CITY OF

SHASTA LAKE









2040

GENERAL PLAN

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ENVIRONMENTAL IMPACT REPORT

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SECTION

1.0

Executive Summary

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1.0 Executive Summary

This Executive Summary (ES) provides an overview of the proposed City of Shasta Lake 2040 General Plan Update (2040 General Plan; project) and its consequences.

1.1 Introduction

In accordance with the California Environmental Quality Act (CEQA) (Public Resources Code §21000-§21189) and the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, §15000-§15387), the City of Shasta Lake, as Lead Agency, has determined that CEQA compliance for the 2040 General Plan will be met through preparation and certification of a Program Environmental Impact Report (PEIR).

As stated in §15146(b) of the CEQA Guidelines, an EIR for a comprehensive amendment of a local general plan should focus on the secondary effects that can be expected to follow from the amendment; however, the EIR need not be as detailed as an EIR for the specific construction projects that might follow. The City's General Plan will be largely self-mitigating in that goals, policies, and implementation actions are included to protect specific environmental resources. This Draft PEIR is intended to fully inform decision-makers, responsible and trustee agencies, and the general public of potential environmental impacts that could occur as a result of implementation of the 2040 General Plan. A detailed description of the project is included in Section 3.0 (Project Description).

1.2 Areas of Controversy

Section 15123(b)(2) of the CEQA Guidelines requires that an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. During the EIR scoping process, no opposition to the proposed 2040 General Plan was expressed; however, several comments were made at the scoping meeting related to air quality, preservation of trees and open space, and water quality (contaminants in creeks and streams). Responses to the Notice of Preparation (NOP) and input provided at the EIR scoping meeting on August 9, 2021, are summarized in Chapter 2.0 (Introduction).

1.3 Issues to be Resolved

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR identify issues to be resolved, including the choice among alternatives and whether or how to mitigate significant effects. This Draft PEIR addresses potentially significant environmental impacts associated with aesthetics, forest resources, air quality, biological resources, cultural and tribal cultural resources, geology, greenhouse gas emissions and energy, hazards and hazardous materials, hydrology and water quality, land use planning and population, noise, public services, recreation, transportation, utilities and service systems, wildfire, and cumulative impacts. The major issues to be resolved by the City include:

a. Whether there are any alternatives to the project that would substantially lessen any of the significant impacts of the project and achieve most of the basic project objectives.
b. Whether the proposed changes to land use designations are compatible with the current character of the area.
c. Whether the proposed goals, policies, and implementation actions should be adopted or amended.
d. Whether the benefits of the project override those environmental impacts that cannot be avoided or mitigated to a level of insignificance.

1.4 Summary of Project Alternatives

In accordance with §15126.6 of the CEQA Guidelines, an EIR must describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project and could avoid or substantially lessen any of the significant effects of the project.

Further, the EIR must evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project; rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The EIR should also identify alternatives that were considered during the scoping process but were rejected from further consideration. Factors that may be used to eliminate alternatives from detailed consideration in an EIR include 1) failure to meet most of the basic project objectives; 2) infeasibility; and 3) inability to avoid significant environmental impacts. The alternatives considered in this EIR are summarized below. **Section 6.0** provides the complete alternatives analysis.

Alternative 1. No Project Alternative
CEQA Guidelines §15126.6(e) requires that a specific alternative of "no project" be evaluated in an EIR in order to allow decision-makers to compare the impacts of approving a proposed project with the impacts of not approving that project. CEQA Guidelines §15126.6(e)(3) states that when a project is the revision of an existing land use plan, regulatory plan, or policy, the "no project" alternative is the continuation of the existing plan, policy, or operation into the future. Under Alternative 1, the proposed 2040 General Plan update would not be adopted, and future development would be guided by the existing goals, policies, implementation programs, and land use designations in the 1999 General Plan, as amended. No changes to allowable residential densities or floor area ratios (FARs) for commercial and industrial uses would be made.

Alternative 2. Residential-Focused Alternative
Under Alternative 2, the Residential-Focused Alternative, the proposed modifications to the General Plan goals, policies, and implementation actions, and changes in land use designations would occur as proposed. Allowable residential densities would increase as proposed, but no increases in FARs for commercial and industrial development would occur, and no increases in the amount of land available for commercial and industrial development would occur.

Alternative 3. Commercial/Industrial-Intensive Alternative
Under Alternative 3, the Commercial/Industrial-Intensive Alternative, the proposed modifications to the General Plan goals, policies, and implementation actions, and changes in land use designations would occur as proposed. Allowable residential densities would increase as proposed. The increase in FARs for commercial and industrial uses would be 25 percent greater than proposed in the 2040 General Plan as follows: 2.5 FAR for Commercial; 1.25 FAR for Industrial, Industrial Light, and Mixed-Use Commercial; and 3.75 for Village Mixed-Use.

1.5 Summary of Impacts and Mitigation Measures

In accordance with the CEQA Guidelines, this EIR focuses on the project's significant effects on the environment. The CEQA Guidelines defines a significant effect as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project. A less-than-significant effect is one in which there is no long- or short-term significant adverse change in environmental conditions. Some impacts are reduced to a less-than-significant level with the implementation of mitigation measures and/or compliance with regulations. **Table 1.1-1** summarizes the identified environmental impacts for each issue area addressed in Section 4.0 of this Draft PEIR, identifies the level of significance for each impact, and identifies required mitigation measures (if any).

Table 1.1-1
Summary of Impacts and Mitigation Measures

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable	PS - Potentially Significant	SU – Significant and Unavoidable	
Section 4.1 Aesthetics				
4.1-1	Implementation of the 2040 General Plan could have an adverse effect on a scenic vista.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.1-2	Implementation of the 2040 General Plan would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a designated State Scenic Highway.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.1-3	Implementation of the 2040 General Plan would not substantially degrade the existing visual character or quality of public views of development sites and their surroundings, and would not conflict with applicable zoning and other regulations governing scenic quality.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.1-4	Implementation of the 2040 General Plan would create new sources of light and glare that could affect day or nighttime views in the area.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
Section 4.2 Agricultural and Forestry Resources				
4.2-1	Implementation of the 2040 General Plan would not convert prime farmland, unique farmland, or farmland of statewide importance, as shown on the maps prepared pursuant to the FMMP, to non-agricultural use and does not involve other changes in the existing environment that could result in conversion of farmland to non-agricultural use.	NI	No mitigation required.	NI
4.2-2	Implementation of the 2040 General Plan would not conflict with existing zoning for agricultural use.	NI	No mitigation required.	NI
4.2-3	Implementation of the 2040 General Plan could result in the loss of forest land, as defined in PRC §12220(g), or conversion of forest land to non-forest use.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
Section 4.3 Air Quality				
4.3-1	Implementation of the 2040 General Plan could conflict with or obstruct implementation of the applicable air quality plan.	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. The applicable air quality plan for the Planning Area is the Northern Sacramento Valley Planning Area (NSVPA) Air Quality Attainment Plan (AQAP). Although development under the 2040 General Plan would comprise a very small percentage of projected emissions in the NSVPA, and project-specific mitigation would be implemented, it is possible that future projects may exceed adopted air quality thresholds or conflict with the NSVPA AQAP or other applicable air quality plans. No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC
4.3-2	Implementation of the 2040 General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. Future projects under the 2040 General Plan would generate emissions of criteria pollutants during construction and operation. Mitigation measures would be implemented as necessary to minimize impacts; however, it is not possible to estimate project-specific emissions or identify quantifiable mitigation measures that would reduce project-specific emissions below the Shasta County Air Quality Management District's thresholds for ROG, NO_X, and PM_{10}. No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
4.3-3	Implementation of the 2040 General Plan could expose sensitive receptors to substantial pollutant concentrations	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.3-4	Implementation of the 2040 General Plan could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people).	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
Section 4.4 Biological Resources				
4.4-1	Implementation of the 2040 General Plan could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. Future projects under the 2040 General Plan may result in direct, indirect, and cumulative impacts on special-status species and their habitats. Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level. No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC
4.4-2	Implementation of the 2040 General Plan could have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.4-3	Implementation of the 2040 General Plan could have an adverse effect on State or federally protected wetlands, (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption, or other means.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
4.4-4	Implementation of the 2040 General Plan could interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.4-5	Implementation of the 2040 General Plan would not conflict with any local policies or ordinances protecting biological resources.	NI	No mitigation required.	NI
Section 4.5 Cultural Resources				
4.5-1	Implementation of the 2040 General Plan could cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.5-2	Implementation of the 2040 General Plan could have a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.5-3	Implementation of the 2040 General Plan could disturb human remains, including those interred outside of dedicated cemeteries.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
Section 4.6 Tribal Cultural Resources				
4.6-1 and 4.6-2	Implementation of the 2040 General Plan could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC §21074, that is eligible for listing in the CRHR or a local register, or is determined by the City to be significant pursuant to the criteria in PRC §5024.1(c).	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact **LCC – Less than Cumulatively Considerable**	**LTS – Less than Significant** **CC – Cumulatively Considerable**	**PS - Potentially Significant**	**SU – Significant and Unavoidable**	
Section 4.7 Greenhouse Gases, Climate Change, and Energy				
4.7-1	Implementation of the 2040 General Plan would not result in significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.7-2	Implementation of the 2040 General Plan would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.	NI	No mitigation required.	NI
4.7-3	Development under the 2040 General Plan could generate greenhouse gas emissions, directly and indirectly, resulting in a significant impact on the environment.	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. Future projects under the 2040 General Plan would generate greenhouse gas (GHG) emissions during construction and operation. However, it is not possible at this time to estimate project-specific emissions or identify quantifiable mitigation measures that would effectively reduce project-specific emissions. No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact **LCC – Less than Cumulatively Considerable**	**LTS – Less than Significant** **CC – Cumulatively Considerable**	**PS - Potentially Significant**	**SU – Significant and Unavoidable**	
4.7-4	Implementation of the 2040 General Plan could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. The State's Climate Change Scoping Plan is the State's comprehensive plan that identifies goals related to reducing GHG emissions and measures necessary to reach the State's GHG reduction targets. Additional related plans, policies, and regulations are identified in Section 4.7.3 of this Draft PEIR. It is not possible at this time to estimate project-specific GHG emissions or identify quantifiable mitigation measures that would effectively reduce project-specific emissions. No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC
Section 4.8 Geology and Soils				
4.8-1	Implementation of the 2040 General Plan could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or based on other substantial evidence of a known fault. ii. Strong seismic ground shaking and seismic-related ground failure, including liquefaction and lateral spreading. iii. Landslides.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.8-2	Implementation of the 2040 General Plan could result in substantial soil erosion or the loss of topsoil.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	**LTS – Less than Significant CC – Cumulatively Considerable**	**PS - Potentially Significant**	**SU – Significant and Unavoidable**	
4.8-3	Implementation of the 2040 General Plan would not result in development on land that may experience significant subsidence.	NI	No mitigation required.	NI
4.8-4	Implementation of the 2040 General Plan could result in development on expansive soils, resulting in substantial direct or indirect risks to life or property.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.8-5	Implementation of the 2040 General Plan could result in development on land that is incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available.	LTS, LCC	No mitigation required.	LTS, LCC
4.8-6	Implementation of the 2040 General Plan could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LTS, LCC	No mitigation required.	LTS, LCC
Section 4.9 Hazards and Hazardous Materials				
4.9-1	Implementation of the 2040 General Plan could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.9-2	Development under the 2040 General Plan could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
4.9-3	Development under the 2040 General Plan could be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.9-4	Implementation of the 2040 General Plan would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.	NI	No mitigation required.	NI
Section 4.10 Hydrology and Water Quality				
4.10-1	Implementation of the 2040 General Plan could violate water quality standards or waste discharge requirements by substantially degrading surface or groundwater quality.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.10-2	Implementation of the 2040 General Plan would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.10-3	Implementation of the 2040 General Plan would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact **LCC – Less than Cumulatively Considerable**	**LTS – Less than Significant** **CC – Cumulatively Considerable**	**PS - Potentially Significant**	**SU – Significant and Unavoidable**	
4.10-4	Implementation of the 2040 General Plan would not substantially alter existing drainage patterns, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would: a. Result in substantial erosion or siltation on- or off-site or provide substantial additional sources of polluted runoff. b. Substantially increase the rate or amount of surface runoff and result in flooding on- or off-site. c. Substantially create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems. d. Impede or redirect flood flows.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.10-5	Implementation of the 2040 General Plan could result in the release of pollutants due to inundation of a project in flood hazard or seiche zones.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
Section 4.11 Land Use and Planning				
4.11-1	Implementation of the 2040 General Plan would not physically divide an established community.	NI	No mitigation required.	NI

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
4.11-2	Implementation of the 2040 General Plan could result in an environmental impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. Development under the 2040 General Plan could conflict with land use plans, policies, and regulations related to air quality, biological resources, GHG emissions, and vehicle miles traveled (VMT). No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC
Section 4.12 Mineral Resources				
4.12-1 and 4.12-2	Implementation of the 2040 General Plan would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State, and would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.	NI	No mitigation required.	NI
Section 4.13 Noise				
4.13-1	Implementation of the 2040 General Plan could cause a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or of applicable standards of other agencies.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.13-2	Implementation of the 2040 General Plan could cause excessive groundborne vibration or groundborne noise levels.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.13-3	Implementation of the 2040 General Plan could expose people residing or working in the project area to excessive noise levels from a private airstrip.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
Section 4.14 Population and Housing				
4.14-1	Implementation of the 2040 General Plan would not induce substantial unplanned population growth in the City, either directly or indirectly.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.14-2	Implementation of the 2040 General Plan would not displace existing people or housing.	NI	No mitigation required.	NI
Section 4.15 Public Services				
4.15-1	Implementation of the 2040 General Plan could result in the need for new and/or expanded fire protection facilities, the construction of which could cause significant environmental impacts.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.15-2	Implementation of the 2040 General Plan could result in the need for new and/or expanded police protection facilities, the construction of which could cause significant environmental impacts.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.15-3	Implementation of the 2040 General Plan could result in the need for new and/or expanded school facilities, the construction of which could cause significant environmental impacts.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.15-4	Implementation of the 2040 General Plan could result in the need for new and/or expanded public health and/or other public services facilities, the construction of which could cause significant environmental impacts.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
Section 4.16 Recreation				
4.16-1	Implementation of the 2040 General Plan could increase the use of existing neighborhood and regional parks and other recreational facilities in a manner that substantial physical deterioration of such facilities would occur or be accelerated.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.16-2	Implementation of the 2040 General Plan could result in the construction or expansion of recreational facilities, which may have an adverse physical effect on the environment.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
Section 4.17 Transportation				
4.17-1	Implementation of the 2040 General Plan would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, and bicycle and pedestrian facilities.	NI	No mitigation required.	NI
4.17-2	Implementation of the 2040 General Plan could conflict with criteria for analyzing transportation impacts based on vehicle miles traveled (VMT) pursuant to CEQA Guidelines §15064.3(b).	PS, CC	Minimized to the extent feasible through General Plan Policies and Implementation Actions. Although VMT under the 2040 General Plan would be ±0.3 percent less than what is expected to occur under the current General Plan, VMT would not be below the significance thresholds for GHG emission reductions (i.e., 15 percent below existing VMT for residential and office developments, and no net increase in total VMT for retail developments). No feasible mitigation is available at the programmatic level. Project-specific mitigation will be implemented as necessary.	SU, CC

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
4.17-3	Implementation of the 2040 General Plan could increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.17-4	Implementation of the 2040 General Plan would not result in inadequate emergency access.	NI	No mitigation required.	NI
Section 4.18 Utilities and Service Systems				
4.18-1	There could be insufficient capacity in the water treatment and distribution system to serve development under the 2040 General Plan.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.18-2	There could be insufficient capacity in the wastewater collection and treatment system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.18-3	There could be insufficient capacity in the electric utility system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.18-4	Implementation of the 2040 General Plan would require construction of new or expanded utility infrastructure, and possibly the relocation of existing utility infrastructure (e.g., waterlines, sewer lines, water or wastewater treatment facilities, electric, natural gas, stormwater drainage, or telecommunications facilities), the construction of which could cause significant environmental effects.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.18-5	There could be insufficient water supplies available to serve development under the 2040 General Plan during dry and multiple dry years.	PS, LCC	**MM 4.18-1** In order to minimize potential impacts during dry and multiple dry years, the City shall implement the following: **a. Add the following Policy CON 4.8 to the General Plan Conservation Element:**	LTS, LCC

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact **LCC – Less than Cumulatively Considerable**	**LTS – Less than Significant** **CC – Cumulatively Considerable**	**PS - Potentially Significant**	**SU – Significant and Unavoidable**
		Prior to the approval of major new development, Specific Plans, major infrastructure improvements, or other projects that would result in significant increased demand on existing water supplies, require that projects demonstrate proof of availability of adequate water supply (e.g., that existing supplies are adequate to accommodate the increased project demand, or that improvements to the capacity of the system to meet the increased demand will be made prior to project implementation), and that potential impacts to water supplies will be addressed. **b. Add the following Implementation Action CON-4.9 to the General Plan Conservation Element:** As part of the development review process require new large-scale development to mitigate the potential project demand on the community's available water supply. **c. Add the following Implementation Action CON-4.10 to the General Plan Conservation Element:** Explore opportunities to develop mechanisms and infrastructure to deliver reclaimed water to city water users from the City's Wastewater Treatment System and other sources.	

Impact		Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
NI – No Impact LCC – Less than Cumulatively Considerable	LTS – Less than Significant CC – Cumulatively Considerable		PS - Potentially Significant	SU – Significant and Unavoidable
4.18-6	Implementation of the 2040 General Plan could generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, impair the attainment of solid waste reduction goals, and/or result in non-compliance with federal, State, and local management and reduction statutes and regulations related to solid waste.	LTS, LCC	No mitigation required.	LTS, LCC
Section 4.19 Wildfire				
4.19-1	Implementation of the 2040 General Plan would not substantially impair an adopted emergency response plan or emergency evacuation plan.	NI	No mitigation required.	NI
4.19-2	Implementation of the 2040 General Plan could, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, thereby exposing people to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.19-3	Implementation of the 2040 General Plan could expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.19-4	Implementation of the 2040 General Plan would require the installation and maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC
4.19-5	Implementation of the 2040 General Plan could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	LTS, LCC	No mitigation beyond the 2040 General Plan policies and implementation actions required.	LTS, LCC

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SECTION

2.0

Introduction

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2.0 Introduction

The City of Shasta Lake, acting as the lead agency, has prepared this Draft Program Environmental Impact Report (PEIR) to provide the public and responsible and trustee agencies with information about the potential environmental effects of implementing the City of Shasta Lake 2040 General Plan (project; proposed project). A detailed description of the project is included in Section 3.0 (Project Description). The California Governor's Office of Planning and Research State Clearinghouse number for this project is SCH 2021070574. This section describes the environmental review process and legal basis for preparing an EIR.

2.1 Type and Purpose of the Environmental Impact Report

As described in California Environmental Quality Act (CEQA) Guidelines §15121(a), an EIR is a public information document that assesses the potential environmental effects of a proposed project and identifies mitigation measures and alternatives to the project that could reduce or avoid significant adverse environmental impacts. The CEQA Guidelines require the preparation of an EIR prior to approving any project that may have a significant effect on the environment. The term "project" refers to the whole of an action that has a potential to result in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines §15379[a]).

The City has determined that the 2040 General Plan update is a project that has the potential to result in significant environmental effects and has determined that a PEIR is appropriate for the project. PEIRs are generally prepared for programs, such as general plans, rather than specific development projects.

Pursuant to §15146(b) of the CEQA Guidelines, an EIR for a comprehensive amendment of a local general plan should focus on the secondary effects that can be expected to follow from the amendment; however, the EIR need not be as detailed as an EIR for the specific construction projects that might follow. The City's General Plan will be largely self-mitigating in that goals, policies, and implementation actions are included to protect specific environmental resources.

2.2 Intended Uses of the Draft PEIR

This Draft PEIR is intended to evaluate the environmental impacts of implementation of the 2040 General Plan update to the greatest extent possible. The Draft PEIR is intended to provide the City with sufficient environmental analysis to make informed decisions regarding the following discretionary approvals related to the 2040 General Plan:

- Certification of the Final PEIR;
- Adoption of a Mitigation Monitoring and Reporting Program;
- Approval of the 2040 General Plan Update;
- Approval of subsequent revisions to the City's Municipal Code and zoning map, as well as guidelines, programs, or other actions required to implement the policies and implementation actions identified in the 2040 General Plan.

The 2040 General Plan will guide subsequent actions taken by the City in its review of new development projects. Future development projects would be reviewed on a case-by-case basis to determine consistency with the 2040 General Plan. While subsequent environmental review for future projects can be tiered off this PEIR, this PEIR is not intended to address impacts of individual projects.

2.3 Notice of Preparation and Public Scoping Meeting

The City issued a Notice of Preparation (NOP) for the proposed project on July 30, 2021. The comment period on the NOP ended on September 10, 2021. The purpose of the NOP process was to notify public agencies/organizations and the general public about the City's intent to prepare an EIR and to obtain input on the scope of the environmental issues to be addressed in the PEIR (CEQA Guidelines §15082(a). In addition, a scoping meeting was held by the City on August 9, 2021, to present information on the 2040 General Plan and obtain comments regarding issues to be addressed in the PEIR. Notice of the scoping meeting was included in the NOP, posted on the City's website, and mailed to several interested members of the community. The scoping meeting was conducted in person and was also made available virtually via Zoom.

Two agencies submitted comments during the NOP comment period. The NOP and comment letters are included as **Appendix A**. In addition, seven individuals (two City Council members and five members of the general public) attended the in-person scoping meeting on August 9, 2021, and presented comments. The comments are summarized in **Table 2.0-1.**

Table 2.0-1
Comments on the Notice of Preparation

Agency/Organization	Date	Summary of Comments	Section of Draft PEIR Comment is Addressed
California Department of Fish and Wildlife	09.10.21	Recommends revising Section 5.2.1 in the Conservation Element	Comment noted. Not a Draft PEIR issue
		Recommends discussing fuel management strategies and impacts on botanical, wildlife, and natural communities in Draft PEIR.	Section 4.4, Biological Resources
		Recommends addressing wildlife connectivity linkages in Draft PEIR.	Section 4.4, Biological Resources
		Recommends the City work with CDFW to develop/revise General Plan policies prior to release of Draft PEIR.	Comment noted. Not a Draft PEIR issue
		Recommends basic biological surveys be conducted across undeveloped land to determine how to best provide resource protection while balancing public access.	Section 4.4, Biological Resources, addresses special-status species and sensitive communities that may be present in the planning area; however, due to the programmatic nature of the General Plan, field surveys were not conducted.
Native American Heritage Commission	08.04.21	Provides legal requirements for consultation with Native American Tribes pursuant to AB 52 (2014) and SB 18 (2004).	Section 4.5, Cultural Resources Section 4.6, Tribal Cultural Resources
		Recommends the Draft PEIR address whether the project has a significant effect on an identified tribal cultural resource.	Section 4.5, Cultural Resources Section 4.6, Tribal Cultural Resources
		Recommends the EIR address whether feasible alternatives or mitigation measures would avoid or substantially lessen impacts on identified tribal cultural resources.	Section 5.0, Alternatives Analysis Section 4.5, Cultural Resources Section 4.6, Tribal Cultural Resources

Agency/Organization	Date	Summary of Comments	Section of Draft PEIR Comment is Addressed
		States that the EIR may not be certified unless the consultation process between the lead agency and the tribes has been completed.	Comment noted
		Provides recommendations for conducting cultural resources assessments, including records searches and field surveys.	Comment noted
		Recommends inclusion of mitigation measures for the inadvertent discovery of archaeological resources, including tribal cultural resources.	Section 4.5, Cultural Resources Section 4.6, Tribal Cultural Resources
Scoping Meeting Comments	08.09.21	Would like more air quality monitoring stations in the City and monitoring for individual businesses.	Section 4.3, Air Quality
		Expressed concerns about the protection of sensitive areas and recommended programs such as a creek management plan, City-funded educational programs, and oak woodlands management plan.	Section 4.4, Biological Resources
		City should ensure the provision of parks in new developments. Recommended pocket parks throughout the City.	Section 4.15, Public Services Section 4.16, Recreation
		Recommended energy efficiency programs, such as solar.	Section 4.7, Energy, Greenhouse Gas Emissions, and Climate Change.
		Discussed importance of opening Pine Grove Fire Station on east side of I-5.	Section 4.15, Public Services
		Suggested safer crosswalks on Shasta Dam Boulevard.	Section 4.17, Transportation
		Suggested tree planting along Shasta Dam Boulevard.	Not a DEIR issue
		Expressed need to consider ecosystems.	Section 4.4, Biological Resources
		Expressed concerns with contamination of creeks due to homeless encampments.	Comment noted
		Recommended public education regarding invasive species.	Comment noted
		Recommended a reduction in pesticide use.	Section 4.10, Hydrology/Water Quality

2.4 Organization and Scope of the Draft PEIR

Sections 15120 through 15132 of the CEQA Guidelines identify the content requirements for Draft and Final EIRs. An EIR must include a brief summary of the proposed actions and its consequences and a project description that includes a statement of the objectives of the project, a general description of the project's technical, economic, and environmental characteristics, a description of intended uses of the EIR, and a description of all required discretionary approvals associated with a project.

An EIR must also describe the physical environmental conditions in the project area as they existed at the time the notice of preparation for the project was published; this environmental setting normally constitutes the baseline physical conditions by which a lead agency determines whether an impact is significant. The EIR must include an environmental impact analysis that discusses

potential significant environmental impacts of the project, including growth-inducing impacts, identifies proposed mitigation measures to minimize significant effects, identifies project alternatives that were considered, identifies significant irreversible environmental changes and effects found not to be significant, and discusses cumulative impacts.

The scope of this Draft PEIR was established through review of available environmental documentation, City studies and reports, comments submitted on the NOP and at the August 9, 2021, scoping meeting, and direction given by the City Council. This DEIR has been organized in the following format:

Section 1.0 **Executive Summary:** Provides an overview of the proposed project and its consequences, identifies feasible mitigation measures (if necessary), and describes alternatives that were considered that would reduce or avoid environmental effects.

Section 2.0 **Introduction.** An introduction and overview describing the intended use of the Draft PEIR, the process used to identify the scope of the Draft PEIR, and the environmental review process.

Section 3.0 **Project Description.** Identifies the objectives of the proposed project and describes the 2040 General Plan update.

Section 4.0 **Environmental Impact Analysis.** For each resource topic, describes study methods, the environmental setting specific to the resource topic, the regulatory framework, thresholds of significance, potentially significant effects, proposed General Plan goals, policies and implementation actions that minimize/avoid potential environmental effects, and proposed mitigation measures (if necessary); and lists documents/sources that were referenced during preparation of each resource section.

Section 5.0 **Cumulative Impacts.** Includes an analysis of the potential cumulative environmental effects that could occur as a result of implementation of the 2040 General Plan.

Section 6.0 **Alternatives Analysis.** Describes alternatives to the 2040 General Plan that were considered, provides a comparative analysis between the project and the alternatives, and identifies the environmentally preferred alternative.

Section 7.0 **Other CEQA Considerations: Growth-Inducing Impacts, Significant Unavoidable Impacts, and Significant Irreversible Environmental Changes.** Identifies growth-inducing impacts, significant unavoidable impacts for which no feasible mitigation measures are available to reduce impacts to a less-than-significant level, and significant irreversible environmental changes that could result from implementation of the 2040 General Plan.

Section 8.0 **Preparers and Organizations Consulted.** Identifies the individuals involved with preparation of the Draft PEIR and agencies, organizations, and individuals consulted during preparation of the Draft PEIR.

Appendices Contains information to supplement Section 4.0.

SECTION

3.0

Project Description

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3.0 Project Description

The project analyzed in this Draft Program Environmental Impact Report (PEIR) is the proposed City of Shasta Lake 2040 General Plan Update (2040 General Plan, project). The 2040 General Plan is a comprehensive update of the existing General Plan and is intended to guide investment, development, and conservation in the City of Shasta Lake through 2040. In compliance with the California Environmental Quality Act (CEQA) and CEQA Guidelines, this section provides a detailed description of the project, including the location and boundaries of the Plan Area, the primary objectives of the project, and the principal characteristics of the 2040 General Plan.

3.1 Background and Overview

California State law requires each city and county to adopt a general plan "for the physical development of the county or city and any land outside its boundaries that in the planning agency's judgment bears relation to its planning" (Cal. Gov. Code § 65300). General plans provide a basis for local government decision-making and benefit communities by promoting streamlined processes, integrated planning, and improved access and use of available resources.

The Shasta Lake General Plan was originally adopted in 1999, and individual elements have been updated periodically since that time (primarily the Housing Element as required by State law). The 2040 General Plan includes updates to the goals, policies, and implementation measures in the Land Use, Circulation, Conservation, Open Space, and Health and Safety (including Noise and Air Quality) Elements and revisions to the General Plan land use designations.

The update also addresses changes in State law that have occurred in the past few years. Based on community input, the 2040 Land Use Diagram focuses on promoting more compact growth and creating livable places through infill and redevelopment, especially in areas supported (currently or in the future) by public transit and utilities. The General Plan increases opportunities for housing in key areas of the City through increased density and mixed-use developments.

3.2 Project Location

The City of Shasta Lake is located in the northern extent of the Sacramento Valley in Shasta County. The City abuts the City of Redding to the south and southeast, the unincorporated community of Mountain Gate to the northeast, and the unincorporated area of Shasta County to the west and northwest. **Figure 3.0-1** shows the planning area for the 2040 General Plan, which encompasses all land within the City limits and the City's Sphere of Influence (SOI).

3.3 Sphere of Influence

The SOI is land outside of the City limits that reflects the probable ultimate physical boundaries of the City. Land must be included in the SOI in order for the land to be annexed into the City. The Shasta County Local Agency Formation Commission (LAFCO) is responsible for overseeing changes to governmental boundaries and is required by State law to determine a SOI for each city and special district in the County. Generally, changes to a city's SOI are initiated by the city.

On November 6, 2014, the Shasta County LAFCO conducted a public hearing and approved a change to the City's SOI to include property immediately north of the City that was proposed for development of the Moody Flats Quarry at that time. LAFCO included some federal land north of the Moody Flats Quarry site, but this may have been unintentional. It should be noted that LAFCO approved the SOI despite the City's request to leave the SOI coterminous with the City limits.

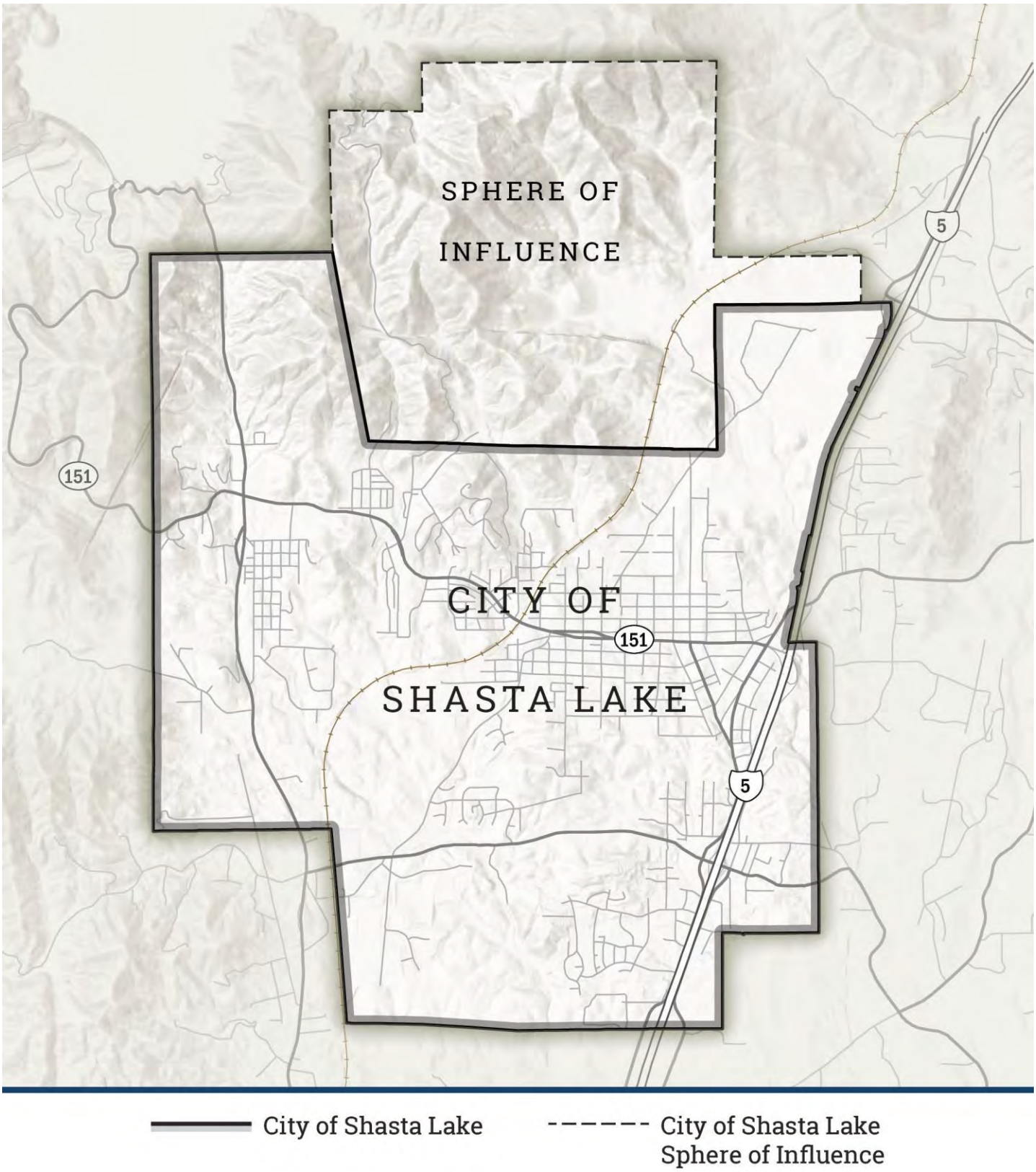


Figure 3.0-1
General Plan Planning Area

The current SOI (refer to **Figure 3.0-1**) encompasses ±2,500 acres. The majority of land in the SOI (±1,837 acres) is owned by Minnesota Mining and Manufacturing Company (3M) and includes ±1,468 acres with a County General Plan designation and zoning of Mineral Resource, ±234 acres designated Suburban Residential (Interim Rural Residential zoning), and ±135 acres designated Industrial (Light Industrial, General Industrial zoning). Approximately 665 acres is federal land with a General Plan designation of Public Land (Unclassified zoning). The County's General Plan designations for properties in the City's SOI are shown in **Figure 3.0-2**

The Environmental Impact Report for the Moody Flats Quarry project was not certified, and the project has not been approved by the County. The timing, type/characteristics, and density of future development of the property are unknown at this time. The 2040 General Plan update does not propose any revisions to the City's SOI.

3.4 Project Objectives

Section 15124 of the CEQA Guidelines requires a clearly written statement of the project's objectives to assist with developing a reasonable range of alternatives. The statement of objectives should include the underlying purpose of the project and may discuss the project's benefits. The 2040 General Plan update will guide City programs, policies, and land use decisions within the planning area through the year 2040.

The City's vision statement was developed as a first step in the planning process for the 2040 General Plan and serves as the basis for the goals, policies, and implementation programs included in the Plan. The vision statement was developed based on community input that was gathered at numerous workshops and meetings that began in 2015.

> Vision Statement
>
> The City of Shasta Lake is a safe and vibrant community that embraces our diversity, lives in harmony with our unique natural environment, and provides access to healthy lifestyles for our citizens. Surrounded by natural beauty, the City of Shasta Lake is characterized by welcoming neighborhoods and an appreciation for our historical heritage. Expanded parks and recreation amenities and a variety of housing choices create a high quality of life for all citizens.
>
> The array of youth activities, sports clubs, and robust schools make this a great place for families to thrive. Job opportunities and social vitality attract diverse talent to the community. The strong schools, community services, recreational amenities, reasonably priced homes, and close-knit neighborhoods produce an ideal place to raise a family. Expanded housing options, support services, and transportation choices create opportunities for longtime residents to stay in the City of Shasta Lake as they age.
>
> As growth continues, the City of Shasta Lake maintains its distinct small-town charm while providing a high level of community services. Public health and safety are a priority to create an environment where City residents have access to healthy lifestyles. The City promotes optimal health and safety of its residents through prevention, protection, and intervention. Arts, culture, and civic engagement are embraced by a community that understands the social issues and needs of fellow residents. The historic downtown is friendly and walkable, strengthened by infill and mixed-use projects including a mix of retail, restaurant, residential, and office uses leading to a vibrant and active commercial area.

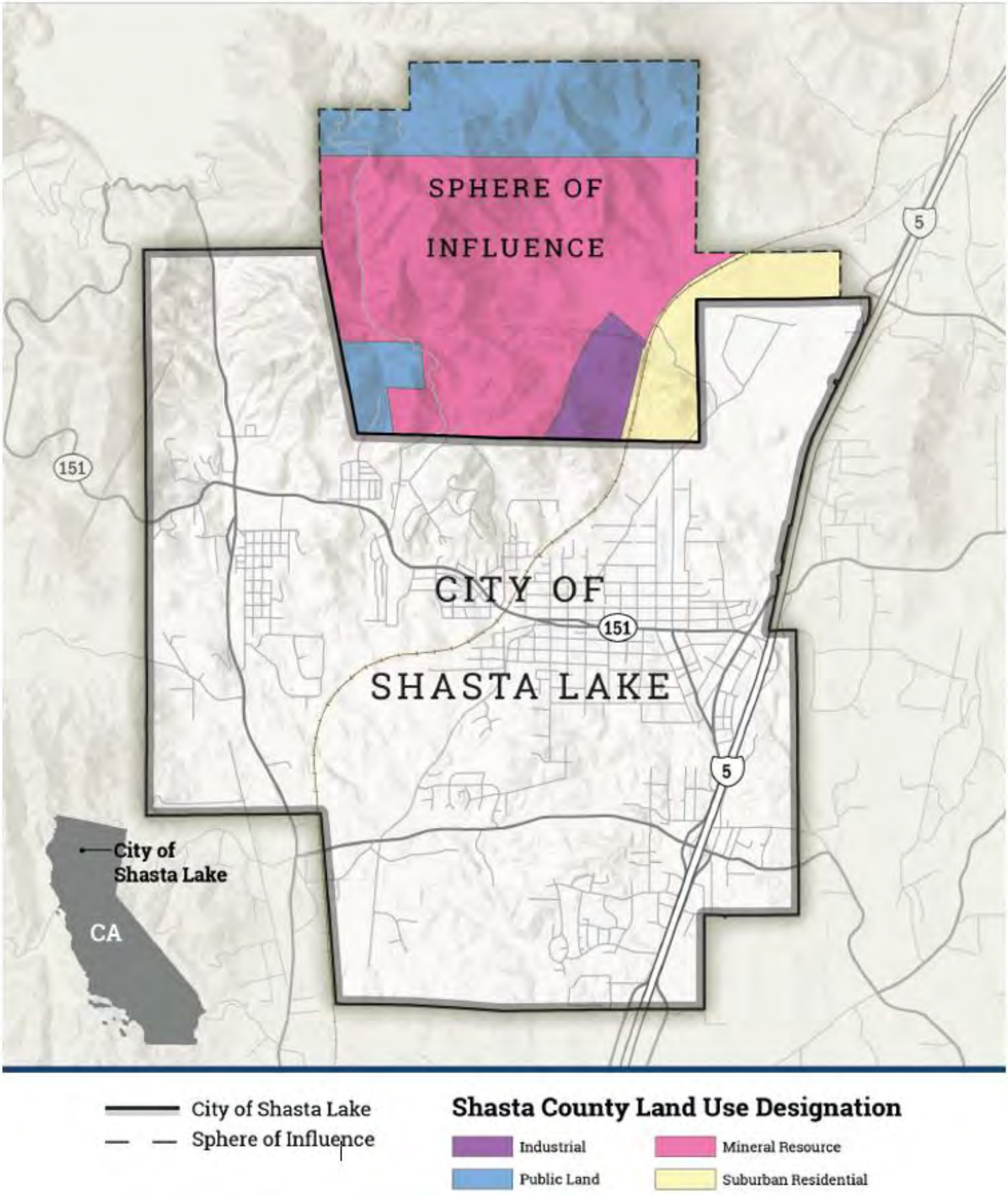


Figure 3.0-2
Sphere of Influence – Shasta County General Plan Designations

The City is a model of economically, environmentally, and culturally responsible development. Industrial development in the Shasta Gateway Industrial Park provides a reliable tax base for the City while creating jobs. The transportation network is balanced and connected to provide opportunities for all ages and abilities. This includes safe and efficient roadways, pedestrian-friendly paths and sidewalks, trails, bicycle amenities, and public transportation.

All of this has led to the City of Shasta Lake becoming a preferred place to live, work, play, and conduct business.

The 2040 General Plan includes core vision statements that serve as the objectives of the 2040 General Plan:

a. Provide a diverse and affordable housing stock attracting professionals, families, and seniors.

b. Establish a balanced and connected network of multiple transportation methods allowing safe and efficient movement by users of all ages, abilities, and modes.

c. Provide a business-friendly economy that encourages economic development, prosperity, and community enrichment while allowing the City to receive a reliable tax base.

d. Establish a community that fosters health and well-being, where citizens feel safe and connected to their community.

e. Establish a healthy community with access to fresh food, recreation opportunities, social engagement, clean water and air, and multi-modal transportation options.

f. Provide sufficient land designated for industrial uses that provide a variety of desirable and stable jobs.

g. Provide a walkable downtown containing shopping, dining, entertainment, offices, and residences surrounded by revitalized neighborhoods, connected to all parts of the community.

h. Preserve riparian corridors, parks, and open spaces and protect these areas from development for the public good.

i. Support emergency service professionals committed to public safety and prepared to adapt and serve the needs of a changing community.

3.5 Land Use Revisions

Based on community input, the 2040 Land Use Diagram focuses on promoting more compact growth and creating livable places through infill, redevelopment, and mixed-use development, especially in areas supported (currently or in the future) by public transit and utilities. **Figure 3.0-3** shows the current General Plan Land Use designations; **Figure 3.0-4** shows the proposed 2040 General Plan land use designations.

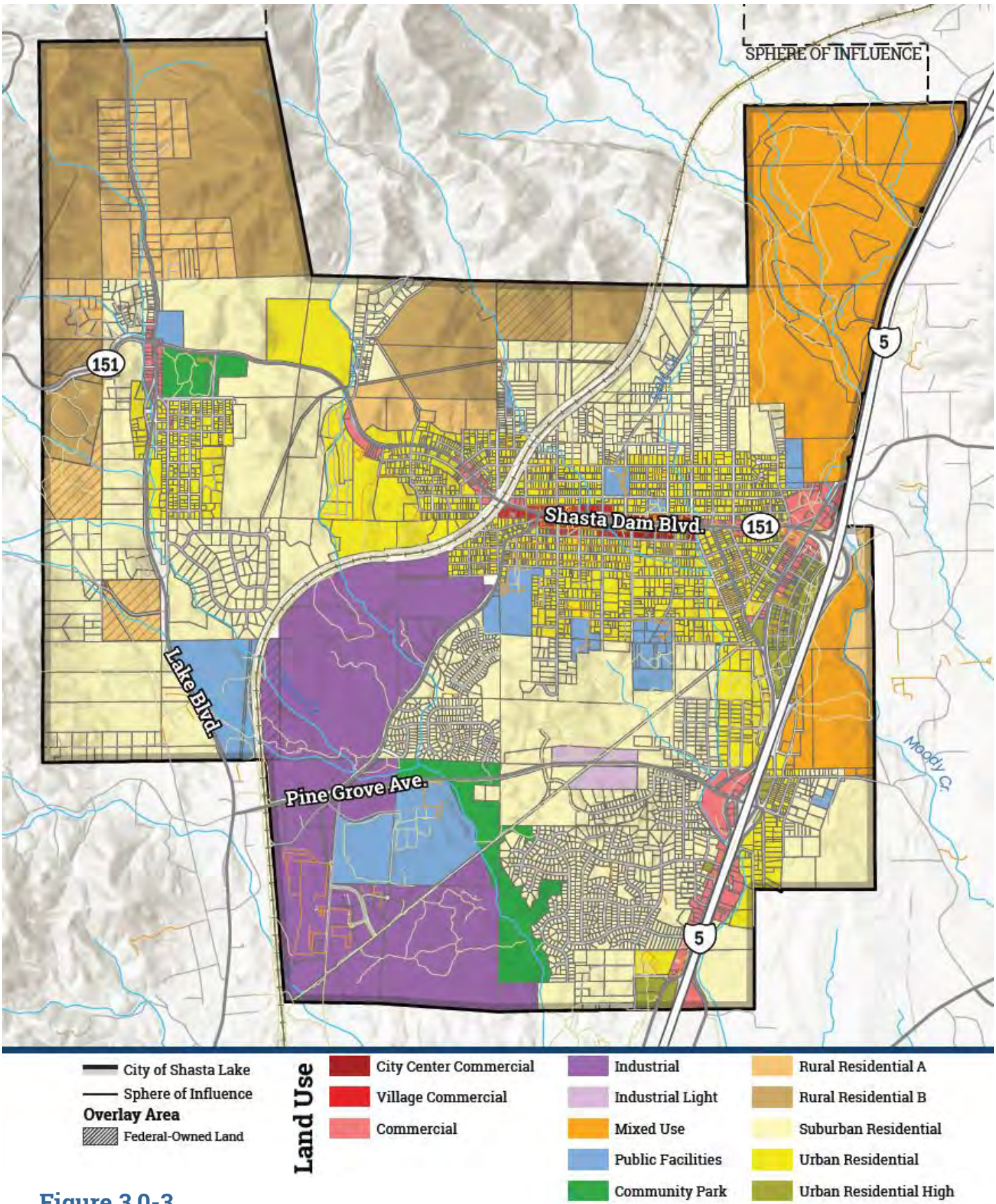


Figure 3.0-3
Current General Plan Designations

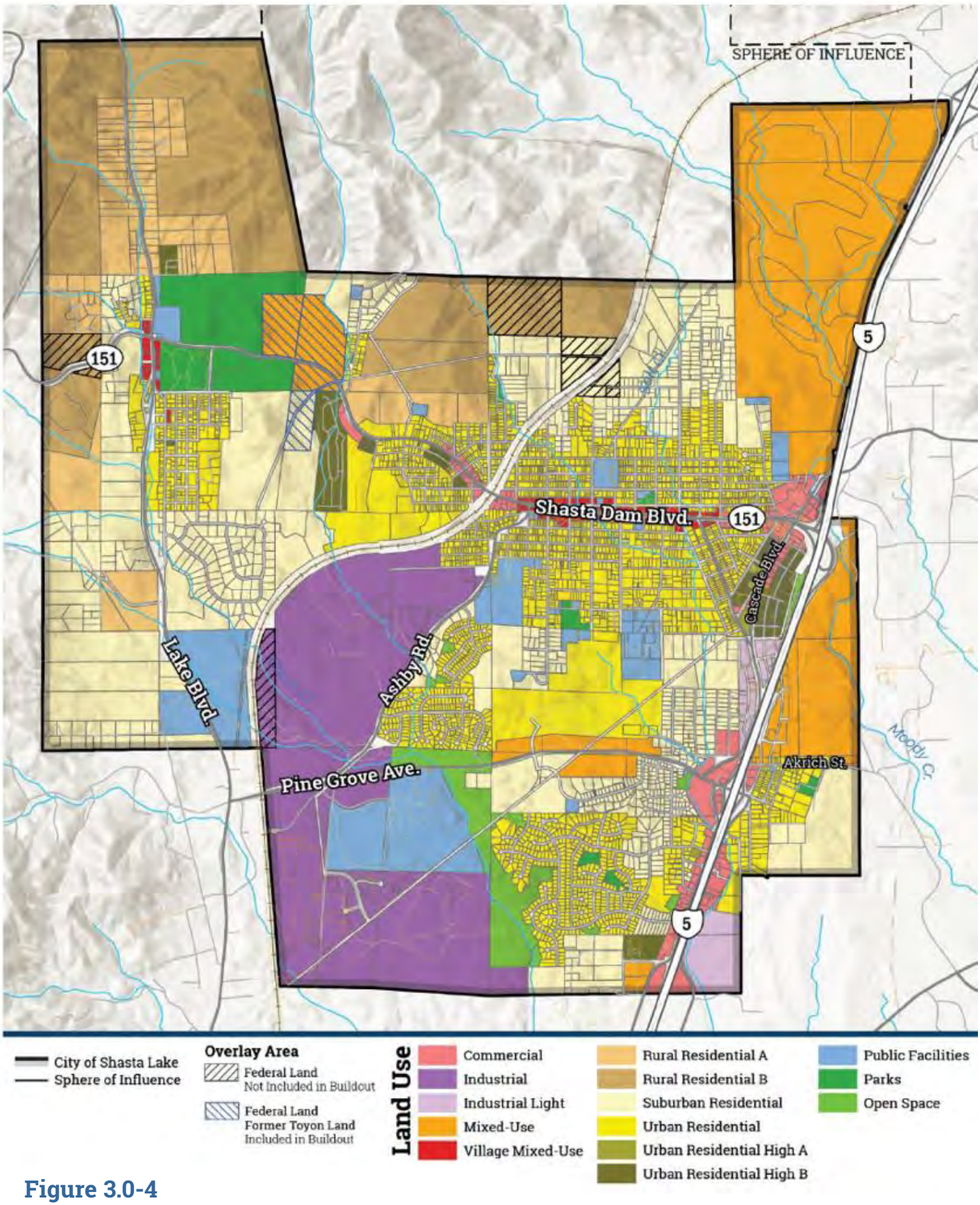


Figure 3.0-4
Proposed 2040 General Plan Designations

Many of the amendments will not change the type or density of development currently allowed under the existing General Plan. For example, the designations for parcels within developed subdivisions (e.g., Windsor Estates, Hazelwood/Oakridge, Coeur D'Alene, Hardenbrook Estates, etc.) would change from Suburban Residential to Urban Residential to reflect the size of existing parcels in those areas; however, because these parcels are already developed, no change in allowable land uses would occur.

In addition, some of the current land use designations for developed parcels would be consolidated/redefined but would not result in a change in development patterns (e.g., the City Center Commercial designation would be eliminated and would change to either Village Mixed-Use or Urban Residential, depending on the existing land use).

Table 3.0-1 provides an overview of proposed changes in residential land use designations and densities; **Table 3.0-2** identifies proposed changes in commercial/industrial land use designations and floor area ratios (FAR); and **Table 3.0-3** identifies changes for lands identified as public facilities, community parks, open space, and federal land, as well as public rights-of-way (ROW).

A description of all proposed land use designations is included in the Land Use Element of the General Plan.

3.6 Build-Out Potential

The General Plan forecasts maximum build-out of the City, which is the point at which the City is fully developed with the land uses identified in the Land Use Element. Maximum build-out assumes that undeveloped parcels are developed to their fullest extent and underutilized parcels are redeveloped in accordance with the density limits and FARs set forth in the General Plan. For nonconforming uses, it is assumed that the parcels would be redeveloped in accordance with the density limits and FARs of the conforming use.

Because there are many other factors that influence the density and timing of development (e.g., cost of installing utility infrastructure; cost of completing roadway improvements, regulatory controls, economic conditions, property owner decisions, and other market forces), it is unlikely that full build-out will occur by 2040,

Therefore, the General Plan identifies both build-out assumptions and development projections based on what is likely to occur over the next 20 years. **Table 3.0-4** identifies anticipated residential development over the 20-year planning period for the 2040 General Plan. **Table 3.0-5** identifies anticipated commercial and industrial development over the 20-year planning period for the 2040 General Plan.

The projections are based on developable land and do not include land with designated flood hazard area, wetlands as shown on the U.S. Fish and Wildlife Service National Wetlands Inventory, or areas with slopes over 20 percent.

It also includes proportional area splitting for mixed-use parcels and lot efficiency factors for each land use. Employment growth is estimated from U.S. EIA median square feet (SF) per worker by land use (Commercial, 410 SF; Industrial and Light Industrial, 750 SF; Mixed-Use, 403 SF; Village Mixed-Use, 425 SF).

Table 3.0-1
Existing and Proposed General Plan Land Use Calculations – Residential Uses

General Plan Land Use Designation	Gross Acres		Developable Acres		Allowable Densities		Buildout		Difference in Buildout Between 1999 and 2040 General Plans
	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	
Rural Residential A	382	347	142	118	0.5	0.5	85	76	-9
Rural Residential B	697	701	77	80	0.2	0.2	15	16	+1
Suburban Residential	1,899	1360	1,385	954	3	3	2,639	2,049	-590
Urban Residential	807	1,102	673	914	10	12	3,823	6,674	+2,851
Urban Residential High (URH)	52	-	49	-	20	-	745	-	-745
URH A	-	5	-	4	-	30	-	105	+105
URH B	-	93	-	76	-	20	-	950	+950
Village Commercial (Residential Uses)	9	-	8	-	20	-	129	-	-129
Village Mixed-Use (Residential Uses)	-	17	-	22	-	30	-	561	+561
Mixed-Use (Residential Uses)	359	440	284	350	20	30	5,664	10,475	+4,811
Total Residential:	4,205	4,065	2,618	2518	-	-	13,100	20,906	+7,806

Table 3.0-2
Existing and Proposed General Plan Land Use Calculations – Commercial and Industrial Uses

General Plan Land Use Designation	Gross Acres		Developable Acres		Allowable FAR		Buildout		Difference in Buildout Between 1999 and 2040 General Plans
	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	
City Center Commercial	11	-	344,695	-	0.25	-	36,353	0	-36,353
Village Commercial (Commercial Uses)	9	-	285,023	-	0.25	-	29,343	0	-29,343
Village Mixed-Use (Commercial Uses)	-	17	-	253,594	-	3	0	559,992	+559,992
Mixed-Use (Commercial Uses)	359	440	9,904,860	12,205,524	1	1	9,902,082	12,196,853	+2,294,771
Commercial	114	117	3,057,560	3,154,025	0.25	2	529,502	6,007,280	+5,477,778
Industrial	714	713	21,658,515	21,622,411	0.40	1	7,541,075	20,499,867	+12,958,792
Light Industrial	31	67	966,292	1,741,726	0.30	1	289,888	1,734,486	+1,444,598
Total Commercial/Industrial:	1,238	1,354	36,216,945	38,977,280			18,328,243	40,998,478	+22,670,235

Table 3.0-3
Existing and Proposed General Plan Land Use Calculations – Other Uses

Other Land Use Designations	Gross Acres		Difference between 1999 and 2040 General Plans
	Existing 1999 General Plan	Proposed 2040 General Plan	
Public Facilities	307	326	+19
Community Park	138	163	+25
Open Space	0	117	+117
ROW/ Easements	656	744	+88
Gov. Owned	380	157	-223
Total Other	1,481	1,507	26

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Table 3.0-4
Residential Growth Projections
(Population and Housing)

Housing Type	Existing Units	Additional Units at Buildout	Total Number of Units at Buildout	20-Year Projections		Annual Projections	
				Unit Growth	Population Growth	Unit Growth	Population Growth
Single-Family	3,645	8,815	12,460	542	1,350	27	67
Multi-Family	542	1,055	1,597	142	354	7	18
Mixed-Use	38	11,036	11,074	152	378	8	19
Total	**4,225**	**20,906**	**25,131**	**836**	**2,082**	**42**	**104**

Table 3.0-5
Commercial, Industrial, and Mixed-Use Commercial Growth Projections
(Square Footage and Jobs)

Category	Existing Square Footage	Additional SF at Buildout	Total SF at Buildout	20-Year Projections		Annual Projections	
				SF Growth	Job Growth	SF Growth	Job Growth
Commercial	316,096	6,007,280	6,323,376	60,073	147	3,004	7
Industrial	1,122,544	20,499,867	21,622,411	184,499	246	9,225	12
Light Industrial	7,240	1,734,486	1,741,726	20,814	28	1,041	1
Mixed-Use	8,671	12,196,853	12,205,524	109,772	272	5,489	14
Village Mixed-Use	228,948	559,992	788,940	5,600	13	280	1
Total	**1,683,499**	**40,998,478**	**42,681,977**	**380,758**	**706**	**19,039**	**35**

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SECTION

4.0

Environmental Impact Analysis

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4.0 Environmental Impact Analysis

Pursuant to the California Environmental Quality Act (CEQA) (California Public Resources Code §21000 *et seq.*) and CEQA Guidelines (Title 14 California Code of Regulations, §15000 *et seq.*), this section evaluates potential environmental impacts that could result from implementation of the 2040 General Plan.

In accordance with §15064 of the CEQA Guidelines, in evaluating the significance of the environmental effects of a project, the lead agency must consider direct and reasonably foreseeable indirect physical changes in the environment that may be caused by a project. A direct physical change is one that is caused by and immediately related to a project (e.g., dust and noise from a project's construction-related activities, removal of wildlife habitat, damage to cultural resources, etc.; and potential operational impacts related to air pollutants, noise, and/or traffic hazards generated by a facility).

An indirect physical change in the environment is one that is not immediately related to a project, but that is caused indirectly by the project (e.g., expansion of a water or wastewater treatment facility or construction of a new road may facilitate new development and result in growth-inducing impacts; a general plan amendment or rezone could result in new or more intense development in an area). An indirect physical change must be considered only if that change is a reasonably foreseeable impact. A change that is speculative or unlikely to occur is not reasonably foreseeable.

Pursuant to §15146(b) of the CEQA Guidelines, an EIR for a comprehensive amendment of a local general plan should focus on the secondary effects that can be expected to follow from the amendment; however, the EIR need not be as detailed as an EIR for the specific construction projects that might follow. For each resource topic, the following are addressed:

Study methods. Describes methods used to identify potential impacts that could occur as a result of implementation of the 2040 General Plan.

Environmental Setting. Describes the existing physical environmental setting for the resource category to establish the existing-conditions baseline from which the lead agency determines whether an impact is significant.

Regulatory Framework. Identifies federal, State, and local laws, policies, programs, and/or requirements that are applicable to the resource category.

Proposed General Plan Goals, Policies, and Implementation Actions. Identifies proposed goals, policies, and implementation actions related to the resource category.

Thresholds of Significance. Identifies thresholds that are used to determine impact significance. A threshold of significance can be a quantitative, qualitative, or performance-based threshold that is adopted by ordinance, resolution, rule, or regulation, and is developed through a public review process and supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in §15064(b)(2) of the CEQA Guidelines (CEQA Guidelines §15064.7 (a, b).

Pursuant to §15064.7(d), any public agency may adopt or use an environmental standard as a threshold of significance. Using environmental standards promotes consistency in significance determinations and integrates environmental review with other environmental program planning

and regulation. An "environmental standard" is a rule of general application that is adopted by a public agency through a public review process and that is all of the following: (1) a quantitative, qualitative, or performance requirement found in an ordinance, resolution, rule, regulation, order, plan, or other environmental requirement; (2) adopted for the purpose of environmental protection; (3) addresses the environmental effect caused by the project; and, (4) applies to the project under review.

When using an environmental standard as a threshold of significance, the public agency must explain how compliance with the environmental standard reduces project impacts, including cumulative impacts, to a level that is less than significant, and why the environmental standard is relevant to the analysis of the project under consideration.

Issues Not Discussed Further. Identifies potential impacts of the project that were determined not to be significant are not further discussed in the impact analysis.

Impact Analysis and Mitigation Measures. Describes potential impacts that could occur with implementation of the 2040 General Plan. For each impact category, potential environmental impacts are classified as follows:

- **No Impact.** The proposed project would not have any measurable environmental impact on the environment.
- **Less-Than-Significant Impact.** The proposed project has the potential to impact the environment; however, this impact would be below established thresholds of significance.
- **Potentially Significant Impact Unless Mitigation Incorporated.** The proposed project has the potential to generate impacts that may be considered a significant effect on the environment; however, mitigation measures can reduce these impacts to levels that are less than significant.
- **Significant and Unavoidable**. The proposed project would or may cause a substantial adverse effect on the environment, and there are no feasible mitigation measures that would reduce the impact to a less-than-significant level.

  When an impact is identified as significant and unavoidable, the lead agency may still approve the project but must prepare a statement of overriding considerations documenting how the economic, legal, social, technological, or other benefits, including region-wide and/or statewide environmental benefits of a project, outweigh the unavoidable adverse environmental effects (CEQA Guidelines §15093).

Cumulative Impacts. Section 5.0 identifies potential cumulative impacts that could result from implementation of the 2040 General Plan. A cumulative impact analysis for a comprehensive general plan update is primarily an analysis of development that could occur with build-out of the general plan. In most cases, the potential for cumulative impacts is limited to areas within the City limits and the boundaries of the City's sphere of influence. However, cumulative impacts for the following resource categories also consider regional impacts: air quality, biological resources, greenhouse gas emissions, hydrology and water quality, and transportation/traffic.

References. Identifies plans, studies, reports, and other sources of information referenced during preparation of the resource section.

SECTION

4.1

Aesthetics

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4.1 Aesthetics/Visual Resources

This section describes existing visual resources in the study area and discusses potential impacts that implementation of the 2040 General Plan could have on aesthetics/visual resources, including potential impacts associated with scenic vistas, scenic resources, visual character, quality of public views, and light/glare.

4.1.1 Study Methods

The following evaluation of potential impacts on aesthetic and visual resources is based on review of the proposed 2040 General Plan land use diagram (**Figure 3.0-3 in Section 3**), the City of Shasta Lake Municipal Code, California Department of Transportation's (Caltrans) guidelines for designating scenic highways, and California Green Building Standards Code requirements. The analysis evaluates whether future development and other physical changes that could occur from development under the 2040 General Plan would physically alter existing scenic resources, including scenic resources visible from designated scenic highways, or obstruct, degrade, or obscure scenic vistas. The analysis also considers potential impacts associated with light and glare.

A common approach to visual impact assessments includes identifying visual resources in the project area (both natural and built features); assessing the visual character and quality of those resources in relation to the overall visual character of the community; identifying key viewers in the viewshed; identifying viewer groups in the project area (typically the traveling public who are viewing the project corridor from their vehicles, and individuals who view the project site from a nearby location such as a residence, business, or public park); and determining viewer sensitivity to the changes that would result from a proposed development. Due to the conceptual nature of development under the 2040 General Plan, a detailed visual impact assessment will be conducted on a case-by-case basis when project-specific information is available.

4.1.2 Environmental Setting

EXISTING VISUAL CONDITIONS

The City of Shasta Lake is located in Shasta County at the northern extent of the Central Valley, at the foothills of the Klamath Mountains and the Cascade Range.

Scenic Vistas

Scenic vistas are public areas that provide expansive views of natural features such as mountains, hills, valleys, water courses, rock outcrops, and natural vegetation, as well as man-made scenic structures (e.g., public art, historic buildings, etc.). Significant scenic vistas in the Planning Area include the Interstate 5 (I-5) corridor and other public streets throughout the City, and public areas such as parks and recreational facilities that provide views of scenic resources.

Important natural scenic resources in or visible from various locations in the Planning Area include Mount Shasta to the north, Lassen Peak to the east, creeks and streams throughout the Planning Area (i.e., Churn Creek, Little Churn Creek, Salt Creek, Moody Creek, Rancheria Creek, Nelson Creek, Newtown Creek, and numerous unnamed streams), open space areas throughout the City, and forested hillsides in and north, east, and west of the Planning Area. Creeks and streams, mature scenic trees, steep hillsides, and other natural features shape development patterns and provide attractive natural features among urban land uses in the City.

Existing Light and Glare

Sources of light in urbanized areas of the City include street lights, interior lighting, security lights and other exterior lights on buildings/structures and in landscaped areas, lighting in parking lots, lights for sign/billboard illumination, and field lighting at parks and schools. Some rural areas of the City lack street lights; thus, lower ambient light levels are present. Additional sources of light and glare include headlights from vehicles on public streets throughout the community.

4.1.3 Regulatory Framework

FEDERAL

There are no federal regulations pertaining to aesthetics that apply to the proposed project.

STATE

California Scenic Highway Program

The California Scenic Highway Program, administered by the California Department of Transportation (Caltrans), was established in 1963 to preserve and protect the natural beauty of scenic highway corridors in the State. The Scenic Highway System includes a list of highways that have been designated as scenic highways as well as a list of highways that are eligible for designation as scenic highways. Cities and counties can nominate eligible scenic highways for official designation by identifying and defining the scenic corridor of the highway. The municipality must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. Suitability for designation as a State Scenic Highway is based on three criteria (Caltrans, 2021):

> **Vividness**. The extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements.
>
> **Intactness**. The integrity of visual order and the extent to which the natural landscape is free from visual intrusions (e.g., buildings, structures, equipment, grading).
>
> **Unity**. The extent to which development is sensitive to and visually harmonious with the natural landscape.

California Building Standards Code

The California Building Standards Code (CBSC) (CCR Title 24) is based on the International Building Code (IBC) used widely throughout the country. Part 11 of the CBSC is the Green Building Code (CALGreen). CALGreen §5.106.8 includes mandatory light pollution reduction measures for non-residential uses. The intent of the measures is to maintain dark skies and to ensure that newly constructed projects reduce the amount of backlight, uplight, and glare (BUG).

In addition, §130.2(c) of the California Energy Code (CEC) (CBSC Part 6) requires that all outdoor lighting for new non-residential uses must be controlled with a photocontrol, astronomical time-switch control, or other control capable of automatically shutting off the outdoor lighting when daylight is available, thereby minimizing the potential for glare during the daytime. In addition, automatic scheduling controls must be installed for all outdoor lighting and must be capable of reducing lighting power by at least 50 percent and no more than 90 percent, and must be separately capable of turning the lighting off during scheduled unoccupied periods. CEC §130.3 (Sign Lighting Controls) also requires that outdoor sign lighting be controlled with a photocontrol in addition to an automatic time-switch control, or an astronomical time-switch control. A dimmer

that provides the ability to automatically reduce sign lighting power by a minimum of 65 percent during nighttime hours must be included.

LOCAL

City of Shasta Lake Municipal Code (SLMC),

The SLMC includes regulations that are intended to avoid/minimize potential aesthetic impacts that could result from new development. These regulations include, but are not limited to:

SLMC Title 17 (Zoning)

Design Standards for Specific Zoning Districts. Chapters 17.10 through 17.60 of the SLMC identify various zoning districts in the City and site development standards that apply to development in each of the zoning districts. These standards include minimum yard setbacks, maximum structural height, maximum density or floor area ratio, landscaping requirements, outdoor lighting requirements, standards for signage, and additional standards that are applicable to specific land use categories (e.g., multi-family residential, commercial, industrial, etc.). There are also several Planned Development Districts in the City (e.g., SLMC Chapter 17.61, Shasta Gateway Industrial Park PD, and Chapter 17.63, Mountain Gate at Shasta PD, etc.) that include more stringent design guidelines.

General Development Standards. SLMC Chapter 17.84 includes design and architectural objectives for new commercial, industrial, and public development projects. Objectives are included for site design, building design, signage, landscaping, and lighting. The purpose of the objectives is to enhance the community's overall value and appearance and to achieve well-designed projects that complement the small-town feel of the community and its heritage. In addition, the design objectives are intended to:

- Encourage originality, flexibility, innovation in site planning and development, including the architecture, landscaping, and design of proposed developments in relation to the city as a whole and/or surrounding areas.
- Discourage monotonous, drab, unsightly, dreary, and inharmonious developments, minimize discordant and unsightly surroundings and visual blight, and avoid inappropriate and poor-quality design.
- Aid in assuring that structures, signs, and other improvements are properly related to their sites and surrounding areas, with regard for the aesthetic qualities of the natural terrain and landscape, and that proper attention is given to exterior appearances of structures, signs, and other improvements.

Lighting. SLMC §17.84.050 states: *"All lighting, exterior and interior, shall be designed and located so as to confine direct lighting to the premises. A light source shall not shine upon or illuminate directly on any surface other than the area required to be lighted. No lighting shall be of the type or in a location such that it constitutes a hazard to vehicular traffic, either on private property or on abutting streets."*

Signs. SLMC §17.84.060 includes requirements for signs that apply to all development in the City. In addition to standards for location, size, and placement of signs, §17.84.060(E) prohibits blinking, flashing, rotating, or animated signs, or signs that change color or intensity. Lights used to illuminate signs must concentrate the illumination on the sign and minimize glare or direct illumination upon a public street or adjacent property. No lighted freestanding signs are allowed within 50 feet of a residential zone district.

Landscaping. SLMC §17.84.040 includes requirements for landscaping in parking areas. All required landscaping must be installed and maintained in accordance with a landscaping plan that is reviewed and approved by the Development Services Director or his/her designee.

SLMC Chapter 15.08, Grading, Erosion Control, and Hillside Development

SLMC Chapter 15.08 includes rules and regulations for excavation, grading, and development on hillsides and along ridgelines. SLMC §15.08.210 includes design criteria applicable to all projects that require a grading permit. These criteria are intended to reflect and implement the goals and policies of the Shasta Lake General Plan relating to the protection of the City's natural resources. SLMC §15.08.270 includes more stringent design standards for hillside development, and SLMC §15.08.280 includes design standards for skyline and ridgeline development. When determined necessary by the City, a visual impact analysis is required to evaluate the visual impacts of a proposed development.

SLMC Chapter 12.36, Tree Conservation

SLMC Chapter 12.36 includes regulations intended to protect and enhance the environmental and aesthetic qualities of the community provided by both native and non-native trees, preserve the City's valuable natural features wherever feasible, and establish a range of mitigation strategies to offset the loss of trees when required, including replacing trees that are removed, or allowing the payment of in-lieu fees to support offsite planting, replanting, or maintenance of trees in parks, natural areas, or other developed locations within the City limits.

4.1.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to aesthetics/visual resources:

GOAL LU-1	**Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.**	
POLICIES	LU-1.1	The City should encourage the reuse of existing structures and developed properties as opposed to greenfield development, including through incentives or other programs to promote infill development opportunities, where feasible.
	LU-1.4	Adopt quality zoning development standards to ensure that the characteristics of major entrances to the community are not diminished by commercial uses or site development proposals that do not support high quality visitor serving commercial development.
	LU-1.8	As the community grows and faces development pressure along I-5 and on its fringes, the City must be both deliberate and resolute in its commitment to preserve the character and economic vitality of downtown. The City shall encourage economic growth and continued improvement in the downtown area, on already-developed areas, and on underutilized parcels.
	LU-1.11	Incorporate existing buildings into community design efforts. Encourage the preservation, protection and restoration of historic buildings and properties where practical and feasible.

	LU-1.12	Protect or improve the aesthetic appeal of neighborhoods in a fashion that does not conflict with the existing community character.
	LU-1.13	Seek to establish a community "village" quality throughout the City. The community "village" quality should focus on building orientation, form and massing, parking, and circulation.
IMPLEMENTATION ACTIONS	LU-1.1	Review, and as necessary revise, specific design policies, guidelines, and development standards to address reuse of aging structures.
	LU-1.5	Establish commercial design guidelines to govern new construction and major exterior alterations and additions in neighborhood and community shopping centers and in highway commercial areas.
	LU-1.6	Adopt appropriate standards to improve the character of development along the Cascade and Twin View corridors, including but not limited to site access, building design and off-street parking orientation to street, building height, on-site lighting, signage, and appropriate buffer requirements adjacent to residential uses. Where appropriate, provide density and other incentives to encourage mixed use.
	LU-1.7	Establish zoning districts and quality development standards consistent with general plan goals and policies, and amend the city's zoning map in a timely manner to be consistent with the General Plan.
	LU-1.10	Implement design guidelines and a design review process to establish a community "village" quality throughout the City as appropriate.
GOAL LU-3	Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.	
POLICIES	LU-3.3	Development on slopes in excess of 20 percent should generally be avoided. Development of highly sloped areas over 20 percent may be considered with additional design requirements.
	LU-3.4	Development on slopes over 30 percent or within 50 feet of prominent ridgetops visible from major transportation corridors should be prohibited, except for the extension of utilities, street connections to access otherwise developable property, or for public safety improvements.
	LU-3.10	Work to protect important natural resource areas and the scenic beauty of mountains and rolling hills around the City as the community develops. For new development located along existing creeks and streams, incorporate bank naturalizing approaches for channeled sections as a means of creek and stream restoration where appropriate.
IMPLEMENTATION ACTIONS	LU-3.1	Review, and as necessary revise, specific design policies, guidelines, and development standards to address new structures and property development.
	LU-3.4	Discourage development without a coordinated plan for land use or that is incompatible with adjacent residential areas, circulation limitations, available infrastructure capacity, or public service needs.
	LU-3.5	Evaluate the zoning ordinance for possible updates to the Habitat Protection and Open Space districts to ensure development is consistent with natural resource protection goals in the General Plan.

GOAL CON-3	**Conserve and manage significant fish, wildlife, and vegetation resources, enhance the area's natural beauty, and provide residents with a healthy environment.**	
POLICIES	CON-3.1	Establish or evaluate existing regulations and development standards to conserve and manage natural resources, including provisions for clustering of development, access to open space, drainage corridors, hillside slopes, waiver of minimum lot width requirements, narrower local street widths, and other techniques to enhance protection of sensitive habitats and resources.
	CON-3.4	Continue protecting and managing urban forests in the City to enhance beautification and conservation efforts to the greatest extent possible, in particular by: • Maintaining existing City trees with regular scheduled service • Planting new trees to replace ones that were removed and extending tree canopies where possible • Requiring tree planting in new developments on streets and in parking areas • Working with commercial parking lot owners to enhance tree canopy • Using volunteer groups and property owners to enhance tree canopy.
IMPLEMENTATION ACTION	CON-3.5	Work with stakeholders to identify priority conservation areas in the City and establish appropriate protection measures for these resources and habitats.
GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICIES	CON-4.4	Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally-sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.
	CON-4.6	Define transition zones between development areas and open space or conservation areas to provide for further conservation of habitat and wildlife areas.
	CON-4.7	Promote clustered development in foothill areas.
IMPLEMENTATION ACTIONS	CON-4.5	Foster and encourage landowner education on the benefits and feasibility of establishing conservation easements within subdivisions and on individual properties.
	CON-4.6	Protect and preserve natural resources areas by amending the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting areas of natural resource value.
	CON-4.7	Use landscaping methods and setbacks to create transition zones between development areas and open space areas.
	CON-4.8	Locate new development on sites that minimize the need for grading and removal of native plants. Ensure no significant change in the general configuration of topography occurs where grading and earthwork is necessary.

GOAL OS-1	**Conserve and manage open space and recreation resources for use and enjoyment by City residents and visitors in a manner that balances public access, resource protection, and private property rights. Ensure future development incorporates open space and recreation resources as appropriate.**	
POLICIES	OS-1.1	Seek to protect riparian habitat along significant river and creek corridors. The following measures are identified to provide the riparian habitat protection: • Regulation of vegetation removal • Design of grading and road construction • Establishment of a development set-back • Siting of structures, including clustering.
	OS-1.4	Preserve open space along creeks and hillsides to maintain biological, scenic, and recreational resources in future development.
	OS-1.5	Preserve topographic features unique to the City to maintain its character as the "Gateway to the Mountains".
	OS-1.6	Safeguard open space resources when faced with the potential for pressure to mine areas near the City boundary.
IMPLEMENTATION ACTIONS	OS-1.1	Update City's Design Guideline sections of the Zoning Ordinance and Grading, Erosion Control, and Hillside Development Ordinance as needed to continue to address viewshed encroachment in development of foothill areas, including visual simulations in development practices and requirements to ensure that development does not disrupt the viewshed.
	OS-1.4	Seek to provide 5 acres of parks to meet neighborhood, community, and habitat protection needs per 1,000 new residents, based on commonly used state or national standards. Strive to maintain a neighborhood park standard of at least 0.9 acres per 1,000 new residents.
GOAL OS-2	**Establish, improve, and maintain sufficient facilities and natural and man-made greenbelt areas along existing creeks, floodplains, natural open space areas, certain roadways, bicycle, and pedestrian trail systems.**	
POLICIES	OS-2.3	Use applicable statewide and national best practices to determine minimum goals for land requirements for protection of existing park space, as well as for planning of new park space and facilities.
	OS-2.4	Promote volunteerism as a means to improve and beautify greenbelt areas or parks.
IMPLEMENTATION ACTION	OS-2.5	Evaluate the establishment of a conservation trust for the acquisition and maintenance of natural habitat areas to ensure permanent protection. Evaluate using grants, rather than tax revenues, to achieve this.
GOAL OS-3	**Ensure that open space planning and development practices are consistent with hazard and flood mitigation efforts.**	
POLICY	OS-3.1	Use a comprehensive approach that includes implementation of hazard mitigation plan development policies, as well as open space design strategies such as encouraging natural drainage areas, such as depression areas and wetlands.
IMPLEMENTATION ACTION	OS-3.3	Continue to implement the Hillside Development Ordinance, which prohibits large-scale redistribution of earth and alteration of the topographic conditions on slopes.

4.1.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on aesthetics and visual resources if it:

1. Has a substantial adverse effect on a scenic vista.
2. Substantially damages scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway.
3. Substantially degrades the existing visual character or quality of public views of development sites and their surroundings, or if it would conflict with applicable zoning and other regulations governing scenic quality.
4. Creates a new source of substantial lighting and glare which would adversely affect day or nighttime views in the area.

4.1.6 Issues Not Discussed Further

All issues identified in Section 4.1.5 are addressed below.

4.1.7 Impact Analysis and Mitigation Measures

Impact 4.1-1	**Implementation of the 2040 General Plan could have an adverse effect on a scenic vista.** ***Less-than-Significant Impact***

Future development under the 2040 General Plan would introduce structures and associated features into areas that currently provide expansive views of scenic resources in the Planning Area (see Section 4.1.2, Environmental Setting). Depending on the specific location, elevation of the property, height of the building/structure, and other factors, future development has the potential to block views of scenic resources in the Planning Area and result in an adverse effect on a scenic vista. The 2040 General Plan includes amendments to some General Plan designations (refer to **Figure 3.0-3**, Proposed 2040 General Plan Land Use Diagram); however, no changes are proposed that would result in development in areas that are not already approved for development or result in intrusion of development into designated open space areas.

Implementation of the proposed General Plan policies and implementation actions identified in Section 4.1.4 would ensure that projects are designed to minimize impacts on scenic resources. Further, projects would be subject to compliance with the design standards included in the SLMC, including those identified in Section 4.1.3 (Regulatory Framework). For example, the City's Zoning Code includes height limitations for each zoning district.

Because development on skylines and ridgelines has a higher potential to adversely affect scenic vistas, the City's Grading, Erosion Control, and Hillside Development Code allows only single-story structures in these areas and states that structures may project above ridgelines a maximum of 20 feet. The maximum allowable density in skyline and ridgeline areas is two units per acre and the minimum lot width is 200 feet, which avoids development that is not sensitive to the natural setting and that could result in significant adverse effects on scenic vistas.

In addition, General Plan Policy LU-3.3 states that development on slopes in excess of 20 percent should generally be avoided, but may be considered with additional design requirements. Policy LU-3.4 states that, with the exception of the extension of utilities, streets, and public safety improvements, development on slopes over 30 percent or within 50 feet of prominent ridgetops that are visible from major transportation corridors should be prohibited. The Land Use Element of the 2040 General Plan includes a Natural Resources Overlay Zone map that identifies areas in the City with slopes in excess of 20 percent. For purposes of identifying the City's development potential, these areas were excluded from the developable land calculations included in the Land Use Element.

Due to the conceptual nature of development under the General Plan, future projects would require individual analysis to identify potential project-specific impacts on visual resources, including impacts to scenic vistas. If necessary, project-specific mitigation would be implemented to reduce potential impacts to a less-than-significant level. Therefore, implementation of the General Plan policies and implementation actions included in Section 4.1.4, and compliance with the City's regulations identified in Section 4.1.3, ensures that impacts on scenic vistas would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.1-2	**Implementation of the 2040 General Plan would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway.** ***Less-than-Significant Impact***

The nearest designated State Scenic Highway to the Planning Area is a segment of State Route (SR) 151 (Shasta Dam Boulevard). Based on signage on SR 151 near Shasta Way and previous documentation in various planning reports, it was previously believed that the designated Scenic Highway commenced at the intersection of SR 151 and Lake Boulevard and continued west to Shasta Dam. However, a review of current Caltrans Scenic Highway maps (Caltrans, 2021) and documentation (Caltrans, 2019) shows that the designated Scenic Highway commences at Shasta Dam and continues a distance of 3.3 miles to milepost marker 3.3, which is at the City's western City limit.

Although no portion of the designated Scenic Highway is within the City limits, the segment of Shasta Dam Boulevard between I-5 and the western City limit line is identified as an Eligible State Scenic Highway. In addition, the segment of I-5 that bisects the City is identified as an Eligible Scenic Highway. In order for the eligible routes to become officially designated Scenic Highways, the City would need to apply to Caltrans for approval and adopt a Corridor Protection Program.

Some properties within the City limits are visible from higher elevations on the designated Scenic Highway corridor, primarily to eastbound travelers. However, due to trees and other vegetation along the road corridor, as well as intervening topography, drivers would glimpse only a few seconds of views of development in the City. Future development could result in improvements near the start of the designated Scenic Highway at the western City limit line; however, the road right-of-way (ROW) of SR 151 west of Lake Boulevard ranges from 175 to 200 feet in width, which provides a development buffer along the roadway. Further, steep topography along the roadway constrains development adjacent to the roadway.

Due to the conceptual nature of development under the General Plan, projects would be reviewed on a case-by-case basis to identify potential project-specific impacts to scenic resources. If necessary, project-specific mitigation would be implemented. Therefore, because development within the City limits is not prominently visible from the designated Scenic Highway, and development in proximity to the scenic highway is limited by topographical constraints, impacts on scenic resources within the designated Scenic Highway would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.1-3	**Implementation of the 2040 General Plan would not substantially degrade the existing visual character or quality of public views of development sites and their surroundings, and would not conflict with applicable zoning and other regulations governing scenic quality.** ***Less-than-Significant Impact***

Development under the 2040 General Plan could change the visual character of the area by introducing new features into the viewshed. As discussed under Impacts 4.1-1 and 4.1-2 above, future development would be subject to the proposed General Plan policies and implementation actions identified in Section 4.1.4, as well as State and local regulations, including those identified in Section 4.1.3 (Regulatory Framework). Compliance with these regulations would avoid/minimize potential aesthetic impacts associated with future development.

Future projects would be reviewed on a case-by-case basis to ensure consistency with applicable regulations. If necessary, project-specific mitigation would be implemented. Implementation of the General Plan policies and implementation actions, and compliance with State and City regulations identified in Section 4.1.3, ensures that impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.1-4	**Implementation of the 2040 General Plan would create new sources of light and glare that could affect day or nighttime views in the area.** ***Less-than-Significant Impact***

Development under the 2040 General Plan would introduce new sources of lighting and potential glare into the area that could affect day and/or nighttime views. Primary sources of light would include interior light spillover from windows of residences and businesses, exterior lighting on residences and commercial/industrial buildings and accessory structures, security lighting, streetlights, parking area lighting, and illuminated signs.

Light pollution is defined as the inappropriate or excessive use of artificial light that occurs when lighting is misdirected, unshielded, excessive, or unnecessary and results in light spilling upward and outward, thereby causing light trespass, glare, and a nighttime "sky glow". Glare could occur due to sunlight, vehicle headlights, or other light sources bouncing off of reflective surfaces. Potential sources of glare include windows, reflective building materials, exterior mechanical equipment, and solar photovoltaic (PV) panels.

Solar PV panels are typically tempered glass treated with an anti-reflective coating that reduces the intensity of glare from the panel. According to the Final Environmental Impact Report prepared for the 2022 Building Energy Efficiency Standards and certified by the California Energy Commission on August 21, 2021, modern PV panels reflect as little as two percent of incoming sunlight, about the same as water, but less than soil and wood shingles. Any perceived glare would be temporary and last a few minutes as the reflected beam of the sun moves (CEC, 2021). For these reasons, solar PV panels would not result in substantial glare that would significantly affect day or nighttime views. Further, the majority of solar panels in the City are anticipated to be roof-mounted and above the line of sight of motorists on public streets and the majority of neighboring properties.

Further, development in the City must comply with applicable provisions of SLMC Chapter 17.84 (General Development Standards), which require lighting to be designed and located to prevent glare and light trespass from the project site onto adjacent properties, buildings, and roadways. In addition, non-residential projects must comply with the light pollution reduction measures included in the CALGreen Code.

The City's Building Official is responsible for reviewing construction plans and ensuring compliance with State and local lighting requirements. Compliance with existing State and City regulations ensures that new light or glare sources do not significantly adversely affect day or nighttime views in the area. Impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

4.1.8 References

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SECTION

4.2

Agricultural and Forestry Resources

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4.2 Agricultural/Forestry Resources

This section describes agricultural and forestry resources in the City and evaluates whether future development and other physical changes that could occur due to implementation of the 2040 General Plan would physically alter existing agricultural or forestry resources.

4.2.1 Study Methods

The following evaluation of potential impacts on agriculture and forestry resources is based on review of the proposed 2040 General Plan Land Use Diagram (**Figure 3.0-4** in Section 3.0), the City of Shasta Lake Municipal Code (SLMC), and U.S. Department of Agriculture, Natural Resources Conservation District (NRCS) records.

4.2.2 Environmental Setting

AGRICULTURE

According to the U.S. Department of Agriculture (USDA), Natural Resources Conservation District (NRCS), there are soil types within the City limits that are identified as prime farmland if irrigated or farmland of statewide importance, indicating that the soil type is generally suitable for food, feed, fiber, forage, and oilseed crops. However, NRCS records also indicate that the soils have moderate to very severe limitations that reduce the choice of plants or that require special conservation practices and/or very careful management, making them generally unsuitable for commercial-scale crop production and limiting their use mainly to pasture/grazing land. The main limitations for field crops in the City are the risk of erosion and/or soils that are shallow, droughty, or stony (USDA, 2021).

According to the California Department of Conservation (DOC), ±8 acres of land immediately south of the City's Wastewater Treatment Plant (WWTP) is designated as farmland of statewide importance, and ±34 acres of land south and east of the WWTP is designated as farmland of local importance (see **Figure 4.2-1**). These areas are owned by the City and have been historically used as spray fields for the WWTP. The City has also leased this area to private parties for cattle grazing.

As described in Section 4.2.3, the City's Zoning Code allows small-scale agricultural uses outright in some residential areas of the City, including animal husbandry and the sale of agricultural products grown on the premises. The City's industrial zones also allow agricultural uses, provided that the use is conducted within a building. The predominant agricultural use in the planning area is cannabis cultivation, with the largest cultivation facilities located in the Shasta Gateway Industrial Park. Cannabis businesses are allowed to cultivate using indoor and mixed-light facilities only. Outdoor commercial cannabis operations are currently prohibited.

FORESTRY RESOURCES

Forest land is defined in Public Resources Code (PRC) Section §12220(g) as "land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits".

Although there are no properties within the City limits that are zoned for timberland production, there are undeveloped areas within the City that meet the definition of forest land pursuant to PRC §12220(g).

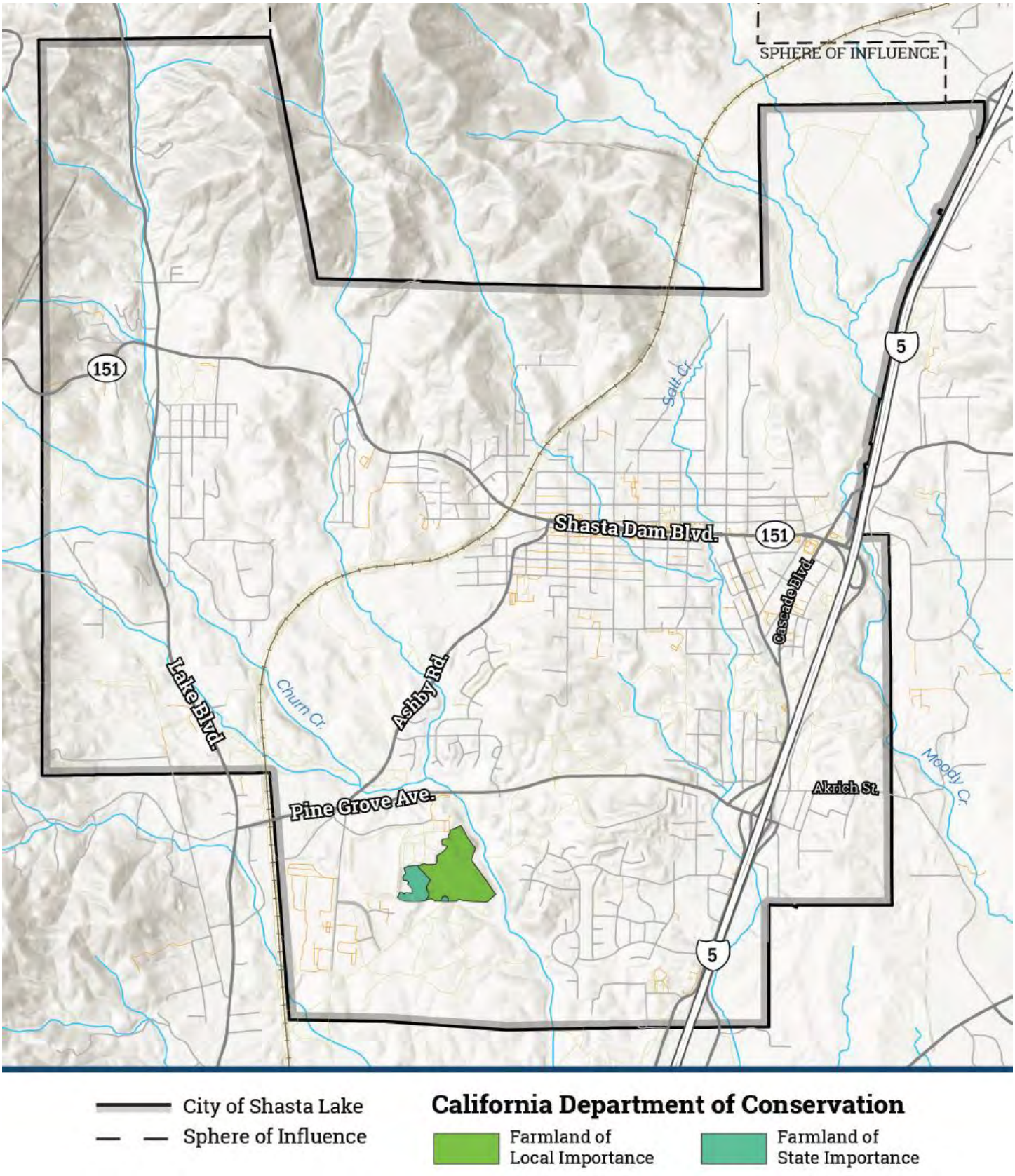


Figure 4.2-1
Designated Farmland

As further described in Section 4.2.3, the City's zoning code allows forest management activities, including site preparation, planting, harvesting, road construction, insect and disease control, and fire protection in all zoning districts provided that the regulations of the Forest Practices Act, along with other applicable State regulations, are met.

Outside of the State-defined forest land, the City of Shasta Lake is primarily urban forest. An urban forest is a forest or collection of trees within a developed urban area. In addition, urban forests, which includes street trees and trees in City parks, gardens, and along stream corridors, are present throughout the developed areas of the City.

4.2.3 Regulatory Framework

FEDERAL

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) of 1981 applies to federal projects and federally funded activities that result in the irreversible conversion of farmland. Under the FPPA, farmland is land designated by the USDA, NRCS, as prime, unique, or important farmland as further described below.

> *Prime farmland.* Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland includes land that possesses the above characteristics but is being used currently to produce livestock or timber. It does not include land already in or committed to urban development or water storage.
>
> *Unique farmland.* Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables.
>
> *Important farmland.* Important farmland is land other than prime or unique farmland that is of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the appropriate State or unit of local government agency or agencies, and that the Secretary of Agriculture determines should be considered as farmland.

The FPPA requires identification of potential adverse effects on farmland, identification of alternative actions and/or mitigation that could lessen adverse effects, and assurance that the project is consistent with State and local farmland preservation policies.

STATE

California Farmland Mapping and Monitoring Program (FMMP)

The FMMP, which monitors the conversion of the State's farmland to and from agricultural use, relies on information from the NRCS soils surveys, NRCS land inventory and monitoring criteria, and land use and water availability. Topography, climate, soil quality, and available irrigation water all factor into the FMMP farmland classifications.

The FMMP was established by the California Department of Conservation (DOC), under the Division of Land Resource Protection. Important Farmland Maps are compiled by the FMMP pursuant to §65570 of the California Government Code. The FMMP is an informational service only and does not constitute state regulation of local land use decisions. Under the FMMP, "Important Farmland Categories" were established based on soils characteristics that have significant agricultural production values. Categories mapped by the FMMP are as follows:

Prime Farmland. Prime farmland is land that has been used for irrigated agricultural production and meets the physical and chemical criteria for prime farmland as determined by the USDA, NRCS. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Farmland of Statewide Importance. Farmland of statewide importance is similar to prime farmland but generally includes steeper slopes or less ability to store soil moisture. In order to be classified as farmland of statewide importance, the land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Unique Farmland. Unique farmland is farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards. Land must have been cropped at some time during the four years prior to the mapping date.

Farmland of Local Importance. Farmland of local importance is land important to the local economy as determined by the County Board of Supervisors and a local advisory committee. This land includes dryland grain producing lands and farmlands that are presently irrigated but do not meet the soil characteristics of prime farmland or farmland of statewide importance.

Grazing Land. Grazing land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for grazing land is 40 acres.

Urban and Built-Up Land. Urban and built-up land is land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

Other Land. Other Land is land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres.

Water. This category includes perennial water bodies with an extent of at least 40 acres.

California Land Conservation Act (Williamson Act)

The Williamson Act (California Land Conservation Act of 1965) was enacted as a means to protect agricultural uses in the State. Under the Williamson Act, local governments can enter into contracts with private landowners to ensure that specific parcels are restricted to agricultural and related open space uses. In return, landowners receive reduced property tax assessments. The minimum term for a Williamson Act contract is ten years, and the contract is automatically renewed for one-year terms unless the landowner files a notice of nonrenewal or a petition for cancellation.

When a notice of non-renewal is filed, the annual tax assessment gradually increases over a ten-year period until it reaches the market value tax rate, at which time the contract is terminated. The landowner may also petition the local government to immediately cancel the contract. If the cancellation is approved, the landowner must pay a cancellation fee, and the property is thereafter taxed at its current market value.

California Forest Legacy Program Act of 2007

The California Forest Legacy Program Act of 2007 (Public Resources Code [PRC] §12200-12276) was established to protect forest lands and aquatic resources in California by focusing on long-term conservation of productive forest lands; protecting wildlife habitats, rare plants, and biodiversity; maintaining wildlife habitat connectivity; protecting riparian habitats, oak woodlands, ecological old growth forests, and other key forest types; protecting water quality, fisheries, and water supplies; maintaining and restoring natural ecosystem functions; and encouraging improvements to enhance long-term sustainable forest uses while providing forest areas with increased protection against other land uses that conflict with forest uses. Pursuant to PRC §12220(g), forest land is defined as *"land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."*

Z'berg-Nejedly Forest Practice Act of 1973

The Z'Berg-Nejedly Forest Practice Act of 1973 (PRC §4511 *et seq.*) established Forest Practice Rules that apply to forest management activities (i.e., timber harvesting, timberland conversion, fire hazard removal, etc.,) in the State.

PRC §4526 defines timberland as *"land, other than land owned by the federal government, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees."* Commercial species are defined by region in California Code of Regulations Title 14, §895.1.

The California Department of Forestry and Fire Protection (CAL FIRE) has oversight responsibility for private forest and timberland in the State. When a private landowner converts timberland to non-timber uses (agricultural, residential, commercial, etc.), the owner must file a Timberland Conversion Permit with CAL FIRE. In addition, a timber harvest permit from CAL FIRE is required for tree cutting on private property in the following circumstance:

1. The land meets the definition of timberland pursuant to PRC §4526 **AND**

2. The trees are sold, traded, bartered, or exchanged; **OR** the area in which the trees were cut is developed with another use (e.g., house, commercial/industrial building, vineyard, etc.).

With certain limitations, some types of timber operations are exempt from the requirement to prepare a THP (e.g., harvesting dead, dying, or diseased trees, removing trees to eliminate fire fuels within 150 feet of an existing structure, etc.). A Conversion Exemption is provided for areas less than three acres.

California Timberland Productivity Act of 1982

The Timberland Productivity Act of 1982 (Government Code §51104) defines timberland as privately-owned land, or land acquired for State forest purposes, which is devoted to and used for growing and harvesting timber, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre. The Act established Timberland Production Zones (TPZ) for the purpose of discouraging the premature conversion of timberland to other uses. TPZs are rolling ten-year contracts that provide preferential tax assessments to qualified timberlands. Government Code §51104(g) defines TPZ as *"an area which has been zoned pursuant to [Government Code] §51112 or §51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h)."*

LOCAL

City of Shasta Lake Municipal Code (SLMC),

Although the City does not have zoning districts that primarily address agricultural uses or forest resources, SLMC Chapter 17.14 (Habitat Protection), Chapter 17.16 (Open Space), Chapter 17.26 (Rural Residential), Chapter 17.28 (Interim Rural Residential), Chapter 17.54 (Mixed Use District), Chapter 17.52 (Commercial-Light Industrial), Chapter 17.56 (Light Industrial), and Chapter 17.58 (General Industrial) allow a range of agricultural uses. SLMC §17.88.040 (Forestry Management) states that forest management activities, as described in the California Forest Practices Act, are permitted in all zoning districts provided that the regulations of the Forest Practices Act, along with other applicable state regulations, are met. Forest Management practices include, but are not limited to, site preparation, planting, harvesting, road construction, insect and disease control, and fire protection. The SLMC includes regulations that are intended to avoid/minimize potential impacts on forestry resources that could result from new development. These regulations include, but are not limited to:

SLMC Chapter 12.36, Tree Conservation

The intent of SLMC Chapter 12.36 is to promote the conservation of a healthy tree population and to maintain and enhance tree canopy throughout the community where feasible and appropriate. Tree conservation is to be achieved by preserving existing native trees, replacing or transplanting trees that are removed, and phasing development to reduce potential impacts when tree removal is required. For any project that involves land disturbance of more than 20,000 square feet, a pre-development review is required to ensure that tree conservation is considered early in the planning process with respect to placement of buildings, roads, driveways, parking areas, utilities, and other site improvements (SLMC §12.36.062).

Methods of preserving trees include preserving stands of trees rather than individual trees as they provide better habitat, and designating suitable land in an open space area that retains as many protected trees as possible while providing for tree growth consistent with healthy forest practices, or land that is particularly suitable for the planting and/or natural regeneration of trees. The Tree Conservation Ordinance also specifies mitigation that is required for the removal of trees (e.g., tree replacement, conservation easements, payment of in-lieu fees, etc.).

4.2.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to agriculture and forestry resources.

GOAL CON-3	**Conserve and manage significant fish, wildlife, and vegetation resources, enhance the area's natural beauty, and provide residents with a healthy environment.**	
POLICIES	CON-3.1	Establish or evaluate existing regulations and development standards to conserve and manage natural resources, including provisions for clustering of development, access to open space, drainage corridors, hillside slopes, waiver of minimum lot width requirements, narrower, local street widths, and other techniques to enhance protection of sensitive habitats and resources.
	CON-3.4	Continue protecting and managing urban forests in the City to enhance beautification and conservation efforts to the greatest extent possible, in particular by: • Maintaining existing City trees with regular scheduled service • Planting new trees to replace ones that were removed and extending tree canopies where possible • Requiring tree planting in new developments on streets and in parking areas • Working with commercial parking lot owners to enhance tree canopy • Using volunteer groups and property owners to enhance tree canopy.
IMPLEMENTATION ACTION	CON-3.5	Work with stakeholders to identify priority conservation areas in the City and establish appropriate protection measures for these resources and habitats.
GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICIES	CON-4.4	Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally-sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.
	CON-4.6	Define transition zones between development areas and open space or conservation areas to provide for further conservation of habitat and wildlife areas.
	CON-4.7	Promote clustered development in foothill areas.
IMPLEMENTATION ACTIONS	CON-4.5	Foster and encourage landowner education on the benefits and feasibility of establishing conservation easements within subdivisions and on individual properties.
	CON-4.6	Protect and preserve natural resources areas by amending the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting areas of natural resource value.

	CON-4.7	Use landscaping methods and setbacks to create transition zones between development areas and open space areas.
	CON-4.8	Locate new development on sites that minimize the need for grading and removal of native plants. Ensure no significant change in the general configuration of topography occurs where grading and earthwork is necessary.
GOAL OS-1	**Conserve and manage open space and recreation resources for use and enjoyment by City residents and visitors in a manner that balances public access, resource protection, and private property rights. Ensure future development incorporates open space and recreation resources as appropriate.**	
POLICIES	OS-1.4	Preserve open space along creeks and hillsides to maintain biological, scenic, and recreational resources in future development.
	OS-1.5	Preserve topographic features unique to the City to maintain its character as the "Gateway to the Mountains".
	OS-1.6	Safeguard open space resources when faced with the potential for pressure to mine areas near the City boundary.
GOAL OS-2	**Establish, improve, and maintain sufficient facilities and natural and man-made greenbelt areas along existing creeks, floodplains, natural open space areas, certain roadways, bicycle, and pedestrian trail systems.**	
POLICY	OS-2.3	Use applicable statewide and national best practices to determine minimum goals for land requirements for protection of existing park space, as well as for planning of new park space and facilities.
IMPLEMENTATION ACTION	OS-2.5	Evaluate the establishment of a conservation trust for the acquisition and maintenance of natural habitat areas to ensure permanent protection. Evaluate using grants, rather than tax revenues, to achieve this.

4.2.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on agriculture and forestry resources if it would:

1. Convert prime farmland, unique farmland, or farmland of statewide importance (farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to non-agricultural use or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

2. Conflict with existing zoning for agricultural use.

3. Result in the loss of forest land (as defined in Public Resources Code section 12220(g) or conversion of forest land to non-forest use.

4.2.6 Issues Not Discussed Further

There are no properties in the City that are designated/zoned as forest land or timberland, and no properties in the City are zoned Timberland Production. Therefore, implementation of the 2040 General Plan would not conflict with existing zoning for, or cause rezoning of, forest land (as

defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).

Implementation of the 2040 General Plan would have no impact on a Williamson Act contract because no properties within or adjacent to the City limits are subject to a Williamson Act contract.

4.2.7 Impact Analysis and Mitigation Measures

Impact 4.2-1	**Implementation of the 2040 General Plan would not convert prime farmland, unique farmland, or farmland of statewide importance, as shown on the maps prepared pursuant to the FMMP, to non-agricultural use and does not involve other changes in the existing environment that could result in conversion of farmland to non-agricultural use.** ***No Impact***

As stated in Section 4.2.2, ±8 acres of land immediately south of the City's WWTP is designated by the FMMP as farmland of statewide importance, and ±34 acres of land south and east of the WWTP is designated as farmland of local importance. These areas are owned by the City and are presently designated as Public Facilities (PF) and Industrial. The proposed General Plan amendment includes changing the land designated as Industrial to PF, which would allow for continued use of the property as grazing land. There are no other properties in the City that are designated as prime or unique farmland, or farmland of statewide or local importance.

The 2040 General Plan does not include any goals, policies, or implementation programs, or changes in land use designations on adjacent properties, that would otherwise result in conversion of farmland to non-agricultural use. Therefore, implementation of the 2040 General Plan would not convert prime farmland, unique farmland, or farmland of statewide importance to non-agricultural use. ***No Impact.***

Mitigation Measures

No mitigation measures required.

Impact 4.2-2	**Implementation of the 2040 General Plan would not conflict with existing zoning for agricultural use.** ***No Impact***

As discussed in Section 4.2.3, some of the City's zoning districts allow agricultural activities: SLMC Chapter 17.14 (Habitat Protection), Chapter 17.16 (Open Space), Chapter 17.26 (Rural Residential), Chapter 17.28 (Interim Rural Residential), Chapter 17.54 (Mixed Use District), Chapter 17.52 (Commercial-Light Industrial), Chapter 17.56 (Light Industrial), and Chapter 17.58 (General Industrial). The 2040 General Plan does not include any goals, policies, implementation actions, or other components that would result in a change in allowable land uses in the zoning districts that currently allow agricultural uses. Therefore, implementation of the 2040 General Plan would not conflict with existing zoning for agricultural use. ***No Impact.***

Mitigation Measures

No mitigation measures required.

Impact 4.2-3	**Implementation of the 2040 General Plan could result in the loss of forest land, as defined in PRC §12220(g), or conversion of forest land to non-forest use.** ***Less-than-Significant Impact***

As stated in Section 4.2.3, PRC §12220(g) defines forest land as *"land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."*

Many of the undeveloped areas in the City include 10-percent native tree cover and allow for management of aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Future development under the 2040 General Plan may result in the loss of forest land and/or the conversion of forest land to non-forest use. As stated in Section 4.2.3 (Regulatory Framework), SLMC Chapter 12.36 (Tree Conservation) was enacted to promote the conservation of a healthy tree population and to maintain and enhance tree canopy throughout the community. Tree conservation must be considered early in the planning process to reduce potential impacts, including impacts in areas that meet the definition of forest land pursuant to PRC §12220(g).

Tree conservation is to be achieved by preserving existing native trees, replacing or transplanting trees that are removed, and phasing development to reduce potential impacts when tree removal is required. For any project that involves land disturbance of more than 20,000 square feet, a pre-development review is required to ensure that tree conservation is considered early in the planning process with respect to placement of buildings, roads, driveways, parking areas, utilities, and other site improvements (SLMC §12.36.062).

Methods of preserving trees include preserving stands of trees rather than individual trees as they provide better habitat, and designating suitable land in an open space area that retains as many protected trees as possible while providing for tree growth consistent with healthy forest practices. The Tree Conservation Ordinance also specifies mitigation that is required for the removal of trees (e.g., tree replacement, conservation easements, etc.

In addition, as stated in Section 4.2.3, CAL FIRE has oversight responsibility for private forest and timberland in the State. When a private landowner converts timberland to non-timber uses, the owner must file a Timberland Conversion Permit with CAL FIRE. In addition, a timber harvest permit (THP) from CAL FIRE is required for tree cutting on private property in the following circumstance:

1. The land meets the definition of timberland pursuant to PRC §4526 **AND**
2. The trees are sold, traded, bartered, or exchanged; **OR** the area in which the trees were cut is developed with another use (e.g., house, commercial/industrial building, vineyard, etc.).

In accordance with California Forest Practice Rules, CAL FIRE will not approve a THP unless feasible mitigation measures are implemented to substantially lessen or avoid potentially significant adverse impacts on the environment. Therefore, compliance with the General Plan policies and implementation actions, and the State and City regulations identified in Section 4.2.3, ensures that impacts on forest land would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

4.2.8 References

California Department of Conservation. Important Farmland Finder. https://maps.conservation.ca.gov/dlrp/ciff/. Accessed November 2021.

California Department of Forestry and Fire Protection. 2021. California Forest Practice Rules. https://bof.fire.ca.gov/media/3qebuoma/2021-forest-practice-rules-and-act_final.pdf. Accessed November 2021.

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SECTION

4.3

Air Quality

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4.3 Air Quality

This section describes applicable air quality plans and regulations, criteria pollutants and other objectionable air emissions, and analyzes potential air quality impacts that could occur as a result of implementation of the 2040 General Plan.

4.3.1 Study Methods

The following evaluation of potential impacts on air quality is based on review of information from the U.S. Environmental Protection Agency, California Air Resources Board (CARB), Shasta County Air Quality Management District (AQMD), and traffic modeling data provided by Ganddini Group, Inc. (see Section 4.16, Transportation).

4.3.2 Environmental Setting

REGIONAL SETTING

Northern Sacramento Valley Air Basin

The City of Shasta Lake is located at the northernmost end of the Northern Sacramento Valley Air Basin (NSVAB), also known as the Northern Sacramento Valley Planning Area (NSVPA). The NSVPA consists of a total of seven counties: Butte, Colusa, Glenn, Shasta, Tehama, Sutter, and Yuba. These counties are bounded on the north and west by the North Coast Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains.

The surrounding mountains provide a substantial barrier to the horizontal dispersion of air contaminants for both locally created pollution and pollution that has been transported northward on prevailing winds from areas south of the NSVAB. Extremely stable atmospheric conditions, referred to as "inversions," also act as barriers to pollutant dispersion. In areas below 1,000 feet mean sea level, inversions act as "lids" and may cause dust and pollutants to be trapped until atmospheric conditions become more unstable (Shasta County, 2004). Therefore, the mountains prevent pollutants from being dispersed horizontally, while inversions prevent pollutants from dispersing vertically.

In Shasta County, due to high temperatures, stagnant atmospheric conditions, and temperature inversions, the main air quality concern in the summer is ozone pollution generated by vehicles and industrial activities. Ozone precursors (NO_X and ROG) from these sources react to form ozone. Particulate matter (PM10 and PM2.5) resulting from wildfires throughout the region, and often beyond, have become a major concern, especially in recent years. In the winter, cold-weather inversion layers can trap pollutants generated by fireplaces, wood stoves, and open burning (Shasta County, 2004).

Regional Climate

The climate of the Northern Sacramento Valley Air Basin, as with all of Central California, is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Climate is also affected by the temperature-moderating effects of the nearby oceanic heat reservoir. Warm summers, cool winters, daytime onshore breezes, and moderate humidity characterize regional climatic conditions. In summer when the high-pressure cell is strongest, temperatures are very warm and humidity is low.

The daily incursion of the sea breeze into the Central Valley, however, creates persistent breezes that moderate the summer heat. In winter, when the high-pressure cell is weakest, conditions are characterized by occasional rainstorms interspersed with stagnant conditions and sometimes heavy fog. Airflow patterns in the basin can be characterized by one of eight directional types, the most frequent being northwesterly. Northwest winds are predominant in spring and summer, but seasonal variations do occur. Calm wind conditions dominate the winter months.

Terrain features create various microclimates. The pattern of mountains and hills in the basin is primarily responsible for the wide variations of rainfall, temperatures, and localized winds that occur throughout the region. Temperature variations have an important influence on basin wind flow, dispersion along mountain ridges, vertical mixing, and photochemistry. Because the temperature-moderating marine influence decreases with distance, monthly and annual temperature variations are greater inland than along the coast.

Precipitation is highly variable seasonally. Summer months are often dry, averaging less than 1 inch in total precipitation per month. Rainfall is most abundant during the winter months and increases with elevation. Annual rainfall is lowest in the inland valleys, higher in the coastal and inland foothills, and highest in the mountains.

Attainment Status

Shasta County is currently designated a non-attainment-transitional area for State ozone standards, which indicates that pollution concentrations violate the State standard, but air quality is nearing attainment; the County is designated as an attainment or unclassified area for all other federal and State ambient air quality standards (CARB, 2021).

Due to the regional nature of the ozone problem, the air pollution control districts and air quality management districts of the seven counties located in the NSVPA originally prepared an Air Quality Attainment Plan (AQAP) in 1991, and have updated the plan triennially since then. Most recently, the Sacramento Valley Air Quality Engineering and Enforcement Professionals (SVAQEEP) prepared the NSVPA 2021 Triennial Air Quality Attainment Plan (2021 AQAP).

The 2021 AQAP constitutes the region's State Implementation Plan (SIP). The 2021 AQAP confirms that air pollution transport studies have demonstrated that a significant number of the ozone violations occurring in Shasta County are caused when pollutants from urban areas are transported aloft throughout the air basin. Shasta County's primary emphasis in implementing the AQAP is to attempt to reduce emissions from mobile sources through public education and grant programs.

LOCAL SETTING

The City of Shasta Lake is located at the northern end of the Sacramento Valley in Shasta County. The study area is characterized by a Mediterranean climate with cool, wet winters and hot, dry summers. The average annual temperature is about 75 degrees Fahrenheit (˚F). Monthly mean maximum temperatures range from a high of 95˚ F in July to a low of 31˚ F in January. Daily high temperatures commonly exceed 100˚ F during the summer. Precipitation is about 63 inches per year. Elevation ranges from ±650 feet in the southeastern area of the City to ±1,600 feet in the northwestern area of the City.

The Shasta County Air Quality Management District (SCAQMD) maintains air quality monitoring stations in Shasta County that monitor ozone and particulate matter. There is presently one ozone monitoring station in the City, at 13791 Lake Boulevard. There was previously a station at 4066 La Mesa Avenue in the City that monitored PM_{10}, but this station was removed in 2020. Shasta County AQMD has deployed experimental particulate matter (smoke) sensors throughout Shasta County,

including two sensors in Shasta Lake. These sensors are not official monitors but can be helpful in gauging smoke levels in particular locations (reported on PurpleAir website)[1].

The County maintains air quality monitoring stations for ozone and $PM_{2.5}$ on North Street in Anderson and at the County Health Department on Breslauer Way. The nearest $PM_{2.5}$ monitoring station to the General Plan Planning Area is located at the County Health Department building which is approximately 9 miles south of the Planning Area. No other pollutant monitoring information is available for Shasta County.

Table 4.3-1 includes monitoring data for the area from 2016 through 2020, including dates with the highest reported average for 8-hour ozone, and highest concentrations of PM_{10} and $PM_{2.5}$. The highest 8-hour ozone averages occurred in June, July, and August, which would be expected given that ozone occurs in higher concentrations during warmer times of the year. The highest concentrations of particulate matter occurred primarily in the summer and early fall, although the highest concentrations in 2019 were reported in January, November, and December.

Table 4.3-2 identifies 2020 Estimated Annual Average Emissions from stationary sources, areawide sources, mobile sources, and natural (non-anthropogenic) sources for Shasta County.

Wildfires

Smoke and air pollution from wildfires can be a severe health hazard, especially for sensitive populations including children, the elderly, and those with respiratory and cardiovascular diseases. Emissions from wildfires depend on the type of fuel, the moisture content of the fuel, the efficiency or temperature of combustion, and the weather. Public health impacts associated with wildfires include difficulty in breathing and reduction in visibility, as well as exposure to odors. First responders likewise are exposed to the dangers from the initial incident and after-effects from smoke inhalation.

Smoke generated by wildfire contains visible and invisible emissions, including particulate matter such as soot, tar, water vapor, and minerals; gases such as carbon monoxide, carbon dioxide, and nitrogen oxides; and toxins such as formaldehyde and benzene. Fine particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$) is a prevalent component in wildfire smoke and is of particular concern since it can enter the blood stream. Lingering health impacts from inhalation of PM2.5 include chronic bronchitis, cardiovascular damage, and decreased lung function.

As witnessed in recent years, even fires that are hundreds of miles away can adversely affect air quality in the Planning Area.

[1] PurpleAir, air quality sensor locations and results: https://www.purpleair.com/map?opt=1/mAQI/a10/cC0#13.87/40.68274/-122.3698

Table 4.3-1
Summary of Ambient Air Quality Data

Monitoring Station / Air Pollutant	2016	2017	2018	2019	2020
Shasta Lake: 13790 Lake Boulevard Monitoring Station					
OZONE					
Maximum 1-Hour Concentration (ppm)	0.093	0.096	0.111	0.072	0.088
Number of Days >1-Hour State Standard (0.09)	0	1	1	0	0
Maximum 8-Hour Concentration (ppm)	0.082	0.089	0.088	0.068	0.078
Number of Days > 8-Hour State Standard	14	13	13	0	1
Number of Days > 8-Hour National Standard (0.07 ppm)	13	13	11	0	1
Dates with the Highest Reported 8-Hour Ozone Averages	Aug. 19 (0.082) Aug. 20 (0.079) Aug. 13 (0.077) Jul. 2 (0.076)	Aug. 2 (0.088) Aug. 18 (0.084) Jul. 24 (0.075) Jul. 31 (0.075)	Aug. 10 (0.088) Aug. 1 (0.081) Aug. 2 (0.079) Aug. 8 (0.079)	Aug. 1 (0.067) Aug. 7 (0.066) Jul. 26 (0.064) Jul. 31 (0.061)	Sept. 3 (0.078) Sept. 14 (0.66) Aug. 29 (0.065) Aug. 23 (0.064)
Shasta Lake: 4066 La Mesa Avenue Monitoring Station					
RESPIRABLE PARTICULATE MATTER (PM_{10})					
Annual Average (µg/m^3)	12.1	14.1	24.3	12.2	19.3
Maximum 24-hour concentration (µg/m^3)	33.2	87.6	145.2	42.3	105.0
Number of Days >24-Hour State Standard (50 µg/m^3)	0	1 measured	8 measured	0	30.6 estimated 5 measured
Number of Days >24-Hour National Standard (150 µg/m^3)	0	0	0	0	0
Dates with the Highest Reported Concentrations of PM_{10}	Sept. 27 (33.2) Aug. 16 (27.9) Aug. 22 (27.1) Aug. 4 (27)	Sept. 4 (87.6) Aug. 29 (32.5) Aug. 17 (29.5) Aug. 11 (27.2)	Aug. 6 (145.2) Jul. 31 (137.6) Sept. 11 (104.7) Aug. 18 (97.8)	Nov. 5 (41.4) Jan. 3 (27.6) Jul. 8 (24.2) Dec. 18 (23.8)	Sept. 12 (105.0) Sept. 30 (69.8) Sept. 6 (58.0) Sept. 24 (52.8)
Redding: County Health Department Building, 2650 Breslauer Way					
FINE PARTICULATE MATTER ($PM_{2.5}$)					
Annual Average	5.1	7.8	15.8	6.6	10.1
Maximum 24-Hour Concentration (µg/m^3)	12.6	67.3	131.0	24.1	68.3
Number of days > 24-Hour National Standard (35 µg/m^3)	0	6.1 estimated 1 measured	5 measured	0	18.4 estimated 3 measured
Dates with the highest reported concentrations of $PM_{2.5}$. (24-Hour Average)	Nov. 14 (12.6) Aug. 4 (12.5) Aug. 22 (11.2) Jul. 29 (11.0)	Sept. 4 (67.3) Oct. 10 (32.2) Aug. 23 (19.1) Aug. 29 (17.5)	Jul. 31 (131.0) Aug. 6 (102.8) Aug. 18 (65.8) Aug. 12 (63.1)	Dec. 29 (24.1) Jan. 3 (22.6) Dec. 5 (19.9) Jan. 15 (19.4)	Sept. 30 (68.3) Sept. 12 (65.6) Sept. 6 (40.7) Sept. 24 (29.3)

Source: CARB, 2020

Notes: The "number of days above state/federal standard" statistic is representative of the estimated number of days as if monitoring had occurred every day. µg/m^3 = micrograms per cubic meter; ppm = parts per million

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Table 4.3-2
Shasta County Estimated 2020 Emissions (Tons per Day)

Stationary Sources	**TOG**	**ROG**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Fuel Combustion	2.1	0.6	19.6	7.0	0.1	1.2	1.1
Waste Disposal	0	-	0	0	0	0	0
Cleaning and Surface Coatings	0.8	0.7	-	-	-	-	-
Petroleum Production and Marketing	0.3	0.3	-	-	-	-	-
Industrial Processes	0.9	0.7	9.5	2.1	0.2	1.8	1.1
Total Stationary Sources	**4.1**	**2.3**	**29.1**	**9.0**	**0.3**	**2.9**	**2.1**
Areawide Sources	**TOG**	**ROG**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Solvent Evaporation	3.4	3.1	-	-	-	-	-
Miscellaneous Processes[2]	20.7	5.8	92.5	1.1	0.2	31.8	11.5
Total Areawide Sources	**24.1**	**8.9**	**92.5**	**1.1**	**0.2**	**31.8**	**11.5**
Mobile Sources	**TOG**	**ROG**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
On-Road Motor Vehicles	3.2	2.9	22.6	8.0	0.1	0.5	0.4
Other Mobile Sources	6.3	5.9	45.2	6.0	0.0	0.7	0.6
Total Mobile Sources	**9.4**	**8.8**	**67.8**	**14.0**	**0.1**	**1.3**	**0.9**
Natural (non-anthropogenic) Sources (natural biogenic sources, wildfires)	**TOG**	**ROG**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Natural Sources	177.8	166.9	49.5	1.6	0.5	5.1	4.3
Total Natural (non-anthropogenic) Sources	**177.8**	**166.9**	**49.5**	**1.6**	**0.5**	**5.1**	**4.3**
Grand Total for Shasta County	**215.3**	**186.9**	**238.9**	**25.8**	**1.1**	**41.1**	**19.0**

Source: CARB, 2020 Estimated Annual Average Emissions.
https://www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_YR=2020&F_DIV=0&F_SEASON=A&SP=2009&F_AREA=CO&F_CO=45&F_COAB=#9.

4.3.3 Regulatory Framework

FEDERAL

The U.S. Environmental Protection Agency (USEPA), under the federal Clean Air Act (CAA), establishes maximum ambient concentrations for criteria air pollutants (CAP), known as the National Ambient Air Quality Standards (NAAQSs). The NAAQSs are designed to protect the health and welfare of the populace with a reasonable margin of safety. **Table 4.3-3** identifies the seven CAPs as well as characteristics, health effects, and typical sources for each CAP:

[2] Miscellaneous processes include residential fuel combustion, farming operations, construction and demolition, road dust, fugitive dust, fires, and managed burning and disposal.

Table 4.3-3
Federal Criteria Air Pollutants

Pollutant	Characteristics	Primary Effects	Major Sources
Ozone (O_3)	Ozone is a colorless or bluish gas formed through chemical reactions between two major classes of air pollutants: reactive organic gases (ROG) and oxides of nitrogen (NO_X). These reactions are stimulated by sunlight and temperature; thus, ozone occurs in higher concentrations during warmer times of the year.	• Respiratory symptoms. • Worsening of lung disease leading to premature death. • Damage to lung tissue. • Crop, forest, and ecosystem damage. • Damage to a variety of materials, including rubber, plastics, fabrics, paints, and metals.	Motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.
Carbon Monoxide (CO)	Carbon monoxide is an odorless, colorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline and wood. Because CO is emitted directly from internal combustion engines, motor vehicles operating at slow speeds are the primary source of carbon monoxide.	• Chest pain in patients with heart disease. • Headache. • Light-headedness. • Reduced mental alertness.	Motor vehicle exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a reddish-brown gas formed when nitrogen (N_2) combines with oxygen (O_2). Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere and is related to traffic density.	• Respiratory symptoms. • Damage to lung tissue. • Worsening of cardiovascular disease. • Precursor to ozone and acid rain. • Contributes to global warming and nutrient overloading which deteriorates water quality. • Causes brown discoloration of the atmosphere.	Automobile and diesel truck exhaust, petroleum-refining operations, industrial sources, aircraft, ships, railroads, and fossil-fueled power plants.

Pollutant	Characteristics	Primary Effects	Major Sources
Sulfur Dioxide (SO_2)	Sulfur dioxide is a colorless, nonflammable gas that results mainly from burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries.	• Respiratory symptoms. • Worsening of cardiovascular disease. • Damage to a variety of materials, including marble, iron, and steel. • Damages crops and natural vegetation. • Impairs visibility. • Precursor to acid rain.	Petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and large ships, and fuel combustion in diesel engines.
Particulate Matter ($PM_{2.5}$ and PM_{10})	Particulate matter is a major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols that are small enough to remain suspended in the air for a long period of time. Particulate matter with a diameter of 10 microns or less (PM_{10}) is inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$). Therefore, $PM_{2.5}$ comprises a portion of PM_{10}.	• Premature death. • Hospitalization for worsening of cardiovascular disease. • Hospitalization for respiratory disease • Asthma-related emergency room visits. • Increased symptoms, increased inhaler usage	Dust- and fume-producing construction activities, power plants, steel mills, chemical plants, unpaved roads and parking lots, woodburning stoves and fireplaces, wildfires, motor vehicles, and other combustion sources. Also a result of photochemical processes.
Lead (Pb)	A heavy metal that occurs both naturally in the environment and in manufactured products.	• Impaired mental functioning in children • Learning disabilities in children • Brain and kidney damage. • Reproductive disorders. • Osteoporosis.	Lead-based industrial production (e.g., battery production and smelters), recycling facilities, combustion of leaded aviation gasoline by piston-driven aircraft, and crustal weathering of soils followed by fugitive dust emissions.

STATE

California Clean Air Act

The California Clean Air Act (CAA) establishes maximum concentrations for the seven federal CAPs, as well as the four additional air pollutants identified below. The four additional standards are intended to address regional air quality conditions, not project-specific emissions. These maximum concentrations are known as the California Ambient Air Quality Standards (CAAQSs). The California Air Resources Board (CARB) has jurisdiction over local air districts and has established its own standards and violation criteria for each CAP under the CAAQS.

The CAA requires air districts that have been designated as a non-attainment area for CAAQS for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide to prepare a plan for attaining and

maintaining the standards. Air districts must review their progress toward attaining the CAAQS every three years.

Visibility-Reducing Particles. Visibility-reducing particles come from a variety of natural and manmade sources. Major sources include wildfires, residential fireplaces and woodstoves, windblown dust, ocean sprays, biogenic emissions, dust and fume-producing construction, industrial and agricultural operations, and fuel combustion. Primary effects include visibility impairment, respiratory symptoms, and worsening of cardiovascular disease.

Sulfate (SO_4). Sulfate is oxidized to sulfur dioxide (SO_2) during the combustion process and is subsequently converted to sulfate compounds in the atmosphere. Major sources include industrial processes and the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. Primary effects include respiratory symptoms, worsening of cardiovascular disease, damage to a variety of materials, including marble, iron, and steel, damage to crops and natural vegetation, and visibility impairment.

Hydrogen Sulfide (H_2S). Hydrogen sulfide is a colorless gas with the odor of rotten eggs. Major sources include geothermal power plants, petroleum refineries, and wastewater treatment plants. Primary effects include eye irritation, headache, nausea, and nuisance odors.

Vinyl Chloride (chloroethene). Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. It is also listed as a toxic air contaminant. Most vinyl chloride is used to make PVC plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites due to microbial breakdown of chlorinated solvents. Primary effects include dizziness, drowsiness, headaches, and liver damage.

Table 4.3-4 provides the current federal and State ambient air quality standards:

Table 4.3-4
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1, 3]	Federal Standards [2]	
			Primary [3, 4]	Secondary [3, 5]
Ozone (O_3) [6]	1 Hour	0.09 ppm (180 µg/m^3)	-	Same as Primary
	8 Hour	0.070 ppm (137µg/m^3)	0.070 ppm (137µg/m^3)	
Particulate Matter (PM_{10}) [7]	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	Annual Arithmetic Mean	20 µg/m^3	-	
Particulate Matter-Fine ($PM_{2.5}$) [7]	24 Hour	-	35 µg/m^3	-
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	-
	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	-

Pollutant	Averaging Time	California Standards [1, 3]	Federal Standards [2]	
			Primary [3, 4]	Secondary [3, 5]
Nitrogen Dioxide (NO_2) [8]	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	-
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
Sulfur Dioxide (SO_2) [9]	1 Hour	0.25 ppm (665 µg/m^3)	75 ppb (196 µg/m^3)	-
	3 Hour	–	–	0.5 ppm (1300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas)	-
	Annual Arithmetic Mean	–	0.030 ppm (for certain areas)	-
Lead (Pb) [10,11]	30 Day Average	1.5 µg/m^3	–	-
	Calendar Quarter	-	1.5 µg/m^3 (for certain areas)	Same as Primary
	Rolling 3-Month Average	-	0.15 µg/m^3	
Visibility-Reducing Particles [12]	8 Hour	See Footnote	No Federal Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride [10]	24 Hour	0.01 ppm (26 µg/m^3)		

Source: CARB, 2016.

Notes: mg/m^3=milligrams per cubic meter; ppm=parts per million; ppb=parts per billion; µg/m^3=micrograms per cubic meter

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in CCR Title 17, §70200.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25˚ C and a reference pressure of 760 torr. Most measurements of air

quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
7. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
9. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Toxic Air Contaminants

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Assembly Bill 2588) was adopted in response to public concern regarding potential adverse health effects associated with emissions of toxic air contaminants (TACs) (CARB, n.d.). TACs are regulated under the California CAA. A “hot spot” is an area where air toxics levels are higher than in the overall region, which may be caused by emissions from a specific facility.

Facilities found to release high volumes of toxic air pollution are required to conduct a detailed health risk assessment that includes a comprehensive analysis of the dispersion of hazardous substances in the environment, their potential for human exposure, and a quantitative assessment of both individual and population-wide health risks associated with those levels of exposure. Stationary sources are required to report the types and quantities of certain toxic substances that their facility routinely releases into the air.

Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), grading and demolition of structures (asbestos), and diesel-motor vehicle exhaust. TACs are less pervasive in the urban atmosphere than the CAPs, but are linked to short-term (acute) and long-term (chronic or carcinogenic) adverse human health effects, including cancer, birth defects, neurological damage, and death. AAQS have not been set for TACs. Instead, these pollutants are typically regulated through a technology-based approach for reducing TACs. This approach requires facilities to install Maximum Achievable Control Technology on emission sources.

California Building Standards Code

Title 24 of the CCR, also known as the California Building Standards Code (CBSC), is based on the International Building Code (IBC) used widely throughout the country. The CBSC has been modified for California conditions to include more detailed and/or more stringent regulations. The CBSC consists of 13 parts, including the California Building Code, Energy Code, and Green Building Standards Code.

California Energy Code

The California Energy Code (Part 6 of the CBSC), also known as the State's Energy Efficiency Standards, was established in 1978 with a goal of reducing California's energy consumption for residential and nonresidential buildings. The Standards have the added benefit of reducing emissions of criteria pollutants.

The 2022 Energy Code, which goes into effect on January 1, 2023, include measures that will reduce energy use in newly constructed and altered single-family, multifamily, and nonresidential buildings. These measures add new prescriptive and performance standards for electric heat pumps for space conditioning and water heating, as appropriate for the various climate zones in California; requiring photovoltaic (PV) and battery storage systems for multifamily and selected nonresidential buildings; establishing efficiency measures for lighting, building envelopes, and HVAC systems; and making covered process load improvements.

The Environmental Impact Report prepared for the 2022 Energy Code update states that overall, the 2022 amendments are expected to reduce electricity and fossil fuel natural gas (and propane) use when compared to continued use of existing Energy Code requirements. Under the 2022 amendments, on a statewide basis by 2024, all measures for newly constructed buildings and altered components of existing buildings, collectively would save approximately 27 million therms of fossil fuel natural gas and 1.4 billion kWh of electricity, which result in net reductions of NO_X and sulfur oxides (SO_X) emissions beginning by the end of 2023.

The 2022 Energy Code contains standards for new construction and alternations to existing buildings that are anticipated to reduce NO_X emissions by 105 tons per year.

California Green Building Standards Code

In 2007, the California Building Standards Commission (CBSC) developed green building standards in an effort to meet the goals established by the Global Warming Solutions Act of 2006. These standards are referred to as the CALGreen Code and are included as Part 11 of the CBSC. The CALGreen Code requires new residential and commercial buildings to comply with mandatory measures related to planning and design, energy efficiency, water efficiency/conservation, material conservation, resource efficiency, and environmental quality. The most recent update to the CALGreen Code went into effect on January 1, 2020.

The 2022 CALGreen Code goes into effect on January 1, 2023, and includes provisions intended to reduce and eventually eliminate the use of fossil fuels, including natural gas, and replacing them with electricity generated by renewable sources such as solar panels, wind, and hydroelectric dams.

California Air Resources Board (CARB), 2020 Mobile Source Strategy

In September 2021, CARB published the 2020 Mobile Source Strategy (CARB, 2021). The 2020 Strategy is a framework that identifies actions needed to meet the State's goals for the reduction of emissions of criteria pollutants, GHGs, and toxic air contaminants from mobile sources. The 2020 Mobile Source Strategy uses the same targets for reducing VMT as the 2016 Mobile Source Strategy and 2017 Climate Change Scoping Plan, which aim to reduce light-duty vehicle VMT by 15 percent by 2050 compared to business as usual. The 2020 Mobile Source Strategy identifies strategies that CARB can take to assist in achieving additional reductions and support implementation of regional Sustainable Communities Strategies.

The 2020 Mobile Source Strategy identifies eight strategy areas for reducing VMT and are outlined in CARB's SB 375 Progress Report. The strategy areas are:

1. Increase Transportation Choices and Improve Access
2. Authorize and Implement Equitable Pricing of Transportation
3. Align State Funding Programs to Reduce Vehicle Travel and Achieve the State's Greenhouse Gas Emissions Reduction Goals
4. Shape the Deployment of New Mobility Options in Ways That Reduce VMT
5. Better Align Land Use Planning with the Scoping Plan's Goals
6. Accelerate Infill Housing Production
7. Support Local and Regional Partners to Implement VMT Reduction Measures
8. Elevate the State of Science to Inform the Development and Implementation of Sustainable Community and Transportation Policies

Advanced Clean Cars Program

The Advanced Clean Cars (ACC) Program combines the control of smog-causing criteria pollutants and GHG emissions into a single package of regulations. The Low-Emission Vehicle (LEV) requires manufacturers to produce an increasing number of zero-emission vehicles (ZEV). In 2022, CARB proposed additional regulations to establish the next set of LEV and ZEV requirements.

In-Use Off-Road Diesel-Fueled Fleets Regulation

The goal of the In-Use Off-Road Diesel-Fueled Fleets Regulations is to reduce NO_X, diesel particulate matter, and other criteria pollutant emissions from existing off-road heavy-duty diesel vehicles in California. The regulation covers a wide range of vehicle types, including, but not limited to, vehicles used in construction, air travel, manufacturing, and landscaping.

All self-propelled off-road diesel vehicles 25 horsepower (HP) or greater used in California and most two-engine vehicles (except on-road two-engine sweepers) are subject to the regulation, including rented and leased vehicles. The regulation imposes limits on idling, restricts adding older vehicles into fleets, and requires fleet owners to reduce their emissions by retiring, replacing, repowering, or retrofitting older engines. In addition, the Portable Equipment Registration Program (PERP) requires all portable engines 50 HP or greater to be registered in PERP or be permitted by a

local air district. In May 2021, CARB commenced the process of amending the Regulation to further reduce emissions from off-road diesel vehicles.

Senate Bill 210 (2019), Heavy-Duty Vehicle Inspection and Maintenance Program

SB 210, signed by the Governor on September 20, 2019, recognizes that communities near highways and roads with high levels of truck traffic bear the burden of heavy-duty trucks that are not maintained. According to CARB, as of 2020, heavy-duty trucks operating in the State emitted nearly 52 percent of the statewide on-road mobile source NO_X emissions and about 54 percent of the statewide on-road mobile source $PM_{2.5}$ emissions.

Under the Heavy-Duty Vehicle Inspection and Maintenance Program heavy-duty diesel trucks with a gross vehicle weight rating of more than 14,000 pounds must pass a smog check or remotely transmit vehicle emission system monitoring data to ensure vehicle emission controls are maintained in order to register or operate in California.

The program is expected to be one of the most impactful CARB programs approved in decades. In 2024, it is projected to reduce 8.6 tons per day (TPD) of NO_X emissions and 0.09 TPD of PM emissions in the San Joaquin Valley. In 2037, the program is projected to cut statewide NO_X emissions by 81.3 TPD, and PM emissions by 0.7 TPD. The PM and NO_X reduction would result in roughly 7,500 avoided premature deaths and 6,000 avoided hospitalizations statewide, which are equivalent to monetized health benefits of $75.8 billion for the 2023-2050 period (CARB, n.d.).

Executive Order N-79-20

Executive Order (EO) N-79-20, signed by the Governor on September 23, 2020, established a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero emission by 2035, and that 100 percent of medium- and heavy-duty vehicles be zero-emission by 2045 for all operations where feasible, and by 2035 for drayage trucks. Further, EO N-79-20 established a goal to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

LOCAL

Shasta County Air Quality Management District (SCAQMD)

The SCAQMD has the responsibility of enforcing federal and State air quality regulations in Shasta County. The SCAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs, and it regulates agricultural burning. All projects in Shasta County are subject to applicable SCAQMD rules and regulations in effect at the time of construction. Descriptions of specific rules applicable to the proposed project may include, but are not limited to:

- SCAQMD Rule 2:1, New Source Review, establishes pre-construction review requirements for new and modified stationary sources of air pollution for use of Best Available Control Technology (BACT), analysis of air quality impacts, and to ensure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards. The regulation provides for no net increase in emissions from new or modified stationary sources that emit, or have the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors.
- SCAQMD Rule 2:1A, Permits Required, specifies requirements to obtain an Authority to Construct/Permit to Operate for uses that may cause the issuance of air contaminants.

- SCAQMD Rule 2:6, Open Burning: General Provisions, states that burning in the City of Shasta Lake is allowed from November 1 to April 30 when the fire is ignited between the hours of 10:00 AM and 3:00 PM; fires must be completely out by 5:00 PM. This rule also discusses permit requirements for open outdoor burning.

- SCAQMD Rule 2:7, Conditions of Open Burning, includes measures to minimize smoke from open burning.

- SCAQMD Rule 3:15, Cutback and Emulsified Asphalt, includes regulations to limit emissions of volatile organic compounds (VOCs) from the use, manufacture, or sale of cutback and emulsified asphalt in paving, construction, or maintenance of parking lots, streets, and highways.

- SCAQMD Rule 3:16, Fugitive, Indirect, or Non-Traditional Sources, includes measures to minimize the emission of fugitive dust during earth-moving, construction, demolition, bulk storage, and other activities that could result in wind erosion. This rule identifies Reasonably Available Control Measures (RAMC) that could be considered to prevent or reduce the emission and transport of fugitive dust (applying dust suppressants, using fences, barriers, and/or wind breaks/screens, revegetating disturbed surfaces, cleaning paved streets, improving road surfaces, and/or controlling vehicular speeds in unpaved areas.

- SCAQMD Rule 3:23, Fireplace and Solid Fuel Heating Device Usage, establishes emissions limits for woodstoves, pellet stoves, and fireplaces.

- SCAQMD Rule 3:24, Transportation Control Measure (TCM), includes requirements for significant trip generators (a facility that has 100 or more persons scheduled to arrive at one site between the hours of 6:00 AM and 10:00 AM Monday through Friday). The purpose of this rule is to improve air quality, minimize traffic congestion, and encourage ridesharing and other methods to reduce vehicle trips through public education and requiring annual trip reduction reports from significant trip generators.

- SCAQMD Rule 3:31, Architectural Coatings, establishes VOC content limits for architectural coatings that are supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the County.

- SCAQMD Rule 3:32, Adhesives and Sealants, limits the emissions of VOCs from adhesives and sealants and associated primers, and from related surface preparation solvents, cleanup solvents, and strippers.

As shown in **Table 4.3-5**, SCAQMD has adopted air quality thresholds for emissions of Reactive Organic Gases (ROG), Oxides of Nitrogen (NO_X) and Particulate Matter, 10 microns in size (PM_{10}) to determine the level of significance for projects subject to CEQA review.

Table 4.3-5
Thresholds of Significance for Criteria Pollutants of Concern

Threshold	ROG	NO_X	PM_{10}
Level A	25 lbs/day	25 lbs/day	80 lbs/day
Level B	137 lbs/day	137 lbs/day	137 lbs/day

Source: Shasta County Air Quality Management District, 2003.

All discretionary projects in Shasta County are required to implement Standard Mitigation Measures (SMMs) to minimize emissions and contribute to a reduction in cumulative impacts. SCAQMD recommends that projects that generate unmitigated emissions above Level A implement Best Available Mitigation Measures (BAMMs) in addition to the SMMs. If a project is not able to reduce emissions below the Level B threshold, emissions offsets are required. If after applying the emissions offsets, a project's emissions still exceed the Level B threshold, an Environmental Impact Report is required.

SCAQMD Rule 2:1 includes additional thresholds for stationary sources. Rule 2:1A requires that any person who is building, altering, or replacing any article, machine, equipment, or other contrivance that emits air contaminants must obtain written authority for construction from the SCAQMD. Examples of air contaminant emitting equipment and processes that may trigger the need for a permit include, but are not limited to:

- Agricultural products processing
- Bulk material handling
- Chemical blending, mixing, manufacturing, storage, etc.
- Combustion equipment (boilers, engines, heaters, incinerators, etc.)
- Metals etching, melting, plating, refining, etc.
- Plastic and fiberglass forming and manufacturing
- Petroleum production, manufacturing, storage, and distribution
- Rock and mineral mining and processing
- Solvent use (de-greasing, dry cleaning, etc.)
- Surface coating and preparation (painting, blasting, etc.)
- Lumber and wood products manufacturing

City of Shasta Lake

The Shasta Lake Municipal Code SLMC includes the following regulations related to minimizing adverse impacts related to air quality:

SLMC Chapter 12.12, Vehicle Congestion Management Program
SLMC Chapter 12.12 implements SCAQMD Rule 3:24 described above. To date, there are no significant trip generators in the City that would be subject to the Vehicle Congestion Management Program.

SLMC Section 17.84.080, Paved Street Requirements
SLMC Section 17.84.080 requires that all new construction shall have primary access from an existing paved street. In lieu of paving, the city council may approve payment of a dust mitigation fee to be used for paving city streets. When paving is waived, the owner must sign a deferred improvement agreement for future participation in an assessment district formed to provide a paved road.

4.3.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to air quality.

GOAL HS-9	**Protect the community from poor air quality.**	
POLICIES	HS-9.1	Improve and maintain air quality to protect human health and preclude damage to plants and property.
	HS-9.2	Cooperate with the Air Quality Management District and the Regional Transportation Agency to meet air quality standards and implement provisions of the California and Federal Clean Air Acts.
	HS-9.3	Encourage integration of land use, transportation, and energy planning efforts to help reduce air pollution.
	HS-9.4	Review land use decisions with consideration of the potential for improvement of air quality and mitigate air quality impacts to the greatest extent practicable. Consult with the Air Quality Management District regarding mitigation of air quality impacts.
	HS-9.5	All parcels created by new land divisions and new multi-family residential, commercial, and industrial development (or with expansion of such uses) shall be served by paved roads, driveways, and parking areas. Unpaved roads serving one or more vacant parcels shall be paved at the time of property development. Alternative surfacing methods or timing may be authorized in limited circumstances, subject to specific findings by the approving authority.
	HS-9.6	Encourage a land use pattern that reduces reliance on the automobile and encourages alternative modes of transportation for travel to employment and shopping by encouraging: • Infill development; • Mixed-use development near employment centers (e.g., daycares, restaurants, and banks); • Increased residential densities near employment and shopping, and along major traffic corridors; and • Employment opportunities and shopping near to residential development.
	HS-9.7	Encourage a reduction in vehicle trips and vehicle miles traveled by promoting: • Public transportation; • Carpooling, ridesharing, and vanpooling; • Shortened and combined motor vehicle trips for work, shopping, and services; • Use of bicycles; and pedestrian access and walking.
	HS-9.8	Encourage pedestrian-oriented and transit-oriented design in new development.
	HS-9.9	Adopt guidelines for developers to encourage and promote pedestrian movement, bicycling, and public transit.
	HS-9.10	Encourage local development in order to encourage local employment and shopping opportunities and reduce the number and distance of vehicle trips.

	HS-9.11	Work with the Redding Area Bus Authority, Caltrans, and other agencies to establish multi-modal transfer sites for automobiles, bicycles, pedestrians, and public transit, consistent with the Circulation Element.
	HS-9.12	Develop a bikeway plan to encourage the use of bicycles, consistent with the Circulation Element.
	HS-9.13	Develop a pedestrian plan to encourage walking, consistent with the Circulation Element.
	HS-9.14	The City will support the Air Quality Management District's efforts to reduce and track emissions through appropriate analysis of project level air quality impacts during the CEQA process.
	HS-9.15	Recognize the health impacts on local and regional air quality resulting from climate change and wildfire. Support efforts to mitigate these impacts through the application of appropriate vegetation management in the wild land-urban interface areas, and on public lands abutting the City's planning area.
	HS-9.16	Increase community awareness of wildfire smoke risks and health hazards and provide guidance to individuals, businesses, and institutions on how to reduce risks during a wildfire event affecting local air quality.
IMPLEMENTATION ACTIONS	HS-9.1	Continue to require new development to implement CALGreen building standards.
	HS-9.2	Support programs that encourage and promote the recycling and composting of residential green waste as a preferred alternative to disposal by lawful burning on-site.
	HS-9.3	Evaluate the feasibility of providing incentives to encourage the retrofitting of existing older wood burning devices with devices meeting current air quality standards at the time a residence is sold, or a major alteration or addition is initiated.
	HS-9.4	Coordinate with the Air Quality Management District regarding proposed land uses near hazardous air pollution sources.
	HS-9.5	Encourage and promote public education regarding the link between air quality, transportation alternatives, and wood burning. Emphasize health hazards resulting from wildfire smoke and wood burning.
	HS-9.6	In collaboration with Shasta County Health and Human Services Agency (SCHHSA), provide guidance to the public on ways to reduce health risks during a wildfire event affecting local air quality.
	HS-9.7	Encourage community and agency efforts that will reduce the potential for uncontrolled wild land fires which can negatively impact air quality. Consider modifying city policies or ordinances which make this more difficult.
GOAL HE-1	**To provide for a broad range of housing types to meet the needs of all residents.**	
POLICY	HE-1.7	The City shall encourage circulation improvements and subdivision layouts that promote community connectivity and livability.
IMPLEMENTATION ACTION	HE-1.11	The City will evaluate commercial parcels and structures as part of the update to the General Plan. The evaluation will include identifying parcels/lots that are most appropriate for mixed commercial and residential uses.

GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICY	CON-4.3	Promote cost-effective water and energy consumption in the City as much as possible; continue and build upon existing programs to reduce water and energy consumption in the City.
IMPLEMENTATION ACTIONS	CON-4.2	Encourage the highest feasible water conservation possible when reviewing landscaping plans for new projects and ensure the landscape watering ordinance contains best practices for water conservation.
	CON-4.3	Work with the largest users of water and energy in the City to establish incentives, offer recommendations, and explore other programs and policies for lowering consumption.
GOAL LU-1	**Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.**	
POLICY	LU 1.16	Consider vegetation management and landscaping projects that can reduce heat island and pollutant transport and dispersion on high traffic roads such as Shasta Dam Blvd and frontage roads along the I-5 corridor (Cascade Blvd and Twin View Blvd). Collaborate with California Department of Transportation (Caltrans) to improve the landscaping in this area.
GOAL LU-3	**Ensure new development is of high-quality; well-integrated and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU 3.1	Where practical, promote mixed-use development patterns and higher densities where practical, that use land and resources efficiently, reduce automobile dependence and pollution, and facilitate walking, bicycling, and transit use.
	LU 3.2	Encourage development of residential uses in strategic proximity to employment, recreational facilities, schools, neighborhood commercial areas, and transportation routes.
	LU-3.7	Approval of new industrial development should demonstrate that public services are available, the site is designed to be compatible with adjacent uses and is of adequate size to accommodate a variety of industrial uses, and that safe and adequate access is available.
	LU-3.8	Require that new industrial development be designed to avoid adverse impacts to adjacent non-industrial uses, including noise, dust, vibration, water quality, air quality, agricultural resources, and biological resources.
	LU 3.11	Require that new buildings and the reconstruction of existing buildings comply with the most current California Green Buildings Standards Code and amendments.
	LU 3.15	Encourage sustainable, resilient development that conserves water and energy resources and incorporates best practices for avoiding and minimizing damage from flooding, earthquake, wildfire, and other hazards. Explore incentives and other methods for addressing conservation and resiliency in existing development.

	LU-3.19	Limit residential development and require adequate setbacks or other physical improvements for development next to Interstate 5 to reduce public health impacts from interstate traffic, such as noise and air pollution.
	LU-3.20	Protect the health of residents by ensuring an adequate buffer from Interstate 5 for recreational facilities.
IMPLEMENTATION ACTION	LU-3.8	Review the City's municipal code and modify it as needed to ensure setbacks or other improvement requirements for development adjacent to Interstate 5 are adequate for public health protection.
GOAL LU-4	**Provide services to promote healthy lifestyles, safety, and the well-being of all residents.**	
POLICIES	LU-4.1	Ensure sufficient parks, open space, and trails are planned throughout the City for existing and future residents to improve public health by promoting physical activity, giving residents an opportunity to connect with nature, and mitigating air and water pollution impacts on residents.
	LU-4.2	Assess funding and siting opportunities for increased parks and open space within the City through a parks and recreation services master plan process. The plan should include acknowledging and prioritizing access to surrounding public land and recreational opportunities. Explore connections between the two community parks and low income and higher density residential properties.
GOAL HE-5	**To support energy efficiency improvements and appropriate weatherization for all new and existing housing units.**	
POLICIES	HE-5.1	New Construction Efficiency. The City shall require new construction to meet Title 24 energy conservation requirements.
	HE-5.2	Conservation Programs & Measures. The City shall promote energy efficiency measures and energy conservation programs in accordance with applicable laws, including programs to support low-income households.
	HE-5.3	Passive solar. During the tentative map review process, the City shall encourage new subdivision lots to be oriented to allow for both passive and active solar design to minimize energy losses.
IMPLEMENTATION ACTIONS	HE-5.1	Energy Efficiency Calculations. The City shall require all new construction to demonstrate compliance with Title 24 mandates during the planning and design process using energy efficiency calculations approved by the State.
	HE-5.2	Energy Efficiency. The City shall offer programs that comply with applicable laws that provide for weatherization and energy efficiency rebates for residential customers and support low-income households.
	HE-5.3	Green Building Incentives. The City shall encourage the implementation of the voluntary (Tier 2) provisions of the Green Building standards. The City will also provide information, on request, regarding green standards currently being applied.
	HE-5.4	Community Solar. The City shall explore locations and projects for "community solar" or utility-scale solar photovoltaic systems with supporting programs to directly serve the City's end-users' electricity needs with local renewable energy sources.

GOAL CIR-1	**Develop a transportation system that meets the needs of all segments of the community, including residents, businesses, visitors, and the region, through a "complete streets" approach to transportation planning.**	
POLICIES	CIR-1.1	Coordinate policies for land development and circulation.
	CIR-1.2	Evaluate the feasibility of including "complete streets" considerations in the design of all street improvement projects, including but not limited to: • Water efficient, drought tolerant landscaping • Public transit improvements • Accessibility for disabled persons and Americans with Disabilities Act (ADA) compliance • Safety criteria, such as traffic calming measures and lighting • Sign and wayfinding design • Sidewalk installation • On- and off-street parking management • Bicycle routes, facilities, and signage
	CIR-1.3	Encourage practical parking solutions to serve community needs while avoiding excessive amounts of surface parking that disrupt the urban fabric of the city. Explore alternatives that reduce parking footprints, including decreasing or removing parking minimums, adding more public parking, and expansion or modification of on-street parking.
	CIR-1.4	Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming.
	CIR-1.5	Strive to attain a Level of Service (LOS) "C" and VMT reduction, so that potential congestion is minimized, VMT targets are met, and active transportation needs are addressed.
	CIR-1.6	Improve unpaved roads, driveways, pedestrian and bicycle paths, and parking areas as appropriate and with consideration of reducing impervious surfaces.
	CIR-1.7	Encourage connectivity and accessibility to a mix of land uses that meet residents' daily needs within walking distance, consistent with the Land Use Element.
	CIR-1.8	Promote greater linkages between land uses and transit, as well as non-vehicular modes of transportation to reduce vehicular trip related emissions.
	CIR-1.9	Take into account the specific needs of the population when designing roadways, including bicycle and pedestrian access, transit and drop-off needs, and safety around crosswalks, intersections, and roundabouts.
	CIR-1.10	Improve air quality from transportation sources to protect human and environmental health and minimize impacts on sensitive populations by routing heavy truck traffic away from residential zones and promoting safety at rail crossings.

IMPLEMENTATION ACTION	CIR-1.1	Program improvements to the transportation system based on demonstrated needs according to the collection of data on physical conditions, traffic volumes, and safety reports, for both active and vehicular transportation. Incorporate into a Capital Improvement Plan (CIP).
GOAL CIR-2	**Increase options and services for walking and bicycling while improving safety for all modes of transportation.**	
POLICIES	CIR-2.1	Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming. Strive to attain a Level of Service (LOS) "C" and VMT reduction to the maximum degree feasible to minimize potential congestion and increase safety on streets and at intersections.
	CIR-2.2	Provide access to public facilities, schools, parks, and shopping areas.
	CIR-2.3	Design intersections and public rights-of-way to include accessible, safe access for all users.
	CIR-2.4	Design sidewalks and pedestrian paths to provide sufficient space from vehicular traffic and adequate sight lines between adjoining development to ensure safety and security, as practicable.
	CIR-2.5	Continuously evaluate the operation of the City's transportation system to manage the speed of travel, manage queues at intersections, and develop improvements to increase safety of all transportation services.
	CIR-2.7	Limit the intrusion of commercial truck traffic on City streets, especially in residential neighborhoods, by directing truck traffic to the City's designated truck routes.
IMPLEMENTATION ACTION	CIR-2.1	Continue a data collection program for the transportation system, to include a physical inventory, condition of surfacing, maintenance needs, traffic volumes, and accident reports. Update the program at least every five years.
GOAL CIR-3	**Promote alternative travel modes, including transit, pedestrian, and bicycle circulation systems to improve access and public health.**	
POLICIES	CIR-3.1	Coordinate transportation planning and implementation with regional and local plans.
	CIR-3.2	Plan for transportation modes and strategies that ensure good air quality, reduce greenhouse gas emissions, and reduce the need to devote additional lands to transportation uses.
	CIR-3.3	Encourage the development and expansion of local and regional public transit systems. Request improvements in transit service.
	CIR-3.4	Require sidewalks in all new public and private developments.
	CIR-3.5	Continue to develop a system of bicycle and pedestrian transportation, both on- and off-street.
	CIR-3.6	Encourage local transportation agencies to make public transit more comfortable and convenient, especially for underserved populations.
	CIR-3.7	Review proposed designs for large traffic-generating uses with transit service in mind, and, where feasible, require streets to be improved to provide bus loading and unloading without disruption of through-traffic.

	CIR-3.8	Where feasible and appropriate, and where non-motorized travel is reasonably expected, the width of existing streets should be reduced through bulbouts, medians, pedestrian islands and similar methods, and planting shade trees in landscaped areas within and adjacent to streets while not jeopardizing emergency response and future capacity requirements.
	CIR-3.9	Expand and maintain a safe and comprehensive bicycle system that connects the City's neighborhoods to public facilities, services, and recreational opportunities within the City.
	CIR-3.10	Encourage bicycle parking and related facilities in new employment-generating development and multi-family housing to facilitate multi-modal commute choices.
	CIR-3.11	Promote street trees in urbanized areas, especially along major thoroughfares such as Shasta Dam Boulevard and around active transportation infrastructure.
IMPLEMENTATION ACTIONS	CIR-3.1	Where feasible and appropriate, enhance pedestrian and bicycle circulation and planning, including enhancing the urban canopy with street trees, in coordination with the GoShasta Plan.
	CIR-3.2	Increase walking and bicycling to local destinations and regional transportation services by developing wayfinding signage for pedestrians and bicyclists.
	CIR-3.3	Develop measures to reduce conflict areas for bicyclists through methods such as brightly-colored paint or a one-foot buffer strip along bicycle routes, focusing on problem areas like right turn lanes and driveways.
	CIR-3.4	Consider applicable strategies prepared by outside agencies when developing transportation plans within the City.
	CIR-3.5	Construct, improve, and maintain the system of curb, gutters, sidewalks, and crosswalks for pedestrian and bicycle circulation safety and drainage control, prioritizing high traffic areas. (
	CIR-3.6	Implement bicycle safety programs and cooperate with other agencies in the enforcement of bicycle safety.

4.3.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on air quality if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

4.3.6 Issues not discussed Further

All issues identified in Section 4.3.5 are addressed below.

4.3.7 Impact Analysis and Mitigation Measures

Impact 4.3-1	**Implementation of the 2040 General Plan could conflict with or obstruct implementation of the applicable air quality plan.** ***Significant and Unavoidable Impact***

As stated in Section 4.3.2 (Environmental Setting), for areas within the State that have not attained air quality standards, the CARB works with local air districts to develop and implement attainment plans to obtain compliance with both federal and State air quality standards. The Northern Sacramento Valley Planning Area (NSVPA) 2021 Air Quality Attainment Plan (AQAP) constitutes the region's State Implementation Plan (SIP) and focuses on achieving and maintaining the State AAQS for ozone by the earliest practicable date.

The 2021 AQAP assesses the overall effectiveness of the individual air districts within the NSVPA (Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba counties) in meeting the goals of the previous 2018 Attainment Plan. Glenn and Colusa counties are currently in attainment status for ozone but continue to participate in the regional effort. Butte, Sutter, Tehama, and Yuba counties are in nonattainment status. Shasta County is in nonattainment-transitional status, which indicates that the County is approaching the attainment level.

The 2021 AQAP proposes strategies and regulations for the three-year planning cycle for the 2021 AQAP (2022 through 2024). Continued attention is given to reducing ROG and NO_X emissions from transportation and areawide emission sources with implementation of regulations and planning requirements from earlier AQAP planning cycles. The Shasta County Air Pollution Control Board (APCB) adopted the 2021 AQAP on April 5, 2022.

According to the Shasta County emissions inventory maintained by CARB, mobile sources in the County account for 34 percent of ROG and 68 percent of NO_X; therefore, the County's main emphasis in implementing the 2018 AQAP has been to attempt to reduce emissions from mobile sources through public education and grant programs. Through the Carl Moyer Heavy-Duty Low Emission Vehicle Incentive Program, Shasta County provides incentives to companies, fleet operators, and individuals interested in replacing older engines with newer engines that have substantially lower emissions (SCAQMD, n.d.).

The purpose of the program is to reduce emissions of NO_X, an ozone precursor. The program is also expected to reduce the fine particulate matter (PM) component of diesel exhaust, which contributes to particulate air pollution. Eligible projects include on-road vehicles with a gross vehicle weight rating of greater than 14,000 pounds, off-road self-propelled vehicles with an engine rated at 25 horsepower or greater, and agricultural pumping applications with an engine rated at 25 horsepower or greater.

The 2021 AQAP proposes the adoption of new control measures (model rules) in the next three-year planning cycle for Graphic Arts, Small Boilers, and Use of Solvents. Control measures for graphic arts and small boilers will be scheduled for consideration by the Shasta County APCD once model rules are completed. The District's VOC rules (Vehicle Coating, Architectural Coating, Adhesives and Sealants, and Wood Products Coatings) were amended in May 2013.

A project's consistency with the AQAP is determined based on projections in the AQAP. Mobile sources comprise the majority of the NO_X emission inventory in 2020, an estimated 68 percent of the total. Areawide emission sources account for 42 percent of the ROG inventory in 2020. The 2021 AQAP states that the NO_X emissions are forecasted to reduce by 44 percent and the ROG emissions are forecasted to reduce by 19 percent between 2012 and 2025.

The 2021 AQAP includes ROG and NO_X emission projections for area, mobile, and stationary sources in the NSVPA through year 2025, based, in part on a projected population for Shasta County of 178,494 and projected countywide average daily VMT of 7,851,000 by year 2025. Population estimates in the 2021 AQAP are based on California Department of Finance, Demographic Research Unit population estimates; VMT estimates are based on CARB's on-road mobile source emissions inventory model (EMFAC2017 v1.0.3).

As discussed under Impact 4.3-2, development under the proposed 2040 General Plan would generate ozone precursor emissions (ROG and NO_X). For this analysis, estimated areawide and mobile source emissions under the 2040 General Plan were compared to the estimated area and mobile source emissions projected in the 2021 AQAP for year 2025. Because it is not possible to estimate stationary source emissions that could occur with implementation of the 2040 General Plan, a comparison of stationary source emissions is not included. As indicated in **Table 4.3-6**, ROG and NO_X emissions that would occur with implementation of the 2040 General Plan comprise a very small percentage of projected areawide source and mobile source emissions in the NSVPA.

Table 4.3-6
Comparison of NSVPA and Proposed 2040 General Plan
Ozone Precursor Emissions – Areawide and Mobile Sources

Ozone Precursor	Projected 2025 NSVPA Emissions (tons per day)	Proposed 2040 General Plan (tons per day)	Percentage of 2025 NSVPA Total
ROG			
Areawide Source	40.60	0.15	0.37%
Mobile Source	27.39	0.013	0.05%
NO_X			
Areawide Source	5.02	0.002	0.04%
Mobile Source	41.82	0.01	0.02%

Development under the 2040 General Plan would be analyzed on a case-by-case basis when detailed project-specific information is known, and mitigation measures would be implemented as necessary.

As described in Section 4.3.3 (Regulatory Framework), the SCAQMD has adopted rules to ensure that new and modified stationary sources of air pollution do not interfere with the attainment or maintenance of AAQS. These rules are intended, in part, to ensure that projects do not conflict with or obstruct implementation of the NSVPA AQAP.

Although emissions that would occur with implementation of the 2040 General Plan comprise a very small percentage of projected emissions in the NSVPA, and mitigation measures would be implemented as necessary, it is possible that future projects may exceed adopted thresholds or conflict with plans that were adopted to achieve and maintain the State AAQS for ozone. Due to the programmatic nature of this Draft PEIR, it is not possible to estimate project-specific emissions or identify quantifiable mitigation measures that would reduce project-specific emissions. Therefore, the potential for future projects to conflict with or obstruct implementation of the NSVPA AQAP is considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

Impact 4.3-2	**Implementation of the 2040 General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.** ***Significant and Unavoidable Impact***

As stated in Section 4.3.3, Shasta County is currently designated a non-attainment-transitional area for State ozone standards, and implementation of the 2040 General Plan would contribute to cumulative impacts associated with the generation of ozone precursors (i.e., ROG and NO_X).

Construction Emissions

Construction under the 2040 General Plan would result in the temporary generation of ROG, NO_X, PM_{10}, and other regulated pollutants during construction. ROG and NO_X emissions would be associated with employee vehicle trips, delivery of materials, and construction equipment exhaust. PM_{10} would be generated during site preparation, excavation, paving, and from exhaust associated with construction equipment. The City uses the California Emissions Estimator Model (CalEEMod) to estimate project emissions. CalEEMod reports both maximum daily emissions (pounds per day) and overall annual emissions (tons per year) for both construction and operational emissions.

In order to estimate construction emissions, detailed information regarding the amount of site clearing, grading, cubic yards of dirt to be imported and exported, and the weight of demolition debris is required. For all land uses other than single-family residential (multi-family residential, commercial, industrial, educational, institutional and parks facilities), the square footage of pavement for parking lots and other paved surfaces must be input as a separate land use type. CalEEMod also requires detailed information to calculate changes in CO_2 associated with tree/habitat removal and tree planting. Because there are many factors involved with estimating construction emissions, it is not possible to develop a reasonable estimate at this time.

Emissions associated with construction activities under the 2040 General Plan will be evaluated using the most current CalEEMod version, or similar model for estimating construction emissions. As stated in Section 4.3.3 (Regulatory Framework), all discretionary projects in Shasta County are required to implement SMMs to minimize emissions and contribute to a reduction in cumulative impacts. SMMs that the City has imposed on previous projects to minimize emissions from construction activities have included the following:

- All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of ambient air quality standards. The timing and frequency of watering shall be determined by the City Engineer or Building Official.
- All material transported off-site shall be either sufficiently watered or securely covered to prevent a public nuisance.
- All areas with vehicle traffic (other than paved roads) shall be watered periodically or have dust palliatives applied for stabilization of dust emissions.
- All on-site vehicles shall be limited to a speed of 15 miles per hour on unpaved roads.

- All land clearing, grading, earth moving or excavation activities on the project site shall be suspended if/when the City Engineer or Building Official determines that winds are causing excessive dust generation.
- Paved streets adjacent to construction areas shall be swept or washed at the end of the day to remove excessive accumulations of silt and/or mud resulting from activities on the work site.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.
- Off-road construction equipment and other diesel-fueled construction vehicles (e.g., dump trucks) shall not be left idling for periods longer than five minutes when not in use.
- Trees and other vegetation cleared to accommodate the proposed project shall not be burned onsite and shall be disposed of in another lawful manner (e.g., chipping or mulching), as approved by the City.

Projects that generate unmitigated emissions above Level A must implement BAMMs in addition to the SMMs. If a project is not able to reduce emissions below the Level B threshold, emissions offsets are required. If after applying the emissions offsets, a project's emissions still exceed the Level B threshold, an Environmental Impact Report would be required.

Operational Emissions

Future projects under the 2040 General Plan would generate criteria pollutants from areawide sources (e.g., wood-burning fireplaces, cleaning supplies, maintenance activities such as painting, landscape equipment etc.) and mobile sources (e.g., vehicle trips for employees, visitors, vendors, deliveries, etc.), as well as indirect emissions associated with energy use, solid waste disposal, water treatment and distribution, and wastewater treatment. CalEEMod was used to estimate average daily emissions that could occur by the end of the 20-year planning period based on the 20-year growth assumptions identified in Section 3.0 (Project Description), Tables 3.0-4 and 3.0-5.

The information in **Table 4.3-7** reflects areawide sources, energy sources, and mobile sources based on building square footage and land use types. Many additional factors will be considered when reviewing specific projects under the 2040 General Plan. These factors are either unknown at this time (e.g., the level of emissions from stationary equipment, the type and intensity of fleet equipment, etc.), or are factors that could change over the years (e.g., the emissions intensity factors for electric and natural gas services, new or revised State and local regulations, etc.).

Because detailed project-specific information is not known at this time, the CalEEMod analysis does not include stationary source emissions and does not reflect implementation of any mitigation measures. CalEEMod defaults were used to calculate emissions from wood-burning stoves, fireplaces, architectural coatings, solid waste generation, and mobile sources. The CalEEMod report is included as **Appendix B**.

As reflected in **Table 4.3-7,** estimated ROG and NO_X emissions are over the significance thresholds established by Shasta County AQMD for projects subject to CEQA review.

Table 4.3-7
Potential Unmitigated Operational Emissions (Average Pounds per Day)
20-Year Planning Period

Pollutants of Concern (Average Pounds per Day)					
Source	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**CO**
Area	293	4.93	41.6	41.4	333
Energy	0.45	7.97	0.62	0.62	5.25
Mobile	26.2	20.5	16.3	3.07	149
Total	**319.65**	**33.4**	**58.52**	**45.09**	**487.25**
Thresholds (Pounds per Day)					
Level A	25	25	80	-	-
Level B	137	137	137	-	-
Exceeds Level A Threshold?	**Yes**	**Yes**	No	-	-
Exceeds Level B Threshold?	**Yes**	No	No	-	-

Source, CalEEMod, 2022

As shown in **Table 4.3-7,** area and mobile sources produce the highest level of ROG emissions, primarily due to the use of wood-burning fireplaces and vehicle use. One potential project-level mitigation measure that would reduce operational ROG emissions would be to minimize the use of wood-burning stoves in a development to remain below the significance thresholds.

As stated in Section 4.3.7 (Regulatory Framework), SCAQMD Rule 2:1, New Source Review, establishes pre-construction review requirements for new and modified stationary sources of air pollution. The regulation provides for no net increase in emissions from new or modified stationary sources that emit, or have the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors. The use of BACT is required to ensure that projects with stationary source emissions do not interfere with the attainment or maintenance of ambient air quality standards.

Development under the 2040 General Plan would be analyzed on a case-by-case basis when detailed information regarding construction and operational activities is known. Future projects would be subject to the General Plan policies and implementation actions identified in Section 4.3.4, as well as SCAQMD and State rules and regulations, including, but not limited to those identified in Section 4.3.3 (Regulatory Framework).

SMMs would be implemented, and the City would consult with the SCAQMD as necessary to identify project-specific BAMMs and other measures that could be implemented to achieve compliance with established thresholds.

However, due to the programmatic nature of this Draft PEIR, it is not possible to identify quantifiable mitigation measures that would reduce project-specific emissions below the referenced thresholds. Therefore, the potential for development under the 2040 General Plan to result in a cumulatively considerable net increase of a criteria pollutant for which the project area is in non-attainment is possible, and therefore considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

Impact 4.3-3	**Implementation of the 2040 General Plan could expose sensitive receptors to substantial pollutant concentrations.** ***Less-than-Significant Impact.***

See Section 4.9 (Hazards and Hazardous Materials), Impact 4.9-1, for a discussion related to hazardous materials that could become airborne during earth-disturbing or demolition activities (i.e., treated wood waste, asbestos-containing materials, lead-based paint, naturally occurring asbestos, and aerially deposited lead).

Sensitive receptors are individuals or groups of people that are more affected by air pollution than others, including young children, elderly people, and people weakened by disease or illness. Areas that may contain high concentrations of sensitive receptors for air pollutants include residential areas, schools, day care centers, hospitals, long-term residential care/skilled nursing facilities, retirement homes, and parks and outdoor recreational facilities. Growth resulting from implementation of the 2040 General Plan could expose sensitive receptors to substantial concentrations of criteria pollutants, TACs, and other emissions.

Construction Emissions

Sensitive receptors adjacent to construction sites could be exposed to elevated dust levels and other pollutants. As stated under Impact 4.3-2, all projects in Shasta County are subject to applicable SCAQMD rules and regulations in effect at the time of construction. Projects must also implement SMMs during construction. When necessary, additional measures are implemented to ensure that sensitive receptors are not exposed to pollutant concentrations associated with construction activities.

Operational Emissions

In addition to operational emissions described under Impact 4.3-2, new development would result in an increase in traffic and associated mobile source emissions, and sensitive receptors residing near heavily travelled roadways such as State Route 151, Pine Grove Avenue, Ashby Road, Lake Boulevard, and Cascade Boulevard could be exposed to high concentrations of vehicle exhaust if vehicle congestion were to occur.

High-volume roadways and intersections have been found to be pollution hotspots, mainly due to frequent deceleration and acceleration, and the increased frequency and duration of idling at intersections (CARB, 2017). Intersections that tend to exhibit a significant CO concentration typically operate at LOS D or worse. As discussed in Section 4.17 (Transportation), a traffic study was completed to evaluate current and future traffic conditions at 19 intersections in the City (Ganddini, 2022).

The study identified four intersections that would function at LOS D and below. As shown in **Table 4.3-8**, improvements are identified to resolve deficient LOS at these four intersections.

Table 4.3-8
Proposed Improvements to Resolve Deficient Intersection LOS

Intersection	Improvement	Resulting LOS	
		Peak Hour	LOS
Mussel Shoals/Grand Coulee at SR 151 *Currently LOS D in the AM and LOS E in the PM*	Restrict to NB/SB right turns only	AM and PM	B
Cascade Boulevard at SR 151 *Currently LOS D in the AM and PM*	Modify signal phasing to permissive left-turn phasing for all approaches and optimize signal timing	AM	B
		PM	A
South Cascade Boulevard at Pine Grove Avenue *Currently LOS F in the PM*	Realign South Cascade Boulevard to align with signalized North Cascade Boulevard.	AM and PM	B
I-5 NB Ramps at Pine Grove Avenue *Currently LOS F in the PM*	Install new traffic signal	AM	A
		PM	B

Source: Shasta Lake General Plan Update Traffic Impact Analysis. Ganddini Group, 2022.

The traffic study also analyzed 48 roadway segments and found that all segments would continue to operate at acceptable levels at buildout of the 2040 General Plan.

Future projects would be subject to the General Plan policies and implementation actions identified in Section 4.3.4, as well as SCAQMD and State rules and regulations, including, but not limited to those identified in Section 4.3.3 (Regulatory Framework). SMMs would be implemented, and the City would consult with the SCAQMD as necessary to identify BAMMs and additional measures that would need to be implemented to ensure that sensitive receptors are not adversely impacted by pollutant concentrations. Impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.3-4	**Implementation of the 2040 General Plan could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.** ***Less-Than-Significant Impact.***

Construction activities that have the potential to emit odors and similar emissions include operation of diesel equipment, generation of fugitive dust, and paving (asphalt). Odors and similar emissions from construction would be intermittent and temporary, and generally would not extend beyond the construction area.

Projects that have a potential to generate odorous emissions include, but are not limited to, cannabis cultivation, processing, and manufacturing facilities; wastewater treatment facilities; transfer stations; asphalt batch plants; food processing facilities; painting/coating operations (e.g., auto body shops), chemical manufacturing facilities, and similar uses. Existing facilities in the City that have a potential to emit odorous emissions include the City's wastewater treatment plant,

commercial cannabis facilities, the transfer station on Lake Boulevard, a food processing facility in Shasta Gateway Industrial Park, and miscellaneous auto body shops.

SLMC §5.05.060 (Commercial Cannabis Cultivation, Testing, Manufacturing, Distribution, and Retail Facilities) states that all commercial cannabis businesses shall be required to provide an air treatment system that ensures off-site odors do not result from its operations. The facility must be designed to provide sufficient odor absorbing ventilation and exhaust systems so that any odor generated inside the location is not detected outside the building, on adjacent properties or public rights-of-way, or within any other unit located within the same building as the facility, if the use occupies only a portion of a building. The air treatment/odor control system is inspected by the City's Building Official prior to issuance of a cannabis business permit.

The City's public facilities, mixed-use, and industrial zoning districts also specifically prohibit uses that create objectionable odors that are readily detectable beyond the property line. Projects are reviewed on a case-by-case basis to determine whether an air treatment or odor control system is required to prevent odorous emissions, smoke, or fumes from affecting people working or living in the area. In addition, proposed projects are reviewed to determine whether a proposed use would be exposed to odorous emissions from an existing facility. Therefore, impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

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SECTION

4.4

Biological Resources

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4.4 Biological Resources

This section describes biological resources in the City and evaluates whether future development and other physical changes that could occur due to implementation of the 2040 General Plan would physically alter existing biological resources.

4.4.1 Study Methods

Biological resources include aquatic and terrestrial plant and wildlife species and their associated habitats. The following evaluation of potential impacts on biological resources is based on review of California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB) records for special-status plants, animals, and natural communities; the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants; U.S. Fish and Wildlife Service (USFWS) records for federally listed, proposed, and candidate plant and animal species under jurisdiction of the USFWS; National Marine Fisheries Service (NMFS) records for special-status fish species, critical habitat for fish species, and essential fish habitat (EFH). The CNDDB records search covered a five-mile radius around the Planning Area.

For the purpose of this evaluation, special-status plant species consist of the following:

- Species listed by the USFWS as Endangered or Threatened.
- Species designated by the USFWS as Proposed species.

  These species have limited protection under the federal Endangered Species Act (FESA). Federal agencies must consider Proposed taxa in biological assessments and "confer" with the Service regarding any action or project "likely to jeopardize the continued existence" of a Proposed species. However, the USFWS recommendations are not mandatory on the conferring federal agency.
- Species designated by the USFWS as Candidate species.

  Candidate species are those for which sufficient information is on file to support a proposal to list the species as Threatened or Endangered. Candidate species are not protected under the FESA. However, some level of protection is given to Candidates by most federal agencies. Further, the Service is required to monitor the status of Candidate taxa "to prevent their extinction while awaiting listing."
- Species listed by the State of California as Rare, Threatened, or Endangered, or identified as Candidates for State listing.
- Species that are not currently listed as Rare, Threatened, or Endangered, or Candidates for listing by the State, but meet the definitions of Rare or Endangered pursuant to §15380 of the State CEQA Guidelines.

  CDFW generally considers all plants assigned a California Rare Plant Rank (CRPR) of 1A, 1B, or 2 as being eligible for state listing. These plants must be fully considered during preparation of environmental documents relating to CEQA. Plants with a Rare Plant Rank of 3 or 4 do not generally meet the criteria for listing and mitigation for their loss is seldom required under CEQA. However, these species may be evaluated by the City on a case-by-case basis in consultation with CDFW.

For the purpose of this evaluation, special-status animal species consist of the following:

- Species listed by the USFWS or NMFS as Endangered or Threatened.
- Species designated by the USFWS or NMFS as Proposed species.

  These species have limited protection under the FESA. Federal agencies must consider Proposed taxa in biological assessments and "confer" with the Services regarding any action or project "likely to jeopardize the continued existence" of a Proposed species. However, the Services' recommendations are not mandatory on the conferring federal agency.

- *Species designated by the USFWS or NMFS as Candidate species.*

  Candidate species are those for which sufficient information is on file to support a proposal to list the species as Threatened or Endangered. Candidate species are not protected under the FESA. However, some level of protection is given to Candidates by most federal agencies. Further, the Services are required to monitor the status of Candidate taxa "to prevent their extinction while awaiting listing."

- *Species listed by the State of California as Threatened, Endangered, or Fully Protected, or identified as Candidates for state listing.*
- *Species that are not currently listed by the State, but meet the definitions of Rare or Endangered pursuant to §15380 of the State CEQA Guidelines.*

  CDFW generally considers all animals designated as a "State Species of Special Concern" (SSSC) as warranting consideration under CEQA. CDFW has designated certain animals as SSSC because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. However, not all SSSC have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing under the State and/or Federal Endangered Species Acts. Accordingly, the need for protective measures is considered on a case-by-case basis.

Habitat types and communities were categorized and described using vegetation and wildlife habitat relationship mapping information from the California Department of Forestry and Fire Protection's (CAL FIRE) Fire and Resource Assessment Program (FRAP). Additional habitat information was acquired from the Stillwater-Churn Creek Watershed Assessment (North State Resources, 2007) and previous environmental studies conducted within the City of Shasta Lake.

4.4.2 Environmental Setting

REGIONAL SETTING

The City of Shasta Lake is located at the northern end of the Sacramento Valley in Shasta County. This region of California is characterized as a dissected plain located between the Klamath Range and Trinity Mountains to the north and west, and the northernmost extent of the Sierra Nevada foothills and the southernmost extent of the Cascade Range to the east. The plain is highly dissected by streams that drain toward the Sacramento River.

The Planning Area for the 2040 General Plan is part of the Sacramento River ecosystem and is located within the Stillwater-Churn Creek watershed, which encompasses ±77,735 acres. The headwaters of both Stillwater Creek and Churn Creek originate in the hills between Redding and Lake Shasta and flow in a north to south direction, entering the Sacramento River south of Redding. The steep, hilly headwaters constitute a heavy precipitation zone that typically receives over 60 inches of rain annually in non-drought years.

Water Quality Control Plan (Basin Plan)

The CVRWQCB adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, Fifth Edition, that designates beneficial uses, establishes water quality objectives, and identifies implementation programs and policies to achieve those objectives for all waters addressed through the plan.

The Basin Plan does not specifically identify beneficial uses for waterways in the City; however, Section 2.1 of the Basin Plan states that the beneficial uses of any identified water body generally apply to its tributary streams (CVRWQCB, 2019). The Basin Plan identifies beneficial uses for the reach of the Sacramento River between Shasta Dam and the Colusa Basin Drain. All streams in the City are tributary to the Sacramento River; thus, beneficial uses for this reach of the Sacramento River are applicable to streams in the City. For purposes of the biological resources evaluation, beneficial uses of streams in the City include warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm and cold (SPWN); and wildlife habitat (WILD).

LOCAL SETTING

Climatic conditions in the Planning Area are characterized by a Mediterranean climate with cool, wet winters and hot, dry summers. The average annual temperature is about 75 degrees Fahrenheit (˚F). Monthly mean maximum temperatures range from a high of 95˚ F in July to a low of 31˚ F in January. Daily high temperatures commonly exceed 100˚ F during the summer.

Much of the native vegetation and wildlife habitat in the City has been disturbed or fragmented by previous urban development. In recent years, wildfires in and adjacent to the Planning Area have greatly influenced aquatic and terrestrial habitats. Although frequent low-intensity fires can be beneficial because they prevent woody debris and brush from accumulating, help to preserve mature trees, and help to maintain diverse, multi-story forests with a minimal grass understory, high-intensity fires can be devastating to sensitive species and sensitive natural communities due to direct habitat loss, soil disturbance, increased erosion, increased volumes of runoff, and other effects. However, there are large expanses of undisturbed land and aquatic features that provide suitable habitat for a wide range of plant and wildlife species, including special-status species.

Principal Natural Communities

Habitats within the City of Shasta Lake have been categorized in general accordance with the California Wildlife-Habitat Relationships (WHR) System. The WHR habitat classification was developed by the California Interagency Wildlife Task Force Group to recognize and logically categorize major vegetative complexes at a scale sufficient to predict wildlife-habitat relationships. Although the habitat types are relatively broad, additional detail is presented in the following discussions, particularly with respect to unique plant communities.

The two principal WHR habitat types present within the City are blue oak-gray pine, and urban. In addition, smaller amounts of mixed chaparral, valley foothill riparian, valley oak woodland, annual grassland, pasture, fresh emergent wetland, lacustrine (pond and lake) and riverine habitats are present.

Generalized WHR mapping is shown in **Figure 4.4-1**. The Hardwood Woodland category encompasses most of the blue oak – gray pine habitat type. Other expressions of this habitat type are mapped under the Conifer and Hardwood Forest categories. The Hardwood Forest category also includes valley oak woodland habitat.

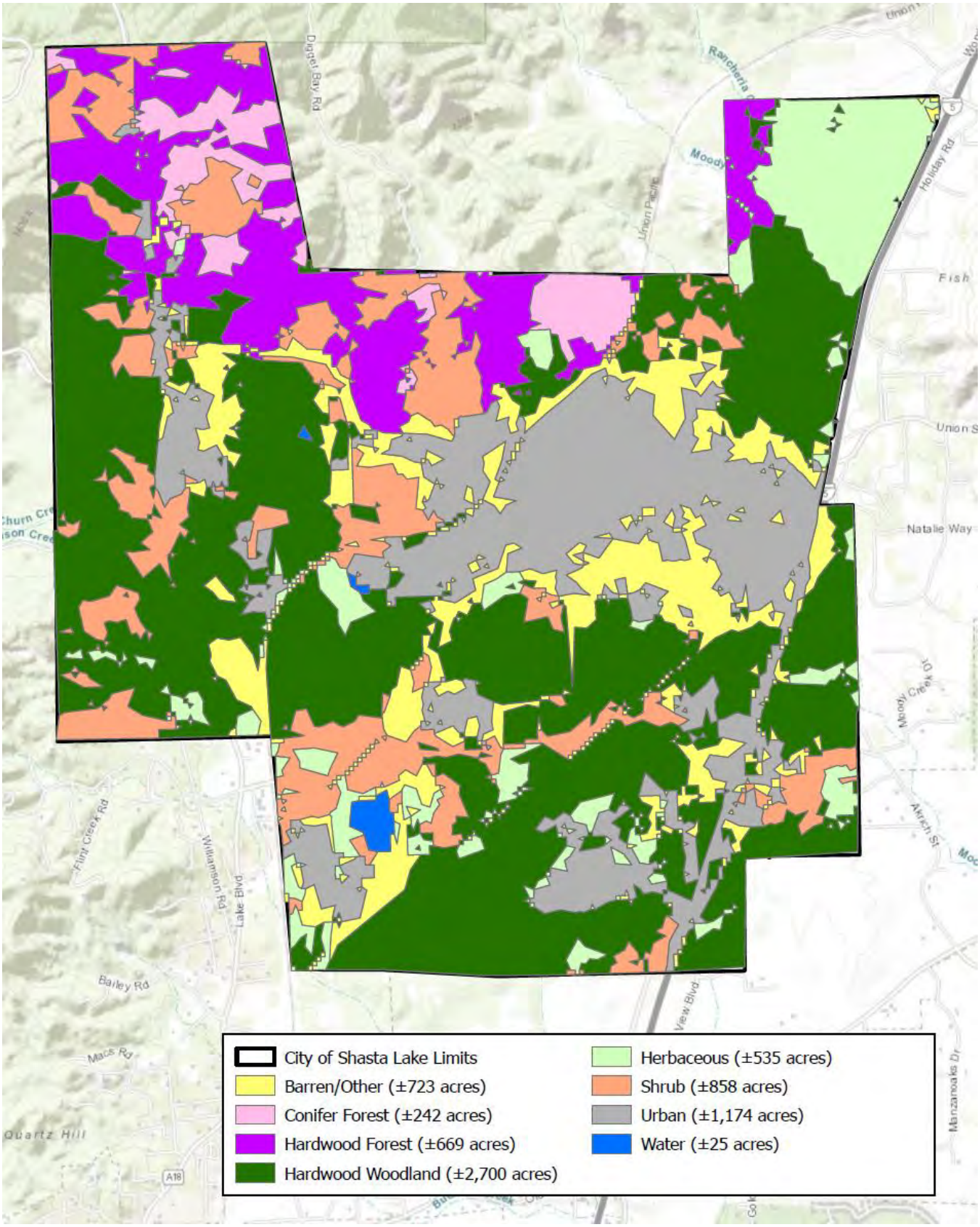


Figure 4.4-1
Vegetation – Wildlife Habitat Relationship Categories

The Shrub category includes the mixed chaparral habitat type. The Herbaceous category includes both annual grassland and pasture habitats. The Water category includes lacustrine habitats. The remaining habitat types (riverine, valley foothill riparian, and freshwater emergent) generally occur as inclusions in other general map categories.

Blue Oak-Gray Pine. This habitat type is diverse in both species composition and structure. Blue oak and gray pine generally comprise the overstory, with blue oak usually the most abundant. Stands dominated by gray pine tend to lose their blue oaks, which are intolerant of shade. Interior live oak is sometimes a dominant species, particularly in rocky areas and on north-facing slopes at higher elevations. The shrub component is typically composed of several species that tend to be clumped, with interspersed patches of annual grassland. The habitat seldom forms a continuous cover over large areas; it usually is a major element of a mosaic including annual grassland, chaparral, and strips of riparian forest. The blue oak-gray pine habitat generally rings the foothills of the Central Valley, between 500 and 3,000 feet in elevation.

In the City of Shasta Lake, the diversity of this habitat type is well displayed. In the southeastern portion of the City, the habitat is dominated by blue oaks, with an occasional gray pine towering above the open oak canopy. The shrub layer, where present, consists of clumps of white-leaf manzanita or buckbrush, as well as scattered poison oak. An annual grassland understory is present throughout, except in dense clumps of shrubs.

Throughout much of the City, the blue oak-gray pine habitat is characterized by a mix of blue oaks, gray pine, interior live oak, and black oak with moderate canopy closure. A very dense and diverse shrub layer is typically present, featuring species such as toyon, snowdrop, white-leaf manzanita, poison oak, California buckeye, hoary coffeeberry, and other species. The herbaceous layer is virtually nonexistent under the dense woody canopy; where present in openings, it is characterized by sweet vernal grass, soft chess, red brome, western buttercup, Hartweg's odontostomum, lupines, clovers, and other grasses and forbs.

In other areas of the City, blue oak forms only a minor component of the tree layer. These areas are characterized by a mix of ponderosa pine, black oak, gray pine, interior live oak, and blue oak with moderate to dense canopy closure; a moderately dense shrub layer of white-leaf manzanita, toyon, buckbrush, redbud, and others; and a poorly developed herbaceous layer. This "ponderosa pine phase" is found primarily on the west side of the City.

Blue oak-gray pine woodlands provide breeding habitats for a large variety of wildlife species, although no species is totally dependent upon them for breeding, feeding, or cover. Most of the species that use this habitat type for breeding are the cavity-nesting birds, such as the acorn woodpecker, Lewis' woodpecker, tree swallow, and screech owl. These species frequently use the subdominant live oaks for nest sites. Mammals commonly found in the blue oak-gray pine habitat include deer mouse, gray fox, and coyotes.

Urban. Urban habitat is highly variable, ranging from tree groves in parks to heavily maintained expanses of lawn to unmaintained weedy lots. Species composition in urban habitats varies with planting design and climate. Although individual units of urban habitat often have very low diversity, the juxtaposition of urban vegetation types within the urban areas may produce a rich mosaic with considerable edge areas.

Within the City of Shasta Lake, species richness and diversity are extremely low in the city center, which is very sparsely vegetated. Lawn-dominated habitats tend to be found in the newer subdivisions, where area-wide grading removed most of the native vegetative cover. Many of the older residential areas and those with larger lot sizes tend to follow the dominant native vegetation type of the area, such as blue oak-gray pine woodland. Overall, the tree-dominated type is the most abundant of the urban habitats.

No wildlife species are dependent on urban habitat for reproduction, feeding, or cover, though many species do avail themselves of the comparatively limited opportunities to do so. Some species have adapted to urban development and are almost synonymous with it. These species include American robin, common crow, raven, rock dove, and several species of smaller perching birds (sparrows, wrens, and starlings).

Mixed Chaparral. Mixed chaparral is a structurally uniform brushland type dominated by shrubs with thick, stiff, evergreen leaves. Wildfires play an important role in regenerating the community. Shrub height and crown cover vary considerably, depending on when the last fire occurred and other factors. At maturity, mixed chaparral is typically a dense, nearly impenetrable thicket with greater than 80 percent shrub cover. Much dead material accumulates in stands that have not burned in decades. Mixed chaparral generally occurs below 5,000 feet in elevation on steep slopes and ridges with thin soils. It can be found in most of California, except in the desert regions, east of the Sierra Nevada, and the floor of the Central Valley.

In the City of Shasta Lake, mixed chaparral is best developed in the northwestern portion of the City where it occurs as large expanses covering steep hillsides. Shrub cover is greater than 70 percent and total cover approaches 100 percent. The dominant shrub is white-leaf manzanita. Other shrubs present include toyon and redbud. The tree layer is very open, and includes species such as gray pine, knobcone pine, interior live oak, canyon live oak, blue oak and California bay. The herbaceous layer is present only in openings, and consists of species typical of annual grassland habitat.

No wildlife species are totally dependent on, or restricted to mixed chaparral habitats. Wildlife management considerations are usually limited to fire management treatments. Some species of ground-nesting and ground-dwelling birds that commonly use this habitat include the California quail, Bewick's wren, and the chipping sparrow. Mammals that use this habitat include the California vole, deer mouse and black-tailed jackrabbit. Coyotes often forage in mixed chaparral habitat and may establish dens in mixed chaparral if suitable denning sites are available.

Valley Foothill Riparian. This habitat type generally consists of a tall forest with a subcanopy of shorter trees, an understory shrub layer and a significant component of woody vines. Most of the trees are deciduous. The transition to nonriparian vegetation is usually abrupt. Valley foothill riparian may also consist of only a shrub layer. The shrub layer may persist indefinitely or may be a subclimax stage that is later succeeded by the tree stage. Valley foothill riparian habitats can be found in the Central Valley and surrounding foothills as well as along the coast. They are found in valleys bordered by sloping alluvial fans, and are usually associated with low-velocity streams and rivers.

In the City of Shasta Lake, this habitat type can be found in narrow discontinuous fingers along most streams. Seldom does it extend back more than 50 feet from the streambanks. Riparian habitat is reduced or absent along many of the creeks due to development. For example, there are few well-developed riparian zones along the upper reaches of Churn

Creek or its tributaries. Many sites along these creeks appear well suited for habitat restoration.

Both the shrub and tree phases of valley foothill riparian habitat are present in the City, with the shrub type being more common. The shrub phase is dominated by various willows, buttonwillow and Himalayan blackberry; where present, the herbaceous layer includes species such as common monkeyflower, Fendler's meadow-rue, American wintercress, slender rush, and sedges. The tree phase is usually dominated by valley oak, festooned with wild grape. The dense shrubby understory consists of wild rose, Himalayan blackberry, poison oak, pipevine, willows or other species. The herbaceous layer is very sparse, usually consisting of Santa Barbara sedge, curly dock, sticky cinquefoil, panic grass or other grasses and forbs.

Valley foothill riparian habitats provide food, water, migration and dispersal corridors, cover, nesting, and thermal refuge for many wildlife species, some of which are totally dependent on this habitat type for nesting. It has been estimated that at least 50 species of amphibians and reptiles, 55 species of mammals, and 147 species of birds occur in this habitat type. Species such as the tricolored blackbird, winter wren, and tree swallow are totally dependent on the riparian areas for nesting, foraging, and cover. Many mammals use this habitat for foraging, cover, and reproduction, such as the raccoon, the opossum, and the ringtail. Even the mountain lion uses this habitat for foraging and for cover in long-distance movements.

Valley Oak Woodland. This habitat type consists of savanna-like to forest-like stands dominated almost exclusively by valley oak. Denser stands typically grow in valley soils along natural drainages. Tree density decreases on less-fertile soils of drier uplands. Similarly, shrub cover is most dense near the drainages and decreases upslope. Ground cover consists of a well-developed carpet of grasses and forbs.

Although valley oaks can be found along most streams in the City of Shasta Lake, this habitat type is not well developed in the City. It is perhaps best represented on gently undulating lands in the northeast portion of the City. It occurs here as an open stand with an annual grassland understory and virtually no shrub layer. The valley oaks are scattered throughout the lower, wetter sites, with blue oaks present on the drier knolls.

Valley oak woodlands provide food and cover for many species of wildlife. Oaks are an important source of food (acorns and browse) for some birds and mammals. This habitat is one of the most important foraging habitats for overwintering resident raptors, such as the red-shouldered hawk, the red-tailed hawk, the American kestrel, and the merlin. Many of the non-raptor bird species observed using this habitat are those that are more characteristic of the annual grasslands and pasture habitats, due to the openness of the canopy. Common bird species include the California quail, oak titmouse, scrub jay, rufous-sided towhee, bushtit, and acorn woodpecker.

Annual Grassland. This habitat consists of an open grassland composed primarily of annual species. Many of these species also occur as understory in valley oak woodland and open blue oak-gray pine habitats. The annual plant seeds germinate with the onset of the fall rains. Plants grow slowly during the cool winter months and then rapidly during the spring. By summer, most of the plants have set seed and died. Introduced annual grasses are the dominant plant species. Annual grassland habitat occurs mostly on flat plains to gently rolling foothills. This habitat occurs throughout the Central Valley and westward to the

coast. Annual grassland habitat occupies what once was a pristine native bunchgrass grassland.

In the City of Shasta Lake, annual grasslands can be found as relatively small patches interspersed within the oak hardwood habitats. Annual grassland habitat is most common on the east side of the City, where it is the dominant understory in the oak woodland habitats. Special features such as vernal pools and seasonal wetlands are often present in annual grasslands, including those in the northeastern part of the City. Some of the grasslands may be naturally occurring, while others have developed following clearing of the oak hardwood habitats. Dominant grasses include sweet vernal grass, soft chess, slender wild oats and annual ryegrass. Common forbs include western buttercup, filaree, Spanish lotus, lupines, slender cottonweed, and various clovers. An occasional tree may also be present, usually blue oak or valley oak.

A number of wildlife species use annual grasslands for foraging. However, many of these species require special habitat features nearby to support reproduction, such as cliffs, caves, permanent ponds, or woodlands with large trees or snags. Mammals typically found in this habitat include the black-tailed jackrabbit, California ground squirrel, California vole, and coyote. Birds known to use this habitat include the horned lark, and western meadowlark. Annual grassland is also important foraging habitat for the loggerhead shrike, turkey vulture, northern harrier, American kestrel, and prairie falcon.

Fresh emergent wetland. This habitat type is characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation in the wettest sites is usually perennial monocots such as cattails and bulrushes. The drier margins of the wetland support lower-growing annual and perennial herbs. Fresh emergent wetlands may occur in association with terrestrial or aquatic habitats, including streams, ponds, and wet meadows.

This habitat type is very limited within the City of Shasta Lake. It occurs primarily in seasonal ponds or in backwater areas along streams and drainage channels. The seasonal ponds are usually dominated by jointed coyote thistle, water plantain, and popcorn flower. Cattail-dominated wetlands can be found as small pockets along Salt Creek and other streams as well as in the larger ponds that retain water well into the summer.

Fresh emergent wetlands are the most productive wildlife habitat in California. Many species rely on fresh emergent wetlands throughout their life cycles, including numerous species of frogs, toads, salamanders, and aquatic snakes. Several listed species are dependent on this habitat type for some or all portions of their life cycles. Others, such as bald eagle and peregrine falcons, use fresh emergent wetlands for foraging. Migratory aquatic birds, such as the northern pintail, Canada goose, and great white heron, use this habitat for feeding and resting during migration to their breeding grounds. The federally listed greater sandhill crane uses this habitat (and wet meadows as well) for foraging and breeding.

Lacustrine. The lacustrine habitat type includes inland depressions and dammed stream channels containing standing water. Occurrences vary from small ponds less than one hectare to large areas of several square kilometers. Typical lacustrine habitats include the nearby Lake Shasta and ponds (including vernal pools) so shallow that rooted plants grow across the bottom. There are several small ponds scattered throughout the Planning Area, including in the annual grassland and valley oak woodland habitats in the northeast portion of the City. Several species of resident and migratory wildlife use these ponds for feeding and resting.

***Riverine*.** Riverine habitat includes intermittent streams, perennial streams, and rivers. Riverine habitats occur in association with most terrestrial habitats. Montane streams usually have a rocky bed, fast velocity, and high dissolved oxygen content. As the streams flow downward, the volume of water increases, velocity decreases and the bed changes from rocky to muddy. Channelization and dams are the most powerful and disruptive influences on riverine systems.

The major stream system within the City is the Churn Creek drainage, an intermittent to semi-permanent stream that flows primarily during the rainy season. Some portions of Churn Creek are channelized and the riparian vegetation has been removed to provide efficient drainage to the urbanized portions of the City. The Moody Creek drainage in the northeast portion of the Planning Area flows southward to the Stillwater Creek system. Salt Creek, an intermittent stream, flows through eastern areas of the City

Wildlife use of the open water of riverine systems is dependent upon the size and duration of open water. The smaller intermittent streams found within the City can be used by insectivorous birds, such as the oak titmouse or black phoebe, and by the more adaptable mammals, such as the raccoon, ringtail, and opossum. Churn Creek is known to support spawning Chinook salmon on an occasional basis. The late fall run is most likely to use this reach of the creek. CDFW staff has stated that neither the listed winter run Chinook salmon or the spring run, which is considered for listing, are likely to be present. Rainbow trout may occasionally migrate up from the Sacramento River, where they are resident fish. Other species likely to be found in the City's streams include stoneflies, caddisflies, midges, and many other invertebrates.

The City has developed a Natural Resources Overlay Zone map (see **Figure 4.4-2**) that provides for the protection of significant wildlife habitat resources. These areas are important for maintaining natural local ecosystems, such as floodplains, riparian areas, and sensitive habitats. Vegetation management within the Natural Resource Overlay Zone is also important for fire fuel reduction, fire safety protection, and invasive species management, which are addressed in detail in the General Plan Safety, Conservation, and Open Space Elements.

Figure 4.4-2 identifies wetlands and other waters identified in the National Wetlands Inventory (USFWS, n.d.); these areas were mapped by the USFWS based on review of aerial imagery from 1983, and mapped features have undoubtedly changed during the past ±40 years. Further, many aquatic resources evaluations have been completed in the City for individual projects, and additional wetlands and other jurisdictional waters are known to be present in the City. Therefore, the wetland information shown in **Figure 4.4-2** should not be used as a substitute for field evaluations for future projects.

The Natural Resource overlay areas do not restrict all property development. Rather, they indicate the presence of federal development regulations set forth by FEMA and USFWS to protect property owners from flood damage and to protect natural habitats, and they indicate the presence of applicable City limitations to development in natural resource areas.

Shasta Lake has building codes and development regulations in place to reduce flood risk for new construction, as well as policies that provide for mitigation to existing structures. The Development Services Director, as the floodplain administrator for the City, determines if new construction must meet certain flood zone construction criteria and performs Flood Zone Determinations. The City also has extensive design standards for development on steeper slopes.

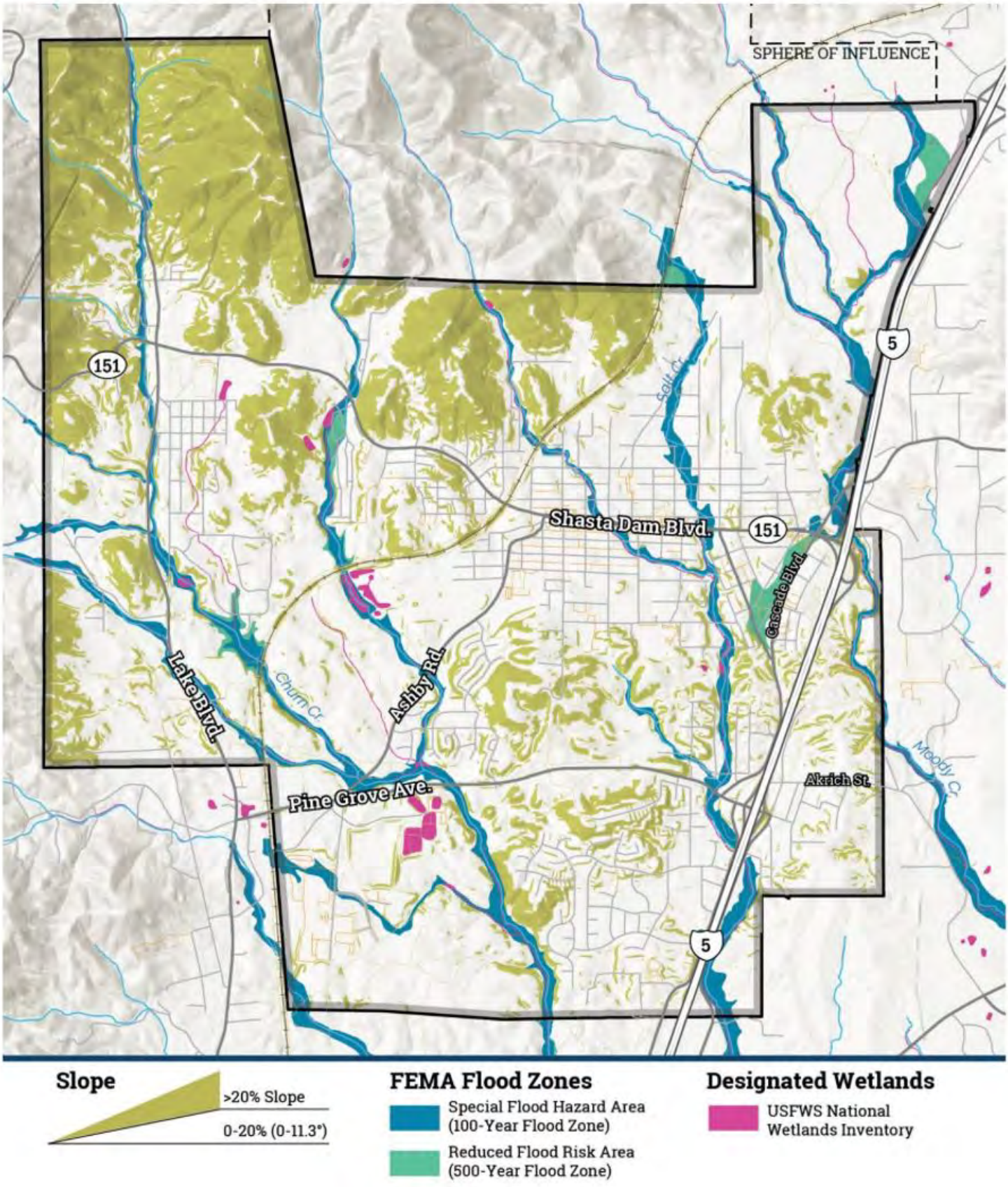


Figure 4.4-2
Natural Resources Overlay Zone

Ideally, land within a Natural Resources overlay zone should be left natural. However, many of the natural resources in Shasta Lake have been altered by yards, driveways, and even portions of buildings. These altered resources still provide important functions, like flood storage and wildlife habitat. Additional impacts to natural resources would be minimized in these areas in the future.

The specific limits of development on any property within this overlay must be determined by a qualified, licensed professional. In addition, these areas could provide protection to property from slope failure and erosion, therefore reducing siltation in local tributaries from excessive grading. Management of these areas in high-fire hazard zones, or in areas near planned development, will include management for both resource values and fire fuels.

Non-Native Noxious Weeds and Invasive Species

Invasive plant species identified by the California Department of Food and Agriculture's (CDFA) Noxious Weed Species List and/or the California invasive Plant Council's (Cal-IPC's) Invasive Plant Inventory list are prevalent throughout Shasta County. Invasive plants affect native plants and habitats by altering nutrient cycles, fire frequency and/or intensity, and hydrologic cycles; by creating changes in sediment deposition and erosion; by dominating habitats and displacing native species; by hybridizing with native species; and by promoting non-native animal species (North State Resources, 2007).

The likelihood that additional invasive plants/noxious weeds will be introduced and/or spread in the City increases with development, particularly in areas adjacent to watercourses. In addition, ponds and other water features used in landscaping, and retention basins used to control stormwater runoff are potential sources of invasive aquatic species.

Non-native invasive plants that are known to occur in the Stillwater-Churn Creek watershed include, but are not limited to giant reed (*Arundo donax*), yellow star-thistle, pampas grass, scotch broom, Himalayan blackberry, medusa-head grass, tree-of-heaven, bull thistle, and tall fescue.

Commonly occurring non-native wildlife species include the bullfrog, wild turkey, European starling, brown-headed cowbird, house sparrow, and opossum. Non-native wildlife species are known to have detrimental impacts on native species and habitats. For example, bullfrogs are known to directly out-compete many native aquatic species, while European starlings are known to out-compete native bird species for critical nest cavities (North State Resources, 2007). Most non-native wildlife species occurrences have been established for quite some time; however, the continued encroachment by development into wildland settings furthers the spread of many of these species, particularly on a local level (North State Resources, 2007).

4.4.3 Regulatory Framework

FEDERAL

Clean Water Act (CWA)

Section 404

Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) jointly with the U.S. Environmental Protection Agency (USEPA) regulates the discharge of dredged or fill material into wetlands and other waters of the U.S. The USACE requires that a permit be obtained prior to the placement of structures within, over, or under navigable waters as well as prior to discharging dredged or fill material into waters of the U.S. Mitigation for the loss of waters is typically required as a condition of permit approval.

Nationwide Permits
Projects that will result in only minimal adverse effects to USACE jurisdictional waters typically qualify for coverage under a Nationwide Permit (NWP). NWPs are general permits issued on a nationwide basis to streamline the authorization of activities that result in minimal individual and cumulative adverse effects on the aquatic environment. The NWPs must be reissued every five years following a full interagency and public interest review.

In order to qualify for a NWP, permittees must comply with all of the terms, general conditions, and regional conditions of the NWP, including any requirements for the submittal of a pre-construction notification (PCN). When a PCN is required, a NWP verification letter is issued. The NWP verification may include additional special conditions to minimize individual and cumulative impacts. The verification is generally valid for two years and may be extended.

Individual Permits
If a project does not qualify for a NWP, an Individual Permit is required. Individual permits include Standard Permits, which are generally more complex in nature and involve notification of the public and commenting agencies, and Letters of Permission, a type of permit issued through an abbreviated processing procedure that includes coordination with federal and state fish and wildlife agencies and a public interest evaluation, but without the publishing of an individual public notice. Individual Permits require preparation of an alternatives analysis that evaluates reasonable alternatives to the project that would avoid or reduce impacts to aquatic resources. Individual permits also generally have more stringent mitigation requirements.

Aquatic resource delineations are conducted on a property to identify the type and extent of waters on the site that are subject to federal jurisdiction. Waters may include rivers, streams, lakes, and ponds, as well as special aquatic sites such as wetlands. The delineation is submitted to the USACE with a request for verification. The type of USACE permit required for a project is based in part on the extent of wetlands and other waters of the U.S. that will be affected by the proposed activity.

Section 401

Under Section 401 of the CWA, a project requiring a USACE Section 404 permit is also required to obtain a State Water Quality Certification (or waiver) to ensure that the project will not violate established State water quality standards. In California, when a discharge is proposed to waters outside of federal jurisdiction, the discharge is regulated under the State Porter-Cologne Water Quality Control Act through the issuance of Waste Discharge Requirements (WDRs). The State has a policy of no-net-loss of wetlands and requires mitigation for impacts to wetlands before it issues water quality certifications or WDRs.

Federal Anti-Degradation Policy

The federal Anti-Degradation Policy is part of the CWA (Section 303(d)) and is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that protects designated uses of water bodies (e.g., fish and wildlife, recreation, water supply, etc.). The water quality necessary to support the designated use(s) must be maintained and protected.

National Pollutant Discharge Elimination System (NPDES)

Under Section 402(p) of the CWA, the USEPA established the NPDES to enforce discharge standards for both point-source and non-point-source pollution. Dischargers can apply for individual discharge permits, or apply for coverage under the General Permits that cover certain qualified dischargers. Point-source discharges include municipal and industrial wastewater, stormwater runoff, combined sewer overflows, sanitary sewer overflows, and municipal separate

storm sewer systems. NPDES permits impose limits on discharges based on minimum performance standards or the quality of the receiving water, whichever type is more stringent in a given situation.

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 requires that all federal agencies ensure that any action they authorize, fund, or carry out will not likely jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of critical habitat. Projects that would result in "take" of any federally listed species are required to obtain authorization from NMFS and/or USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project.

Federal Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act (MBTA) of 1918, as amended, migratory bird species listed in CFR Title 50, §10.13, including their nests and eggs, are protected from injury or death, and any project-related disturbances. The MBTA applies to over 1,000 bird species, including geese, ducks, shorebirds, raptors, and songbirds, some of which were near extinction before MBTA protections were put in place in 1918. The MBTA provides protections for nearly all native bird species in the U.S., including non-migratory birds.

Fish and Wildlife Conservation Act

Under the Fish and Wildlife Conservation Act of 1980, as amended, the USFWS maintains lists of migratory and non-migratory birds that, without additional conservation action, are likely to become candidates for listing under the FESA. These species are known as Birds of Conservation Concern and represent the highest conservation priorities.

Bald and Golden Eagle Protection Act

This Act provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds and their occupied and unoccupied nests.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), also known as the Sustainable Fisheries Act, requires the identification of Essential Fish Habitat (EFH) for federally managed fishery species and implementation of appropriate measures to conserve and enhance EFH that could be affected by project implementation. All federal agencies must consult with NMFS on projects authorized, funded, or undertaken by that agency that may adversely affect EFH for species managed under the MSFCMA.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code §13000 *et seq.*) is the principal law governing water quality in California. It establishes a comprehensive program to protect water quality and the beneficial uses of waters of the State. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater, and to both point and non-point sources of pollution. The Act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or

otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The RWQCBs enforce waste discharge requirements (WDRs) identified in the Report.

State Anti-Degradation Policy

In 1968, as required under the Federal Anti-Degradation Policy, the SWRCB adopted an Anti-Degradation Policy, formally known as the *Statement of Policy with Respect to Maintaining High Quality Waters in California* (State Water Board Resolution No. 68-16). Under the Anti-Degradation Policy, any actions that can adversely affect water quality in surface or ground waters must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial use of the water, and not result in water quality less than that prescribed in water quality plans and policies.

Water Quality Control Plan (Basin Plans)

The CVRWQCB adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, Fifth Edition, in May 2018, as well as subsequent amendments to the Plan. The Basin Plan identifies beneficial uses to be protected for both surface water and groundwater and establishes water quality criteria designed to protect those uses. WDRs were adopted in order to attain the beneficial uses identified in the Basin Plan. Water quality affects municipal, industrial, agricultural, and in-stream water uses as well as the health of terrestrial habitats. Because changes in water quality can indicate changes in other watershed processes or components, measurements of water quality are a favored, non-biological indicator of watershed condition.

State Water Resources Control Board (SWRCB)/CVRWQCB

Wetland Riparian Area Protection Policy and Water Quality Certification Program

In 2019, the State Water Resources Control Board (SWRCB) adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures) (SWRCB, 2021a, 2021b). The Procedures consist of four major elements:

1. A wetland definition;
2. A framework for determining if a wetland feature is a water of the State;
3. Wetland delineation procedures; and
4. Procedures for the submittal, review, and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities.

The Water Quality Certification Program regulates the removal or placement of materials in wetlands and waterways in the State. The Program protects all waters, but has special responsibility for wetlands, riparian areas, and headwaters because these waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs.

The State's Water Quality Certification is issued pursuant to Section 401 of the Clean Water Act to certify that the project approved by the USACE Section 404 permit will also meet State water quality requirements. The Program implements the State's no net loss policy for wetlands to ensure no overall net loss and long-term gain in the quantity, quality, and permanence of wetland acreage and values. Mitigation for the loss of wetlands could include creating new wetlands and/or preserving/restoring existing wetlands and enhancing their functionality.

National Pollutant Discharge Elimination System (NPDES) Program

Pursuant to the federal Clean Water Act, responsibility for enforcing the NPDES program has been delegated to the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB). The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. In California, NPDES permits are also referred to as waste discharge requirements (WDRs). Point sources are discrete conveyances such as pipes or man-made ditches. Typical activities that could affect water quality and trigger the requirement for an NPDES permit include, but are not limited to:

- Discharges of process wastewater not discharging to a sewer (e.g., factories, cooling water, etc.)
- Waste containments (landfills, waste ponds, etc.)
- Construction sites
- Discharges of pumped groundwater and cleanup activities (underground tank cleanup, dewatering activities, spills, etc.)
- Material handling areas draining to storm drains
- Sewage treatment facilities

The SWRCB and CVRWQCB have several General Permits that apply to specific activities. In addition, individual NPDES permits are issued to facilities not covered under a General Permit. For example, the City's WWTP is covered under NPDES CA0079511 (Order R5-2020-0058), which includes WDRs specific to the WWTP (CVRWQCB, 2020).

Below are descriptions of some common NPDES General Permits.

Statewide NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES No. CAS000002)

This NPDES Permit is currently under review by the SWRCB, and it is anticipated that the revised permit will be reissued in July 2022. This permit is also known as the Construction General Permit and includes WDRs for discharges of stormwater runoff associated with construction and land disturbance activities that disturb one acre or more of total land area. The permit also applies to construction activity that results in less than one acre of land disturbance if the construction activity is part of a larger common plan of development or the sale of one or more acres of disturbed land surface.

The permitting process requires the development and implementation of an effective Storm Water Pollution Prevention Plan (SWPPP). Coverage under the Construction General Permit is obtained by submitting a Notice of Intent (NOI) to the SWRCB and preparing the SWPPP prior to the beginning of construction. The SWPPP must include BMPs to reduce pollutants and any more stringent controls necessary to meet water quality standards. Dischargers must also comply with water quality objectives as defined in the applicable Basin Plan. If Basin Plan objectives are exceeded, corrective measures are required.

General WDRs/NPDES Permit for Limited Threat Discharges to Surface Waters (Order R5-2022-0006/NPDES Permit CAG995002)

Order R5-2022-0006, adopted by the CVRWQCB on February 17, 2022, applies to individuals, public agencies, private businesses, and other legal entities that discharge clean or relatively pollutant-free wastewaters that pose little or no threat to water quality, as well

as discharges that may contain toxic organic constituents, volatile organic compounds, petroleum fuel pollution constituents, pesticides, inorganic constituents, chlorine, and/or other chemical constituents that require treatment prior to discharge.

Examples of activities covered under this General Order include construction dewatering, filter backwash water, pump/well testing, and well development. Activities that may be covered with treatment prior to discharging include cleanup site wastewater and equipment decontamination that do not meet effluent limitations without treatment, and groundwater cleanup of petroleum fuel pollution.

Dischargers obtain coverage under this permit by submitting a Notice of Intent (NOI) to the CVRWQCB, along with a detailed description of the project, discharge type, and a description of where treatment is required to reduce pollutants to levels that will meet effluent limitations. This permit requires Best Management Practices (BMPs) to be developed and implemented to prevent the generation and potential release of pollutants from the discharge facility to waters of the State and to ensure compliance with the effluent limitations identified in the Order.

Statewide General WDRs for Sanitary Sewer Systems (Order No. 2006-0003-DWQ), and Amended Monitoring and Reporting Program (WQ 2013-0058-EXEC)

SWRCB Order No. 2006-0003-DWQ requires that all public entities that own or operate sanitary sewer systems greater than one mile in length prepare a Sewer System Management Plan (SSMP). The SSMP must include a spill response plan that establishes standard procedures for immediate response to a sanitary sewer overflow (SSO), defined as any overflow, spill, release, discharge, or diversion of treated or partially treated wastewater from a sanitary sewer system. The Order requires implementation of a Monitoring and Reporting Program. On August 6, 2013, the SWRCB amended the Monitoring and Reporting Program requirements by issuing Order WQ 2013-0058-EXEC.

WDRs for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4) (Water Quality Order 2013-0001-DWQ, as amended).

On April 30, 2003, the SWRCB adopted *WDRs for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Phase II MS4s).* A municipal separate storm sewer is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains. The Phase II MS4 General Order is intended to minimize adverse impacts associated with stormwater runoff.

California Endangered Species Act

Under the California Endangered Species Act (CESA), the Fish and Game Commission is responsible for listing and delisting threatened and endangered species. The California Department of Fish and Wildlife (CDFW) maintains documentation and occurrence records on listed species, including candidate species for threatened or endangered status, fully protected species, and species of special concern (SSC). SSC are vulnerable to extinction but are not legally protected under CESA; however, impacts to SSC are generally considered significant under CEQA.

CESA prohibits the take of State-listed threatened and endangered species, but CDFW has the authority to issue incidental take permits under special conditions when impacts are minimized and mitigated. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take. One exception allows the collection of fully protected species for scientific research.

California Fish and Game Code §1600-1616 (Lake or Streambed Alteration)

California Fish and Game Code §1600 *et seq.*, requires that a project proponent enter into a Lake or Streambed Alteration Agreement (LSAA) with CDFW prior to any work that would divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; and/or deposit or dispose of material into any river, stream, or lake. "Any river, stream, or lake" includes those that are dry for periods of time as well as those that flow year round. The LSAA includes measures that minimize/avoid potentially significant adverse impacts on fish and wildlife resources (i.e., riparian habitat and waters of the State).

California Fish and Game Code §3503 and 3503.5 (Nesting Bird Protections)

These sections of the Code provide regulatory protection to resident and migratory birds and all birds of prey within the State and make it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Code.

California Fish and Game Code §1900-1913 (Native Plant Protection Act)

The Native Plant Protection Act (NPPA) includes measures to preserve, protect, and enhance native plants that are listed as rare or endangered under the CESA. The NPPA states that no person shall take, possess, sell, or import into the state, any rare or endangered native plant, except in compliance with provisions of the Act.

CDFW developed a ranking system that categorizes the rarity of native plants in California using rare plant ranks (RPR). Rank 1B plants are rare, threatened, or endangered in California and elsewhere. Rank 2 plants are rare, threatened, or endangered in California, but are more common elsewhere. Rank 3 plants are those about which more information is needed to assign them to one of the other ranks or to reject them (a review list). Rank 4 plants have limited distribution (a watch list). The ranking system also includes a threat rank as follows: 0.1 indicates a species that is seriously threatened in California (over 80 percent of occurrences threatened); 0.2 indicates a species that is moderately threatened in California (20 to 80 percent occurrences threatened); and 0.3 indicates a species that is not very threatened in California (less than 20 percent of occurrences threatened).

California Environmental Quality Act (CEQA)

§15380 of the CEQA Guidelines states that even if a plant or animal is not listed as a special-status species, the species is presumed to be endangered or rare if the species can be shown to meet the following criteria:

> ***Endangered***. A plant or animal is considered endangered when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or
>
> ***Rare***. A plant or animal is considered rare when either:
>
> 1. Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or
> 2. The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the FESA.

LOCAL

City of Shasta Lake Municipal Code (SLMC)

The SLMC includes regulations that are intended to avoid/minimize potential direct and indirect impacts on biological resources that could result from new development. These regulations include, but are not limited to:

SLMC Chapter 12.36 (Tree Conservation)
SLMC Chapter 12.36 states that trees are recognized as important to the general well-being of the citizens of the City for their shade, cooling, noise and wind reduction, soil stabilization, greenhouse gas reduction, protection of surface water quality, aesthetic value, air filtering and release of oxygen, benefits to wildlife and the area's ecology, and their economic enhancement to property.

The intent of SLMC Chapter 12.36 is to promote the conservation of a healthy tree population and to maintain and enhance tree canopy throughout the community where feasible and appropriate. This is to be accomplished through:

1. The preservation of existing native trees;
2. The replacement or transplanting of trees that are removed;
3. The phasing of development to reduce impacts when tree removal is required; and
4. The planting of new trees in locations, number, and type that is compatible with local conditions.

For any project that involves land disturbance of more than 20,000 square feet, a pre-development review is required to ensure that tree conservation is considered early in the planning process with respect to placement of buildings, roads, driveways, parking areas, utilities, and other site improvements (SLMC §12.36.062).

The following measures shall be considered when preparing development plans:

1. Stands of trees must be preserved where feasible, rather than individual trees, as they provide better habitat and have a greater likelihood of survival than individual trees surrounded by development.
2. Where possible, stands of trees shall be left in place to connect with other stands of trees on adjacent properties, rather than separating natural treed areas within developed areas.
3. For residential subdivisions, the development shall consider potential neighborhood park areas and subdivision entrance areas in designating set-aside areas for the purpose of preserving trees throughout the project boundaries.
4. The development shall be designed such that suitable land will be identified in an open space area that will:
    a. Retain as many protected trees as possible while providing for tree growth consistent with healthy forest practices; or
    b. Be particularly suitable for the planting and/or natural regeneration of trees.

The set-aside area shall be in addition to any area classified as “open space” under the policies of the Shasta Lake General Plan.

When a protected tree is removed from a property to facilitate development, replacement trees or other mitigation shall be provided to compensate for the loss. One or a combination of the following measures must be implemented:

1. Three fifteen-gallon trees shall be planted for each protected tree removed that exceeds ten inches DBH. The preservation of each native heritage tree (such as mature valley oaks) shall count as three replacement trees.

2. Conservation easements or similar legal restrictions shall be recorded to ensure the permanent protection of land for tree preservation. This is in addition to land designated as Open Space.

3. When it is determined that it is not possible or desirable (e.g., to minimize potential fire hazards) for replacement trees to be planted on the project site, the City may approve payment of an in-lieu tree mitigation fee. The in-lieu fee would be based on the cost of purchasing, planting, irrigating, and maintaining the required number of replacement trees, or for use in protecting and maintaining existing trees anywhere within the City for the benefit of residents and visitors.

4. Other measures determined by the approving body to be consistent with the purpose and goals of the Tree Conservation Code.

SLMC Chapter 13.36 (Storm Water Quality Management)
SLMC Chapter 13.36 was adopted to protect and enhance the water quality of watercourses and water bodies and ensure compliance with the Federal CWA and Porter-Cologne Water Quality Control Act. SLMC Chapter 13.36 provides the City with the legal authority to fully implement and enforce provisions set under NPDES General Permit CAS000004, *Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4)* (Water Quality Order 2013-0001-DWQ, as amended).

SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development)
SLMC Chapter 15.08, §15.08.210(A)(8), requires that all construction projects involving site grading shall include erosion control plans prepared by a registered civil engineer, qualified SWPPP developer (QSD), or other licensed or certified stormwater professional. Temporary and permanent erosion control devices, designed and constructed in accordance with the California Stormwater Quality Association (CASQA) BMPs and the City's Construction Standards, shall be provided to control erosion. The applicant must provide sufficient equipment and qualified personnel to conduct emergency erosion control as identified in the SWPPP and/or erosion control plan.

Pyrethroid Management Plan
As required by CVRWQCB's Pyrethroid Pesticides Control Program, PACE Engineering, Inc., prepared a Pyrethroid Management Plan for the City in August 2021 (PACE, 2021). The purpose of the Plan is to control the discharge of pyrethroid pesticides throughout the Sacramento and San Joaquin River Basins to protect waters with aquatic life beneficial uses. Under the Management Plan, the City will provide information to the public about the harmful effects of pyrethroid pesticides and will implement an Integrated Pest Management Plan (IPM) that includes measures to promote the use of environmentally sensitive pest management strategies in a manner that protects human health and the environment.

4.4.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to the protection of biological resources.

GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU-3.8	Require that new industrial development be designed to avoid adverse impacts to adjacent non-industrial uses, including noise, dust, vibration, water quality, air quality, agricultural resources, and biological resources.
	LU-3.10	Work to protect important natural resource areas and the scenic beauty of mountains and rolling hills around the City as the community develops. For new development located along existing creeks and streams, incorporate bank naturalizing approaches for channeled sections as a means of creek and stream restoration where appropriate.
IMPLEMENTATION ACTIONS	LU-3.5	Evaluate the zoning ordinance for possible updates to the Habitat Protection and Open Space districts to ensure development is consistent with natural resource protection goals in the General Plan.
	LU-3.6	Develop specific or area plans, as needed, that cover services and facilities necessary to serve an identified area based on ultimate development potential. Services and facilities include, but are not limited to, roads, water, sewer, storm drainage, power, law enforcement, fire protection, schools, libraries, parks, trees and landscaping in public spaces, and trail systems. These plans should include a schedule for the phasing of public improvements and anticipated development, and timing of preliminary grading and tree removal and replacement.
GOAL CON-1	**Protect and conserve water resources and improve and maintain water quality.**	
POLICIES	CON-1.1	Protect and improve the quality of surface water.
	CON-1.2	Protect existing wetlands to the greatest extent possible, consistent with achieving the vision expressed in the General Plan.
	CON-1.3	Maintain and improve current conveyance capacity for both natural and constructed drainages.
	CON-1.4	Minimize the alteration of creek courses and bottoms.
	CON-1.5	Integrate stormwater management techniques and low impact development best practices to minimize runoff. Encourage water conservation efforts by residents, businesses, and industry.
IMPLEMENTATION ACTION	CON-1.1	Continue enforcement of illegal discharges into Stillwater and Churn Creeks.
GOAL CON-2	**Continue regional relationships that ensure a flexible and sustainable water supply.**	

POLICIES	CON-2.1	Continue to work with regional water authorities, including the Central Valley Regional Water Quality Control Board and Shasta County Environmental Health Department, to implement land use controls for the protection of water quality.
	CON-2.2	Coordinate with regional water authorities to ensure that applicable requirements are included in new development projects and City ordinances.
	CON-2.3	Work with regional stakeholders to protect and restore watershed viability and protect the health of wildlife and natural habitat in an integrated watershed management approach that aligns with regional, state, and federal policies that may apply.
IMPLEMENTATION ACTION	CON-2.1	Coordinate with the California Division of Water Resources and regional water agencies to implement educational programs regarding the interaction of groundwater, surface water, stormwater, and other surface flows, and the effects of contaminants in surface flows, consistent with MS4 permit requirements.
GOAL CON-3	**Conserve and manage significant fish, wildlife, and vegetation resources, enhance the area's natural beauty, and provide residents with a healthy environment.**	
POLICIES	CON-3.1	Establish or evaluate existing regulations and development standards to conserve and manage natural resources, including provisions for clustering of development, access to open space, drainage corridors, hillside slopes, waiver of minimum lot width requirements, narrower local street widths, and other techniques to enhance protection of sensitive habitats and resources.
	CON-3.2	Design or condition new development to avoid significant adverse impacts on rare, threatened, or endangered plant or animal species, as officially designated by federal and state resource agencies. Work with the California Department of Fish and Wildlife to ensure the preservation of resident and anadromous fish.
	CON-3.3	Use riparian and wetland buffers (non-development setbacks) to preserve existing riparian vegetation through the environmental review process and require minimum setbacks. Specific setbacks and widths should be determined on a case-by-case basis with input from resource agencies, including the California Department of Fish and Wildlife.
	CON-3.4	Continue protecting and managing urban forests in the City to enhance beautification and conservation efforts to the greatest extent possible, in particular by: • Maintaining existing City trees with regular scheduled service. • Planting new trees to replace ones that were removed and extending tree canopies where possible. • Requiring tree plantings in new developments on streets and in parking areas. • Working with commercial parking lot owners to enhance tree canopies. • Using volunteer groups and property owners to enhance tree canopies.

	CON-3.5	Encourage the use of locally-propagated native plants and trees in public spaces.
	CON-3.7	Control the spread of invasive plant species and work with private landowners and landscapers to support these efforts.
IMPLEMENTATION ACTIONS	CON-3.1	Ensure that all new development restricts the use of fencing, completes a creek restoration plan in locations essential for wildlife movement, and locates structures in a manner that minimizes interference with wildlife movement.
	CON-3.3	To the greatest extent possible, ensure that medians include native plants and trees with the least demand for irrigation and maintenance.
	CON-3.4	Continue and evaluate programs and incentives to encourage the use of locally-propagated plants and trees and discourage the use of invasive, non-native species in home and commercial landscaping.
	CON-3.5	Work with stakeholders to identify priority conservation areas in the City and establish appropriate protection measures for these resources and habitats.
GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICIES	CON-4.2	Recognize that conservation goals and development practices may, on occasion, conflict and will need to be resolved according to policies specified in the General Plan.
	CON-4.4	Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally-sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.
	CON-4.6	Define transition zones between development areas and open space or conservation areas to provide for further conservation of habitat and wildlife areas.
IMPLEMENTATION ACTIONS	CON-4.5	Foster and encourage landowner education on the benefits and feasibility of establishing conservation easements within subdivisions and on individual properties.
	CON-4.6	Protect and preserve natural resource areas by amending the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting areas of natural resource value.
	CON-4.7	Use landscaping methods and setbacks to create transition zones between development areas and open space areas.
	CON-4.8	Locate new development on sites that minimize the need for grading and removal of native plants. Ensure no significant change in the general configuration of topography occurs where grading and earthwork are necessary.

GOAL OS-1	**Conserve and manage open space and recreation resources for use and enjoyment by City residents and visitors in a manner that balances public access, resource protection, and private property rights. Ensure future development incorporates open space and recreation resources as appropriate.**	
POLICIES	OS-1.1	Seek to protect riparian habitat along significant river and creek corridors. The following measures are identified to provide the riparian habitat protection: • Regulation of vegetation removal • Design of grading and road construction • Establishment of a development set-back • Siting of structures, including clustering.
	OS-1.4	Preserve open space along creeks and hillsides to maintain biological, scenic, and recreational resources in future development.
	OS-1.6	Safeguard open space resources when faced with the potential for pressure to mine areas near the City boundary.
IMPLEMENTATION ACTION	OS-1.4	Seek to provide five acres of parks to meet neighborhood, community, and habitat protection needs per 1,000 new residents, based on commonly used state or national standards. Strive to maintain a neighborhood park standard of at least 0.9 acres per 1,000 new residents.
GOAL OS-2	**Establish, improve, and maintain sufficient facilities and natural and man-made greenbelt areas along existing creeks, floodplains, natural open space areas, certain roadways, and bicycle and pedestrian trail systems.**	
IMPLEMENTATION ACTIONS	OS-2.4	Evaluate and implement, where feasible, linking natural habitat areas with interconnecting open space corridors, particularly those which provide animals and wildlife with access to drinking water and enhance biological diversity of the area.
	OS-2.5	Evaluate the establishment of a conservation trust for the acquisition and maintenance of natural habitat areas to ensure permanent protection. Evaluate using grants, rather than tax revenues, to achieve this.
	OS-2.6	Support Shasta County Mosquito Abatement District and state and federal wetlands protection policies in acceptable disease vector control measures and ensure they are followed in the preservation of resources such as wetlands.
GOAL OS-3	**Ensure that open space planning and development practices are consistent with hazard and flood mitigation efforts.**	
POLICY	OS-3.1	Use a comprehensive approach that includes implementation of hazard mitigation plan development policies, as well as open space design strategies such as encouraging natural drainage areas and wetlands.
GOAL HS-4	**Minimize the risk to life and property from flood.**	
POLICIES	HS-4.3	Support project level flood control measures that also further the goals of recreation, resource conservation (including streamside vegetation and habitat modification when necessary), and the preservation of the scenic values of water resources

	HS-4.4	Design or approve flood control measures which avoid, to the extent feasible, the alteration of creeks, wetlands, and riparian buffer areas.
IMPLEMENTATION ACTION	HS-4.2	In designing flood control facilities, consider the need to protect anadromous fisheries and allow for adequate water passage to ensure the survival of downstream riparian ecosystems.
GOAL HS-5	**Minimize the risk to life and property from climate change.**	
IMPLEMENTATION ACTION	HS-5.4	Identify important green infrastructure in the city that may be used in climate adaptation projects. Where feasible, use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing climate mitigation and adaptation projects (e.g., floodplain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days).

4.4.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan.

4.4.6 Issues Not Discussed Further

The City has determined that implementation of the 2040 General Plan would have no impact on an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or State habitat conservation plan.

A HCP is a federal planning document that is prepared pursuant to Section 10 of the FESA. A NCCP is a State planning document administered by CDFW. There are no HCPs, NCCPs or other habitat conservation plans within the Planning Area. Therefore, implementation of the 2040 General Plan would have no impact on an HCP, NCCP, or other habitat conservation plan.

4.4.7 Impact Analysis and Mitigation Measures

Impact 4.4-1	**Implementation of the 2040 General Plan could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.** ***Significant and Unavoidable Impact***

Future development under the 2040 General Plan would include earth disturbance, vegetation removal, and other construction activities that could directly impact special-status plant and wildlife species. Indirect impacts could include loss of habitat and degradation of surface waters in the area and downstream.

The following evaluation identifies special-status species that could be present in the Planning Area, and habitats that could potentially support these species.

Plant and Wildlife Habitat

As described in Section 4.4.2 (Environmental Setting), the Planning Area includes several habitat types that provide suitable habitat for special-status plant and wildlife species.

> Blue Oak-Gray Pine Habitat. Blue oak-gray pine woodlands provide breeding habitats for a large variety of wildlife species, although no species is totally dependent upon them for breeding, feeding, or cover. Most of the species that use this habitat type for breeding are the cavity-nesting birds, such as the acorn woodpecker, Lewis' woodpecker, tree swallow, and screech owl. These species frequently use the subdominant live oaks for nest sites. Mammals commonly found in the blue oak-gray pine habitat include deer mouse, gray fox, and coyotes.
>
> Mixed-Chaparral Habitat. No wildlife species are totally dependent on, or restricted to mixed chaparral habitats. Some species of ground-nesting and ground-dwelling birds that commonly use this habitat include the California quail, Bewick's wren, and the chipping sparrow. Mammals that use this habitat include the California vole, deer mouse and black-tailed jackrabbit. Coyotes often forage in mixed chaparral habitat and may establish dens in mixed chaparral if suitable denning sites are available.
>
> Valley Foothill Riparian Habitat. Valley foothill riparian habitats provide food, water, migration and dispersal corridors, cover, nesting, and thermal refuge for many wildlife species, some of which are totally dependent on this habitat type for nesting. It has been estimated that at least 50 species of amphibians and reptiles, 55 species of mammals, and 147 species of birds occur in this habitat type. Species such as the tricolored blackbird, winter wren, and tree swallow are totally dependent on the riparian areas for nesting, foraging, and cover. Many mammals use this habitat for foraging, cover, and reproduction, such as the raccoon, the opossum, and the ringtail. Even the mountain lion uses this habitat for foraging and for cover in long-distance movements.
>
> Valley Oak Woodlands. Valley oak woodlands provide food and cover for many species of wildlife. Oaks are an important source of food (acorns and browse) for some birds and mammals. This habitat is one of the most important foraging habitats for overwintering resident raptors, such as the red-shouldered hawk, the red-tailed hawk, the American kestrel, and the merlin. Many of the non-raptor bird species observed using this habitat are

those that are more characteristic of the annual grasslands and pasture habitats, due to the openness of the canopy. Common bird species include the California quail, oak titmouse, scrub jay, rufous-sided towhee, bushtit, and acorn woodpecker.

Annual Grassland. A number of wildlife species use annual grasslands for foraging. However, many of these species require special habitat features nearby to support reproduction, such as cliffs, caves, permanent ponds, or woodlands with large trees or snags. Mammals typically found in this habitat include the black-tailed jackrabbit, California ground squirrel, California vole, and coyote. Birds known to use this habitat include the horned lark, and western meadowlark. Annual grassland is also important foraging habitat for the loggerhead shrike, turkey vulture, northern harrier, American kestrel, and prairie falcon.

Fresh Emergent Wetland. Fresh emergent wetlands are the most productive wildlife habitat in California. Many species rely on fresh emergent wetlands throughout their life cycles, including numerous species of frogs, toads, salamanders, and aquatic snakes. Several listed species are dependent on this habitat type for some or all portions of their life cycles. Others, such as bald eagle and peregrine falcons, use fresh emergent wetlands for foraging. Migratory aquatic birds, such as the northern pintail, Canada goose, and great white heron, use this habitat for feeding and resting during migration to their breeding grounds.

Lacustrine. The lacustrine habitat type includes inland depressions and dammed stream channels containing standing water. Occurrences vary from small ponds less than one hectare to large areas of several square kilometers. Typical lacustrine habitats include the nearby Lake Shasta and ponds (including vernal pools) so shallow that rooted plants grow across the bottom. There are several small ponds scattered throughout the Planning Area, including in the annual grassland and valley oak woodland habitats in the northeast portion of the City. Several species of resident and migratory wildlife use these ponds for feeding and resting.

Riverine**.** Riverine habitat in the City includes intermittent and perennial streams. Wildlife use of the open water of riverine systems is dependent upon the size and duration of open water. The smaller intermittent streams found within the City can be used by insectivorous birds, such as the oak titmouse or black phoebe, and by the more adaptable mammals, such as the raccoon, ringtail, and opossum. Churn Creek is known to support spawning Chinook salmon on an occasional basis. Other species likely to be found in the City's streams include stoneflies, caddisflies, midges, and many other invertebrates.

Critical Habitat and Essential Fish Habitat (EFH)

The USFWS defines critical habitat as specific areas within a geographical area that are occupied by a species at the time the species is listed as special status under FESA. Critical habitat contains the physical and/or biological features that are essential to conserve the species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation.

The Sustainable Fisheries Act of 1996, defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." A project could potentially affect EFH if it resulted in changes in water quality, modifications to the stream channel, and/or degradation of stream vegetation.

The USFWS and NMFS maintain records of areas in which critical habitat is designated[1]. The USFWS does not identify designated critical habitat within a five-mile radius of the City.

NMFS identifies critical habitat for CCV steelhead in the Project City quadrangle; however, the critical habitat does not extend within the City limits[2]. NMFS identifies EFH for Chinook salmon in the reaches of Churn Creek and Salt Creek in the Planning Area[3].

Adverse Effects on Plant and Wildlife Habitats

Development under the 2040 General Plan would result in the removal of trees and other vegetation that provide habitat for many plant and wildlife species, including species protected under FESA, CESA, the Migratory Bird Treaty Act, California Fish and Game Code Nesting Bird Protections, the Native Plant Protection Act, and additional federal and State regulations enacted for the protection of special-status species.

In addition, in order to minimize risks to the community, especially in high fire hazard severity zones and Wildland Urban Interface areas, the City, CAL FIRE, and/or Shasta Lake Fire Protection District will continue to implement fire fuel reduction projects in the City. Individual development projects in the City must also consider wildfire hazards during project design. For example, residential subdivisions may be required to establish a firebreak around the perimeter of the subdivision to minimize potential impacts on residents. Fire fuel reduction projects would remove vegetation that could provide wildlife habitat.

Although CEQA Guidelines §15304(i) provides a categorical exemption for fuel management activities, this exemption applies only to fuel management activities within 30 to 100 feet of a structure. This categorical exemption does not apply if a project results in the taking of endangered, rare, or threatened plant or animal species or results in significant erosion/sedimentation of surface waters. Further, categorical exemptions are subject to the exceptions identified in §15300.2 of the CEQA Guidelines. Among other factors, a categorical exemption may not be used if a project results in a cumulative impact or a significant environmental impact due to unusual circumstances.

All fire fuel reduction projects in the City would be conducted in accordance with CEQA, CAL FIRE (CAL FIRE, n.d.), Shasta Lake Fire Protection District, and City guidelines. Fire fuel reduction would consist of thinning vegetation to slow the spread of fire, not completely clearing these areas. Fire fuel reduction would consist of removing surface fuels greater than four inches in height, removing lower limbs of trees to at least six feet above ground, and creating vertical spacing between shrubs and the lowest branches of trees. Fuel reduction activities would be consistent with the treatment types described in the PEIR prepared by the California Board of Forestry and Fire Protection for the California Vegetation Treatment Program (i.e., Wildland Urban Interface fuel reduction, fuel breaks, and ecological restoration) (California Board of Forestry and Fire Protection, 2019).

The City's Fire Hazard and Fuel Reduction guidelines (City of Shasta Lake, n.d.) state that creating defensible space does not include grading or the removal of protected trees over 10-inches in

[1] *U.S. Fish and Wildlife Service Critical Habitat for Threatened and Endangered Species (Web Map).* https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77.
[2] *NOAA Fisheries. Protected Resources App (Web Map)* https://www.webapps.nwfsc.noaa.gov/portal/apps/webappviewer/index.html?id=7514c715b8594944a6e468dd25aaacc9.
[3] *NOAA Fisheries. Essential Fish Habitat Mapper.* https://www.habitat.noaa.gov/apps/efhmapper/?data_id=dataSource_13-17aa6b26e62-layer-55-All_Fresh-water_Salmon_1%3A27&page=page_4

diameter at breast height. The City's guidelines also state that all fuel reduction activities must avoid all sensitive biological, cultural, and historical resources.

As identified in Section 4.4.4, the 2040 General Plan includes policies and implementation actions that would minimize impacts to natural habitats in the City. Policy LU-3.10 requires that new development located along existing creeks and streams incorporate bank naturalizing approaches for channeled sections as a means of creek and stream restoration where appropriate.

Under implementation action LU-3.5, the City will evaluate the zoning ordinance to determine feasible updates to the Habitat Protection and Open Space districts to ensure development is consistent with natural resource protection goals included in the 2040 General Plan.

Policy CON-3.3 calls for the use of riparian and wetland buffers (non-development setbacks) to preserve existing riparian vegetation through the environmental review process and require minimum setbacks based on consultation with the CDFW and other applicable resource agencies. Under Policy CON-3.5, the City will work with stakeholders to identify priority conservation areas in the City and establish appropriate protection measures for these resources and habitats.

Future projects, including fire fuel reduction projects, would be reviewed on a case-by-case basis to identify appropriate mitigation measures for avoiding/minimizing impacts to natural habitats and for off-setting the loss of such habitats.

Special-Status Species

A discussion of special-status plants and wildlife species that could be present in the Planning Area is provided below.

Special-Status Plant Species

USFWS records do not identify any federally listed plants with the potential to occur in the Planning Area. No critical habitats for federally listed plant species are identified in the Planning Area. CNDDB records show that no special-status plants have been reported in the Planning Area.

Eight special-status plants have been reported within a ±5-mile radius of the Planning Area: maverick clover, Red Bluff dwarf rush, Sanford's arrowhead, Shasta huckleberry, Shasta limestone monkeyflower, Shasta snow-wreath, silky cryptantha, and Sulphur Creek brodiaea. The following non-status plants have been reported in the ±5-mile search radius: dubious pea (Rare Plant Rank [RPR] 3), Henderson's bent grass (RPR 3.2), and northern clarkia (RPR 4.3).

CNPS records do not identify any additional special-status plants in the Shasta Dam and Project City quadrangles. The following additional non-status plants are reported in these quadrangles: broad-lobed leptosiphon (RPR 4.3), depauperate milk-vetch (RPR 4.3), Mallory's manzanita (RPR 4.3), Redding checkerbloom (RPR 3), Sanborn's onion (RPR 4.2), Shasta County arnica (RPR 4.2), Shasta maidenhair fern (RPR 4.3), Siskiyou iris (RPR 3.3), thread-leaved beakseed (RPR 4.2), and tripod buckwheat (RPR 4.2).

Table 4.4-1 provides a list of the special-status plants identified above, as well as those with a potential to occur in the Planning Area based on habitat types. The table identifies the current legal (protective) status of each species, provides a general habitat description, and identifies the blooming season at which time the species would be identifiable.

Table 4.4-1
Special-Status Plants with a Potential to Occur in the Planning Area

Species Common Name/ *Scientific Name*	Regulatory Status *			General Habitat Description	Blooming Period
	Federal	State	CRPR		
Maverick clover *Trifolium piorkowskii*	-	-	1B.2	An annual herb that occurs in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools, typically on volcanic clay, and often in openings and along streambanks. The species is reported between ±525 and ±2,230 feet in elevation.	April - May
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	-	-	1B.1	An annual herb that occurs along the edges of vernal pools and vernal drainages, or on clay-rich terrace soils. The species is found between ±100 and ±4,100 feet in elevation.	March – May/June
Sanford's arrowhead *Sagittaria sanfordii*	-	-	1B.2	A perennial rhizomatous herb that occurs in freshwater ponds, marshes, and ditches with perennial water. The species is found below ±2,200 feet in elevation.	May - October/ November.
Shasta huckleberry *Vaccinium shastense* ssp. *shastense*	-	-	1B.3	A perennial deciduous shrub that occurs in a variety of acidic habitats, including along streambanks, around seeps, rocky outcrops, roadsides, and in disturbed areas within chaparral, cismontane woodland, coniferous forest, and riparian communities. The species is reported between ±1,000 and ±4,000 feet in elevation.	December – September
Shasta limestone monkeyflower *Erythronium taylorii*	-	-	1B.1	An annual herb that occurs in rockfaces or in rock crevices in limestone rocks in the vicinity of Shasta Lake. The species is reported between ±1,100 and ±3,300 feet in elevation.	February - May
Shasta snow-wreath *Neviusia cliftonii*	-	SC	1B.2	A perennial shrub that often occurs along streams in cismontane woodlands, lower montane coniferous forests, and riparian woodlands, generally on shaded, north-facing slopes or in sheltered canyons, and on or near limestone-derived soils. The species is known from fewer than 20 occurrences in the mountains around Lake Shasta.	April - June

Species Common Name/ *Scientific Name*	Regulatory Status *			General Habitat Description	Blooming Period
	Federal	State	CRPR		
Silky cryptantha *Cryptantha crinita*	-	-	1B.2	An annual herb that occurs along low-gradient seasonal streams with broad floodplains, usually on the valley floor, where it is found on gravelly or cobbly substrates. The species also occurs in vernally moist uplands. Less frequently, it occurs along perennial streams, including the Sacramento River. The species is found between ±200 and ±4,000 feet in elevation.	April - May
Sulphur Creek brodiaea *Brodiaea matsonii*	-	-	1B.1	A perennial bulbiferous herb that occurs along streambanks in cismontane woodland. The plant has only been reported only along a short reach of Sulphur Creek near Redding. The species is found between ±600 and ±700 feet in elevation.	May - June

* **Status Codes**

State:
SC State Candidate Species

Rare Plant Rank
1B Plants Rare, Threatened or Endangered in California and Elsewhere

Rare Plant Threat Rank
0.1 Seriously Threatened in California
0.2 Moderately Threatened in California
0.3 Not Very Threatened in California

Special-Status Wildlife Species

USFWS records identify 11 federally listed wildlife species or candidates for listing with the potential to occur in the Planning Area: gray wolf, northern spotted owl, yellow-billed cuckoo, Delta smelt, longfin smelt, monarch butterfly, valley elderberry longhorn beetle, conservancy fairy shrimp, Shasta crayfish, vernal pool fairy shrimp, and vernal pool tadpole shrimp. The USFWS does not identify any critical habitats for federally listed wildlife species in the Planning Area.

NMFS records identify Central Valley spring run (CVSR) Chinook salmon, evolutionary significant unit (ESU) (federally threatened), Sacramento River winter run (SRWR) Chinook salmon ESU (federally endangered), and California Central Valley (CCV) steelhead, distinct population segment (DPS) (federally threatened) in the U.S. Geological Survey's Project City and Shasta Dam quadrangles. Critical habitat for CCV steelhead is identified in the Project City quadrangle. Essential fish habitat (EFH) is identified in both the Project City and Shasta Dam quadrangles for Chinook salmon. Additionally, fall/late-fall run Chinook salmon ESU are known to occur in Churn Creek (Graham Matthews & Associates, 2008).

CNDDB records show that one special-status wildlife species, western pond turtle (SSSC), has been reported in the Planning Area on two occasions: five adult turtles were observed at three different locations in Salt Creek in March 2007, and two adult turtles were observed in a pooled area of Churn Creek in October 2015.

Seven additional special-status wildlife species have been reported within a ±5-mile radius of the Planning Area: American peregrine falcon, bald eagle, fisher, foothill yellow-legged frog, Shasta salamander, Townsend's big-eared bat, and valley elderberry longhorn beetle. The following non-status animals have been reported in the ±5-mile search radius: Antioch Dunes anthicid beetle, California linderiella, Klamath sideband, kneecap lanx, Oregon shoulderband, Sacramento anthicid beetle, Shasta chaparral, Shasta hesperian, silver-haired bat, western pearlshell, Wintu sideband, and Yuma myotis.

Table 4.4-2 provides a list of the special-status wildlife identified above, as well as those with a potential to occur in the area based on habitat types in the Planning Area. The table identifies the current legal (protective) status of each species, provides a general habitat description, and describes the potential for each species to occur in the Planning Area.

Table 4.4-2
Special-Status Wildlife Species with a Potential to Occur in the Planning Area

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	State	
AMPHIBIANS			
Foothill yellow-legged frog *Rana boylii*	-	SE SSSC	Foothill yellow-legged frogs are a highly aquatic species typically found in shallow, partly-shaded, perennial streams in areas with riffles and rocky substrates. This frog needs at least some cobble-sized substrate for egg-laying. Foothill yellow-legged frogs generally prefer low- to moderate-gradient streams, especially for breeding and egg-laying, although juvenile and adult frogs may utilize moderate- to steep-gradient streams during summer and early fall. There is a potential for foothill yellow-legged frogs to be present in streams in the Planning Area.
Shasta salamander *Hydromantes shastae*	-	ST	The Shasta salamander is primarily restricted to limestone outcrops near Lake Shasta. Habitat consists of moist limestone fissures and caves, limestone talus, and under woody debris on the surface near limestone outcrops. Shasta salamanders may be found in all successional stages of valley foothill hardwood-conifer, ponderosa pine, and mixed conifer habitats. There is a potential for Shasta salamanders to be present in the City's SOI and in northern areas in the City.
BIRDS			
American peregrine falcon *Falco peregrinus anatum*	FD	SD SFP	American peregrine falcons frequent water bodies in open areas with cliffs and canyons nearby for nesting. This falcon feeds and breeds near water. There is no suitable nesting habitat in the Planning Area for American peregrine falcons.

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	**State**	
Bald eagle *Haliaeetus leucocephalus*	FD	SE SFP	Bald eagles nest in large, old-growth trees or snags in mixed stands near open bodies of water. Adults tend to use the same breeding areas year after year and often use the same nest, though a breeding area may include one or more alternate nests. Bald eagles usually do not begin nesting if human disturbance is evident. In California, the bald eagle nesting season is from February through July. There is no suitable nesting habitat in the Planning Area for bald eagles.
Northern spotted owl *Strix occidentalis caurina*	FT	ST SSSC	Northern spotted owls inhabit dense, old-growth, multi-layered mixed conifer, redwood, and Douglas-fir forests from sea level to approximately 7,600 feet in elevation. Northern spotted owls typically nest in tree cavities, the broken tops of trees, or in snags. There are no old growth forests or other suitable habitat for northern spotted owls in the Planning Area.
Yellow-billed cuckoo *Coccyzus americanus*	FT	SE	Yellow-billed cuckoos inhabit and nest in extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut slow-moving watercourses, backwaters, or seeps. Willows are almost always a dominant component of the vegetation. There is marginally suitable habitat for yellow-billed cuckoos along the southern reach of Churn Creek.
INSECTS			
Monarch butterfly *Danaus plexippus*	FC	-	The western population of monarch butterflies overwinters on the California Coast, Baja California, and to some extent in the central Mexico mountains. The butterflies leave their winter habitats in February and March, and reach the northern limits of their range in California, Oregon, Washington, Idaho, and Nevada, in early to mid-June. Eggs are laid singly on milkweed plants within their breeding range. Once hatched, larva reach the adult stage in 20 to 35 days; most adults live 2 to 5 weeks. Several generations can be produced within one season, with the last generation beginning migration to their overwintering range in August and September, where they live between 6 and 9 months before migrating north. Milkweeds have a high potential to occur in the Planning Area, as do nectar-providing flowers. There is a high potential for monarchs to migrate through the area, and they may use local milkweeds for breeding.

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	**State**	
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	-	The valley elderberry longhorn beetle (VELB) is found only in association with elderberry shrubs (*Sambucus* spp.). Most occurrences are found below 500 feet in elevation. The species is known to occur in the Central Valley and foothills. Although elderberry shrubs are present in the City, there are no areas in the City that are below 500 feet in elevation, and it is unlikely that VELB would be present.
CRUSTACEANS			
Conservancy fairy shrimp *Branchinecta conservatio*	FE	-	Conservancy fairy shrimp inhabit large, cool-water vernal pools with moderately turbid water. There are no known vernal pools in the City, and there is a very low potential for the species to be present. The species is not known to occur in Shasta County.
Shasta crayfish *Pacifastacus fortis*	FE	SE	Shasta crayfish inhabit sections of the Pit River, Fall River, Hat Creek, and tributary streams and springs characterized by cool, clear water, low gradient, and substrate consisting of volcanic rubble on sand and/or gravel. The Planning Area is well outside the known range of the Shasta crayfish; the species has no potential to be present.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	-	Vernal pool fairy shrimp inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump or basalt-flow depression pools. There are no known vernal pools in the City, and there is a very low potential for the species to be present.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	-	Vernal pool tadpole shrimp occur in vernal pools in California's Central Valley and in the surrounding foothills. There are no known vernal pools in the City, and there is a very low potential for the species to be present.

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	State	
FISH			
Chinook salmon - Central Valley spring-run ESU *Oncorhynchus tshawytscha* (pop. 6)	FT	ST	Central Valley spring-run Chinook salmon enter the Sacramento-San Joaquin Delta in early January, and enter natal streams between mid-March and mid-October. Upon entering fresh water, spring-run are sexually immature and must hold in cold water habitats through summer to mature. Typically, spring-run utilize mid- to high-elevation streams that provide sufficient flow, water temperature, cover, and pool depth to allow over-summering. Spawning occurs between August and mid-October. The lack of holding and staging habitat (i.e., year-round cold freshwater habitat) excludes spring-run Chinook from spawning in the Planning Area; thus, the species would not be present.
Chinook salmon – Central Valley fall-run and late-fall-run ESU *Oncorhynchus tshawytscha*	-	SSSC	The Central Valley fall-run Chinook salmon spawn in the lower reaches of most rivers and streams in the Central Valley. Adults begin their spawning migration between July and December. Spawning occurs between October and December. Spawning habitat is characterized by loose, clean gravel in cold, swiftly flowing water. The Central Valley late-fall-run spawn in the lower reaches of most rivers and streams in the Central Valley. Adults begin their upstream spawning migration between mid-October and mid-April. Spawning occurs between January and April. Spawning habitat is characterized by loose, clean gravel in cold, swiftly flowing water. Small numbers of fall-run Chinook salmon have been documented in Churn Creek, including below a box culvert on Hill Boulevard in the City of Shasta Lake during 2001. There is a moderate potential for fall-run and late-fall-run Chinook to be present in the Planning Area.

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	**State**	
Chinook salmon - Sacramento River winter-run ESU *Oncorhynchus tshawytscha* (pop. 7)	FE	SE	Sacramento River winter-run Chinook salmon spawn almost exclusively in the Sacramento River from mid-April through August. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs where there is an abundance of loose gravel. Juveniles may rear in tributaries of the Sacramento River. The species is dependent on cold freshwater habitat year-round. Winter-run Chinook would not spawn in the Planning Area and are very unlikely to be present.
Steelhead Central Valley DPS *Oncorhynchus mykiss irideus*	FT	-	Central Valley steelhead inhabit cold-water tributaries of the Sacramento and San Joaquin rivers. Adults begin their upstream spawning migration between August and March. Spawning occurs between December and April. Spawning habitat is characterized by loose, clean gravel in cold, swiftly flowing, shallow water. There is a potential for steelhead to be present, particularly in Churn Creek.
Delta smelt *Hypomesus transpacificus*	FT	SE	Delta smelt primarily inhabit the brackish waters of Sacramento-San Joaquin River Delta. Most spawning occurs in backwater sloughs and channel edgewaters. The Planning Area is well outside the range for Delta smelt. There is no potential for the Delta smelt to be present in the Planning Area.
Longfin smelt *Spirinchus thaleichthys*	FC	ST	The longfin smelt is a pelagic fish that ranges from Alaska southward to the San Francisco Bay-Delta in California. The range includes at least 20 scattered populations found in estuaries, rivers, and lakes stretching from California to Alaska. The USFWS found that listing of the longfin smelt is warranted only for the Bay-Delta population, not range-wide. There is no potential for the longfin smelt to be present in the Planning Area.

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	State	
MAMMALS			
Fisher – West Coast DPS *Pekania pennanti*	-	SSSC	Fishers inhabit mixed conifer forests dominated by Douglas-fir, higher elevation fir and pine forests, and mixed evergreen/broadleaf forests. Suitable habitat for fishers consists of large areas of mature, dense forest stands with snags and greater than 50 percent canopy closure. Fishers den in cavities in large trees, snags, logs, rocky areas, or shelters provided by slash or brush piles. Fishers are very sensitive to human activities. Den sites are most often found in areas with no human disturbance. There is a potential for fishers to be present in northern areas of the City.
Gray wolf *Canis lupus*	FE	SE	Gray wolves are habitat generalists; populations can be found in any type of habitat in the Northern Hemisphere from about 20˚ latitude to the polar ice pack. Preferred habitats include a year-round abundance of prey, secluded denning and rendezvous sites, and minimal human disturbance. Dens may be a hollow log or a tunnel excavated in loose soil. Dens are often near water, and are usually elevated to detect approaching enemies. Wolf packs establish and defend territories that may range from 20 to 400 square miles. Wolves travel over large areas to hunt, and may cover as much as 30 miles in a day. Young wolves may disperse several hundred miles to seek a mate or to establish their own pack. There are no reported occurrences of gray wolves in the Planning Area. Although wolves could potentially stray near the Planning Area, they would not routinely utilize or den in the area given the extent of human activity and urbanization.
North American wolverine *Gulo gulo luscus*	FPT	-	Wolverines are dependent on areas in high mountains near the treeline, where conditions are cold year-round and snow cover persists into late spring. There is no suitable habitat for wolverines in the Planning Area; thus, wolverines would not be present.

Species Common Name/ *Scientific Name*	Regulatory Status *		General Habitat Description and Potential to Occur
	Federal	**State**	
Pallid bat *Antrozous pallidus*	-	SSSC	Pallid bats are a wide-ranging species found in a variety of habitats throughout western North America. Pallid bats roost alone, in small groups, or in large colonies. Day and night roosts include trees, rocky outcrops, cliffs, caves, mines, and a variety of man-made structures. Trees and other structures in the Planning Area provide potentially suitable habitat for pallid bats.
Townsend's big-eared bat *Corynorhinus townsendii*	-	SSSC	Townsend's big-eared bat is found throughout California in all but subalpine and alpine habitats. The details of its distribution are not well known. The bat can be found roosting in caves, mines, tunnels, buildings, and other human-made structures. Structures in the Planning Area provide suitable habitat for Townsend's big-eared bats.
REPTILES			
Western pond turtle *Emys marmorata*	-	SSSC	The western pond turtle associates with permanent or nearly permanent water in a variety of habitats. The turtle is typically found in quiet water environments. Pond turtles require basking sites such as partially submerged logs, rocks, or open mud banks, and suitable (sandy banks or grassy open fields) upland habitat for egg-laying. Nesting and courtship occur during spring. Nests are generally constructed within 500 feet of a waterbody. Pond turtles leave aquatic sites in the fall and overwinter in uplands nearby. Pond turtles return to aquatic sites in spring. There is a potential for western pond turtles to be present in and adjacent to streams in the Planning Area.

* **Status Codes**:

Federal:

FE Federally Listed – Endangered
FT Federally Listed – Threatened
FC Federal Candidate Species
FP Federal Proposed Species
FD Federal Delisted

State:

SFP State Fully Protected
SE State Listed - Endangered
ST State Listed - Threatened
SSSC State Species of Special Concern
SD State Delisted

Special-Status Birds

As identified in Section 4.4.2 (Environmental Setting), there is habitat throughout the Planning Area that provides food, water, migration and dispersal corridors, cover, nesting, and thermal refuge for a wide variety of bird species. The USFWS species list identifies the following Birds of Conservation Concern that may be present in the Planning Area: Cassin's finch, Clark's grebe, common yellowthroat, Lawrence's goldfinch, Nuttall's woodpecker, oak titmouse, tricolored

blackbird, wrentit, and yellow-billed magpie. Numerous other bird species are known to occur in the Planning Area and are protected under the federal Migratory Bird Treaty Act and/or California Fish and Game Code §3503 and 3503.5 (Nesting Bird Protections).

Conclusions

All discretionary development projects in the City that involve earth disturbing activities are reviewed on a case-by-case basis to determine whether a project has a potential to impact special-status species and wildlife habitats. When necessary, a biological resources study to evaluate special-status species and their potential to occur on the project site is required. When a project has a potential to impact wetlands and other waters of the U.S. or State, including riparian habitat, an aquatic resources delineation report is required.

Development proposals in the City are referred to CDFW with a request for comments when potential impacts to special-status species and their habitats could occur. CDFW works with the City to develop appropriate mitigation measures to avoid/minimize impacts. Potential mitigation measures that would avoid/minimize adverse impacts on special-status species and their habitats may include, but are not limited to:

- Requiring that all construction personnel receive training from a qualified biologist regarding: 1) special-status species and sensitive habitats that could be present in a project site, 2) the laws and regulations that protect the species and habitats, 3) procedures to be implemented if special-status species are encountered during construction, and 4) the consequences of noncompliance with applicable laws and regulations.
- Designating non-disturbance areas on a project site by installing temporary fencing or flagging around wetlands and other waters of the U.S. and State, trees designated for retention, and other sensitive areas.
- Limiting work in streams to the dry season.
- Minimizing the potential for the introduction and spread of noxious weeds by using only certified weed-free erosion control materials, mulch, and seed; limiting any import or export of fill material to materials that is known to be weed free; and requiring construction equipment to be washed at a commercial wash facility prior to entering the job site and upon leaving the job site.
- Requiring compensatory mitigation for the permanent loss of wetlands, riparian habitat, and other sensitive natural communities.

The special-status species lists maintained by the CDFW, USFWS, and NMFS will undoubtedly change during the 20-year planning period for the 2040 General Plan. Due to climate change and other factors, habitat conditions in the Planning Area are expected to change as well; therefore, it is not possible to identify project-level mitigation measures at this time.

Development anticipated throughout the General Plan area may result in impacts to biological resources, including the permanent loss of habitat, corridor fragmentation, and reduction or degradation of habitat. If wildlife movement corridors, special-status species, or sensitive habitats are present and disturbance is necessary, federal and State laws require measures to reduce, avoid, or compensate for impacts to these resources. The requirements of these federal and State laws, and the implementation of required mitigation are implemented through the permit process.

Future projects would be reviewed on a case-by-case basis to identify potential direct and indirect impacts on special-status species and their habitats, and mitigation measures would be

implemented as necessary. Future projects would be subject to compliance with the 2040 General Plan policies and implementation actions identified in Section 4.4.4, and the federal, State, and local regulations identified in Section 4.4.3 (Regulatory Framework). In addition to mitigation measures adopted by the City, resource agency permits may include additional measures to further minimize impacts.

The City recognizes that implementation of the proposed General Plan may result in the direct, indirect, and cumulative loss of habitat even though future development would comply with federal, State, and local regulations adopted for the protection of special-status species and their habitats. Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than significant level. Therefore, potential impacts on special-status species and their habitats are considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

Impact 4.4-2	**Implementation of the 2040 General Plan could have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.** ***Less-than-Significant Impact***

According to CDFW, since the inception of the Natural Heritage Program in 1979, natural communities have been considered for their conservation significance (CDFW, 2017). Unique natural communities were recorded in the CNDDB until the mid-1990s, when funding for the natural community portion of the program was eliminated. Although natural communities are no longer being added to the CNDDB, many of the occurrences maintained in the CNDDB still have significance for conservation and should be considered in the environmental review process.

Review of CNDDB records shows that the nearest mapped natural communities are Great Valley Cottonwood Riparian Forest, about four miles south of the City and Great Valley Valley Oak Riparian Forest about six miles south of the City. Both of these communities are located in the City of Redding along the Sacramento River and would not be impacted by development in the City of Shasta Lake.

As described in Section 4.4.2 (Environmental Setting), riparian habitat is found in narrow discontinuous fingers along most streams in the City. As stated in Section 4.4.3, the SWRCB's Wetland Riparian Area Protection Policy and Water Quality Certification Program regulates the removal or placement of materials in wetlands and waterways in the State. The Program protects all waters, but has special responsibility for wetlands, riparian areas, and headwaters because these waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs.

In addition, California Fish and Game Code §1600 *et seq.*, requires that project proponents enter into a Lake or Streambed Alteration Agreement (LSAA) with CDFW prior to any work that would divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; and/or deposit or dispose of material into any river, stream, or lake.

The General Plan policies and implementation actions included in Section 4.4.4 specifically address the protection of riparian habitat and natural resource areas. In accordance with Policy CON-3.3, the City would consult with CDFW to determine appropriate riparian and wetland buffers for specific projects to preserve existing riparian vegetation. As required by Implementation Action CON-4.6, the City will amend the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting areas of natural resource value.

Future projects will be reviewed on a case-by-case basis to identify any potential for a project to adversely affect any riparian habitat or other sensitive natural community, and the City will impose mitigation measures as necessary to avoid/minimize impacts. In addition to mitigation measures adopted by the City, resource agency permits may include additional measures to compensate for impacts on riparian habitat (e.g., purchasing mitigation credits at an approved mitigation bank and/or creating, restoring, or enhancing on-site or off-site habitat). Therefore, potential impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.4-3	**Implementation of the 2040 General Plan could have an adverse effect on State or federally protected wetlands, (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption, or other means.** ***Less-than-Significant Impact***

Development under the 2040 General Plan would involve earth disturbance and other construction activities that could affect State or federally protected wetlands. As described in Section 4.4.3 (Regulatory Framework), projects that involve the placement of structures within, over, or under navigable waters and projects that result in the discharge of dredged or fill material into wetlands and other waters of the U.S. must obtain a Section 404 permit from the USACE.

Projects that will result in minimal adverse effects typically qualify for a USACE Nationwide Permit (NWP) and must comply with conditions of the permit. For some of the NWPs, preconstruction notification (PCN) is required; in these cases, the USACE may impose special conditions on a project, depending on the extent of potential impacts. If a project does not qualify for a NWP, an Individual Permit is required. Individual Permits require preparation of an alternatives analysis that evaluates reasonable alternatives to the project that would avoid or reduce impacts to aquatic resources. Individual permits generally have more stringent mitigation requirements and involve a higher level of public review.

Under Section 401 of the CWA, a project requiring a USACE Section 404 permit is also required to obtain a State Water Quality Certification (or waiver) to ensure that the project will not violate established State water quality standards. In California, when a discharge is proposed to waters outside of federal jurisdiction, the discharge is regulated under the State Porter-Cologne Water Quality Control Act through the issuance of Waste Discharge Requirements (WDRs). The State has a policy of no-net-loss of wetlands and requires mitigation for impacts to wetlands before it issues Water Quality Certifications or WDRs.

Where applicable, discretionary projects in the City are required to prepare an aquatic resources delineation report to identify all wetlands and waters of the U.S. and State on a project site. The delineation is submitted to the USACE with a request for verification. The City is responsible for

ensuring that the delineation has been verified by the USACE and that appropriate resource agency permits are obtained prior to issuance of a clearing or grading permit by the City. The City also ensures that any measures required under the resource agency permits are incorporated into the project plans.

Compliance with federal, State, and local requirements for the protection of wetlands and implementation of applicable policies and implementation actions identified in Section 4.4.4 ensures that the potential for future development to have an adverse impact on State or federally protected wetlands would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.4-4	**Implementation of the 2040 General Plan could interfere with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.** ***Less-than-Significant Impact***

Wildlife corridors function to connect areas of significant wildlife habitat and facilitate the movement of various wildlife species, including birds, fish, mammals, and amphibians. In addition to natural habitats (e.g., streams, rivers, riparian habitat, landscape blocks), man-made structures, such as bridges, tunnels, and culverts may serve as migration corridors. CDFW does not identify critical summer ranges, critical winter ranges, fall holding areas, or fawning grounds for deer in the Planning Area (CDFW, 2021). CDFW's Areas of Conservation Emphasis (ACE) dataset includes information on essential connectivity areas that link to natural landscape blocks, riparian corridors, and wildlife linkages[4].

CDFW's ACE records show that the northwesternmost border of the City has a Terrestrial Connectivity Rank of 5 (Irreplaceable and Essential Corridor) that links natural landscape blocks located in the City's Sphere of Influence (SOI) and other areas north of the City near Lake Shasta. The 2040 General Plan does not propose any changes to the type or density of development adjacent to the mapped essential connectivity areas/corridors. Further, these areas are identified on **Figure 4.4-2** (Natural Resources Overlay Zone) as areas with steep slopes over 20 percent with limited development potential. Although fire fuel reduction projects may occur in these areas and could temporarily impede the movement of wildlife, fuel reduction projects would not create any barriers that would permanently impede wildlife movement.

ACE records show the entire length of Churn Creek from the northwestern City limit to the southern City limit as a mapped riparian corridor. As stated in Section 4.4.2 (Environmental Setting), riparian habitats provide food, water, migration and dispersal corridors, cover, nesting, and thermal refuge for many wildlife species, some of which are totally dependent on this habitat type for nesting. It has been estimated that at least 50 species of amphibians and reptiles, 55 species of mammals, and 147 species of birds occur in this habitat type. Species such as the tricolored blackbird, winter wren, and tree swallow are totally dependent on the riparian areas for nesting, foraging, and cover. Many mammals use this habitat for foraging, cover, and reproduction, such as

[4] *CDFW Areas of Conservation Emphasis (ACE)v.3.0. https://apps.wildlife.ca.gov/ace/.*

raccoons, opossums, and ringtails. Loss of this habitat could interfere with the movement of wildlife species.

As shown in **Figure 4.4-2**, the City's Natural Resources Overlay Zone map identifies areas in the City that provide significant wildlife habitat resources, including riparian areas and stream corridors. Policy OS-1.1 promotes the protection of riparian habitat along significant creek corridors by regulating vegetation removal, the siting of structures, and establishing development set-backs. Implementation Action OS-2.4 requires that the City evaluate and implement, where feasible, linking natural habitat areas with interconnecting open space corridors, particularly those that provide wildlife with access to drinking water and enhance biological diversity of the area.

Future projects will be reviewed on a case-by-case to identify any potential for a project to adversely affect wildlife corridors and the movement of wildlife species. The City will impose mitigation measures as necessary to avoid/minimize impacts. Therefore, potential impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.4-5	**Implementation of the 2040 General Plan would not conflict with any local policies or ordinances protecting biological resources.** ***No Impact***

Local regulations that were enacted for the protection of biological resources include, but are not limited to, those shown in Section 4.4.3 (Regulatory Framework). The City's primary regulations that address direct and indirect impacts on biological resources include:

SLMC Chapter 12.36 (Tree Conservation)
The intent of SLMC Chapter 12.36 is to promote the conservation of a healthy tree population and to maintain and enhance tree canopy throughout the community where feasible and appropriate. Future projects under the 2040 General Plan would be subject to the pre-development review requirements to ensure that tree conservation is considered early in the planning process with respect to placement of buildings, roads, driveways, parking areas, utilities, and other site improvements (SLMC §12.36.062). All projects are subject to the tree planting requirements for new development included in SLMC §12.36.070. When a protected tree is removed from a property to facilitate development, replacement trees or other mitigation must be provided to compensate for the loss.

SLMC Chapter 13.36 (Storm Water Quality Management)
SLMC Chapter 13.36 provides the City with the legal authority to fully implement and enforce provisions set under NPDES General Permit CAS000004, *Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4)* (Water Quality Order 2013-0001-DWQ, as amended). These regulations were adopted to protect and enhance the water quality of watercourses and water bodies and ensure compliance with the Federal CWA and Porter-Cologne Water Quality Control Act.

SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development)
SLMC Chapter 15.08, §15.08.210(A)(8), requires that all construction projects involving site grading shall include erosion control plans prepared by a registered civil engineer, qualified SWPPP developer (QSD), or other licensed or certified stormwater professional. Temporary

and permanent erosion control devices, designed and constructed in accordance with the CASQA BMPs and the City's Construction Standards, shall be implemented to control erosion.

The proposed 2040 General Plan does not include any goals, policies, or implementation actions that would conflict with any local regulations related to the protection of biological resources. Rather, the 2040 General Plan proposes additional goals, policies, and implementation actions for the protection of biological resources. As required by Implementation Action CON-4.6, the City will amend the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting areas of natural resource value.

Future projects would be reviewed on a case-by-case basis to ensure that projects comply with local regulations that are in place at the time a project application is submitted to the City. When necessary, mitigation measures would be implemented to ensure compliance with applicable local codes. Therefore, there would be ***no impact.***

Mitigation Measures

No mitigation measures required.

4.4.8 References

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SECTION

4.5

Cultural Resources

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4.5 Cultural Resources

This section describes federal, State, and local regulations related to cultural resources and evaluates whether implementation of the 2040 General Plan would cause a substantial adverse change in the significance of a historical or archaeological resource, or disturb any human remains.

Tribal Cultural Resources are further discussed in Chapter 4.6 of this Draft PEIR.

4.5.1 Study Methods

The following evaluation of potential impacts on cultural resources is based on review of existing reports and literature, including cultural resources studies and historic resources evaluations that have been completed for projects within and adjacent to the City. Resources reviewed include: City of Shasta Lake Historic Context Statement prepared by Carey & Co. Inc. in January 2011 (Carey & Co., 2011); the Environmental Impact Report for the Shasta Dam Area Redevelopment Plan, Fourth Amendment prepared by the Ervin Consulting Group (ECG) in 2008; information from the Shasta Lake Heritage and Historical Society, and documentation prepared by the U.S. Bureau of Reclamation regarding the history of Shasta Dam.

4.5.2 Environmental Setting

Prehistoric Context

The City of Shasta Lake lies in what is generally described as the Cascade subregion of the Northeastern California Archaeological Region. The Cascade subregion extends southward from the Oregon border to the Central Valley, between the crest of the Klamath Mountains on the west and the Modoc Plateau on the east.

California prehistory is divided into three broad temporal periods that reflect similar cultural characteristics throughout the State: the Paleoindian Period (ca. 9,000 to 6,000 BCE), the Archaic Period (6,000 BCE to CE 500), and the Emergent Period (CE 500 to Historic Contact). The Archaic Period is divided further into the Lower (6,000 to 3,000 BCE), the Middle (3,000 to 1,000 BCE), and the Upper (1,000 BCE and CE 500) Periods, generally governed by climatic and environmental variables, such as the drying of pluvial lakes at the transition from the Paleoindian to the Lower Archaic Periods (Moratto 1984). Evidence of human occupation in the Cascade subregion dates as early as 10,000 years ago during the Paleoindian Period, although human occupation apparently experienced a hiatus after the Mazama ash fall approximately 7,600 years ago (Moratto 1984).

Ethnographic Context

The City of Shasta Lake lies within the ethnographic territory claimed by the Wintu (Kroeber 1976). The earliest archaeological evidence of human occupation in north central California is from a site located north of the City of Shasta Lake on Squaw Creek, where evidence suggests initial Native American presence around 6,500 years ago (Jensen, 1993). Continuous use of the region is indicated on the basis of evidence from this and other regional sites. It is estimated that the Wintu arrived in the Sacramento Valley approximately 1,000 to 1,200 years ago (LaPena 1978; Moratto 1984).

A detailed account of the ethnographic context of the area is included in Section 4.6 (Tribal Cultural Resources) of this Draft PEIR.

Historical Context

The first recorded historical use of the region by European-Americans occurred during the late 1820s and early 1830s, when the trapping expeditions of Jedediah Strong Smith, Peter Skene Ogden, and the Hudson Bay Company entered the Sacramento Valley (Petersen 1965).

U.S. possession of California territory coincided with the discovery of gold in the foothills of the Sierra Nevada mountain range. On January 24, 1848, John Marshall, an employee of a ranch and mill owner named John Sutter, discovered gold on the American River. Subsequently, half of California's population descended upon the region between San Francisco and the Sierra Nevada foothills, with the former's population alone growing from fewer than 1,000 people at the beginning of 1848 to more than 26,000 by year's end. Migrants from the East Coast and immigrants from Europe, Central and South America, and Asia came to the area the following year (Carey & Co., 2011).

Key events that contributed to settlement and population increases in Shasta County include Pearson B. Reading's discovery of gold on Clear Creek in 1848 and the subsequent California Gold Rush that began in late 1849; the arrival of the Central Pacific Railroad in 1872; the copper mining boom that began in the late 1880s; and the Central Valley Project (CVP) of 1935 and construction of Shasta Dam (Smith 1999).

Local Mining History

Pierson B. Reading's 1848 gold strike in Clear Creek occurred about five miles upstream from the Sacramento River, at a location that became known as Reading's Bar (Abeloe 1966; Hoover *et al.* 2002; Smith 1999). By 1849, thousands of gold seekers had arrived in the area. Settlements such as Horsetown and Old Shasta began to be established. As the gold rush continued, European diseases began to spread to Native Americans, and they began to die in large numbers. Eventually, their settlements and culture were destroyed (ECG, 2008).

Gold mining continued into the early years of the 20th century and copper mining, timber harvesting, and milling also became important industries (ECG, 2008). Several other small settlements sprang up with new discoveries of gold, silver, quartz, copper, and other ores and minerals. A few were particularly important to the City of Shasta Lake, though not necessarily the largest settlements or most important overall: Copper and Silver City, Coram, and Kennett.

Copper and Silver City, which included 40 camps, 7 houses, and 14 saloons, was founded in 1863 in the Pittsburg mining district. The large deposits of copper and silver were depleted by 1867, but the town subsequently experienced brief periods of development. Coram was founded in 1907 as a company town for the Balaklala copper mine on Motion Creek. Three years later, it incorporated with a population of 575.

Like all smelting operations, the Coram smelter resulted in sulfurous smoke that killed vegetation and crops and corroded metal work for miles. Farmers of Happy Valley won a lawsuit that forced the closure of the Balaklala smelting operation, and by 1914, Coram counted just 50 people. Ten years later, most of the remaining few buildings were burned down (Kobe, 1984).

Kennett developed around the site of traditional fishing and hunting grounds of the Wintu tribe. Europeans and Wintu tribes likely first made contact in 1844, when Ross McCloud passed through town, and John Sisk settled in what would later become the site of Kennett in 1857. Only in 1884 upon the discovery of gold on Squaw Creek, however, did Kennett take off as a mining town. Successful copper smelting operations at nearby Keswick in the 1890s led to further growth of

Kennett (Carey & Co., 2011). As a result of the construction of Shasta Dam in the 1930s and 1940s, apart from Keswick, the ruins of each of these towns now lie under water.

Although the above mining towns were short-lived, and many mining operations in Shasta County were intermittent, they left behind an unmistakable legacy in that American miners clashed with indigenous peoples, and mining operations had devastating environmental effects.

Violence was not simply common between the miners and Native American groups, miners and settlers considered indigenous Californians a hindrance to their intention to settle and bring Christianity and material prosperity to the North American continent (Carey & Co., 2011). Dramatic displacement through war or relocation occurred throughout the American continent. California was no exception to this, and during the Gold Rush and the decades immediately following, the indigenous population experienced a period of extreme violence perpetrated by settlers and miners.

By 1900, the population of 310,000 Native Americans who occupied California before European colonization was reduced to approximately 15,000-30,000. While some Wintu found refuge and subsistence on the territories of Anglos like Livingston Stone and Pierson Reading, their populations suffered dramatic losses too. Survivors were often displaced and destitute, and their culture struggled to survive (Carey & Co., 2011).

Environmental destruction from mining operations was extensive. Mining methods in the 1850s destroyed riverbeds and salmon habitat. Settlers felled trees for housing and introduced cattle and fences that transformed the natural habitat. Before electricity was introduced to the region in 1898, trees also provided the fuel necessary for smelting. Sulfur fumes, a byproduct of the refining process, killed many of the remaining trees and vegetation, replacing forests with barren wastelands (Carey & Co., 2011).

First Non-Native Settlement - Churntown

The Gold Rush introduced the first non-native settlement in the current City limits, Churntown, along what is now Flanagan Road in the western area of the City of Shasta Lake. Walcott and Mahan are prominent names in the early history of Churntown. Nelson Walcott opened a store and saloon; he disappeared mysteriously, but his store became the Flanagan home which, though significantly altered, remains standing to this day. It is probably the oldest structure in the City (Carey & Co., 2011).

Like Walcott, John Mahan appears on the tax rolls by 1860. Remnants of his family's homestead can be found in the City, including a cellar, and a hand-dug well. Mahan's daughter, Julia, married John Flanagan, an Irishman who immigrated to the U.S. in 1880 and soon settled in the Churntown area, where he became a prominent figure in the mining industry. Remnants of the Flanagan estate remain in the City as well; in addition to the Walcott store, which served as the Flanagan home, multiple outbuildings still exist.

Railroad and Transportation

Many of the major roads in the area originated during the Gold Rush era. Early stage routes from Redding to Yreka passed through the area via today's Ashby Road and Black Canyon Road, and a wagon road constructed in 1910 from Newton north to Kennett follows today's Lake Boulevard (Carey & Co, 2011).

The California and Oregon Railroad established the town of Redding in 1872 at Poverty Flat, where the construction of the California segment of the Transcontinental Railroad (TCR) from Marysville to

Redding terminated. Between 1872 and 1882, Redding served as the northernmost termination point for the TCR in California, allowing travelers from the Atlantic Coast and Midwest to travel and settle in the area, and economic goods to be imported and exported.

The Southern Pacific Railroad finished laying tracks from Redding to Portland, Oregon, in 1887. As Southern Pacific constructed its rail line through Redding toward Oregon, they became one of the largest property owners in the region; the railroad giant owned a checkerboard pattern of 160-acre parcels for twenty miles on either side of the tracks, thereby controlling development through land sales. Southern Pacific similarly owned much of the land that eventually became the City of Shasta Lake (Ellickson, 1986).

Central Valley Project and Shasta Dam

The Gold Rush era spawned many small local irrigation systems, usually canals, constructed by private interest groups to redistribute water from the Sacramento and San Joaquin Rivers to tracts of promising land to the east and west. Most of these projects were constructed independent of each other and resulted in water-rights court cases at the State and local levels. It was at this time that it became evident that a State water plan was needed (Rocca, 1993).

In 1921, Robert Marshall, a former official for the U.S. Geological Survey, proposed a plan for use of water from the Sacramento River. The plan proposed diverting water from the River to irrigate the Central Valley while retaining its navigability and creating hydroelectric power. This plan failed but prompted additional studies to determine sites that were best suited for new dams (Carey & Co., 2011).

In 1927, the California State Engineer released a report stressing the importance of a storage dam along the upper Sacramento River. Voters passed a measure in 1933 to fund the Central Valley Project (CVP) through the sale of revenue bonds sold against the expected power and irrigation water sales; however, due to the Great Depression, the State sold few bonds (Rocca, 1993). The CVP was subsequently turned over to the U.S. Bureau of Reclamation (USBR).

In the 1930s, Judge Francis Carr and State Senator John McColl lobbied congress and the USBR for federal funding to construct a large concrete dam in Shasta County. The CVP was approved by President Roosevelt under the Rivers and Harbors Act in 1935, and initial funds for Shasta Dam were appropriated for surveying, relocation of the railroad, and construction of access roads.

Therefore, before actual dam construction started in 1938, prospective workers poured into the area. These workers included crews from the USBR, construction workers from previous government projects in other states, men who had not had jobs for years due to the Depression, and migrant farm workers from the Dust Bowl in the Midwest (ECG, 2005).

Shasta Dam Village/Contractor's Camp

Employees of the contractor, Pacific Constructors Inc., were housed in Shasta Dam Village (Contractor's Camp), a townsite that was created at the base of the dam site. Contractor's Camp included shops, a hospital and commissary, residences, and a post office (Carey & Co., 2011).

Toyon / Government Camp

The Toyon townsite started as a homestead owned by Porter Seamans in 1855. In 1937, recognizing the need for housing near the Shasta Dam project, the government acquired the land from the Seamans family to establish Kennett Camp, later renamed Toyon and referred to locally as Government Camp.

Only government employees that worked on the project and their families were housed at Toyon. The federal community consisted of the USBR headquarters building, large two-story dormitories for single men, duplexes, single-family residences, paved streets, sidewalks, manicured lawns, park and recreation facilities, a fire station, and water tank. In total, there were ±100 buildings in the Toyon community.



Photo 4.5-1. Aerial View of Toyon, 1941. Courtesy of U.C. Davis. March 11, 1943 (Source: Pacific Constructors, Inc.)

Photo 4.5-1 is an aerial view of the Toyon townsite in 1943. **Photo 4.5-2** shows residences along a paved road within the Toyon community around 1939.



Photo 4.5-2. Cottages at Toyon, c. 1939.
Courtesy of Shasta Lake Heritage and Historical Society.

At the completion of construction of Shasta Dam, most of the buildings in Toyon were sold and moved throughout Shasta County (Palmer, 2018). The site became a Federal Job Corps Center between 1963 and 1969, and evolved into a Bureau of Indian Affairs holding in 1971. The Winnemem Wintu tribe occupied the site on May 21, 1971, and remained there until 1989, when the federal government evicted the tribe and demolished all of the buildings, other than a warehouse that stands to this day.

Boomtowns

In addition to Contractor's Camp and Government Camp (Toyon), new arrivals settled into "boomtown" communities: Central Valley (originally named Boomtown), Project City (originally named Midway), Summit City, and Pine Grove. Pine Grove, established by Charles Akard along Highway 99, south of Project City, included large lots, but no school, post office, or independent commercial center.

Project City, Central Valley, and Summit City grew around a commercial center of cafes, taverns, gas stations, grocery stores, dry goods, and various service-related businesses (ECG, 2008). Some people built permanent homes and some, who anticipated leaving soon after the Dam was completed, built tarpaper shacks. **Photo 4.5-3** shows the main road in Summit City in 1940. **Photo 4.5-4** shows the movie theater in Central Valley in 1940.

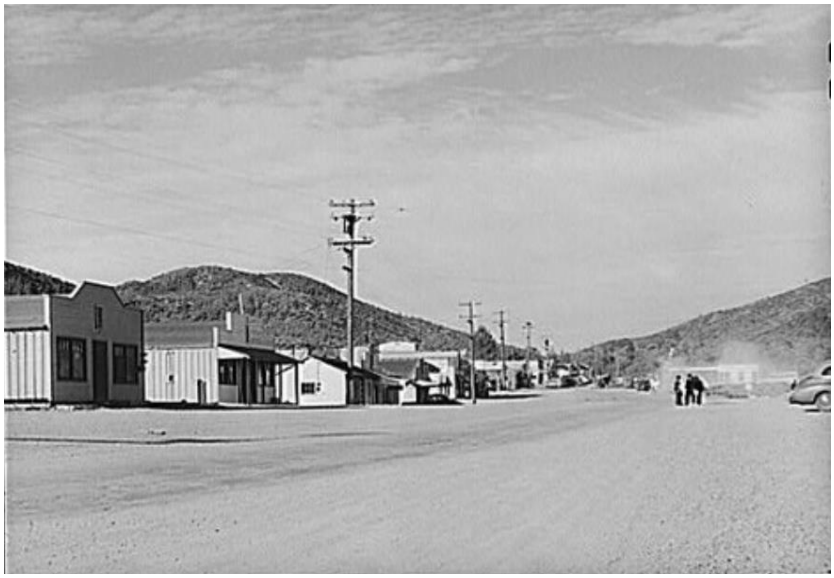


Photo 4.5-3. Main Street Summit City.
Photograph by Lee Russell, 1940. Library of Congress.



Photo 4.5-4. Central Valley Movie Theater.
Photograph by Lee Russell, 1940. Library of Congress.

As dam construction commenced, it became apparent that a school was needed, and Toyon School was constructed in 1938 at the intersection of what is now Shasta Dam Boulevard and Lake Boulevard. Two school buses were also purchased: one took the younger children to Toyon School, while the other took the older children to high school in Redding. By 1939, these new towns included several hundred houses, a private company distributed water from wells to homes, Pacific Gas & Electric (PG&E) supplied electricity, and septic disposal systems were installed. In the late summer of 1939, Shasta Dam Boulevard was paved, as was the Kennett-Buckeye Road (now Lake Boulevard) over the summit.

Photo 4.5-5 shows Shasta Dam under construction in 1943. Construction of the dam was completed in 1945, and it was expected that USBR employees and workers would move on to other projects; however, many workers stayed on until the dam was dedicated and filled in 1950, and later found employment in Shasta County's growing lumber industry. In 1945, the boomtown communities included 3,500 permanent residents.



Photo 4.5-5. Shasta Dam Under Construction, 1943.
Source: Pacific Constructors, Inc.

A group of residents organized the Shasta Dam Area Improvement Association (SDAIA), which was responsible for the formation of the Shasta Dam Area Public Utility District (SDAPUD) in 1947. The SDAPUD formed an agreement with the USBR to purchase water from Lake Shasta, and a bond measure passed in 1947 to build the infrastructure for a water distribution system. Water reached homes in the former boomtowns on February 12, 1948.

SDAIA next turned their focus to providing electricity. It first constructed the infrastructure to power an industrial tract, in the hopes of attracting commercial industry. Subsequently, five lumber processing plants were established in the SDAPUD, creating jobs and increasing local land values. In 1953, voters in the utility district passed a bond measure to build the infrastructure necessary to distribute power to all residents in the districts. In 1957, after four years of litigation

against PG&E, who argued that the SDAPUD presented illegal competition, the utility district installed an electrical distribution system that served most residents. The SDAPUD expanded the electricity system in 1962, with the construction of a transmission line from Keswick Dam to the District, and in 1980, when the SDAPUD purchased PG&E distribution facilities within the District (Carey & Co., 2011).

By 1976, the SDAPUD had constructed a sewer collection and treatment system and also owned and operated seven parks throughout the District. This included Margaret Polf Park, the City's first park, which was constructed around 1940 by the federal government and Pacific Constructors Inc. In 1993, the towns of Pine Grove, Project City, Central Valley, Summit City, and Toyon were incorporated to form the City of Shasta Lake.

4.5.3 Regulatory Framework

FEDERAL

Section 106 of the National Historic Preservation Act (NHPA)

Section 106 of the NHPA and its implementing regulations require federal agencies to take into account the effects of their activities and programs on historic properties. Section 106 applies to projects that receive federal funds and/or require federal permits.

A historic property is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property (NHPA Sec. 301[5]). A resource is considered eligible for listing in the NRHP if it meets the following criteria as defined in Code of Federal Regulations (CFR) Title 36, §60.4:

A. The property is associated with events that have made a significant contribution to the broad patterns of our history;

B. The property is associated with the lives of persons significant in our past;

C. The property embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or

D. The property has yielded, or is likely to yield, information important to prehistory or history.

In addition to meeting at least one of the criteria outlined above, the property must also retain enough integrity to enable it to convey its historic significance. To retain integrity, a property will always possess several, and usually most, of the following seven aspects of integrity:

- Location: the place where the historic property was constructed or the place where the historic event occurred.
- Design: the combination of elements that create the form, plan, space, structure, and style of a property.
- Setting: the physical environment of a historic property.
- Materials: the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

- Workmanship: the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- Feeling: a property's expression of the aesthetic or historic sense of a particular period of time.
- Association: the direct link between an important historic event or person and a historic property.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP. If a site is determined to be an eligible or historic property, impacts are assessed in terms of "effects." An undertaking is considered to have an adverse effect if it results in any of the following:

- Physical destruction or damage to all or part of the property.
- Alteration of a property.
- Removal of the property from its historic location.
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of a property that causes its deterioration; and the transfer, lease, or sale of the property.

If a project will adversely affect a historic property, feasible mitigation measures must be incorporated. For federally funded projects, or projects requiring a federal permit, the State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to commencement of the project.

STATE

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is an authoritative list of historical resources in the State. The list is derived from a variety of sources, including resources listed in the National Register, State Historic Landmarks, Points of Historical Interest, resources subject to local preservation ordinances, and other resources identified as significant under the criteria listed in Title 14, §4852 of the California Code of Regulations (CCR). The CRHR serves several purposes, one of which is to identify resources that require environmental review under CEQA.

California Environmental Quality Act (CEQA)

CEQA requires that projects financed by or requiring the discretionary approval of public agencies in California be evaluated to determine potential adverse effects on historical and archaeological resources (CCR §15064.5). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. Pursuant to §15064.5 of the CCR, a property may qualify as a historical resource if it meets any of the following criteria:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).

- The resource is included in a local register of historic resources, as defined in §5020.1(k) of the Public Resources Code (PRC), or is identified as significant in a historical resources survey that meets the requirements of §5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- The lead agency determines that the resource may be a historical resource as defined in PRC §5020.1(j), or §5024.1, or may be significant as supported by substantial evidence in light of the whole record. Pursuant to PRC §5024.1, a resource may be eligible for inclusion in the CRHR if it:
    - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    - Is associated with the lives of persons important in our past;
    - Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
    - Has yielded, or may be likely to yield, information important in prehistory or history.

Resources must retain integrity to be eligible for listing on the CRHR. Resources that are listed in or formally determined eligible for listing in the NRHP are included in the CRHR, and thus are significant historical resources for the purposes of CEQA (PRC §5024.1(d)(1)).

A unique archaeological resource means an artifact, object, or site that meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

California Historical Building Code,

The California Historical Building Code (CHBC) (California Health and Safety Code §18950 et seq.) includes regulations pertaining to the repair, alteration, and additions necessary for the preservation, restoration, rehabilitation, relocation, or continued use of a qualified historical building or structure. The intent of the CHBC is to protect California's architectural heritage by recognizing unique construction problems that are inherent in historical buildings.

For purposes of the CHBC, a qualified historical building or structure is defined as any structure or collection of structures, and their associated sites deemed of importance to the history, architecture, or culture of an area by an appropriate local or State governmental jurisdiction. This includes any structures in existing or future national, State, or local historical registers or official inventories, such as the NRHP, State Historical Landmarks, State Points of Historical Interest, and city or county registers or inventories of historic or architecturally significant sites, places, historic districts, and landmarks. CCR Title 24, Part 8 of the California Building Standards Code contains alternative regulations for qualified historical buildings. It is the responsibility of local building officials to implement the CHBC and accept solutions that are reasonably equivalent to the regular building code, while ensuring reasonable safety for building occupants and access for persons with disabilities.

LOCAL

Shasta Lake Municipal Code (SLMC)

Design Guidelines. SLMC Chapter 17.78, Design Review (DR) District, is an overlay zone that is combined with principal zone districts to protect areas having unique historical, environmental, physical, or scenic features and to ensure compatibility with surrounding land uses through suitable project design.

SLMC §17.84.005 identifies general design objectives for new commercial, industrial, residential, and public development projects. The objectives are also applied, as feasible, to existing structures. The intent of the design objectives is to enhance the community's overall value and appearance, and to achieve well-designed projects that complement the small-town feel of the community and its heritage. SLMC §17.84.005(C) encourages design themes that reflect the City's small-town atmosphere, and its natural resources and recreation-based heritage (e.g., use of stone, heavy timbers, other natural appearing materials and colors in the buildings, and overall site design). SLMC §17.84.005(C) also states that building accents that relate to the community's origin in the 1930s and 1940s are encouraged.

Grading, Erosion Control, and Hillside Development Code. SLMC §15.08.210 (Design Criteria for all Projects) subsection (A)(12) states that grading designs shall be sensitive to natural topographic, cultural, and environmental features. Significant cultural and historical features must be preserved in open space easements, or such other means that would ensure preservation of such features.

4.5.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to cultural resources:

GOAL OS-4	**Promote and protect the City's historical, cultural, and archaeological resources.**	
POLICIES	OS-4.1	Preserve historical or archaeological resources from development impacts and include appropriate mitigation to protect such resources.
	OS-4.2	Require consultation with affected communities, such as the Wintu, to determine the culturally appropriate treatment of historical or archaeological resources. This includes proper storage and handling, and potentially placing collections in a curated facility. These procedures should be based on existing federal curation standards.
	OS-4.3	Coordinate with public agencies and the Wintu to maintain existing inventory of cultural resources in the City, including information about whether collections or sites are open to the public or have been placed in a curated site for public visitation.
IMPLEMENTATION ACTION	OS-4.1	Develop an internal inventory of the City's historical, cultural, and archaeological resources and programs to protect them (shall remain confidential and unavailable to the public unless otherwise authorized).
GOAL LU-1	**Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.**	
POLICY	LU-1.11	Incorporate existing buildings into community design efforts. Encourage the preservation, protection and restoration of historic buildings and properties where practical and feasible.

IMPLEMENTATION ACTIONS	LU-1.1	Review, and as necessary revise, specific design policies, guidelines, and development standards to address reuse of aging structures.
	LU-1.9	Conduct an assessment and prioritization of community areas or specific properties exhibiting deteriorating conditions that could be addressed through public and private conservation and rehabilitation programs. Seek grant or other funding for such efforts.

4.5.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on cultural resources if it would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5.

2. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines §15064.5.

3. Disturb any human remains, including those interred outside of dedicated cemeteries.

4.5.6 Issues Not Discussed Further

All issues identified in Section 4.5.5 are discussed below.

4.5.7 Impact Analysis and Mitigation Measures

Impact 4.5-1	**Implementation of the 2040 General Plan could cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5.** ***Less-than-Significant Impact***

Development under the 2040 General Plan could result in a substantial adverse change to historical resources if such resources were destroyed, damaged, altered, or removed from their historic location. Development could also change the character of a property's use or of physical features that contribute to its historic significance. The introduction of elements (e.g., lighting) that diminish the integrity of the property's significant historical features could also occur.

As discussed in Section 4.5.2 (Environmental Setting), the construction of Shasta Dam and development of the Central Valley Project were of major significance to the growth and economic success of California and the City. The Dam has both physical and historic significance to the development of the entire State, and the workers that built the Dam gained importance from their effort. The timely creation of small towns to house thousands of workers was a notable achievement. The housing created for that project has gained historic importance for its associated role in that era of California history (ECG, 2008).

As described below, several historical resource evaluations have been completed over the years to determine the significance of structures in the City. The surveys that covered all or large areas of the City are described below. Additional surveys have been completed for private development projects as well. The types of historical resources that have been identified in the City during past

surveys include historic-era foundations/house pits/depressions; historic dumps/trash scatters; and pits, depressions, piles, tailings, and other evidence of historic mining activities.

Shasta Dam Area Redevelopment Plan, Fourth Amendment

In 2007, as part of the Fourth Amendment to the Shasta Dam Area Redevelopment Plan, Historic Environment Consultants (HEC) conducted a survey in the westernmost areas of the City to assess the presence of potentially significant historic buildings (ECG, 2008). The HEC report included research and visual surveys of buildings within the former Summit City area, along Shasta Park Drive, and along Shasta Dam Boulevard between Shasta Park Drive and Rouge Road. The survey noted several groups of buildings in the Summit City area that were constructed to house and serve workers who came to the area to work on the Shasta Dam project.

The DEIR for the Redevelopment Plan amendment notes that many structures from the Dam era were constructed as temporary dwellings and have been greatly altered over the years, which has impacted their integrity where character-defining features have been lost or removed. The DEIR states that the most distinctive Dam-era complex was a row of connected gable-roofed cottages on the hillside west of Buckeye Street; however, these cottages were recently demolished due to substandard structural conditions that presented a safety hazard. The DEIR states that additional Dam-era structures were noted in the Summit City area.

City of Shasta Lake Historic Context Statement

In 2010, as part of preparation of the City's 2011 Historic Context Statement (Carey & Co., 2011), reconnaissance windshield surveys of the City were conducted by an architectural historian, and documentation regarding the types of buildings, existing conditions, historic features, and structures of architectural significance was prepared. A records search was conducted by the Northeast Information Center of the California Historical Resources Information System (CHRIS) at California State University, Chico, on February 17, 2010, to identify previously completed cultural resource survey reports and recorded cultural resources within the City limits.

Carey & Co. also met with members of the Shasta Lake Heritage and Historical Society to conduct research, and with representatives of the Wintu tribe to obtain their perspective on known archaeological sites and traditional cultural properties in the area.

The Historic Context Statement noted several Dam-era structures in the Summit City area, including duplexes on Hill Boulevard that are reportedly the original duplexes that were relocated from the Toyon townsite (Government Camp). Additional cottages, bungalows, and some commercial structures that were built in the 1930s and 1940s were identified throughout the City. These structures are potentially eligible for listing in the NRHP or CRHR for their association with the development of the Boomtowns. Schools within the City were also addressed.

One industrial property, a lumber mill (current owned by Sierra Pacific Industries) was identified. The lumber mill was established around 1938 and may be eligible for listing in the NRHP or CRHR due to its association with development of the Boomtowns.

The Historic Context Statement concluded that many of the Dam-era structures are not apparently recognizable as important works of architecture by master architects. Many were also erected as temporary structures, so they may be in poor condition. Many of the buildings have already been determined to be ineligible for the NRHP or the CRHR in previous surveys due to a lack of significance and/or a lack of integrity. Carey & Co. recommended that

additional research be conducted to identify individually significant properties and historic districts in the City.

As recommended in the DEIR for the Redevelopment Plan Amendment and Historic Context Statement, additional evaluation of the gable-roofed cottages on the hillside west of Buckeye Street was completed by Trudy Vaughan in 2015, and the complex was recorded (CA-SHA-4988H). Ms. Vaughan concluded that the complex is not considered eligible for listing in the NRHP or CRHR because it does not retain sufficient integrity to meet the eligibility requirements. This is likely the case with other Dam-era structures.

Shasta Dam Historic District Evaluation

In 2018, Lex Palmer, architectural historian with the USBR Mid-Pacific Region, recorded the Shasta Dam Historic District, which includes structures and improvements at the Dam and facilities within the City. Elements of the Historic District include a circulation system (five roadways and a bridge spanning the Sacramento River), operations and maintenance buildings, Shasta Dam visitation facilities, designed landscape elements and objects, Shasta Dam water storage and conveyance facilities, power generation and transmission facilities, support features used during construction of the Dam, and historic period archaeology sites.

District elements that are located within the City include the Toyon townsite (Government Camp), Shasta Dam Boulevard between the western City limits and the Toyon townsite, and Lake Boulevard between the northern City limits and Shasta Dam Boulevard. Site records show that these roadways are contributing elements of the Historic District and are eligible for listing in the NRHP. The roadway segments were determined eligible for landscape architecture values focused on visual effects for public visitation; the site record documents that the roadways retain integrity of location, design, setting, materials, workmanship, feeling and association (NRHP Criterion C for Shasta Dam Boulevard and NRHP criterion A/C for Lake Boulevard.

The site record describes the Toyon townsite as a discontinuous, non-contributing element of the Historic District. The Toyon townsite was determined ineligible for listing in the NRHP because all buildings, with the exception of a warehouse and water tank (1937) have been removed. The site does not have Criterion D potential because sufficient plans and historic period images exist, and the site will not provide any additional information. Further, the site has lost integrity of design, materials, workmanship, feeling, and association.

As of May 2022, there are no properties in the City that are listed in the NRHP or CRHR. However, as documented above, there are known historical resources in the City that are potentially eligible for listing the NRHP or CRHR, and development under the 2040 General Plan has the potential to result in an adverse change in the significance of such resources. Additionally, development could occur in areas where structures have not yet been evaluated for historical significance.

As noted in Section 4.5.4, the 2040 General Plan includes policies and implementation actions that will minimize the potential for impacts on historical resources. General Plan Policy OS-4.1 requires preservation of historical and archaeological resources, and implementation of mitigation as necessary to protect such resources. Implementation Action OS-4.1 requires the City to develop an internal inventory of the City's historical and archaeological resources for reference by the City during review of development proposals. Policy LU-1.11 calls for incorporation of existing buildings into community design efforts. The preservation, protection and restoration of historic buildings and properties will be encouraged where practical and feasible. Implementation Action LU-1.1 requires the City to review and revise specific design policies, guidelines, and development

standards to address reuse of aging structures. This could include specific provisions and requirements for historic buildings.

Future development under the 2040 General Plan would be subject to compliance with these proposed policies and implementation programs. In addition, future projects would be subject to review for consistency with the City's design and architectural objectives, which call for building designs that reflect the City's heritage. Building accents that relate to the community's origin in the 1930s and 1940s are strongly encouraged. The City's Grading, Erosion Control and Hillside Development Ordinance requires that significant cultural and historical features must be preserved in permanent open space easements, or by such other means that would ensure preservation of such features.

As stated in Section 4.5.3 (Regulatory Framework), the California Historical Building Code (CHBC) includes regulations and standards for the rehabilitation, preservation, restoration, and relocation of historical buildings, structures, and properties. The City's Building Official is responsible for reviewing building permit applications and implementing the provisions of the CHBC.

Therefore, because future projects will be reviewed on a case-by-case basis to determine compliance with applicable federal, State, and local regulations enacted for the protection of historical resources, and mitigation measures would be implemented as necessary to avoid/minimize adverse effects, impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.5-2	Implementation of the 2040 General Plan could have a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5. ***Less-than-Significant Impact***

Ground-disturbing activities that would occur with implementation of the 2040 General Plan have a potential to directly or indirectly impact archaeological resources.

In 2010, as part of preparation of the City's 2011 Historic Context Statement a records search (I. C. File # D10-10), was conducted by the Northeast Information Center of the California Historical Resources Information System (CHRIS) at California State University, Chico on February 17, 2010. This records search provides a list of previously identified archeological sites and survey reports for sites located within the City limits (Carey & Co., 2011). Additional records searches have been conducted over the years, both for private development projects and City public works/infrastructure projects.

The types of sites previously identified in the City are described below. It is highly likely that additional archaeological field surveys conducted for development projects in the City will identify similar resources in the future.

- Lithic scatters (both surface and subsurface)
- Basalt, chert, and obsidian flakes, cores, occasional point fragments
- Isolates
- Midden sites

- Occupation sites
- Possible tribal ceremonial center
- Village encampments with surface scatters of lithic artifacts and debitage with midden deposits (usually near perennial water sources)
- Short-term occupation/specialized use sites with surface scatters of lithics without midden or subsurface components (usually along a ridge system)
- Bedrock milling stations with areas of exposed bedrock (usually along stream channels)
- Petroglyphs – bedrock outcrops

In addition, there is always some potential to encounter buried archaeological resources during earth-disturbing activities. For this reason, the City's standard conditions of approval and/or construction standards include the following requirement for all discretionary projects and public works projects:

> *In the event of any inadvertent discovery of cultural resources (i.e., burnt animal bone, midden soils, projectile points or other humanly modified lithics, historic artifacts, etc.), all work within 50 feet of the find shall be halted until a professional archaeologist can evaluate the significance of the find in accordance with PRC §21083.2(g) and §21084.1, and CEQA Guidelines §15064.5(a). If any find is determined to be significant by the archaeologist, the City shall meet with the archaeologist to determine the appropriate course of action. If necessary, a Treatment Plan prepared by an archeologist outlining recovery of the resource, analysis, and reporting of the find shall be prepared. The Treatment Plan shall be reviewed and approved by the City prior to resuming construction.*

General Plan Policy OS-4.1 requires preservation of historical and archaeological resources, and implementation of mitigation as necessary to protect cultural resources. Future development under the 2040 General Plan would be subject to compliance with this Policy. Implementation Action OS-4.1 requires the City to develop an internal inventory of the City's historical and archaeological resources for reference by the City during review of development proposals.

In addition, the City's Grading, Erosion Control and Hillside Development Ordinance requires that significant cultural and historical features must be preserved in permanent open space easements, or by such other means that would ensure preservation of such features.

Therefore, because future projects will be reviewed on a case-by-case basis to determine compliance with applicable federal, State, and local regulations enacted for the protection of archaeological resources, mitigation measures would be implemented as necessary to avoid/minimize adverse effects, and the City's standard conditions of approval address the inadvertent discovery of cultural resources, impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.5-3	Implementation of the 2040 General Plan could disturb human remains, including those interred outside of dedicated cemeteries. ***Less-than-Significant Impact***

The 2040 General Plan does not propose any development in or adjacent to a known cemetery. As discussed under Section 4.5.2 (Environmental Setting), evidence for human occupation within and around the City dates as early as 10,000 years ago. Human burials outside of formal cemeteries often occur in prehistoric archeological contexts. In addition, human remains of Native American descent have been uncovered during prior earth-disturbing activities in the City, and there are likely additional human remains in the City that have not yet been encountered.

Therefore, ground-disturbing activities associated with future development under the 2040 General Plan have a potential to disturb human remains. In accordance with California Health and Safety Code (HSC) §7050.5, the City's standard conditions of approval and/or construction standards include the following requirement for all projects:

> *If any human remains are encountered during any phase of construction, all earth-disturbing work shall stop within 50 feet of the find. The county coroner shall be contacted to determine whether investigation of the cause of death is required as well as to determine whether the remains may be Native American in origin. Should Native American remains be discovered, the county coroner must contact the Native American Heritage Commission (NAHC). The NAHC will then determine those persons it believes to be most likely descended from the deceased Native American(s). Together with representatives of the people of most likely descent, a qualified archaeologist can make an assessment of the discovery and recommend/implement mitigation measures as necessary.*

Compliance with HSC §7050.5 and implementation of the City's standard construction measure related to the inadvertent discovery of human remains ensures that impacts are ***less than significant.***

Mitigation Measures

No mitigation measures required.

4.5.8 References

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SECTION

4.6

Tribal Cultural Resources

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4.6 Tribal Cultural Resources

This section describes the ethnographic context of the area, describes tribal cultural resources, and evaluates whether implementation of the 2040 General Plan would cause a substantial adverse change in the significance of a tribal cultural resource.

4.6.1 Study Methods

The following evaluation of potential impacts on cultural resources is based on review of existing reports and literature, including cultural resources studies and historic resources evaluations that have been completed for projects within and near the City of Shasta Lake.

Resources reviewed include: City of Shasta Lake Historic Context Statement prepared by Carey & Co. Inc. in January 2011 (Carey & Co., 2011); the Environmental Impact Report for the Shasta Dam Area Redevelopment Plan, Fourth Amendment prepared by the Ervin Consulting Group (ECG, 2008); and the Cultural Resources Overview for Northern California prepared by Far Western Anthropological Research Group, Inc. (King, Hildebrandt, and Waechter, 2016).

The evaluation also included consultation with Native American tribes as follows:

Public Resources Code (PRC) §21080.3.1 - Assembly Bill (AB) 52 of 2014

Enacted by AB 52 of 2014, PRC §21080.3.1 requires lead agencies to provide written notice to Native American tribes that have requested to be notified of projects under the lead agency's jurisdiction. This requirement applies to projects subject to the California Environmental Quality Act (CEQA) that require preparation of an Environmental Impact Report, Negative Declaration, or Mitigated Negative Declaration. To date, the City has received one such request, from the Wintu Tribe of Northern California.

On July 29, 2021, the City provided written notification to Kelli Hayward, Cultural Resources Director for the Wintu Tribe of Northern California (see **Appendix C**). The letter described the City's proposed 2040 General Plan update and requested that the tribe contact the City if the tribe wished to engage in formal consultation regarding possible significant effects that the 2040 General Plan may have on tribal cultural resources. The Wintu Tribe did not respond to the City's written notice. The City will continue to consult with the Wintu Tribe on individual development projects.

California Government Code (CGC) §65352.3 and §65352.4 - Senate Bill (SB) 18 of 2004

Enacted by Senate Bill (SB) 18 of 2004, CGC §65352.3 and §65352.4 require local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions at an early planning stage to allow consideration of cultural places in the context of broad local land use policy, before individual site-specific, project-level land use decisions are made by a local government.

On July 28, 2021, the City sent information to the NAHC with a request for a search of the Sacred Lands File and a list of Native American Tribes for purposes of completing the consultation pursuant to CGC §65352.3 and §65352.4.

In response to the City's request, on August 26, 2021, the NAHC conducted a search of the Sacred Lands File and indicated that the search did not identify any known Native American

sacred sites or tribal cultural resources in the project area (see **Appendix C**). NAHC provided a list of Native American tribes that may have traditional lands or cultural places located within Shasta County (Wintu Tribe of Northern California, Winnemem Wintu Tribe, Redding Rancheria, Greenville Rancheria, Quartz Valley Indian Community, Mooretown Rancheria of Maidu Indians, Nor-Rel-Muk Nation, Shasta Indian Nation, and Shasta Nation).

On September 3, 2021, written notice of the City's proposed 2040 General Plan update was sent to the Native American contacts identified by NAHC. One response was received during the 90-day comment period, from Matthew Hatcher, Tribal Historic Preservation Officer with the Mooretown Rancheria. Mr. Hatcher stated that the Mooretown Rancheria had no comment regarding the 2040 General Plan update (see **Appendix C**). No responses were submitted by any of the other tribes who received written notification. Future general plan amendments and new or amended specific plans will be referred to Native American tribes as required by CGC §65352.3.

4.6.2 Environmental Setting

The City of Shasta Lake lies within the ethnographic territory claimed by the Wintu (Kroeber 1976). Approximately 310,000 people who spoke between sixty-four and eighty languages lived within the boundaries of modern-day California, and it is believed that the Wintu may have accounted for as much as ten percent of this population; they settled densely along the McCloud River, which they called the Winemem, or "middle waters," and thrived on the abundance of salmon and other foods in the surrounding forests (Carey & Co., 2011).

The earliest archaeological evidence of human occupation in north central California is from a site located north of the City of Shasta Lake on Squaw Creek, where evidence suggests initial Native American presence around 6,500 years ago (Jensen, 1993). Continuous use of the region is indicated on the basis of evidence from this and other regional sites. It is estimated that the Wintu arrived in the Sacramento Valley approximately 1,000 to 1,200 years ago (LaPena 1978; Moratto 1984).

The Wintu political organization consisted of nine tribelets, each of which were an independent social group that maintained a well-defined territory (LaPena 1978). Each territory was further divided into villages and camps, with villages being the primary social, political, and economic unit of the tribelet (LaPena 1978). The villages would contain between five and fifty conical bark houses, which could each accommodate between three to seven family members. The structures were semi-subterranean and were constructed using vertical wood poles and evergreen boughs/bark for structure coverage (LaPena 1978). Some of the larger villages also had an earthen lodge, which would serve as a gathering place for men. Unlike many hunter-gatherer groups, the Wintu were socioeconomically stratified, with each tribelet having a chief or headman (LaPena 1978).

According to LaPena (1978), the Wintu practiced a semi-sedentary subsistence/settlement strategy. Year-round villages were common, as were seasonal camps. A seasonal subsistence strategy focused on the collection of plant foods, hunting, and fishing. During the winter, most people lived in villages along the river, eating stored foods such as dried salmon, acorns, and a variety of small seed crops (DuBois 1935; LaPena 1978). In the spring and summer, people would establish ephemeral campsites in upland areas where they gathered clover, tubers, berries, and various seed crops; hunted deer and rabbit; collected grasshoppers; and fished for salmon and steelhead (LaPena 1978). In the autumn, the Wintu would harvest acorns and pine nuts, hunt black bear, and fish for salmon (LaPena 1978).

The Wintu utilized a wide variety of resources in the production of tools and other utilitarian items (LaPena 1978; Clewett and Sundahl 1983). Woodland, grassland, and riverine environments provided a variety of materials suitable to a wide range of economic activities. Many utilitarian and non-utilitarian implements were crafted including bows, arrows, spears, clubs, slings, ropes, nets, rafts, basketry, clothing of hides and pelts, pipes, and other items (DuBois 1935; Kroeber 1976; LaPena 1978). Extensive trade existed within and between various Wintu villages, and limited trade existed with adjacent groups such as the Shasta, Pomo, and Chimariko.

The first encounter with Euro-Americans was in 1826 and 1827 during expeditions by Jedediah Smith and Peter Ogden. In the 1830s, trappers from the Hudson Bay Company travelled through the area, sometimes in groups as large as 100 people (Maloney, 1945). Although the trappers brought trade items, such as glass beads and copper kettles, which were valuable to the tribe, they also brought disease (thought to have been malaria) that killed much of the local Indian population in 1833 (Cook, 1943; Hildebrandt and Darcangelo, 2008).

Although local populations recovered to some degree, they were impacted again when the Gold Rush brought thousands of gold seekers to the area in 1848. Settlements such as Horsetown and Old Shasta began to be established. As the Gold Rush continued, European diseases began to spread to Native Americans, and they began to die in large numbers (ECG, 2008).

Further, violence was not simply common between the miners and Native American groups, miners and settlers considered indigenous Californians a hindrance to their intention to settle and bring Christianity and material prosperity to the North American continent (Carey & Co., 2011). Dramatic displacement through war or relocation occurred throughout the American continent. California was no exception to this, and during the Gold Rush and the decades immediately following, the indigenous population experienced a period of extreme violence perpetrated by settlers and miners.

By 1900, the population of 310,000 Native Americans who occupied California before European colonization was reduced to approximately 15,000-30,000. While some Wintu found refuge and subsistence on the territories of Anglos like Livingston Stone and Pierson Reading, their populations suffered dramatic losses too. Survivors were often displaced and destitute, and their culture struggled to survive (Carey & Co., 2011).

4.6.3 Regulatory Framework

FEDERAL

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act (NHPA) applies to projects on federal land, projects supported by federal funds, and projects that require a federal permit. In 1992, amendments to the NHPA clarified that properties of religious and cultural significance to Indian tribes could be eligible for listing on the National Register of Historic Places (NRHP). The amendments also clarified that federal agencies, in carrying out their Section 106 responsibilities, must consult with any Indian tribe that attaches religious or cultural significance to historic properties that may be affected by a proposed undertaking.

Historic properties of religious and cultural significance include: archeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places, traditional cultural landscapes, plant and animal communities, and buildings and structures with significant tribal association.

STATE

Senate Bill (SB) 18 (2004) Traditional Tribal Cultural Places

California Government Code (CGC) §65352.3, enacted by SB 18 in 2004, requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan. The intent of this requirement is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

Assembly Bill (AB) 52 (2014)

Public Resources Code (PRC) §21084.2, enacted by AB 52 of 2014, establishes that *"a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment."* Pursuant to PRC §21080.3.1, in order to determine whether a project may have such an effect, a lead agency is required to consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if the tribe requested to the lead agency to be informed through formal notification of proposed projects in the area and the tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation.

Pursuant to PRC §21084.3, lead agencies must, when feasible, avoid damaging effects to a tribal cultural resource and must consider measures to mitigate any identified impact.

Definition of Tribal Cultural Resource

PRC §21074 defines "tribal cultural resources" as either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

    a. Included or determined to be eligible for inclusion in the California Register of Historical Resources.

    b. Included in a local register of historical resources as defined in subdivision (k) of §5020.1.

2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of §5024.1 of the PRC. In applying the criteria set forth in subdivision (c) of §5024.1. for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

A cultural landscape that meets the above criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. A historical resource described in PRC §21084.1, a unique archaeological resource as defined in PRC §21083.2(g), or a nonunique archaeological resource as defined in PRC §21083.2(h) may also be a tribal cultural resource if it conforms to the definition in PRC §21074.

LOCAL

There are no local regulations that specifically address tribal cultural resources.

4.6.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to tribal cultural resources:

GOAL OS-4	**Promote and protect the City's historical, cultural, and archaeological resources.**	
POLICIES	OS-4.1	Preserve historical or archaeological resources from development impacts and include appropriate mitigation to protect such resources.
	OS-4.2	Require consultation with affected communities, such as the Wintu, to determine the culturally appropriate treatment of historical or archaeological resources. This includes proper storage and handling, and potentially placing collections in a curated facility. These procedures should be based on existing federal curation standards.
	OS-4.3	Coordinate with public agencies and the Wintu to maintain existing inventory of cultural resources in the City, including information about whether collections or sites are open to the public or have been placed in a curated site for public visitation.
IMPLEMENTATION ACTION	OS-4.1	Develop an internal inventory of the City's historical, cultural, and archaeological resources and programs to protect them (shall remain confidential and unavailable to the public unless otherwise authorized).
GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICY	LU-3.6	When working on issues affecting California Indian Tribal Governments, the City will act consistently, respectfully, and sensitively. When there are regulatory, statutory, or procedural impediments limiting the City's ability to work with tribal governments in the area, the City will make every effort to eliminate such impediments.

4.6.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact if it would cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC §21074 that is:

1. Listed or eligible for listing in the California Register of Historical Resources (CRHR), or in a local register of historical resources; or

2. Is determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC §5024.1(c)[1], taking into consideration the significance of the resource to a California Native American tribe.

[1] PRC §5024.1(c) references the following NRHP criteria: 1) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; 2) is associated with the lives of persons important in our past; 3) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; 4) or has yielded, or may be likely to yield, information important in prehistory or history.

4.6.6 Issues Not Discussed Further

Both issues identified in Section 4.6.5 are addressed below.

4.6.7 Impact Analysis and Mitigation Measures

Impacts 4.6-1 and 4.6-2	**Implementation of the 2040 General Plan could cause a substantial adverse change in the significance of a tribal cultural resource, as defined in PRC §21074, that is eligible for listing in the CRHR or a local register, or is determined by the City to be significant pursuant to the criteria in PRC §5024.1(c).** ***Less-Than-Significant Impact***

Development under the 2040 General Plan could result in a significant adverse change in the significance of a tribal cultural resource. As noted in Section 4.6.2 (Environmental Setting), initial Native American presence in the area dates to around 6,500 years ago (Jensen, 1993), and continuous use of the region is indicated based on evidence gather during past archaeological studies. The types of resources previously identified in the general area are described below:

- Lithic scatters with flaked stone debitage and/or tools
- Milling stations consisting of bedrock milling features and/or portable milling tools
- Simple habitations, likely occupied by families or small groups of families. These sites, in addition to flaked stone and bedrock or portable milling equipment, may include midden deposits and/or accumulations of dietary remains such as shell or animal bone. Thermal features and scattered fire-cracked rock are also common at these sites.
- Complex habitations, which include constituents of simple habitations, as well as evidence of residential structures (e.g., house pits or large rock rings). They are typically large and located in areas where subsistence resources were ample.
- Rock art, primarily cupules and petroglyphs.

Unlike the resources identified above, traditional cultural properties, landscapes, and use areas, would generally not be identifiable by an archaeologist without consulting with local Native American tribes. For example, an isolated rock feature on a private development site in the City was identified as spiritually significant to a local Native American tribe, and a mitigation measure was proposed to protect the significance of this feature.

As stated in Section 4.6.1 (Study Methods), consultation with the NAHC revealed that the Sacred Lands File did not identify any known Native American sacred sites or cultural resources in the project area. Although no Native American tribes expressed concerns with the 2040 General Plan update, this may be due to the City's close relationship with the Wintu tribe and consultation that has occurred with the tribe on previous projects, including City projects and private development projects. For example, for a recent private development project in the City, the Wintu tribe expressed concern that tribal cultural resources could be discovered on the project site during earth-disturbing activities. The City subsequently adopted the following mitigation measures for the project to address the tribe's concerns. Similar measures could be imposed for future projects, and additional measures could be identified on a project-by-project basis as a result of the City's tribal consultation efforts.

Examples of Mitigation Measures that Could be Imposed on Future Projects

- Prior to commencement of any earth disturbance (e.g., clearing, grading, trenching, etc.), all construction personnel participating in the earth-disturbing activities and their supervisors shall receive training from a Native American representative and/or qualified archaeologist regarding cultural and tribal cultural resources that may be present in the project site. Representatives from the Wintu Tribe of Northern California shall be given the opportunity to review the training materials and participate in the initial training. At a minimum, the training shall include a discussion of pertinent laws protecting cultural and tribal cultural resources, examples of resources that could be encountered in the project site, and procedures to be followed if resources are found. If new personnel are added to the project, the City shall ensure that they receive the mandatory training before starting work. The initial training session may be videotaped and presented to new personnel to satisfy the sensitivity training requirement.

- A minimum of one week in advance of any ground-disturbing activities (e.g., tree removal, clearing, grading, trenching, etc.), the Wintu Tribe of Northern California shall be notified and offered the opportunity for a Native American representative to voluntarily monitor ground-disturbing activities.

- For highly sensitive sites, or in the event that cultural resources or human remains of Native American descent are identified during earth disturbance, the Wintu Tribe of Northern California shall be requested to provide a Native American monitor to observe subsequent earth-disturbing construction activities on potentially sensitive lands. Costs associated with such Native American monitoring shall be the responsibility of the developer.

Additional measures that will be considered in the event a tribal cultural resource is identified could include avoidance and preservation of the resource in place, or establishing a permanent conservation easement with culturally appropriate management criteria for the purposes of preserving or utilizing the sources or places, or other measure identified by the tribe.

Therefore, because future development under the 2040 General Plan would comply with federal, State, and local regulations for the protection of tribal cultural resources, including consultation with Native American tribes, and mitigation measures would be imposed on future projects as necessary, potential impacts on tribal cultural resources that could result from implementation of the 2040 General Plan would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

4.6.8 References

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SECTION

4.7

Greenhouse Gas Emissions, Climate Change, and Energy

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4.7 Greenhouse Gas Emissions, Climate Change, and Energy

This section addresses greenhouse gas (GHG) emissions, climate change, and energy in relation to future development and other physical changes that could occur due to implementation of the 2040 General Plan. The analysis in this section focuses on the General Plan's consistency with local, regional, State, and federal climate change and energy conservation planning efforts. These planning efforts offer context as they relate to the proposed General Plan amendments. Energy has been combined with GHG and climate change because one of the primary sources of GHG emissions in the City is energy consumption.

4.7.1 Study Methods

The following evaluation of potential impacts associated with climate change, GHG emissions, and energy is based on review of the baseline inventory and business-as-usual (BAU) projections that were prepared for the City as part of the Draft Shasta County Regional Climate Action Plan[1]. For purposes of the draft CAP, the baseline year was 2008, and projections were calculated for years 2020, 2035, and 2050.

The evaluation also included review of the California Supreme Court case *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal.4th 204, which involved the Newhall Ranch project. In the Newhall Ranch case, the Supreme Court established that a legally appropriate approach to assessing the significance of GHG emissions is to determine whether a project is consistent with performance-based standards that were adopted to fulfill a statewide plan for the reduction or mitigation of GHGs.

The evaluation of potential impacts related to energy is based on review of existing reports and literature for the City of Shasta Lake. In accordance with the California Environmental Quality Act (CEQA), the project is evaluated for its potential to result in wasteful, inefficient, or unnecessary consumption of energy resources or to conflict with applicable plans for renewable energy and energy efficiency.

4.7.2 Environmental Setting

GLOBAL CLIMATE CHANGE AND GHG EMISSIONS

Climate change refers to substantial changes in climate, including wind patterns, precipitation, storms, and changes in the average temperature of the Earth's atmosphere and oceans. GHGs trap heat in the atmosphere that would otherwise escape into space, causing a greenhouse effect that results in climate change. Unlike criteria pollutants, which are pollutants of regional and local concern, GHGs are global pollutants and are not limited to the area in which they are generated.

Some GHGs occur naturally, and some GHGs are exclusively the result of human activities. Naturally occurring GHGs include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). Although these GHGs occur naturally, human activities have changed their atmospheric concentrations. Since the start of the Industrial Revolution and the advent of coal-powered steam engines, human activities have significantly increased the volume of GHGs

[1] Preparation of the Shasta County Regional Climate Action Plan was made possible by State funding. Due to funding limitations, the County was not able to complete CEQA review for the CAP, and CEQA review for the CAP was made the responsibility of each individual jurisdiction. To date, the CAP has not been formally adopted for tiering purposes by any of the Shasta County jurisdictions.

emitted into the atmosphere. Between 1750 and 2011, atmospheric concentrations of CO_2 increased by about 40 percent, CH_4 by 150 percent, and N_2O by 20 percent (NRDC, 2019).

Table 4.7-1 provides descriptions of the primary GHGs attributed to global climate change, including a description of their physical properties, primary sources, and contribution to the greenhouse effect.

Table 4.7-1
Greenhouse Gases

Greenhouse Gas	Description
Carbon Dioxide (CO_2)	CO_2 is the primary GHG emitted through human activities. In 2019, CO_2 accounted for about 80 percent of all U.S. GHG emissions from human activities. CO_2 is naturally present in the atmosphere as part of the Earth's carbon cycle (the natural circulation of carbon among the atmosphere, oceans, soil, plants, and animals). Human activities are altering the carbon cycle–both by adding more CO_2 to the atmosphere, and by influencing the ability of natural sinks, like forests and soils, to remove and store CO_2 from the atmosphere. While CO_2 emissions come from a variety of natural sources, human-related emissions are responsible for the increase that has occurred in the atmosphere since the industrial revolution. The main human activity that emits CO_2 is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation. CO_2 also enters the atmosphere through burning solid waste, trees, and other biological materials, and as a result of certain chemical reactions (e.g., manufacture of cement). CO_2 is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Methane (CH_4)	CH_4 is the second most prevalent GHG emitted in the U.S. from human activities. CH_4 is emitted by natural sources such as natural wetlands. Natural processes in soil and chemical reactions in the atmosphere also help remove CH_4 from the atmosphere. In terms of human activities, CH_4 is the primary component of natural gas and is emitted during the production, processing, storage, transmission, and distribution of natural gas, as well as the production, refinement, transportation, and storage of crude oil. Domestic livestock (e.g., cattle, swine, sheep, goats, etc.) produce CH_4 as part of their normal digestive process. Also, when animal manure is stored or managed in lagoons or holding tanks, CH_4 is produced. CH_4 is also generated in landfills as organic waste decomposes, and in the treatment of domestic and industrial wastewater.
Nitrous Oxide (N_2O)	N_2O is naturally present in the atmosphere as part of the Earth's nitrogen cycle and is produced from a wide variety of biological sources in soil and water. The primary source of N_2O emissions in the U.S. in 2019 was agricultural soil management activities, such as adding nitrogen to soil through use of synthetic and organic fertilizers, and other cropping practices. N_2O emissions are also generated from fuel combustion, industrial processes during the production of chemicals (i.e., those used to make synthetic commercial fertilizer and other synthetic products), and from treatment of domestic wastewater during nitrification and dentrification of the nitrogen present, usually in the form of urea, ammonia, and proteins.

Greenhouse Gas	Description
Hydrofluorocarbons (HFCs)	HFCs are man-made chemicals that are used as refrigerants, aerosol propellants, foam blowing agents, solvents, and fire retardants. The major emissions source of these compounds is their use as refrigerants (e.g., in air conditioning systems in both vehicles and buildings). HFCs were developed as a replacement for chemicals that deplete the ozone layer. HFCs are released into the atmosphere through leaks, servicing, and disposal of equipment in which they are used.
Perfluorocarbons (PFCs)	PFCs are man-made compounds that contain just fluorine and carbon. PFCs are produced as a byproduct of various industrial processes associated with the manufacture of semiconductors. They are also used as solvents in the electronics industry, and as refrigerants for some specialized refrigeration systems. They are also emitted as a byproduct during aluminum production.
Sulfur Hexafluoride (SF_6)	SF_6 is a synthetic fluorinated compound that is the most potent GHG known to-date. The most common use for and largest emission source is as an electrical insulator in high voltage equipment that transmits and distributes electricity. SF_6 is also used in the manufacture of electronics/semiconductors, and in magnesium production. SF_6 can inadvertently escape into the atmosphere as leaks develop during various stages of the equipment's lifecycle. Gas can be released at the time of equipment manufacturing, installation, maintenance and servicing, and decommissioning, as well as due to leaks from aging equipment.
Nitrogen trifluoride (NF_3)	NF3 is a colorless, odorless, nonflammable gas that is highly toxic by inhalation. It is used in a relatively small number of industrial processes and is primarily produced in the manufacture of liquid crystal display (LCD) panels, certain types of photovoltaic cells for solar panels, and microcircuits.

Source: EPA, 2021

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. The atmospheric lifetime of each GHG reflects how long the gas stays in the atmosphere before natural processes (e.g., chemical reactions) remove it. A gas with a long lifetime can exert more warming influence than a gas with a short lifetime. In addition, different GHGs have different effects on the atmosphere. For this reason, each GHG is assigned a global warming potential (GWP) which is a measure of the heat-trapping potential of each gas over a specified period of time. The GWP is calculated by the Intergovernmental Panel on Climate Change (IPCC) and is revised periodically as updated information becomes available.

Gases with a higher GWP absorb more heat than gases with a lower GWP, and thus have a greater effect on global warming and climate change. The GWP metric is used to convert all GHGs into CO_2 equivalent (CO_2e) units, which allows policy makers to compare impacts of GHG emissions on an equal basis. The GWPs and atmospheric lifetimes for each GHG are shown in **Table 4.7-2**.

Table 4.7-2
Greenhouse Gases: Global Warming Potential and Atmospheric Lifetime

GHG	GWP (100-year time horizon)	Atmospheric Lifetime (years)
CO_2	1	100*
CH_4	25	12

GHG	GWP (100-year time horizon)	Atmospheric Lifetime (years)
N_2O	298	114
HFCs	Up to 14,800	Up to 270
PFCs:	Up to 12,200	2,600 – 50,000
SF_6	22,800	3,200
NF_3	17,200	740

Source: CARB, 2021a.

** No single lifetime can be given for CO_2 because it moves throughout the earth system at differing rates. Some CO_2 will be absorbed very quickly, while some will remain in the atmosphere for thousands of years.*

The consequences of climate change include more frequent and intense drought, hotter temperatures/heat waves, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms, and declining biodiversity.

STATE GHG EMISSIONS

As documented in CARB's GHG Inventory (CARB, 2021a), California produced 418.2 million metric tons (MMT) of CO_2e in 2019. This is 7.2 MMT CO_2e lower than 2018 levels and almost 13 MMT CO_2e below the 2020 GHG limit of 431 MMT CO_2e required by the California Global Warming Solutions Act (CARB, 2021b).

The GHG Inventory includes the following type of sources: emissions from fossil fuel combustion, including combustion for power imported and consumed in the State, GHGs generated as by-products of chemical reactions in industrial processes, use of GHG-containing consumer products and human-made chemicals, and emissions from agricultural and waste sector operations. The exchange of ecosystem carbon between the atmosphere and the plants and soils in land is separately quantified in the Natural and Working Lands Ecosystem Carbon Inventory, which also includes wildfire emissions (CARB, 2018).

Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 tonnes per person to 10.5 tonnes per person in 2019, a 25 percent decrease. In addition, overall trends in the inventory indicate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product (GDP)) is declining. From 2000 to 2019, the carbon intensity of California's economy decreased by 45 percent, while the GDP increased by 63 percent.

According to the U.S. Energy Information Administration (USEIA), California is the nation's second largest consumer of natural gas. In 2020, about 34 percent of the natural gas delivered to California consumers went to the industrial sector, and about 30 percent went to the electric power sector, where it fuels about half of the State's utility-scale electricity generation. The residential sector, accounted for 23 percent of natural gas use, and the commercial sector used about 12 percent. The transportation sector uses compressed natural gas vehicle fuel, and it consumed the remaining 1 percent. In 2019, California's per capita energy consumption was less than in all other states except Rhode Island, due in part to California's energy efficiency programs and its mild climate (USEIA, 2022).

Table 4.7-3, identifies the sectors that have the highest contribution of statewide GHG emissions.

Table 4.7-3
Breakdown of 2019 Statewide GHG Emissions

Sector	Percentage of Total GHGs
Transportation	39.7%
Industrial	21.1%
Electricity (In-State generation)	8.9%
Agriculture and Forestry	7.6%
Residential	6.7%
Electricity (Imports)	2.8%
Commercial	3.8%

Source: CARB, 2021b

Below is a description of the sectors identified in **Table 4.7-3**, and a discussion of trends in GHG emissions for these sectors.

Transportation
The transportation sector remains the largest source of GHG emissions in the State as a result of combustion of fuels that are used by on-road and off-road vehicles, aviation, rail, and water-borne vehicles, and other smaller sources. Transportation emissions decreased by 3.5 MMT CO_2e in 2019 as compared to 2018,

Industrial
The second largest source of GHG emissions in the State is the industrial sector, which includes petroleum refineries, oil extraction and production, cement plants, and the portion of cogeneration emissions attributed to thermal energy output. Refineries and hydrogen production represent the largest individual source of emissions in the industrial sector (33 percent of the sector's total emissions). Emissions from refining and hydrogen production decreased by 1 MMT CO_2e in 2019 as compared to 2018.

Residential/Commercial
GHG emissions in the residential and commercial sectors are primarily from the combustion of natural gas and other fuels for household and commercial use (e.g., space heating, cooking, and hot water or steam generation). Changes in annual fuel combustion emissions are primarily driven by weather conditions and the need for heating in buildings, as well as population growth. In 2019, emissions associated with fuel combustion in the residential and commercial sectors increased compared to 2018 due to a larger need for residential heating in winter, along with an increase in commercial natural gas use.

Agriculture
Major emissions sources in the agricultural sector include enteric fermentation and manure management from livestock, crop production (fertilizer use, soil preparation/disturbance, and crop residue burning), and fuel combustion associated with agricultural activities (water pumping, cooling or heating buildings, processing commodities, tractors, etc.). Approximately 71 percent of agricultural sector GHGs are emitted from livestock and are

primarily associated with dairy operations. Crop production accounted for 21 percent of agricultural emissions in 2019. Emissions from the growing and harvesting of crops have generally declined since 2000, partially due to a reduction in crop acreage (and corresponding reduction in fertilizer use), and a shift away from flood irrigation to sprinkler and drip irrigation.

Wildfire

Although not specifically identified in **Table 4.7.3**, wildfires release carbon dioxide (CO_2) emissions and other GHGs that contribute to climate change. Conversely, climate change influences wildfire in several ways. Increasing temperatures have prolonged the typical fire season, and wildfires are becoming more common throughout the year in some areas of the State. Annual variability in precipitation, as well as ongoing drought conditions, impact the production and moisture of fire fuels, which affect the amount of fuel and its combustibility. Other factors associated with climate change influence wildfire, including increased occurrences of lightning and wind (CARB, 2021c).

In November 2021, CARB released a public review draft of their report entitled *California's Historical Fire Activity before Modern Fire Suppression.* The report states that the 2020 fire season marked the highest annual burn acreage in recorded history (±4.1 million acres), more than double 2018, the next highest year. CARB estimates CO_2 that was attributed to wildfire in 2020 at 106.7 MMT CO_2.

REGIONAL SETTING

The City of Shasta Lake is located in the Sacramento Valley Region. California's Fourth Climate Change Assessment Summary Report for the Sacramento Valley Region discusses climate science, impacts, and adaptation information for Sacramento, Yolo, Sutter, Yuba, Colusa, Glenn, Butte, Tehama, Shasta, the eastern half of Solano, and the western part of Placer counties

The Climate Change Assessment identifies risks facing the Sacramento Valley region, as a result of climate change, including, but not limited to:

- Public health: More frequent and extreme heat waves and greater heat stress risk; greater air pollution exposures from wildfires.
- Energy: Increased risk to generation and transmission infrastructure from wildfires; greater air conditioning energy loads; reduced snowpack resulting in reduced hydropower production.
- Agriculture: Longer growing seasons; insufficient cold from some tree crops; low elevation flooding; changes in productivity of current crop varietals; conversion of agricultural land to other land uses.
- Floods: More extreme floods; greater floodplain vulnerability.
- Water supply: More extreme droughts; pressure to reduce water supply storage due to larger floods; possibly greater water demands from higher crop and landscape water use.
- Aquatic ecosystems: Higher temperatures threaten native species and make reservoirs less effective for sustaining salmon populations; higher Delta water levels.
- Forests: Higher temperatures, variable overall precipitation with less snow and earlier snow melt; lower soil moisture and changes in water storage and runoff; increased wildfire activity

in terms of the number of fires, overall area burned, and more area burned at high severity promoting changes in forest ecosystems.

- Wildfires: More frequent and larger wildfires in both forests and shrubland ecosystems; thinning and fuel reduction can reduce risk in forests but less so in shrublands.

- Delta: Higher sea levels, levee subsidence, and greater floods threaten Delta levees; higher temperatures threaten Delta native species; saltwater intrusion into areas from which water is pumped for agricultural and municipal uses.

LOCAL SETTING

City of Shasta Lake GHG Emissions Inventory

The City of Shasta Lake participated in preparation of the Shasta Regional Climate Action Plan (RCAP) for Shasta County in 2012. Chapter 4 of the RCAP was prepared as the CAP for the City of Shasta Lake. Although the CAP was not formally adopted by the City, the CAP includes a comprehensive and complete inventory of GHG emissions for the City (2008 benchmark); quantifies existing and anticipated business-as-usual (BAU) GHG forecasts for years 2020, 2035, and 2050; establishes a reduction target for the City; and specifies policies, measures, and programs to reduce GHG emissions.

The 2008 GHG emissions inventory serves as the foundation for the City's CAP. To ensure a comprehensive and complete GHG inventory, the City developed a full inventory based on data collected from City departments, utilities, and other relevant agencies and locally specific emissions factors. The inventory contains emissions from all sectors including building energy (electricity and natural gas), water (water demand and wastewater), solid waste, transportation, off-road vehicles, recreation, and stationary sources (industrial).

Due to a lack of jurisdictional control over the stationary-source sector, emissions from this sector are excluded from the *Jurisdictional Inventory*. Examples of permitted stationary-source emissions that are not under the control of the City include process energy-related emissions at manufacturing facilities. These facilities and equipment are permitted by the Shasta County Air Quality Management District (SCAQMD), and their GHG emissions would be controlled under the jurisdiction of the California Air Resources Board (CARB) pursuant to State regulations. The Jurisdictional Inventory was developed for the purpose of identifying reduction targets and strategies.

Table 4.7-4 provides the results of the emissions inventory. The forecasts do not include emission reductions associated with State GHG-reduction regulations or implementation of measures identified in the CAP.

The forecasts were developed for planning purposes and represent the best-available estimates. Given the complexity of each emissions sector and unpredictable nature of market conditions and growth rates, the City will reevaluate the forecasts prior to adopting the CAP.

Table 4.7-4
City of Shasta Lake Greenhouse Gas Emissions Inventory and Business-as-Usual Forecasts: 2008, 2020, 2035, and 2050

Sector	2008 (MT CO_2e/yr)	2020 (MT CO_2e/yr)	Change from 2008	2035 (MT CO_2e/yr)	Change from 2008	2050 (MT CO_2e/yr)	Change from 2008
Energy	82,943	90,912	+10%	107,899	+30%	127,491	+54%
Transportation	48,106	56,608	+18%	78,196	63%	104,443	+117%
Solid Waste	4,139	4,658	+13%	5,369	+30%	6,021	+45%
Water	4,273	4,808	+13%	5,543	+30%	6,216	+45%
Off-Road and Recreation	4,489	5,051	+13%	5,822	+30%	6,530	+45%
Stationary Sources (Non-Jurisdictional)	72,038	72,038	0%	72,038	0%	72,038	0%
Total Inventory	**215,988**	**234,075**	**+8%**	**274,867**	**+27%**	**322,739**	**+49%**
Jurisdictional Inventory	**143,950**	**162,037**	**+13%**	**202,829**	**+41%**	**250,700**	**+74%**
Per Capita Emissions	**14.3**	**15.7**	**+10%**	**19.1**	**+34%**	**23.0**	**+61%**

Source: *Shasta Regional Climate Action Plan: Chapter 4 - City of Shasta Lake, 2012.*

As shown in **Table 4.7-4** in 2008, the community's total baseline emissions included 215,988 MT CO_2e, including stationary sources. Energy production and consumption generated the largest portion of emissions at 38 percent of the total emissions. Stationary sources, such as Sierra Pacific Industries and Knauf Insulation, generated the second highest level of emissions in the City at 33 percent of the total emissions, followed by transportation emissions at 22 percent of the total emissions. The water and off-road/recreation sectors comprise the remaining 7 percent of the emissions inventory.

The emissions forecasts were established using sector-specific growth factors (e.g., energy demand forecasts) based on the City's population and employment growth projections. When based on population and employment growth projections, the GHG forecasts assume that baseline year activity intensity (e.g., solid waste generation per capita) will continue into the future.

The CAP identified the following statewide measures and regulations that would reduce GHG emissions:

Renewable Portfolio Standard (RPS). GHG reductions associated with the RPS were calculated based on the target that was in place at the time the CAP was prepared (33 percent of energy from renewable sources, for an estimated GHG reduction of 18,335 MT CO_2e by year 2035.

Scoping Plan Transportation Measures. GHG reductions associated with transportation measures were based on reductions associated with Pavley II regulations, which focus on achieving GHG reductions for new vehicles, and improving medium- and heavy-duty vehicle efficiency. These measures were estimated to reduce GHG emissions by 33,699 MT CO_2e by year 2035.

As identified in Section 4.7.3 (Regulatory Framework), State regulations have evolved since the 2012 CAP was prepared. For example, the RPS was most recently amended in September 2018 by SB 100 to establish a target of 60 percent renewable energy by 2030 and 100 percent renewable energy by 2045. Additional regulations have been adopted to reduce the State's dependence on fossil fuels, including, but not limited to, those identified in Section 4.7.3 (Regulatory Framework).

Climate Change Vulnerability Assessment.

The Climate Change Vulnerability Assessment prepared as part of the 2040 General Plan update identifies the City's vulnerability to the effects of climate change due to drought, extreme weather, high heat, and wildfire.

The Assessment considers both the potential impact of climate change and the City's adaptive capacity, which is the City's ability to moderate climate change impacts. Assessing adaptive capacity includes analysis of policies, plans, programs, funding, and staffing capacity. The Assessment combines impact and adaptive capacity rankings to provide a climate change vulnerability score, and the scores are used to prioritize mitigation actions based on vulnerability to climate change. **Table 4.7-5** identifies climate change vulnerabilities that were identified as areas of concern for the City and provides mitigation actions to address climate vulnerabilities.

Table 4.7-5
City of Shasta Lake Climate Change Vulnerabilities

Vulnerability Type	Description	Mitigation Actions
Drought	City faces cuts in water delivery from Shasta Lake during drought	• Review and strengthen the City's water conservation ordinance where needed to limit outdoor watering during drought periods. • Develop a robust public education campaign to encourage water conservation during drought periods.
Drought	Drought conditions increase wildfire probability and intensity.	• Review and strengthen the City's water conservation ordinance where needed to limit outdoor watering during drought periods. • Develop and maintain a Wildfire Preparedness Guide, to provide residents with education and information on defensible space maintenance. • Ensure properties are cleared in accordance with weed abatement ordinance for Seniors, disabled and low-income populations. • Develop a robust public education campaign to encourage water conservation during drought periods.

Vulnerability Type	Description	Mitigation Actions
Drought	Droughts are likely to become more frequent and persistent.	• Review and strengthen the City's water conservation ordinance where needed to limit outdoor watering during drought periods. • Develop a robust public education campaign to encourage water conservation during drought periods.
Extreme Weather	Some Caltrans-owned culverts in the City are undersized and create localized flooding problems.	• Work with outside agencies to evaluate and prioritize replacement of undersized culverts in the City.
Extreme Weather	Winter and spring snow events can break off tree canopies and leave dead tops of trees vulnerable to wildfire.	• Improve removal of dead or downed trees or those with dead canopies to be more resilient to wildfire, high winds, and extreme rain or snowstorms.
Extreme Weather	Short periods of extreme weather events overwhelm city resources.	• Harden critical facilities against the effects of a severe rain or winter storm. • Improve removal of dead or downed trees or those with dead canopies to be more resilient to wildfire, high winds, and extreme rain or snowstorms.
Extreme Weather	Intense rainfall events, periodically ones with larger than historical runoff, will continue to affect the City.	• Work with outside agencies to evaluate and prioritize replacement of undersized culverts in the City. • Harden critical facilities against the effects of a severe rain or winter storm.
Extreme Weather	Severe rain events can cause damage to roadways and culverts and block neighborhood access.	• Harden critical facilities against the effects of a severe rain or winter storm.
High Heat	Extreme heat can cause blackouts and loss of electricity.	• Improve HVAC and other weatherization items (insulation, windows/doors) in homes and businesses.
High Heat	Climate change is expected to increase the frequency, intensity, and duration of extreme heat events and heat waves in the City. These events are likely to increase the risk of mortality and morbidity due to heat-related illness and exacerbation of existing chronic health conditions.	• Improve HVAC and other weatherization items (insulation, windows/doors) in homes and businesses. • Construct back-up power facilities for community-based Cooling Centers.
High Heat	Blackouts create need for cooling centers as residents are not able to cool homes	• Construct back-up power facilities for community-based Cooling Centers.

Vulnerability Type	Description	Mitigation Actions
Wildfire	Wildfires will continue, with projections for a longer wildfire season, increased frequency, and expansion of the area susceptible to fire.	• Develop a city-wide implementation plan, in collaboration with SLFPD, for defensible space code administration and enforcement. • Develop and maintain a Wildfire Preparedness Guide, to provide residents with education and information on defensible space maintenance. • Ensure properties are cleared in accordance with weed abatement ordinance for Seniors, disabled and low-income populations. • Join and collaborate with Shasta County Fire Safe Council to protect homes, the community, and environment from wildfires. (Shasta County Fire Safe Council reestablished 2021) • Complete additional fuel break projects focused on north and northeast portions of the City as identified by the CWPP (also see Electric Department Wildfire Mitigation Plan for additional fuel reduction projects). • Seek funding to develop a cost share program for residential defensible space and fuel reduction mitigation and fireproofing retrofits.
Wildfire	Fire fuel present on vacant properties poses a wildfire risk.	• Develop a city-wide implementation plan, in collaboration with SLFPD, for defensible space code administration and enforcement. • Ensure properties are cleared in accordance with weed abatement ordinance for Seniors, disabled and low-income populations. • Join and collaborate with Shasta County Fire Safe Council to protect homes, the community, and environment from wildfires. (Shasta County Fire Safe Council reestablished 2021) • Seek funding to develop a cost share program for residential defensible space and fuel reduction mitigation and fireproofing retrofits.

ENERGY CONSUMPTION AND DISTRIBUTION

Electrical Service

The City of Shasta Lake Electric Utility is a publicly owned electric utility that provides retail electric service to customers within the City limits, as well as some adjacent areas. The Electric Utility serves approximately 4,600 retail customers, of which approximately 4,260 are residential customers. Residential users account for approximately twenty percent of total retail sales.

The City's power and energy demands are greatly influenced by residential customers, with year-to-year variations in peak demand and energy sales due, in part, to the effect of local weather conditions. The City's 2021 peak demand was 36.48 megawatts, occurring on July 9, 2021, at 7:00 PM; energy use in 2021 was 221.1 gigawatt-hours. Shasta Lake's electric assets consist of

transmission lines, distribution lines, substations, transformers, secondary conductors, meters, and all associated hardware. The City owns and operates four small solar installations on City facilities, the largest of which is 40 kilowatts.

The City manages a comprehensive energy and efficiency incentive program for both residential and commercial customers. The program focuses on reducing peak loads and increasing energy conservation. Rebates are available to residential customers for installation of various energy efficiency improvements, including installation of higher-efficiency appliances, cooling and refrigeration equipment, weatherization improvements, and lighting. Rebates for commercial customers are available for upgraded lighting, HVAC equipment, and may be available for additional equipment that reduces energy use and/or demand. The City also offers free on-site energy audits for residential customers.

The City has adopted a renewable energy policy that provides for the acquisition of renewable energy at or in excess of legally mandated quantities. The policy recognizes that the City has an allocation of hydroelectric power generated by the Western Area Power Administration.

In order to assist the City to achieve the State's renewable energy mandates, in March 2022, the City Council authorized staff to execute a Power Management and Administrative Services Agreement and Facilities Agreement with the Northern California Power Agency (NCPA). The NCPA operates a Power Management business that, among other activities, manages a joint-purchase program for renewable energy projects that member agencies can use to help meet compliance mandates for renewable energy. The Agreements with NCPA allow the City to execute power supply contracts in the future as part of NCPA's joint-purchasing process.

Table 4.7-6 identifies actual electricity consumption in the City by customer class between 2015 and 2020.

Table 4.7-6
City of Shasta Lake Electricity Consumption
2015-2020 (GWh)

Year	Commercial Building	Industry	Residential	Streetlight	Total (GWh)
2015	11.15	140.20	38.23	-	189.58
2016	11.10	148.34	38.83	-	198.27
2017	11.13	138.68	40.92	0.14	190.87
2018	10.75	147.94	37.69	0.27	196.65
2019	10.02	145.30	38.70	0.27	194.29
2020	11.55	155.32	41.68	0.27	208.82

Source: California Energy Commission, Electricity Consumption by Entity, 2020.

According to the City's Electricity Resource Planning Form completed on August 13, 2019, the actual peak load in the City for both 2017 and 2018 was 35 MW. The City's peak demand in 2021 was 36.48 megawatts and occurred on July 9 at July 9 at 7:00 PM. The projected peak load by year 2030 is 37 MW. The projected total energy demand for year 2030 is 216 GWh (California Energy Commission, 2019).

City of Shasta Lake 2020 Power Content Label

As required by California Public Utilities Code §398.4 and §398.5 the City annually prepares a Power Source Disclosure (PSD) and Power Content Label that identify electric sources and product mix used by the City's electric utility customers.

The City's 2020 PSD shows that the City's carbon intensity of its electric portfolio is less than half that of the average State utility. The City's GHG intensity for electricity is 199 pounds carbon dioxide equivalent (CO_2e) per megawatt hour (MWh); the State average for utilities is 466 pounds CO_2e per MWh. The 2020 PSD shows that the City's publicly owned electric operation has met end-use customers' needs with electric sources that were from 70.0 percent hydroelectric sources, 3.3 percent nuclear sources, 21.4 percent from sources that cannot be specified, and 5.1 percent eligible renewable energy sources as defined in California's RPS.

Pacific Gas and Electric (PG&E) Natural Gas

The City's service provider for natural gas is PG&E. PG&E is actively working to transition the gas system to transport and deliver cleaner fuels. PG&E's goal is to increase the percentage of renewable natural gas (RNG) supplied to core gas customers to 15 percent by 2030, which will also enable PG&E to meet State standards for utilities (PG&E, 2022). In recent years, almost all new homes in the City were connected to the natural gas system.

California Energy Commission, Natural Gas Research Program.

The California Energy Commission's (CEC) Natural Gas Research Program invests in technologies and solutions that help the natural gas sector support the State's energy and environmental goals. The program is funded by a ratepayer surcharge on all natural gas consumed in California (CEC, n.d.). The Natural Gas Research Program invests $20 million a year to support projects that:

- Reduce greenhouse gas emissions from natural gas sources through increased efficiency.
- Reduce vulnerabilities and fugitive methane emissions in natural gas infrastructure.
- Drive customer adoption of energy-efficient and low-carbon technology solutions for natural gas end uses.
- Increase the cost-competitiveness of renewable gas.
- Minimize air quality impacts from natural gas use to zero or near-zero levels.
- Capture and use biogas.
- Develop renewable gas use as an alternative to diesel in medium- and heavy-duty vehicles.
- Advance natural gas pipeline and infrastructure safety.

4.7.3 Regulatory Framework

FEDERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

***Massachusetts v. EPA,* 549 U.S. 497 (2007)**

On April 2, 2007, in *Massachusetts v. EPA,* 549 U.S. 497 (2007), the Supreme Court found that greenhouse gas emissions (GHGs) are air pollutants covered by the federal Clean Air Act (CAA). In reaching its decision, the Court also acknowledged that climate change is caused, in part, by

human activities. The Supreme Court's ruling paved the way for the regulation of GHG emissions by the USEPA under the CAA. The USEPA has enacted regulations that address GHG emissions, including, but not limited to, mandatory GHG reporting requirements, carbon pollution standards for power plants, and air pollution standards for oil and natural gas.

EPA's Mandatory GHG Reporting Rule (40 CFR Part 98)

Under the EPA's Mandatory GHG Reporting Rule (40 CFR Part 98), the Greenhouse Gas Reporting Program (GHGRP) requires that large GHG emission sources, fuel and industrial gas suppliers, and CO_2 injection sites report GHG data and other relevant information to the U.S. EPA. Approximately 8,000 facilities are required to report their emissions annually, and the reported data are made available to the public in October of each year (U.S. EPA, 2020).

Facilities are generally required to submit annual reports under Part 98 if GHG emissions from covered sources exceed 25,000 MT CO_2e per year; if facilities supply certain products that would result in over 25,000 MT CO_2e of GHG emissions if those products were released, combusted, or oxidized; or if the facility receives 25,000 MT CO_2e or more of CO_2 for underground injection.

There are six facilities in Shasta County that reported GHG data to the U.S. EPA for the year 2020: the PG&E Burney Compressor Station and Dicalite Minerals LLC in Burney (29,469 MT CO_2e); the Anderson Landfill on Cambridge Road in Anderson (54,721 MT CO_2e); the Redding Power Plant on Clear Creek Road in Redding (151,533 MT CO_2e); the West Central Landfill on Clear Creek Road just east of Gas Point Road in unincorporated Shasta County (59,248 MT CO_2e); and the Lehigh Southwest Cement Company on Wonderland Boulevard in the unincorporated community of Mountain Gate, just north of the northeastern City limit (283,688 MT CO_2e). A review of U.S. EPA records shows that between 2010 and 2020, the largest emitter of GHG emissions in the County has been the Lehigh Southwest Cement facility. There are no other facilities in Shasta County that are presently above the reporting thresholds.

STATE

California Executive Order (EO) S-3-05

EO S-03-05 was signed by the Governor on June 1, 2005, and established the goal of reducing statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Assembly Bill 32 (2006), Global Warming Solutions Act

As required by AB 32 (2006), CARB adopted the initial Climate Change Scoping Plan in 2008 that identified the State's strategy to achieve the 2020 GHG emissions limit via regulations, market-based mechanisms, and other actions. AB 32 requires that the Scoping Plan be updated every five years. CARB's first update to the Climate Change Scoping Plan (2014) addressed post-2020 goals and identified the need for a 2030 mid-term target to establish a continuum of actions to maintain and continue reductions, rather than only focusing on targets for 2020 or 2050. EO B-30-15 (2015) extended the goal of AB 32 (2006) and set a GHG reduction goal of 40 percent below 1990 levels by 2030.

In December 2017, CARB adopted the second update to the Scoping Plan that includes strategies to achieve the 2030 mid-term target and substantially advance toward the 2050 climate goal to reduce GHG emissions by 80 percent below 1990 levels.

The 2017 Scoping Plan recommends statewide targets of no more than six metric tons (MT) CO_2e per capita by 2030 and no more than two MT CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 (2016) and the longer-term reduction goal of 80 percent below 1990 levels by 2050. These targets are

appropriate for plan-level documents but should not be applied to specific individual projects because they include all emissions sectors in the State.

Policies and measures addressed in the 2017 Scoping Plan include:

- Implement SB 350 (2015), which expands the RPS to 50 percent and doubles energy efficiency savings by 2030.
- Implement the Mobile Source Strategy (Cleaner Technology and Fuels), including increasing zero emission and plug-in hybrid light-duty electric vehicles and requiring 100% of new buses to be zero-emission.
- Increase stringency for Low Carbon Fuel Standard (18 percent by 2030).
- Implement California Sustainable Freight Action Plan, calls for transitioning to zero emissions where feasible, and near-zero emissions with renewable fuels everywhere else.
- Implement the proposed Short-Lived Climate Pollutant Strategy by 2030, with a 40 percent reduction in methane and HFCs.
- Develop regulations and programs to support organic waste landfill reduction goals.
- Develop Integrated Natural and Working Lands Implementation Plan to secure the State's land base as a net carbon sink.

CARB is in the process of completing the 2022 Scoping Plan update, which establishes a path to achieve carbon neutrality no later than 2045.

Senate Bill 32/Assembly Bill 197 (2016)

These two bills were signed into law on September 8, 2016. SB 32 implements EO B-30-15 and establishes a target of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030 and authorizes CARB to adopt regulations to achieve the maximum technologically-feasible and cost-effective GHG reductions. AB 197 requires CARB to prioritize GHG emission reductions in a manner that benefits the State's most disadvantaged communities and to consider social costs when adopting regulations to reduce GHG emissions.

Renewables Portfolio Standard

In 2002, SB 1078 was passed to establish the State's Renewables Portfolio Standard (RPS) Program, with the goal of increasing the amount of electricity generated and sold to retail customers from eligible renewable energy resources**.** The initial goal was to increase the percentage of renewable energy in the State's electricity mix to 20 percent of retail sales by 2017**.** SB 350 (2015) codified a target of 50 percent renewable energy by 2030, and requires California utilities with an average load greater than 700 GWh to develop integrated resource plans that incorporate a GHG emission reduction planning component beginning January 1, 2019.

Senate Bill 100 (2018), The 100 Percent Clean Energy Act

SB 100 (2018) was signed by the Governor on September 10, 2018, and established new standards for the RPS goals established by SB 350 (2015).

The new standards established by SB 100 increased previously established RPS goals to now require 60 percent renewable energy by 2030 and 100 percent renewable energy by 2045 for both investor-owned utilities and publicly owned utilities. Interim targets require that energy providers have a renewable energy supply of 44 percent by 2024 and 52 percent by 2027.

Executive Order B-55-18

EO B-55-18, issued on September 10, 2018, sets a statewide goal to achieve carbon neutrality (i.e., the point at which removal of carbon pollution from the atmosphere meets or exceeds emissions) as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. The EO directs CARB to address the goals in future Climate Change Scoping Plans.

California Building Standards Code

Title 24 of the CCR, also known as the California Building Standards Code (CBSC), is based on the International Building Code (IBC) used widely throughout the country. The CBSC has been modified for California conditions to include more detailed and/or more stringent regulations. The CBSC consists of 13 parts, including the California Building Code, Energy Code, and Green Building Standards Code.

California Energy Code

The California Energy Code (Part 6 of the CBSC), also known as the State's Energy Efficiency Standards, was established in 1978 with a goal of reducing California's energy consumption for residential and nonresidential buildings. The Standards have the added benefit of reducing emissions of criteria pollutants and GHG emissions. The 2019 Energy Code added a requirement that new residential homes include solar photovoltaic (PV) systems. The solar systems must be sized to provide for the full annual energy use of the home.

The 2022 Energy Code, which goes into effect on January 1, 2023, include measures that will further reduce energy use in newly constructed and altered single-family, multifamily, and nonresidential buildings. These measures add new prescriptive and performance standards for electric heat pumps for space conditioning and water heating; require photovoltaic (PV) and battery storage systems for multifamily and selected nonresidential buildings; establish efficiency measures for lighting, building envelopes, and HVAC systems; and increase ventilation standards for gas stoves.

The Environmental Impact Report prepared for the 2022 Energy Code update states that overall, the 2022 amendments are expected to reduce electricity and fossil fuel natural gas (and propane) use when compared to continued use of existing Energy Code requirements. Under the 2022 amendments, on a statewide basis by 2024, all measures for newly constructed buildings and altered components of existing buildings, collectively would save approximately 27 million therms of fossil fuel natural gas and 1.4 billion kWh of electricity, which result in net reductions of NO_X and sulfur oxides (SO_X) emissions beginning by the end of 2023. The 2022 Energy Code contains standards for new construction and alternations to existing buildings that are anticipated to reduce statewide NO_X emissions by 105 tons per year.

California Green Building Standards Code (CALGreen)

In 2007, the California Building Standards Commission (CBSC) developed green building standards in an effort to meet the goals established by the Global Warming Solutions Act of 2006.

These standards are referred to as the CALGreen Code and are included as Part 11 of the CBSC, and initially went into effect on January 1, 2011. The CALGreen Code requires new residential and commercial buildings to comply with mandatory measures related to planning and design, energy efficiency, water efficiency/conservation, material conservation, resource efficiency, and environmental quality. The most recent update to the CALGreen Code went into effect on January 1, 2020.

The 2022 CALGreen Code goes into effect on January 1, 2023, and includes provisions intended to reduce and eventually eliminate the use of fossil fuels, including natural gas, and replacing them with electricity generated by renewable sources such as solar panels, wind, and hydroelectric dams.

California Air Resources Board (CARB), 2020 Mobile Source Strategy

In September 2021, CARB published the 2020 Mobile Source Strategy (CARB, 2021d). The 2020 Strategy is a framework that identifies actions needed to meet the State's goals for the reduction of emissions of criteria pollutants, GHGs, and toxic air contaminants from mobile sources. The 2020 Mobile Source Strategy uses the same targets for reducing Vehicle Miles Travelled (VMT) as the 2016 Mobile Source Strategy and 2017 Climate Change Scoping Plan, which aim to reduce light-duty vehicle VMT by 15 percent by 2050 compared to business as usual. The 2020 Mobile Source Strategy identifies strategies that CARB can take to assist in achieving additional reductions and support implementation of regional Sustainable Communities Strategies (SCSs).

The 2020 Mobile Source Strategy identifies eight strategy areas for reducing VMT, which are outlined in CARB's SB 375 Progress Report. The strategy areas are:

1. Increase Transportation Choices and Improve Access
2. Authorize and Implement Equitable Pricing of Transportation
3. Align State Funding Programs to Reduce Vehicle Travel and Achieve the State's Greenhouse Gas Emissions Reduction Goals
4. Shape the Deployment of New Mobility Options in Ways That Reduce VMT
5. Better Align Land Use Planning with the Scoping Plan's Goals
6. Accelerate Infill Housing Production
7. Support Local and Regional Partners to Implement VMT Reduction Measures
8. Elevate the State of Science to Inform the Development and Implementation of Sustainable Community and Transportation Policies

Advanced Clean Cars Program

The Advanced Clean Cars (ACC) Program combines the control of smog-causing criteria pollutants and GHG emissions into a single package of regulations. The Low-Emission Vehicle (LEV) requires manufacturers to produce an increasing number of zero-emission vehicles (ZEV). In 2022, CARB proposed additional regulations to establish the next set of LEV and ZEV requirements.

In-Use Off Road Diesel-Fueled Fleets Regulation

The In-Use Off Road Diesel-Fueled Fleets Regulation applies to all self-propelled off-road diesel vehicles 25 horsepower (hp) and greater, and most two-engine vehicles (except on-road two-engine sweepers). This includes vehicles that are rented or leased. The purpose of the regulation is to reduce NO_X and particulate matter from off-road diesel vehicles. The regulation imposes limits on idling, requires all vehicles to be reported to CARB using CARB's on-line reporting system, and restricts adding older vehicles into fleets starting on January 1, 2014, and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (e.g., exhaust retrofits.

Beginning January 1, 2018, for large and medium fleets, and January 1, 2023, for small fleets, a fleet may not add a vehicle with a Tier 2 engine to its fleet. The engine tier must be Tier 3 or higher.

Senate Bill 375 (Sustainable Communities and Climate Protection Act of 2008)

Under SB 375, CARB sets regional targets for the reduction of GHG emissions from passenger vehicles and light duty trucks. Each Metropolitan Planning Organization (MPO) in the State, or Regional Transportation Planning Agency for regions without an MPO, must include a Sustainable Communities Strategy in the applicable Regional Transportation Plan that demonstrates how the region will meet the GHG emissions reduction targets.

California Executive Order B-48-18

EO B-48-18 was issued by the Governor in January 2018, calling for 5 million zero-emission vehicles (ZEVs) by 2030 and the installation of 250,000 electric vehicle chargers and 200 hydrogen fueling stations by 2025. The State's 2016 ZEV Action Plan outlines 200 specific actions that state agencies will take to continue advancing the ZEV market in California. The 2018 ZEV Action Plan refines the top priority actions.

Executive Order (EO) N-79-20 (2020)

EO-N-79-20 was issued in September 2020 and set a target that 100 percent of all new cars, buses, and trucks sold in 2035 will be zero emission. Under EO N-79-20, State agencies must develop charging and fueling infrastructure to support the effort, and to align other modes of transportation (e.g., rail, transit, bicycling, etc.) to support an integrated system.

Assembly Bill 617 (Community Air Protection Program of 2017)

AB 617 required CARB to prepare and update every 5 years a statewide program to address air pollution in neighborhoods with the most heavily polluted air. CARB must select locations around the state for the preparation of community emissions reduction programs and provide grants to community-based organizations for technical assistance and support for community participation in the programs. An air district containing a selected location must adopt a community emissions reduction program.

In addition, air districts that are in nonattainment for one or more air pollutants must adopt an expedited schedule for the implementation of best available retrofit control technology that would apply to each industrial source that, as of January 1, 2017, was subject to a specified market-based compliance mechanism. CARB must establish and maintain a statewide clearinghouse that identifies the best available control technology, best available retrofit control technology for criteria air pollutants, and related technologies for the control of toxic air contaminants.

Short-Lived Climate Pollutant Reduction Strategy (2014)

As required by SB 605 (2014), CARB, in coordination with other State agencies and local air districts, prepared a Short-Lived Climate Pollutant (SLCP) Reduction Strategy in 2017. SLCPs are powerful climate forcers that have relatively short atmospheric lifetimes. These pollutants include methane, hydrofluorocarbons, and anthropogenic black carbon.

SB 1383 (2016) required that CARB begin implementing the Strategy no later than January 1, 2018, in order to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030.

SB 1383 also established targets for reducing the level of the statewide disposal of organic waste (food and other compostable materials) in landfills. The goal of SB 1383 is to reduce organic waste

disposal from 2014 levels by 75 percent by 2025 and to recover at least 20 percent of currently disposed edible food by 2025.

Effective January 1, 2022, all businesses and residents are required to separate organic waste from trash and either subscribe to a required collection service or self-haul to an appropriate facility for diversion. Certain businesses, including supermarkets and grocery stores, must donate edible food to a food bank or other organization that helps feed community members. Beginning in 2024, restaurants that seat over 250 people, schools, and hotels with on-site food facilities and over 200 rooms are required to donate edible food. The Shasta County Environmental Health Division is in the process of preparing plans and programs for implementation of SB 1383, which will include recycling organic waste collected from residents and businesses into compost for use throughout the County (Shasta County, 2022).

Senate Bill 901 (2018)

SB 901 directed CARB to develop a historic baseline of GHGs from California's natural fire regime that reflect conditions prior to modern fire suppression. In November 2021, CARB released a draft report entitled *California's Historical Fire Activity before Modern Fire Suppression* (CARB, 2021c).

Warren-Alquist Act (1974)

The Warren-Alquist Act established the California Energy Resources Conservation and Development Commission (California Energy Commission) in 1974 to respond to the energy crisis of the early 1970s and the State's unsustainable growing demand for energy resources. The Act established State policy focused on reducing the wasteful, unnecessary, and uneconomical uses of energy by employing a range of measures. The Act is regularly updated, and the Energy Commission publishes an updated version of the Act annually (CEC, 2022).

CEQA Guidelines

Greenhouse Gas Emissions

§15064.4 of the CEQA Guidelines states that the lead agency should focus its GHG emissions analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A lead agency has the discretion to determine whether to use a model or methodology to quantify GHG emissions or to rely on a qualitative or performance-based standard.

The GHG analysis should consider:

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting,
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and
- The extent to which the project complies with any regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an Environmental Impact Report (EIR) must be prepared for the project. To determine transportation-generated greenhouse gas emissions in particular, lead agencies may determine that it is appropriate to use the same method used to determine the transportation impacts associated with a project's VMT.

In *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal.4th 204, which involved the Newhall Ranch project, the California Supreme Court concluded that a legally appropriate approach to assessing the significance of GHG emissions was to determine whether a project was consistent with "*'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions' (CEQA Guidelines §15064.4(a)(2), (b)(3)… §15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].)"* (62 Cal.4th at p. 229.)

Energy

§15126.2(b) of the CEQA Guidelines provides guidance for evaluating whether a project would result in significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy, or the wasteful use of energy resources,

The Guidelines state that the energy analysis should include the project's energy use for all project phases and components, including transportation-related energy, during construction and operation. In addition to building code compliance, other relevant considerations may include, among others, the project's size, location, orientation, equipment use, and any renewable energy features that could be incorporated into the project. The energy analysis is subject to the rule of reason and shall focus on energy use that is caused by the project. This analysis may be included in related analyses of air quality, greenhouse gas emissions, transportation, or utilities in the discretion of the lead agency.

Appendix F of the CEQA Guidelines described information that could be covered in an EIR, and potential mitigations measure related to energy. It should be noted that Appendix F was most recently revised in 2009, prior to adoption of many of the current State regulations that were enacted to improve energy efficiency and minimize potential effects associated with the wasteful, inefficient, or unnecessary consumption of energy resources. Appendix F recommends several mitigation measures, which are now mandatory under current State law

LOCAL

Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region (RTP/SCS)

SRTA prepared the 2018 RTP/SCS as required by Code of Federal Regulations (CFR) Title 450.300, Subpart C and California Government Code Section 65080 *et seq.* The RTP is a comprehensive plan that addresses all modes of transportation used by people and for goods and freight movement (i.e., streets/roads, public transit, pedestrian and bicycle facilities, aviation, and rail) in the Shasta region.

The 2018 RTP includes an updated SCS as required by the Sustainable Communities and Climate Protection Act of 2008 (SB 375), which demonstrates how the region will meet the GHG emissions reduction targets established by CARB. CARB established emission reduction targets for California's eighteen MPO regions for the year 2020 and 2035. Shasta County was assigned a 0% per capita change when compared to the 2005 baseline year, and the 2018 RTP/SCS reflects this target.

The RTP must be fiscally constrained, meaning that the projects and programs identified in the RTP and subjected to environmental review must be consistent with reasonably anticipated revenue over the 20-year planning horizon of the RTP. The SCS for reducing per capita GHG emissions must also be fiscally constrained.

The Financial Element of the RTP identifies projected available funds, a list of fiscally constrained projects that is consistent with available funding, a list of unconstrained projects that may be implemented if additional funding becomes available (short- and long-term), and a discussion of potential funding shortfalls for projects in the long-range transportation plan.

On March 28, 2018, CARB adopted a target for the Shasta region of reducing per capita GHG emissions from passenger vehicles by four percent by the year 2035, when compared to a baseline year of 2005 (CARB, 2017). The 2022 RTP/SCS will be based on this target.

The GHG reduction targets are periodically reviewed and updated by CARB based on progress toward meeting the targets and best available information.

Priority projects and programs are identified for implementation during the 2018-2022 RTP planning cycle. The 2018 RTP includes the following goals:

Goal 1: Optimize the use of existing interregional and regionally significant roadways to prolong functionality and maximize return-on-investment.

Goal 2: Strategically increase capacity on interregional and regionally significant roadways to keep people and freight moving effectively and efficiently.

Goal 3: Provide an integrated, context-appropriate range of practical transportation choices.

Goal 4: Create people-centered communities that support public safety, health, and well-being.

Goal 5: Strengthen regional economic competitiveness for long-term prosperity.

Goal 6: Promote public access, awareness, and action in planning and decision-making processes.

Goal 7: Practice and promote environmental and natural resource stewardship.

The purpose of the SCS is to coordinate transportation and land use planning in order to reduce VMT and associated GHG emissions from passenger vehicles and light trucks. The SCS identifies the following key variables, commonly referred to as the five "D" factors, that are known to effectively reduce VMT.

- Density – Number of persons, jobs, and dwellings
- Diversity – Balance of residential, retail, office, and other land uses
- Design – Street network and non-motorized travel accommodations
- Destination Accessibility – Number of jobs and other attractions accessible via any travel mode
- Distance to Transit – Proximity of high-quality public service to home and work

The RTP/SCS states that in Shasta County, achieving the "D" factors is challenging given the region's dispersed development patterns, segregation of land uses, limited access to practical travel alternatives, and slow growth rate. In addition, the RTP/SCS states that no single "D" factor by itself will adequately reduce VMT; a combination of the factors would be required and would depend on specific characteristics of a given area.

Areas most likely to reduce VMT with application of the "D" factors are existing urban centers and corridors where some measure of the "D" factors is already present; where the necessary infrastructure is largely in place; and where existing local plans permit an appropriate range and intensity of land uses. To this end, SRTA worked with the three incorporated cities in Shasta County to identify Strategic Growth Areas (SGAs) where application of the "D" factors was assumed to most effectively reduce VMT.

In the City of Shasta Lake, the SGA is generally described as the SR 151 (Shasta Dam Boulevard) corridor between the I-5/Cascade Boulevard Interchange and the Union Pacific Railroad (UPRR) and areas north and south of this corridor; and the Cascade Boulevard corridor generally between SR 151 and the southern terminus of Grand Coulee Boulevard and areas east and south of this corridor segment, and the City has been focusing efforts to obtain funding for improvements in these areas.

Most recently, the California Strategic Growth Council awarded $16.5 million from the Affordable Housing and Sustainable Communities (AHSC) grant program toward construction of the *Shasta Lake Downtown Revitalization Project.* The purpose of the AHSC program is to reduce GHGs through projects that implement land use, housing, transportation, and other amenities to support infill and compact development.

The City's Downtown Revitalization Project is a mixed-use development within the Shasta Dam Boulevard SGA with 49 dwelling units, including 48 income-restricted units and 7,500 square feet of commercial space. AHSC funding will be used toward transit, pedestrian and bicycle improvements, and street trees throughout the downtown area. Pedestrian and bicycle facilities will also connect to the future Commercial Center project northwest of the intersection of Shasta Dam Boulevard and Cascade Boulevard.

The SCS identifies the following strategies that are believed to offer the highest GHG reduction benefit per dollar investment: expanded plug-in vehicle charging infrastructure; expansion of interregional public transportation options; consolidated goods and freight hubs; expanded bicycle and pedestrian infrastructure; incentives for infill and redevelopment projects; and technology-based strategies (e.g., intelligent transportation systems applications that provide real-time travel information).

SRTA prepared a report in 2021 entitled "*Ways and Means – a Four-Year Progress Report on Mobility in the Shasta Region*" that identifies progress toward short-term (2018-2022) goals identified in the 2018 RTP, and new short-term goals being considered for the 2022 RTP (SRTA, 2021). One strategy that has been developed in other communities that will be considered for inclusion in the 2022 RTP is establishing a VMT mitigation bank from which developers may purchase credits to mitigate for automobile traffic generated by their projects.

City of Shasta Lake Renewable Energy Portfolio Standard (RPS)

The City adopted a RPS Enforcement Program and Renewable Energy Resources Procurement Plan in 2013. The RPS Enforcement Program is a required planning document under Public Utilities Code Section 399.00 – 399.33. The program addresses the City's long-term electrical generation to ensure a minimum amount of electricity product is obtained from renewable resources. In February 2019, the California Energy Commission (CEC) conducted a verification review covering the City's second compliance period (2014-2016). The CEC found that for Compliance Period 2, the City met its renewable energy portfolio balance requirements.

4.7.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 Shasta Lake General Plan includes the following objectives, policies, and implementation measures related to greenhouse gas emissions, climate change, and energy:

GOAL HS-5	**Minimize the risk to life and property from climate change.**	
POLICIES	HS-5.1	Incorporate climate change considerations into city processes and planning efforts, utilizing best available data to understand climate predictions and the potential impacts on community resources and facilities. This includes such plans as the City Hazard Mitigation Plan and Public Safety and Community Health Element Appendix A: Climate Vulnerability Assessment.
	HS-5.2	Actively participate in regional discussions on infrastructure improvements and adaptation strategies related to climate resiliency and addressing potential community impacts.
IMPLEMENTATION ACTIONS	HS-5.1	When reviewing new development, consider impacts that may be exacerbated by climate change projections, and identify potential mitigations for consideration by the project proponents and the approving authority.
	HS-5.2	Incorporate climate change impacts into public emergency preparedness education programs, with special consideration given to effective methods to communicate the issue to a general audience.
	HS-5.3	Assess existing infrastructure and essential public facilities that are vulnerable to hazard impacts, taking into consideration potential climate change impacts.
	HS-5.4	Identify important green infrastructure in the city that may be used in climate adaptation projects. Where feasible, use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing climate mitigation and adaptation projects (e.g., floodplain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days).
GOAL HS-9	**Protect the community from poor air quality.**	
POLICIES	HS-9.2	Cooperate with the Air Quality Management District and the Regional Transportation Agency to meet air quality standards and implement provisions of the California and Federal Clean Air Acts.
	HS-9.3	Encourage integration of land use, transportation, and energy planning efforts to help reduce air pollution.
	HS-9.6	Encourage a land use pattern that reduces reliance on the automobile and encourages alternative modes of transportation for travel to employment and shopping by encouraging: • Infill development; • Mixed-use development near employment centers (e.g., daycares, restaurants, and banks); • Increased residential densities near employment and shopping, and along major traffic corridors; and • Employment opportunities and shopping near to residential development.

	HS-9.7	Encourage a reduction in vehicle trips and vehicle miles traveled by promoting: • Public transportation; • Carpooling, ridesharing, and vanpooling; • Shortened and combined motor vehicle trips for work, shopping, and services; • Use of bicycles; and • Pedestrian access and walking.
	HS-9.8	Encourage pedestrian-oriented and transit-oriented design in new development.
	HS-9.9	Adopt guidelines for developers to encourage and promote pedestrian movement, bicycling, and public transit.
	HS-9.10	Encourage local development in order to encourage local employment and shopping opportunities and reduce the number and distance of vehicle trips.
	HS-9.11	Work with the Redding Area Bus Authority, Caltrans, and other agencies to establish multi-modal transfer sites for automobiles, bicycles, pedestrians, and public transit, consistent with the Circulation Element.
	HS-9.12	Develop a bikeway plan to encourage the use of bicycles, consistent with the Circulation Element.
	HS-9.13	Develop a pedestrian plan to encourage walking, consistent with the Circulation Element.
	HS-9.14	The City will support the Air Quality Management District's efforts to reduce and track emissions through appropriate analysis of project level air quality impacts during the CEQA process.
IMPLEMENTATION ACTION	HS-9.5	Encourage and promote public education regarding the link between air quality, transportation alternatives, and wood burning. Emphasize health hazards resulting from wildfire smoke and wood burning.
GOAL HE-1	**To provide for a broad range of housing types to meet the needs of all residents.**	
POLICY	HE-1.7	The City shall encourage circulation improvements and subdivision layouts that promote community connectivity and livability.
IMPLEMENTATION ACTION	HE-1.11	The City will evaluate commercial parcels and structures as part of the update to the General Plan. The evaluation will include identifying parcels/lots that are most appropriate for mixed commercial and residential uses.
GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICY	CON-4.3	Promote cost-effective water and energy consumption in the City as much as possible; continue and build upon existing programs to reduce water and energy consumptions in the City.
IMPLEMENTATION ACTIONS	CON-4.1	Require construction best practices to reduce erosion that take into account site and climate conditions, consistent with the MS4 stormwater program standards.

	CON-4.2	Encourage the highest feasible water conservation possible when reviewing landscaping plans for new projects and ensure the landscape watering ordinance contains best practices for water conservation.
	CON-4.3	Work with the largest users of water and energy in the City to establish incentives, offer recommendations, and explore other programs and policies for lowering consumption.
	CON-4.4	Continue to implement policies, programs, and projects to reduce greenhouse gas emissions and meet target energy consumption reductions, as identified in the City's Climate Action Plan.
GOAL LU-1	**Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.**	
POLICY	LU 1.16	Consider vegetation management and landscaping projects that can reduce heat island and pollutant transport and dispersion on high traffic roads such as Shasta Dam Blvd and frontage roads along the I-5 corridor (Cascade Blvd and Twin View Blvd). Collaborate with California Department of Transportation (Caltrans) to improve the landscaping in this area.
GOAL LU-3	**Ensure new development is of high-quality; well-integrated and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU 3.1	Where practical, promote mixed-use development patterns and higher densities where practical, that use land and resources efficiently, reduce automobile dependence and pollution, and facilitate walking, bicycling, and transit use.
	LU 3.2	Encourage development of residential uses in strategic proximity to employment, recreational facilities, schools, neighborhood commercial areas, and transportation routes.
	LU 3.11	Require that new buildings and the reconstruction of existing buildings comply with the most current California Green Buildings Standards Code and amendments.
	LU 3.15	Encourage sustainable, resilient development that conserves water and energy resources and incorporates best practices for avoiding and minimizing damage from flooding, earthquake, wildfire, and other hazards. Explore incentives and other methods for addressing conservation and resiliency in existing development.
GOAL HE-5	**To support energy efficiency improvements and appropriate weatherization for all new and existing housing units.**	
POLICIES	HE-5.1	New Construction Efficiency. The City shall require new construction to meet Title 24 energy conservation requirements.
	HE-5.2	Conservation Programs & Measures. The City shall promote energy efficiency measures and energy conservation programs in accordance with applicable laws, including programs to support low-income households.
	HE-5.3	Passive solar. During the tentative map review process, the City shall encourage new subdivision lots to be oriented to allow for both passive and active solar design to minimize energy losses.

IMPLEMENTATION ACTIONS	HE-5.1	Energy Efficiency Calculations. The City shall require all new construction to demonstrate compliance with Title 24 mandates during the planning and design process using energy efficiency calculations approved by the State.
	HE-5.2	Energy Efficiency. The City shall offer programs that comply with applicable laws that provide for weatherization and energy efficiency rebates for residential customers and support low-income households.
	HE-5.3	Green Building Incentives. The City shall encourage the implementation of the voluntary (Tier 2) provisions of the Green Building standards. The City will also provide information, on request, regarding green standards currently being applied.
	HE-5.4	Community Solar. The City shall explore locations and projects for "community solar" or utility-scale solar photovoltaic systems with supporting programs to directly serve the City's end-users' electricity needs with local renewable energy sources.
GOAL CIR-1	**Develop a transportation system that meets the needs of all segments of the community, including residents, businesses, visitors, and the region, through a "complete streets" approach to transportation planning.**	
POLICIES	CIR-1.1	Coordinate policies for land development and circulation.
	CIR-1.2	Evaluate the feasibility of including "complete streets" considerations in the design of all street improvement projects, including but not limited to: • Water efficient, drought tolerant landscaping • Public transit improvements • Accessibility for disabled persons and Americans with Disabilities Act (ADA) compliance • Safety criteria, such as traffic calming measures and lighting • Sign and wayfinding design • Sidewalk installation • On- and off-street parking management • Bicycle routes, facilities, and signage
	CIR-1.3	Encourage practical parking solutions to serve community needs while avoiding excessive amounts of surface parking that disrupt the urban fabric of the city. Explore alternatives that reduce parking footprints, including decreasing or removing parking minimums, adding more public parking, and expansion or modification of on-street parking.
	CIR-1.4	Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming.
	CIR-1.5	Strive to attain a Level of Service (LOS) "C" and VMT reduction, so that potential congestion is minimized, VMT targets are met, and active transportation needs are addressed.
	CIR-1.6	Improve unpaved roads, driveways, pedestrian and bicycle paths, and parking areas as appropriate and with consideration of reducing impervious surfaces.

	CIR-1.7	Encourage connectivity and accessibility to a mix of land uses that meet residents' daily needs within walking distance, consistent with the Land Use Element.
	CIR-1.8	Promote greater linkages between land uses and transit, as well as non-vehicular modes of transportation to reduce vehicular trip related emissions.
	CIR-1.9	Take into account the specific needs of the population when designing roadways, including bicycle and pedestrian access, transit and drop-off needs, and safety around crosswalks, intersections, and roundabouts.
	CIR-1.10	Improve air quality from transportation sources to protect human and environmental health and minimize impacts on sensitive populations by routing heavy truck traffic away from residential zones and promoting safety at rail crossings.
	CIR-1.11	Plan for convenient and accessible parking facilities for persons with disabilities, consistent with Americans with Disabilities Act (ADA) requirements.
	CIR-1.12	Protect natural features, to the degree feasible, when maintaining and expanding the City's circulation system.
IMPLEMENTATION ACTIONS	CIR-1.1	Program improvements to the transportation system based on demonstrated needs according to the collection of data on physical conditions, traffic volumes, and safety reports, for both active and vehicular transportation. Incorporate into a Capital Improvement Plan (CIP).
	CIR-1.2	Develop and adopt street standards that provide flexibility in design, especially in residential neighborhoods. Revise right-of-way and pavement standards to reflect adjacent land uses and anticipated traffic, and permit reduced right-of-way dimensions where necessary to maintain neighborhood character.
	CIR-1.3	Consider available data provided by outside agencies when developing transportation system improvements.
GOAL CIR-2	**Increase options and services for walking and bicycling while improving safety for all modes of transportation.**	
POLICIES	CIR-2.1	Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming. Strive to attain a Level of Service (LOS) "C" and VMT reduction to the maximum degree feasible to minimize potential congestion and increase safety on streets and at intersections.
	CIR-2.2	Provide access to public facilities, schools, parks, and shopping areas.
	CIR-2.3	Design intersections and public rights-of-way to include accessible, safe access for all users.
	CIR-2.4	Design sidewalks and pedestrian paths to provide sufficient space from vehicular traffic and adequate sight lines between adjoining development to ensure safety and security, as practicable.
	CIR-2.5	Continuously evaluate the operation of the City's transportation system to manage the speed of travel, manage queues at intersections, and develop improvements to increase safety of all transportation services.

	CIR-2.6	Coordinate with the Shasta County Sheriff to enforce traffic regulations with particular attention given to sensitive uses such as schools, senior centers, hospitals, community service facilities, and parks.
	CIR-2.7	Limit the intrusion of commercial truck traffic on City streets, especially in residential neighborhoods, by directing truck traffic to the City's designated truck routes.
IMPLEMENTATION ACTIONS	CIR-2.1	Continue a data collection program for the transportation system, to include a physical inventory, condition of surfacing, maintenance needs, traffic volumes, and accident reports. Update the program at least every five years.
	CIR-2.2	Respond quickly to correct traffic signal breakdowns and sign damages and losses.
	CIR-2.3	Review high frequency accident locations and develop specific mitigation measures or improvements.
	CIR-2.4	Provide an ongoing review of emergency operations plans and provisions to ensure that the City's program for emergency transportation services is coordinated with other local and regional jurisdictions and incorporates updated procedures and programs as appropriate.
GOAL CIR-3	**Promote alternative travel modes, including transit, pedestrian, and bicycle circulation systems to improve access and public health.**	
POLICIES	CIR-3.1	Coordinate transportation planning and implementation with regional and local plans.
	CIR-3.2	Plan for transportation modes and strategies that ensure good air quality, reduce greenhouse gas emissions, and reduce the need to devote additional lands to transportation uses.
	CIR-3.3	Encourage the development and expansion of local and regional public transit systems. Request improvements in transit service.
	CIR-3.4	Require sidewalks in all new public and private developments.
	CIR-3.5	Continue to develop a system of bicycle and pedestrian transportation, both on- and off-street.
	CIR-3.6	Encourage local transportation agencies to make public transit more comfortable and convenient, especially for underserved populations.
	CIR-3.7	Review proposed designs for large traffic-generating uses with transit service in mind, and, where feasible, require streets to be improved to provide bus loading and unloading without disruption of through-traffic.
	CIR-3.8	Where feasible and appropriate, and where non-motorized travel is reasonably expected, the width of existing streets should be reduced through bulbouts, medians, pedestrian islands and similar methods, and planting shade trees in landscaped areas within and adjacent to streets while not jeopardizing emergency response and future capacity requirements.
	CIR-3.9	Expand and maintain a safe and comprehensive bicycle system that connects the City's neighborhoods to public facilities, services, and recreational opportunities within the City.

	CIR-3.10	Encourage bicycle parking and related facilities in new employment-generating development and multi-family housing to facilitate multi-modal commute choices.
	CIR-3.11	Promote street trees in urbanized areas, especially along major thoroughfares such as Shasta Dam Boulevard and around active transportation infrastructure.
IMPLEMENTATION ACTIONS	CIR-3.1	Where feasible and appropriate, enhance pedestrian and bicycle circulation and planning, including enhancing the urban canopy with street trees, in coordination with the GoShasta Plan.
	CIR-3.2	Increase walking and bicycling to local destinations and regional transportation services by developing wayfinding signage for pedestrians and bicyclists.
	CIR-3.3	Develop measures to reduce conflict areas for bicyclists through methods such as brightly-colored paint or a one-foot buffer strip along bicycle routes, focusing on problem areas like right turn lanes and driveways.
	CIR-3.4	Consider applicable strategies prepared by outside agencies when developing transportation plans within the City.
	CIR-3.5	Construct, improve, and maintain the system of curb, gutters, sidewalks, and crosswalks for pedestrian and bicycle circulation safety and drainage control, prioritizing high traffic areas.
	CIR-3.6	Implement bicycle safety programs and cooperate with other agencies in the enforcement of bicycle safety.

4.7.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact related to energy, greenhouse gas emissions, and climate change if it would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation;
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.
3. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
4. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing greenhouse gas emissions.

4.7.6 Issues Not Discussed Further

All issues identified in Section 4.7.5 are addressed below.

4.7.7 Impact Analysis and Mitigation Measures

Impact 4.7-1	**Implementation of the 2040 General Plan would not result in significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.** ***Less-than-Significant Impact***

Construction

Future development under the 2040 General Plan would consume diesel fuel and gasoline during use of construction equipment. Construction activities may also use electricity to operate power tools. The number and type of equipment used for construction projects would vary significantly, depending on the size of the project site, the amount of clearing and grading, the size and type of buildings, and the amount of paving that would be installed. Therefore, it is not feasible to estimate energy use associated with construction. However, construction activities would be required to comply with regulations for use of fuel-efficient equipment as described in Section 4.7.3 (Regulatory Framework).

Operations

Table 4.7-6 in Section 4.7.2 (Environmental Setting) identifies electricity consumption in the City by customer class between 2015 and 2020. As indicated in **Table 4.7-6**, industrial users had the highest energy demand in the City, which is to be expected. Most of the industrial facilities in the City were constructed prior to the effective date of the CALGreen Code on January 1, 2011.

The CALGreen Code was adopted, in part, to aid with reaching the GHG goals established by the Global Warming Solutions Act (Assembly Bill 32, 2006).

CALGreen is updated every three years to implement State regulations that have been enacted in the interim. For example, the 2022 CALGreen Code goes into effect on January 1, 2023, and includes provisions intended to reduce and eventually eliminate the use of fossil fuels, including natural gas, and replacing them with electricity generated by renewable sources such as solar panels, wind, and hydroelectric dams. These updated regulations assist with meeting the State's goal that energy from renewable sources for both investor-owned utilities and publicly-owned utilities be increased to 60 percent by 2030 and 100 percent renewable energy by 2045. The bill established incremental requirements that these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027.

The 2022 Building Energy Efficiency Standards (Energy Code) include revisions that support the State's public health, climate, and clean energy goals. The 2022 Energy Code, which goes into effect on January 1, 2023, encourages efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, strengthens ventilation standards, and includes additional energy-efficiency measures (CEC, 2021).

The Energy Code requires completion of Certificates of Compliance to demonstrate that a projects design and equipment comply with the mandatory requirements for residential and nonresidential buildings. A Certificate of Installation is required to ensure that installation is in compliance with the Energy Code at the time of inspection. Certificates of Verification are required to demonstrate compliance with Home Energy Rating System (HERS) requirements.

All new development projects and new or expanded commercial and industrial businesses must submit an application to the City's Electric Department, along with detailed load calculations for stationary equipment, pumps, motors, lighting, etc. All construction applications are reviewed by the City's Building Official to ensure compliance with State CALGreen and Energy Code requirements, and applicable local requirements related to energy efficiency. The Building Official also ensures that certificates of compliance, installation, and verification are completed to ensure that Energy Code requirements are incorporated into the project.

Compliance with existing regulations and processes ensures that development under the 2040 General Plan would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation; impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.7-2	**Implementation of the 2040 General Plan would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.** ***No Impact***

See discussion under Impact 4.7-1.

Development under the 2040 General Plan is reviewed by the City's Building Official to ensure implementation of State requirements for renewable energy and energy efficiency, which are included primarily in the State Energy Code and CALGreen Code. The Electric Utility Director works with customers in the City who wish to add solar PV on existing buildings. Shasta Lake Municipal Code §15.02.010 establishes an expedited, streamlined permitting and inspection process for small residential rooftop solar energy system, electric vehicle charging stations, and other related improvements.

As described in Section 4.7.2 (Environmental Setting), the City manages a comprehensive program for residential and commercial customers that focuses on peak load reduction and energy conservation (City of Shasta Lake, n.d.). On-site energy audits by energy specialists are available to residential customers, and the energy specialist recommends energy efficiency measures based on each audit. The City provides technical support and incentives to facilitate installation of higher efficiency cooling and refrigeration equipment, envelope measures, appliances, weatherization, and lighting. Therefore, development under the 2040 General Plan would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. There would be ***no impact***.

Mitigation Measures

No mitigation measures required.

Impact 4.7-3	**Development under the 2040 General Plan could generate greenhouse gas emissions, directly and indirectly, resulting in a significant impact on the environment.** ***Significant and Unavoidable Impact***

As stated in Section 4.7.3 (Regulatory Framework), §15064.4 of the CEQA Guidelines gives lead agencies the discretion to determine whether to use a model or other method to quantify GHG emissions and/or to rely on a qualitative or performance-based standard.

For a quantitative analysis, a lead agency could determine a less-than-significant impact if a project did not exceed an established numerical threshold. For a qualitative/performance-based threshold, a lead agency could determine a less-than-significant impact if a project complies with State, regional, and/or local programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

If a qualitative approach is used, lead agencies should still quantify a project's GHG emissions to determine the amount, types, and sources of GHG emissions resulting from the project. Quantification may be useful in indicating to the lead agency and the public whether emissions reductions are possible, and if so, from which sources. For example, if quantification reveals that a substantial portion of a project's emissions result from mobile sources (automobiles), a lead agency may consider whether design changes could reduce the project's vehicle miles traveled (OPR, 2018).

Construction Emissions

Construction under the 2040 General Plan would result in the temporary generation of GHG emissions, primarily from the combustion of diesel fuel in heavy equipment.

The City uses the California Emissions Estimator Model (CalEEMod) to estimate project GHG emissions. CalEEMod reports overall annual emissions (tons per year) for both construction and operational emissions. In order to estimate construction emissions, detailed information regarding the amount of site clearing, grading, cubic yards of dirt to be imported and exported, and the weight of demolition debris is required in order to determine the number and type of heavy equipment that would be used on a particular project.

For all land uses other than single-family residential (multi-family residential, commercial, industrial, educational, institutional and parks facilities), the square footage of pavement for parking lots and other paved surfaces must be input as a separate land use type. CalEEMod also requires detailed information to calculate changes in CO_2 associated with tree/habitat removal and tree planting. Because there are many factors involved with estimating construction emissions, it is not possible to develop a reasonable estimate of construction GHG emissions at this time. Emissions associated with construction activities under the 2040 General Plan will be evaluated for future projects using the most current CalEEMod version, or similar model for estimating construction emissions.

Operational Emissions

Future projects under the 2040 General Plan would generate GHG emissions from area sources (e.g., wood-burning fireplaces, cleaning supplies, maintenance activities such as painting, landscape equipment etc.) mobile sources (e.g., vehicle trips for employees, visitors, vendors, deliveries, etc.), and refrigerants used in air conditioning and refrigeration equipment. In addition, indirect emissions associated with energy use, solid waste disposal, water treatment and distribution, and wastewater treatment also would be generated.

Table 4.7-7 identifies the estimated annual GHG emissions that could be generated by the end of the 20-year planning period. The CalEEMod report is included as **Appendix B**. However, there are many additional factors that need to be considered when reviewing specific projects under the 2040 General Plan. These factors are either unknown at this time (e.g., the level of emissions from

stationary equipment, the type and intensity of fleet equipment, etc.), or are factors that could change over the years (e.g., the emissions intensity factors for electric and natural gas services, new or revised State and local regulations, etc.).

As indicated in **Table 4.7-7**, the highest levels of GHG emissions are anticipated to be generated by mobile sources, energy, and area sources

Table 4.7-7
Estimated Average Annual Operational Greenhouse Gas Emissions
Metric Tons per Year

Source	Carbon Dioxide (CO_2)	Methane (CH_4)	Nitrous Oxide (N_2O)	Refrigerant (R)	Carbon Dioxide Equivalent (CO_2e)
Mobile	6,483	0.27	0.37	1.23	6,600
Area	1,033	0.8	0.05	0	1,068
Energy	3,817	0.3	0.02	0	3,831
Water	30.3	3.11	0.07	0	130
Waste	82.1	8.21	0	0	287
Refrigerants	0	0	0	10.6	10.6
Total	**11,445.40**	**12.69**	**0.51**	**11.83**	**11,926.6**

Source: CalEEMod, 2022.

Implementation of the 2040 General Plan is anticipated to result in a population increase of 2,082 by the end of the 20-year planning period; based on an increase in GHG emissions of 11,927 MT CO_2e over the 20-year planning period, the per capita GHG emissions for the increased population (2,082 people) would be ±5.72 MT CO_2e.

The City's GHG emissions inventory has not been updated recently; therefore, it is not possible to estimate current per capita GHG emissions. Although the above information does not reflect the citywide per capita GHG emissions, it does indicate that the increase in GHG emissions is not inconsistent with the 2017 Scoping Plan goal of no more than 6 MT CO_2e per capita by 2030.

CARB is in the process of completing the 2022 Scoping Plan update, and these per capita goals may change. The City also plans to prepare an update to the CAP, which will include an updated emissions inventory and quantifiable measures that would minimize/reduce GHG emissions.

As described in Section 4.7.3 (Regulatory Framework), the State has adopted numerous regulations to minimize statewide GHG emissions. In addition, policies that call for the development of additional State regulations will further minimize/reduce GHG emissions.

Future development under the 2040 General Plan would be reviewed on a case-by-case basis to determine project-specific impacts related to GHG emissions. Projects would be reviewed to ensure consistency with the 2040 General Plan policies and implementation actions identified in Section 4.7.4.

Mitigation measures would be implemented as necessary to minimize/reduce GHG emissions. These measures could include those identified in the California Air Pollution Control Officers Association (CAPCOA) publication *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA, 2021). **Table 4.7-8** identifies potential quantifiable measures that could be applied to future projects. For Measures T-

1 and T-2, these factors may already be accounted for in SRTA's Travel Demand Model, in which case density increases would not provide additional VMT mitigation.

Table 4.7-8
Potential Quantifiable Measures for
Greenhouse Gas Emission Reductions

CAPCOA Measure		Description	GHG Mitigation Potential
T-1	Increase Residential Density	Provide increased density compared to the average residential density in the U.S. (9.1 units per acre).	Up to 30% of GHG emissions from project VMT in the study area
T-2	Increase Job Density	Provide a higher density of jobs as compared to the average job density in the U.S. (i.e., 145 jobs per acre).	Up to 30% of GHG emissions from project VMT in the study area
T-4	Integrate Affordable and Below Market Rate Housing	Provide multi-family residential units that are permanently dedicated as affordable for lower income families.	Up to 28.6% of GHG emissions from project/site multi-family residential VMT
T-5	Implement Commute Trip Reduction (CTR) Program (Voluntary)	Employers implement a voluntary CTR program that includes employer-provided services, infrastructure, and incentives for alternative modes of transportation (e.g., ridesharing, discounted transit, bicycling, vanpool) and guaranteed ride home. Employers must provide information, coordination, and marketing for these services, infrastructure, and incentives.	Up to 4% of GHG emissions from project/site employee commute VMT
T-6	Implement Commute Trip Reduction (CTR) Program (Mandatory Implementation and Monitoring)	Employers implement a mandatory CTR program that includes the same components as the voluntary CTR Program (T-5); must include mandatory trip reduction requirements (including penalties for non-compliance) and regular monitoring and reporting to ensure compliance with the calculated VMT reduction.	Up to 26% of GHG emissions from project/site employee commute VMT
T-7	Implement Commute Trip Reduction (CTR) Marketing	Implement a marketing strategy to promote an employer's CRT program. Program could include onsite or online commuter information, employee transportation coordinators, onsite or online transit pass sales, and/or guaranteed ride home service.	Up to 4% of GHG emissions from project/site employee commute VMT
T-8	Provide Ridesharing Program	Implement a ridesharing program that includes a permanent transportation management association with funding requirements for employers.	Up to 8% of GHG emissions from project/site employee commute VMT
T-9	Implement Subsidized or Discounted Transit Program	Provide subsidized, discounted, or free transit passes for employees and/or residents.	Up to 5.5% of GHG emissions from employee/resident vehicles accessing the site

CAPCOA Measure		Description	GHG Mitigation Potential
T-10	Provide End-of-Trip Bicycle Facilities	Install and maintain end-of-trip facilities for employee use (e.g., secure bike parking, bike lockers, showers, and personal lockers).	Up to 4.4% of GHG emissions from project/site employee commute VMT
T-11	Provide Employer-Sponsored Vanpool	Implement a vanpool program, a ridesharing option that provides a flexible form of public transportation for groups of 5 to 15 employees.	Up to 20.4% of GHG emissions from project/site employee commute VMT
T-17	Improve Street Connectivity	Increase intersection density, with grid streets in subdivisions rather than cul-de-sacs or dead-end streets to facilitate shorter trips.	Up to 30% of GHG emissions from vehicle travel in the plan/community
T-18	Provide Pedestrian Network Improvement	Increase sidewalk coverage to improve pedestrian access to encourage people to walk.	Up to 6.4% of GHG emissions from vehicle travel in the plan/community
T-19-A	Construct or Improve Bike Facility	Construct or improve a single bicycle lane facility (only Class I, II, or IV) that connects to a larger existing bikeway network.	Up to 0.8% of GHG emissions from vehicles on roadways
T-19-B	Construct or Improve Bike Boulevard	Construct or improve a single bicycle boulevard that connects to a larger existing bikeway network.	Up to 0.2% of GHG emissions from vehicles on roadways
T-20	Expand Bikeway Network	Increase the length of a city bikeway network (an interconnected system of bike lanes, bike paths, bike routes, and cycle tracks.	Up to 0.5% of GHG emissions from vehicle travel in the plan/community
E-1	Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards	Require new buildings to exceed the Title 24 Building Energy Efficiency Standards.	Up to 99% of GHG emissions from building electricity and/or natural gas use
E-2	Require Energy Efficient Appliances	Require installation of Energy Star-Certified appliances that exceed the energy efficiency of conventional appliances.	Up to 15% of GHG emissions from building electricity
E-3-B	Require Energy Efficient Commercial Packaged Boilers	Require commercial packaged boilers with a higher energy efficiency than what is required by regulation.	Up to 16% of GHG emissions from boiler fuel consumption
E-12	Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences	Require installation of a water heater that is less emissions-intensive than a natural gas conventional storage tank water heater in residential development.	Potentially moderate reduction in GHG emissions from building natural gas
E-14	Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development	Limit the number of wood-burning devices (woodstoves and fireplaces) or natural gas or propane fireplaces in residential developments.	Potentially large reduction in GHG emissions from wood burning devices

CAPCOA Measure		Description	GHG Mitigation Potential
E-15	Require All-Electric Development	Require that residential and commercial development use all-electric appliances and end uses.	Potentially large reduction in GHG emissions from building energy use
W-5	Design Water Efficient Landscapes	Require landscaping with lower water demands than required by the Water Efficient Landscape Ordinance.	Potentially small reduction in GHG emissions from outdoor water use
W-6	Reduce Turf in Landscapes and Lawns	Remove or reduce turf grass (lawn grass)	Potentially large reduction in GHG emissions from outdoor water use
N-2	Expand Urban Tree Planting	Plant trees in urbanized areas to sequester CO_2, reduce the urban heat island effect, and reduce building cooling demands, thereby reducing energy consumption and associated indirect GHG emissions.	Variable reduction in GHG emissions from urban tree planting
C-1-A	Use Electric or Hybrid-Powered Equipment	Require use of electric- or hybrid-powered construction equipment over conventional diesel-fueled counterparts.	Potentially large reduction in GHG emissions from construction equipment
C-1-B	Use Cleaner-Fuel Equipment	Require use of cleaner-fueled construction equipment over conventional diesel- or gasoline-fueled counterparts.	Potentially small reduction in GHG emissions from construction equipment
R-1	Use Alternative Refrigerants Instead of High-GWP Refrigerants	Replace high-GWP refrigerants with lower-GWP refrigerants in refrigeration and air conditioning equipment.	Up to a 100% reduction in GHG emissions during operation
R-2	Install Secondary Loop and/or Cascade Supermarket Systems in Place of Direct Expansion Systems	Replace conventional direct expansion systems in supermarkets with indirect systems such as secondary loop and cascade systems.	Up to a 100% reduction in GHG emissions during operation

Source: CAPCOA, 2021.

Implementation of State and local requirements, including but not limited to those identified in Section 4.7.3 (Regulatory Framework), will result in a continuing reduction of GHG emissions during the 20-year planning period, including the requirement that the amount of electricity generated from renewable sources be increased to 60 percent by 2030 and 100 percent by 2045. GHG emissions in the transportation and building construction sectors will also continue to decrease with implementation of State regulations.

The City's 2040 General Plan encourages a land use pattern that reduces reliance on the automobile and facilitates alternative modes of transportation by promoting infill development, mixed-use development near employment centers, and increased residential densities near employment and shopping, and along major traffic corridors. Compliance with the General Plan policies and implementation actions identified in Section 4.7.4 will result in a reduction in mobile source emissions.

Future development under the 2040 General Plan would be reviewed on a case-by-case basis to determine project-specific impacts related to GHG emissions. If necessary, mitigation measures, such as those identified in **Table 4.7-8**, would be implemented to minimize GHG emissions.

However, due to the programmatic nature of this Draft PEIR, it is not possible to identify quantifiable mitigation measures that would effectively reduce project-specific GHG emissions. Therefore, potential impacts associated with direct and indirect GHG emissions are considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

Impact 4.7-4	**Implementation of the 2040 General Plan could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.** ***Significant and Unavoidable Impact***

Applicable plans, policies, and regulations that were adopted for the purpose of reducing GHG emissions are identified in Section 4.7.3 (Regulatory Framework). A project is considered consistent with plans, policies, and regulations if it implements the GHG reduction requirements of such plans, policies, and regulations, and does not impede attainment of established GHG goals. The State's Climate Change Scoping Plan is the State's comprehensive plan that identifies goals related to reducing GHG emissions and measures necessary to reach the State's GHG reduction targets.

As stated under Impact 4.7-3, the 2017 Scoping Plan recommends statewide targets of no more than six metric tons CO_2e per capita by 2030 and no more than two metric tons CO_2e per capita by 2050. Based on a population increase of 2,082 by the end of the 20-year planning period, and an increase in GHG emissions of 11,927 MT CO_2e over the 20-year planning period, the per capita GHG emissions for the increased population (2,082 people) would be ±5.72 MT CO_2e. Although this does not reflect the City-wide per capita GHG emissions, it does indicate that the increase in GHG emissions is not inconsistent with the 2017 Scoping Plan goal of no more than 6 MT CO_2e per capita by 2030.

CARB is in the process of completing the 2022 Scoping Plan update, and these per capita goals may change. The City plans to prepare an update to the CAP to reflect current State mandates and goals that would apply to development projects under the 2040 General Plan. The updated CAP will include a current emissions inventory and quantifiable measures that would minimize/reduce GHG emissions.

As described in Section 4.7.3 (Regulatory Framework), the 2018 Shasta RTP includes a SCS that coordinates transportation and land use planning in order to reduce VMT and associated GHG emissions from passenger vehicles and light trucks. The 2040 General Plan is consistent with the SCS because the 2040 General Plan provides for increased residential densities and increased floor area ratios (FARs) for non-residential uses, and includes additional areas for mixed use development that would provide a balance of residential, retail, office, and other uses. Policies and implementation actions are included to accommodate and promote non-motorized transportation, and support infill development that would be accessible by any travel mode. Distance to transit is a challenge for smaller communities; however, it is anticipated that increases in population may increase the demand for public transportation services. Policy HS-9.11 calls for the City to work with the Redding Area Bus Authority, Caltrans, and other agencies to establish multi-modal transfer

sites for automobiles, bicycles, pedestrians, and public transit, consistent with the Circulation Element.

As discussed in Section 4.17 (Transportation) of this Draft PEIR under Impact 4.17-2, the City's referenced thresholds for VMT are based on the State's GHG emissions reductions goals included in CARB's 2020 Mobile Source Strategy and the State's Climate Change Scoping Plan.

Although VMT under the 2040 General Plan would be ±0.3 percent less than what is expected to occur under the current General Plan, VMT would not be below the referenced thresholds (i.e., 15 percent below existing VMT per capita for residential uses; 15 percent below existing regional VMT per employee; and no net increase in total VMT for retail uses).

Future projects under the 2040 General Plan would be reviewed on a case-by-case basis to ensure that the project does not conflict with applicable plans, policies, or regulations for the reduction of GHG emissions. If necessary, projects would be required to implement mitigation measures to minimize GHG emissions. These measures could include those identified in **Table 4.7-8.** However, due to the programmatic nature of this Draft PEIR, it is not possible to identify project-specific mitigation measures that would ensure consistency with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Therefore, potential impacts are considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

4.7.8 References

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SECTION

4.8

Geology and Soils

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4.8 Geology and Soils

This section describes geology and soils in the study area and discusses potential impacts that implementation of the General Plan update could have related to seismic hazards, liquefaction, landslides, soil erosion, expansive soils and other potential unstable ground conditions, installation of on-site wastewater treatment systems, and impacts on paleontological resources.

4.8.1 Study Methods

The following evaluation of potential impacts on geology and soils is based on an assessment of baseline conditions within the City of Shasta Lake, as described under Environmental Setting below. Resources consulted include the Shasta Lake Municipal Code, the City's 2014 and 2021 Local Hazard Mitigation Plans (LHMP). U.S. Geological Survey (USGS) records, California Geologic Survey (CGS) records, U.S. Department of Agriculture soil survey data, and the U.C. Berkeley Museum of Paleontology.

4.8.2 Environmental Setting

GEOMORPHOLOGY/GEOLOGY

The City of Shasta Lake is situated at the far north end of the Sacramento Valley at the point where the valley meets the foothills of the Klamath and Cascade mountain ranges. Topography in the City varies considerably, with elevations ranging between ±650 feet to ±1,800 feet. The steepest areas are located generally in the northwestern areas of the City.

According to the California Geological Survey (CGS), California has 11 geomorphic provinces, which are naturally defined regions that display distinct landscapes or landforms. Defining features in each region are based on geology, faults, topographic relief, and climate (CGS, 2002). The Shasta County area encompasses four of the geomorphic provinces: the Cascade Range, Klamath Mountains, Coastal Range, and the Great (Central) Valley (USDA, 1974). The City of Shasta Lake encompasses two of these geomorphic provinces: the Klamath Mountains and the Great Valley.

The Klamath Mountains geomorphic province encompasses the northern and western areas of the City and is the most complex of all of the provinces in the County in terms of geology and geological history. Earlier studies divided this province into the following four major lithic belts of contrasting age, listed in order from east to west and youngest to oldest: Eastern Klamath (Paleozoic), Central Metamorphic, Western Paleozoic and Triassic, and Western Jurassic belts (Geological Society of American, 2006). The City is located within the Western Paleozoic and Triassic belt, which are comprised of interbedded metavolcanic and metasedimentary rocks, ranging in age from Middle Devonian to Late Triassic (California Division of Mines and Geology [DMG], 1973).

The Great Valley geomorphic province encompasses the southeastern area of the City and is comprised primarily of marine sandstone, shale, and conglomerate. Rocks in this province date to the Cretaceous and Tertiary ages. Recent alluvial sediment is present along the Sacramento River and its tributaries.

A more detailed description of geologic units in the City is included in **Table 4.8-1** and shown in **Figure 4.8-1.**

Table 4.8-1
Geologic Formations in the City of Shasta Lake

Map Symbol	Description	Epoch/Age	Description
Quaternary Period Surficial Deposits			
Qa	**Alluvium and Colluvium**	**Holocene** *11,700 years to present*	Unconsolidated sand and gravel; closely associated with modern stream channels but generally higher than normal modern highwater level; also may include remnants of high-level terraces not necessarily related to present streams. In Shasta County, only two locales with Holocene-aged rock formations have been found to harbor fossils.
Qrb	**Red Bluff Formation**	**Pleistocene** *2.6 million years ago (mya) to 11,700 years*	Thin veneer of distinctive, highly weathered bright-red gravels overlying the Tehama, Tuscan, and Laguna Formations. Interpreted as a sedimentary cover on a pediment surface. High potential for fossils.
Sedimentary Rocks			
Kc	**Chico Formation**	**Upper Cretaceous** *100 to 65 mya*	Tan, yellowish-brown to light-gray, fossiliferous marine sandstone with lenticular beds of pebble to fine cobble conglomerate and minor siltstone. Clasts in conglomerate include rounded to well-rounded, red, green, and black chert, white vein quarts, quartzite, granite, and greenstone. Calcite-cemented concretions and layers of fossil fragments are common.
Eastern Klamath Terrane			
Dk	**Kennett Formation**	**Devonian** *419 to 359 mya*	Lowest part in southern exposure of Kennett Formation is silicic volcaniclastic debris derived largely from erosion of Balaklala Rhyolite. This is overlain by interlayered black carbonaceous and cherty shales containing local volcaniclastic interbeds. Shales typically weather medium to light gray. Uppermost part contains massive gray limestone lenses, locally with abundant fossils.
Dcg	**Copley Greenstone**	**Devonian (?)** *419 to 359 mya*	Chiefly keratophyre and subordinate spilite pillow lavas and volcanic breccias; includes some metaandesite and metabasalt, as well as boninite and shaly tuff lenses in lower part. Pillow lavas conspicuously dominate the upper part where it is locally interlayered with, and also intruded by, middle facies of Balaklala Rhyolite. Low potential for paleontological resources.
Md	**Mafic Rocks**	**Permian (?)** *299 to 251 mya*	Includes mafic diorites and diabasic rocks that intrude Bragdon, Baird, and Nosoni Formations. Low potential for paleontological resources.

Sources: USGS, 2012a and 2012b; California Natural Resources Agency, 2014; and California Department of Conservation, 2002.

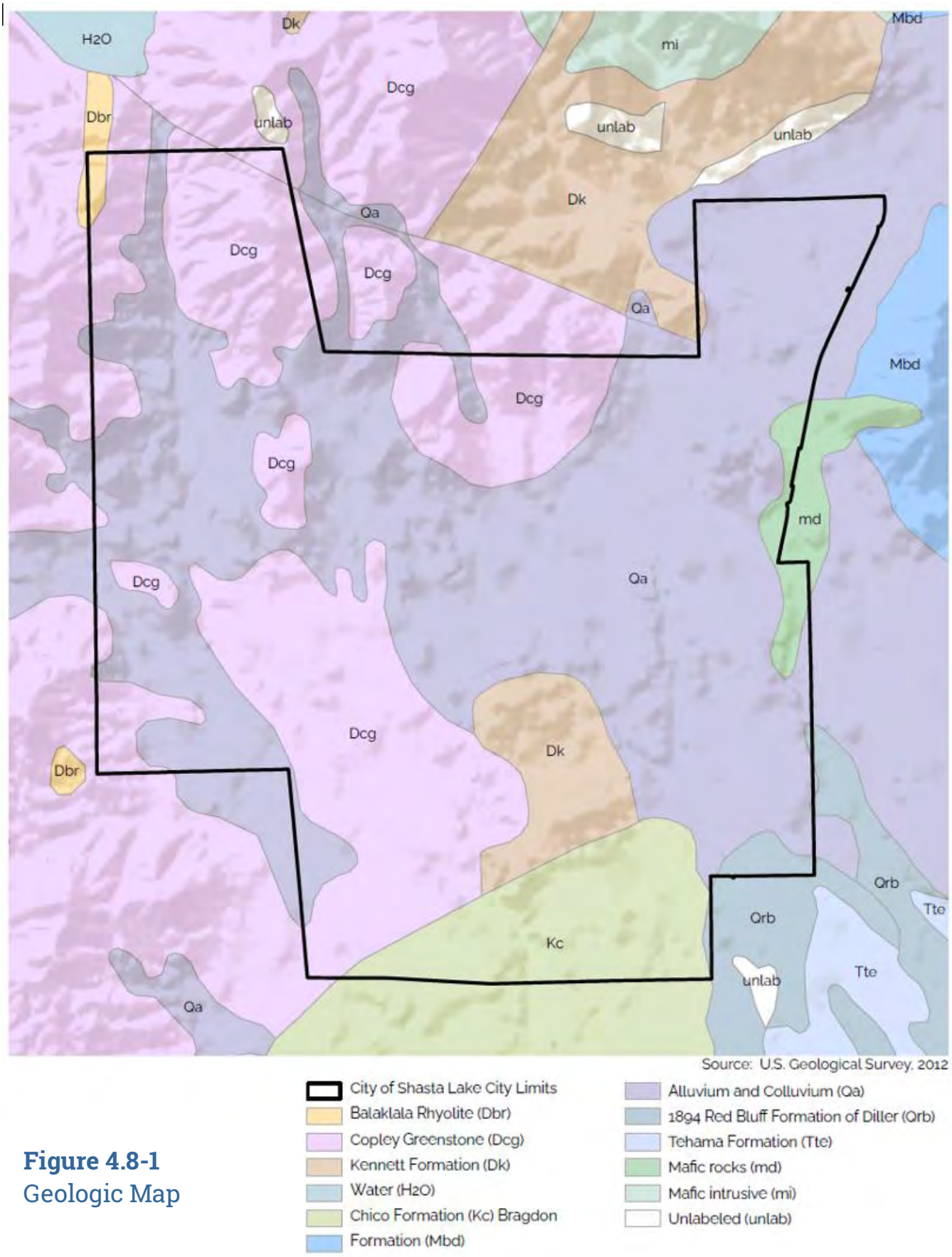


Figure 4.8-1
Geologic Map

SOILS

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), there are 32 soil units mapped within the City. A list of the mapped units and a general description are included in **Table 4.8-2**.

Table 4.8-2
Soils Within the City of Shasta Lake

Map Unit Symbol	Map Unit Name	Acres and Percentage of Total within the City	General Description	Shrink-Swell Potential	Erosion Hazard	Runoff Rate
Ad	Anderson gravelly sandy loam	42.63 (0.6%)	Anderson series soils consist of somewhat excessively drained soils that formed in recent alluvium from mixed sources. Anderson gravelly sandy loam includes very gravelly sand at depths of 24-60 inches. The depth to bedrock or hardpan is over five feet.	Low	None to slight	Slow
AnB	Auburn loam, 0-8% slopes	823.1 (11.9%)	Auburn series soils consist of well-drained clay loams that are underlain by basic metavolcanic rock, mainly greenstone. The depth to unweathered bedrock ranges from 20-31 inches.	Low	Slight to moderate	Slow to medium
AnD	Auburn loam, 8-30% slopes	794.1 (11.5%)		Low	Moderate to high	Medium to rapid
ArD	Auburn very stony loam, 8-30% slopes	136.0 (2.0%)		Low	Moderate to high	Medium to rapid
AsD2	Auburn clay loam 8-30% slopes, eroded	434.4 (6.3%)		Low	Moderate to high	Medium to rapid
AtE2	Auburn very stony clay loam 30-50% slopes, eroded	714.9 (10.3%)		Low	High	Rapid
AuF2	Auburn very rocky clay loam 50-70% slopes, eroded	141.7 (2.0%)		Low	Very High	Very Rapid
BkC	Boomer gravelly loam 0-15% slopes	668.0 (9.6%)	Boomer series soils consist of well-drained gravelly loams that are underlain by weathered metabasic rock, mainly greenstone. The depth to weathered bedrock ranges from 30-49 inches.	Moderate	Slight to moderate	Slow to medium
BkD	Boomer gravelly loam 15-30% slopes,	1,106.1 (16.0%)		Moderate	Moderate to high	Medium to rapid
BkE	Boomer gravelly loam 13-52% slopes, MLRA 15	560.7 (8.1%)		Moderate	High	Rapid

Map Unit Symbol	Map Unit Name	Acres and Percentage of Total within the City	General Description	Shrink-Swell Potential	Erosion Hazard	Runoff Rate
BoE3	Boomer very stony clay loam 30-50% slopes, severely eroded	7.7 (0.1%)		Moderate	High	Rapid
BoF3	Boomer very stony clay loam 50-70% slopes, severely eroded	18.1 (0.3%)		Moderate	Very high	Very rapid
CdA	Churn loam, slightly wet 0-3% slopes	80.0 (1.2%)	Churn series soils consist of well-drained and moderately well-drained soils that formed in alluvium from mixed sources. These soils are on low terraces and fans along the Sacramento River, along Cottonwood, Cow, and Stillwater Creeks, and along tributaries of these creeks. The depth to bedrock or hardpan is over five feet.	Moderate	None or slight	Ponds or runs off very slowly
CeA	Churn gravelly loam 0-3% slopes	115.4 (1.7%)		Low	None to slight	Slow
CeB	Churn gravelly loam 3-8% slopes	5.8 (0.1%)		Low	Slight to moderate	Slow to medium
CfA	Churn gravelly loam, deep 0-3% slopes	54.9 (0.8%)		Low	None to slight	Slow
GbD	Gaviota very rocky sandy loam 0-30% slopes	379.2 (5.5%)	Gaviota very rocky sandy loam is underlain by sandstone or conglomerate. The depth to bedrock (unweathered) is 17-21 inches.	Low	Moderate to high	Medium to rapid
GdD	Goulding very stony loam 10-30% slopes	81.2 (1.2%)	Goulding series soils consist of well-drained soils that are underlain by greenstone. The depth to bedrock (unweathered) ranges from 16 to 20 inches.	Low	Moderate to high	Medium to rapid
GeF2	Goulding very rocky loam 50-70% slopes, eroded	100.5 (1.4%)		Low	Very high	Very rapid
He	Honcut gravelly loam	13.5 (0.2%)	Honcut series soils consist of well-drained soils that formed mainly in basic alluvium. These soils are on alluvial plains of small streams. The depth to bedrock or hardpan is over five feet.	Low	None to slight	Very slow
MeD	Millsholm gravelly loam 3-30% slopes	26.7 (0.4%)	Millsholm series soils consist of well-drained soils underlain by sedimentary and metasedimentary rock. The depth to bedrock (unweathered) is 16-20 inches.	Low	Moderate to high	Medium to rapid
NeC	Newtown gravelly loam 8-15% slopes	96.3 (1.4%)	Newtown series soils consist of well-drained soils that formed in old alluvium from mixed sources.	Low	Moderate	Medium

Map Unit Symbol	Map Unit Name	Acres and Percentage of Total within the City	General Description	Shrink-Swell Potential	Erosion Hazard	Runoff Rate
NeD	Newtown gravelly loam 15-30% slopes	102.0 (1.5%)	Newtown soils are found on high terraces. The depth to bedrock or hardpan is over five feet.	Low	Moderate to high	Medium to rapid
PmB	Perkins gravelly loam 3-8% slopes	3.6 (0.1%)	Perkins series soils consist of well-drained and moderately well-drained soils that formed in mixed alluvium. The depth to bedrock or hardpan is over five feet.	Low	Slight to moderate	Slow to medium
PmC	Perkins gravelly loam 8-15% slopes	93.2 (1.3%)		Low	Moderate	Medium
RbA	Red Bluff loam 0-3% slopes, MLRA 17, moist	39.4 (0.6%)	Red Bluff series soils consist of well-drained and moderately well-drained soils that formed in gravelly old alluvium from mixed sources. The depth to bedrock or hardpan ranges from 30 to 60 inches.	Low	None to slight	Very slow
RbB	Red Bluff loam 3-8% slopes	162.2 (2.3%)		Low	Slight to moderate	Slow to medium
RcB	Red Bluff gravelly loam, moderately deep 3-8% slopes	21.4 (0.3%)		Low	Slight to moderate	Slow to medium
TbB	Tehama loam 3-8% slopes, bedrock substratum, MLRA 15	40.0 (0.6%)	Tehama series soils consist of well-drained soils that formed in fine-loamy alluvium derived from metamorphic and sedimentary rock. The depth to bedrock ranges from 60-70 inches.	Low	Slight	Slow
RxF	Rock Land	23.7 (0.3%)	Areas designated Rock Land are on uplands at elevations over 700 feet. Rock outcrops cover 25-90% of the surface.	-	-	-
TaD	Tailings and placer diggings	22.5 (0.3%)	Areas designated as tailings and placer diggings consist of areas that have been mined for gold by placer mining or dredging.	-	-	-
W	Water	23.9 (0.3%)	In the City, areas designed as water (W) include a pond on the Wastewater Treatment Plant property, and a pond on the Sierra Pacific Industries property.	-	-	-

Source: USDA, NRCS. Web Soil Service, 2022. USDA, Soil Conservation Service and Forest Service, 1974.

SEISMIC HAZARDS

Earthquake faults in California are mapped by the California Department of Conservation (CDC), California Geological Survey (CGS). According to CGS Alquist-Priolo Earthquake Fault map, there are no faults in or adjacent to the City that represent a hazard due to potential surface rupture. The nearest Alquist-Priolo faults are the Rocky Ledge Fault, ±40 miles northeast of the City, east of Burney, and the Hat Creek Fault, ±50 miles east of the City, east of Old Station (CDC, 2022a).

The Fault Activity Map of California shows where earthquake faults have been recognized and identifies the age of latest displacement (CDC, 2022b and 2022c). A fault that is considered "active" is generally one that has been displaced within Holocene time (about the last 11,700 years). Potentially active faults are generally those that have shown evidence of surface displacement during Quaternary time (about the last 1.6 million years). However, different agencies may have more conservation definitions of an active fault for purposes of the design of critical facilities. CGS has also mapped pre-Quaternary faults (older than 1.6 million years), which are generally considered inactive but could become active in the future.

The nearest potentially active mapped fault is the Battle Creek Fault, located ±20 miles south of the City near Cottonwood. The eastward-trending Battle Creek Fault zone is a system of closely parallel faults. The Battle Creek Fault is a normal fault with a length of about 20 miles, with a dip angle of 75 degrees, a southerly dip direction, and a slip rate of ±0.03 inches per year. It is estimated that the Battle Creek Fault could result in an earthquake with a 6.5 moment-magnitude (M) (USGS, 2012c). Seismic events are common in the area; however, most are below M3.0 and are not felt by people in the surrounding area. The largest earthquakes in the greater Redding area in the past 100 years occurred in 1998 and are mapped by the USGS in the same general location, ±2-2.5 miles southwest of the southern City limits: a M4.5 on July 21, 1998; a M5.1 and a M4.6 on November 26, 1998; and a M4.2 on November 18, 1998 (USGS, 2022). There was no reported structural damage within the City as a result of these earthquakes, although broken merchandise, a damaged electrical panel, a fire sprinkler break, and similar non-structural damage was reported.

The Fault Activity Map of California shows an unnamed pre-Quaternary fault ±1 mile west of the City on the east side of the Sacramento River; and north of the City, in and north of the City's Sphere of Influence. Numerous pre-Quaternary faults are also mapped immediately north and west of the City (CDC, 2022c). It should be noted that the seismic events identified above have occurred in proximity to faults identified as pre-Quaternary. CGS periodically reviews the Fault Activity Map of California and updates it as necessary based on recent seismic activity in the State.

VOLCANIC HAZARDS

California has several volcanoes that have exhibited very low levels of volcanic activity (i.e., earthquakes, gas emissions, hot springs, and ground deformation) for decades or even centuries without having an eruption. The USGS monitors 16 volcanoes in the State that have the potential to become active again. The USGS ranks the volcanic threat based on the age of the volcano, types of potential hazards, and potential to affect people and structures. As described below, there are two volcanoes in proximity to the City that could result in adverse impacts on the community as a result of a volcanic eruption. Both of these volcanoes are identified as having a very high threat potential. Potential effects on the City are likely to be limited to ash fall and decreased air quality.

Lassen Volcanic Center. Located in Lassen Volcanic National Park ±45 miles southeast of the City, the last eruption was on Lassen Peak between 1914 and 1917, with the largest event occurring on May 22, 1915, when a vertical column of ash exploded from the vent and reached altitudes of 30,000 feet. The eruption devastated nearby areas and rained volcanic ash as far as 200 miles away. It is likely that increased earthquakes and ground deformation will precede the next eruption (USGS, 2022).

Mount Shasta. Located in Siskiyou County, ±45 miles northeast of the City, Mount Shasta is a stratovolcano that last erupted ±200-300 years ago. The record of eruptions over the past 10,000 years suggests that, on average, at least one eruption occurs every 600 to 800 years. The next eruption at Mount Shasta would likely involve weeks to months of precursory earthquakes and ground deformation (USGS, 2022).

4.8.3 Regulatory Framework

FEDERAL

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction (NEHR) Act was passed in 1977 to reduce the risks to life and property from future earthquakes in the United States. The Act established the National Earthquake Hazards Reduction Program, which was most recently amended in 2004. The Federal Emergency Management Agency (FEMA) is designated as the lead agency of the program.

Paleontological Resources Preservation Act

The federal Paleontological Resources Preservation Act of 2002 limits the collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers who have obtained federal and/or state agency permits and agree to donate any recovered materials to recognized public institutions, where they will remain accessible to the public and to other researchers. The Act incorporates key findings of a report, *Fossils on Federal Land and Indian Lands*, issued by the Secretary of the Interior in 2000, that established that most vertebrate fossils and some invertebrate and plant fossils are considered rare resources.

STATE

California Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC §2621 *et seq.*) was passed in 1972 to reduce the risk to life and property from surface faulting in California. The Act prohibits the siting of most structures intended for human occupancy on the surface trace of active faults. For projects proposed in an Alquist-Priolo Fault Study Zone, a geologic investigation must be prepared to demonstrate that proposed buildings would not be constructed across active faults.

California Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act (SHMA) of 1990 (PRC §2690–2699.6) addresses non-surface fault rupture earthquake hazards, including strong ground shaking, liquefaction, and seismically induced landslides. The SHMA also addresses expansive soils, settlement, and slope stability. Under the SHMA, cities and counties may withhold development permits for sites within seismic hazard areas until geologic/geotechnical investigations have been completed and measures to reduce potential damage have been incorporated into development plans.

California Building Standards Code (CBSC)

The CBSC consists of 13 parts, including the California Building Code, Residential Code, Fire Code, and Green Building Standards Code. Part 2 of the CBSC is the California Building Code (CBC) that includes standards for structural design, excavation, grading, seismic design, drainage, and erosion control. CBC Chapter 18 and 18A (Soils and Foundations) and Appendix J (Grading) include requirements for geotechnical investigations and soil reports.

Protection of Paleontological Resources

Under CEQA, a project is considered to have a significant impact on paleontological resources if it would disturb or destroy a unique paleontological resource or site or unique geologic feature. In addition, Public Resources Code (PRC) Section 5097.5 provides for the protection of paleontological resources. Local agencies are required to comply with PRC 5097.5 when the

agency has discretionary authority over a project undertaken by others (e.g., issuance of use permits, grading permits, etc.).

LOCAL

City of Shasta Lake Hazard Mitigation Plan (LHMP)

The City adopted a Local Hazard Mitigation Plan (LHMP) in 2005 and has subsequently updated it to meet requirements outlined in State law. The most recent LHMP was updated in 2021 (COSL, 2021). The purpose of the LHMP is to identify potential natural hazards that could occur in the area and to recommend actions to mitigate those hazards. The goals of the LHMP are to reduce the risk of injuries and loss of life during disaster events; minimize damage to critical infrastructure and property and minimize interruption of essential services; protect the environment; and promote community resilience through integration of hazard mitigation with public policy and standard business practices.

The LHMP prioritizes mitigation actions based on a cost/benefit analysis, public input, and recommendations of the LHMP Planning Committee, which consisted of City staff and representatives of the Shasta Lake Fire Protection District, the Wintu Tribe of Northern California, the U.S. Department of Reclamation, California Department of Forestry and Fire Protection, Shasta County Sheriff's Department, U.S. Forest Service, and others. The LHMP, as it relates to geologic hazards, considers potential risks associated with earthquakes, slope failure and volcanic activity. The 2021 LHMP does not identify mitigation actions related to earthquakes or landslides.

City of Shasta Lake Municipal Code (SLMC),

SLMC Chapter 15.08, Grading, Erosion Control, and Hillside Development

SLMC Chapter 15.08 includes rules and regulations for excavation, grading (including fills and embankments), and development on hillsides and along ridgelines. SLMC Section 15.08.210 includes design criteria applicable to all projects that require a grading permit. These criteria are intended to reflect and implement the goals and policies of the Shasta Lake General Plan relating to the protection of the City's natural resources. SLMC Section 15.08.270 includes more stringent design standards for hillside development, and SLMC Section 15.08.280 includes design standards for skyline and ridgeline development.

4.8.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to geology and soils.

GOAL HS-6	**Minimize the risk to life and property from geologic hazards.**	
POLICIES	HS-6.1	Protect development from seismic hazards, and protect essential or critical structures, such as schools, public meeting facilities, emergency services, and high-rise and high-density structures, by developing standards appropriate for such protection.
	HS-6.2	Comply with state seismic and building standards in the design and siting of critical facilities, including hospital facilities, law enforcement and fire stations, school facilities, hazardous material manufacture and storage facilities, bridges, and large public assembly halls. Require all new buildings in the city be built under the seismic requirements of the currently adopted codes.

	HS-6.3	The City of Shasta Lake should coordinate with county, state and federal agencies monitoring volcanic activity and hazards.
	HS-6.4	Sedimentation and erosion from development shall be minimized through ordinances and implementation mechanisms as adopted by the City.
	HS-6.5	Protect development from geologic hazards such as landslides, erosion, and expansive soils.
IMPLEMENTATION ACTIONS	HS-6.1	Identify and prioritize seismic retrofits needed on existing public buildings.
	HS-6.2	Support residents and business owners to implement seismic bracing and other retrofits for non-structural building components.
	HS-6.3	Avoid development on unstable slopes through implementation and occasional revisiting of the City's Grading, Erosion Control, and Hillside Development Ordinance.
	HS-6.4	Consider options for implementing application of California Building Code seismic bracing requirement for non-structural building components for commercial projects involving major changes in use requiring a use permit.
GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICY	CON-4.5	Incorporate erosion mitigation practices into construction and development projects.
IMPLEMENTATION ACTIONS	CON-4.1	Require construction best practices to reduce erosion that take into account site and climate conditions, consistent with the MS4 stormwater program standards.
	CON-4.8	Locate new development on sites that minimize the need for grading and removal of native plants. Ensure no significant change in the general configuration of topography occurs where grading and earthwork are necessary.
GOAL OS-3	**Ensure that open space planning and development practices are consistent with hazard and flood mitigation efforts.**	
POLICY	OS-3.1	Use a comprehensive approach that includes implementation of hazard mitigation plan development policies, as well as open space design strategies such as encouraging natural drainage areas and wetlands.
IMPLEMENTATION ACTIONS	OS-3.1	Implement the Hazard Mitigation Plan as it pertains to development and open space ratios integrated into land use districts. Require a minimum of 100-year flood protection for new construction projects.
	OS-3.3	Continue to implement the Hillside Development Ordinance, which prohibits large-scale redistribution of earth and alteration of the topographic conditions on slopes.

4.8.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on geology and soils if it would:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.

ii. Strong seismic ground shaking and seismic-related ground failure, including liquefaction and lateral spreading.

iii. Landslides.

2. Result in substantial erosion or loss of topsoil.

3. Be located on a geologic unit or soil that could experience significant subsidence.

4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

4.8.6 Issues Not Discussed Further

All issues identified in Section 4.8.5 are discussed below.

4.8.7 Impact Analysis and Mitigation Measures

Impact 4.8-1	**Implementation of the 2040 General Plan could directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:** **i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or based on other substantial evidence of a known fault.** **ii. Strong seismic ground shaking and seismic-related ground failure, including liquefaction and lateral spreading.** **iii. Landslides.** ***Less-than-Significant Impact***

i. Rupture of an Earthquake Fault. A surface rupture occurs when movement on an earthquake fault breaks through to the surface. Surface ruptures are more likely to occur on existing faults. According to the Alquist-Priolo Earthquake Fault Zoning Map, there are no faults in the City that represent a hazard due to potential surface rupture. The nearest Alquist-Priolo faults are the Rocky Ledge Fault, ±40 miles northeast of the City, east of Burney, and the Hat Creek Fault, ±50 miles east of the City, east of Old Station. Therefore, implementation of the 2040 General Plan would have ***no impact*** related to rupture of an earthquake fault.

ii. Seismic Ground Shaking and Seismic-Related Ground Failure, including Liquefaction. The nearest mapped potentially active (Quaternary-aged) fault is the Battle Creek Fault, located ±20 miles south of the City near Cottonwood. As stated in Section 4.8.2 (Environmental Setting), it is estimated that the Battle Creek Fault could generate an earthquake of M6.5 (USGS, 2012c).

The largest earthquakes in the project area in the past 100 years occurred in 1998 and are mapped by the U.S. Geological Survey (USGS) in the same general location, ±2-2.5 miles southwest of the southern City limits: a M4.5 on July 21, 1998; a M5.1 and a M4.6 on November 26, 1998; and a M4.2 on November 18, 1998 (USGS, 2022). There were no reported structural damage or deaths within the City as a result of these earthquakes, although broken merchandise, a damaged electrical panel, a fire sprinkler break, and similar non-structural damage was reported. The Fault Activity Map of California shows an unnamed pre-Quaternary fault ±1 mile west of the City on the east side of the Sacramento River; and north of the City, in and north of the City's Sphere of Influence. Numerous pre-Quaternary faults are also mapped immediately north and west of the City (CDC, 2022c).

Liquefaction results from an applied stress on the soil, such as earthquake shaking or other sudden change in stress condition. During liquefaction, soils lose strength and ground failure may occur. Building foundations can sink, break apart or tilt, and gravity-fed pipelines can back up. Liquefaction typically occurs in saturated soil (areas with shallow groundwater) and cohensionless sands and silts of Holocene to late Pleistocene age (USC, SCEC, 1999).

Generally, low-lying areas within floodplains are more prone to liquefaction, whereas areas with bedrock near the surface, or deep groundwater without perched water zones, generally have a low potential for liquefaction. Structures built on artificial fill also have a potential for liquefaction. Lateral spread occurs when earthquake shaking causes a mass of soil to lose cohesion and move horizontally. Lateral movement can occur on flat ground, but is more likely to occur on or around sloping land where loose, saturated sandy soils are encountered at shallow depths. Lateral spread is commonly associated with earthquake-induced liquefaction.

As shown in **Figure 4.8-1,** the majority of land within the City limits is mapped as alluvium and colluvium (Qa), which would generally indicate a potential for liquefaction; however, as described in **Table 4.8-2**, the majority of soils in the City are described as having a relatively shallow depth to bedrock. Further, there are no known reported instances of liquefaction within the City as a result of recent seismic events.

For purposes of the CBC, Shasta County is designated as Seismic Design Category D, indicating that the area could experience very strong ground shaking during an earthquake, resulting in structural damage. CBC Section 1803.5.11 states that with some exceptions as approved by the jurisdiction's Building Official, a geotechnical investigation is required for structures assigned to Seismic Design Category C, D, E, or F. The investigation must include an evaluation to identify slope instability, liquefaction, total and differential settlement, and surface displacement due to faulting or seismically-induced lateral spreading or lateral flow.

CBC Section 1803.6 states that a written geotechnical investigation report must include recommendations for foundation type and design criteria, including but not limited to, bearing capacity of natural or compacted soil; provisions to mitigate the effects of

expansive soils; mitigation of the effects of liquefaction, differential settlement and carrying soil strength, and the effects of adjacent loads.

CBC Section 1803.3 states that soil classification shall be based on observation and any necessary tests of the materials disclosed by borings, test pits, or other subsurface exploration made in appropriate locations. Additional studies may be required to evaluate slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility, liquefaction, and expansiveness.

SLMC §15.08.090 (Grading Permit Requirements) requires that a geotechnical report be submitted with grading permit applications, for all projects requiring discretionary approval by the planning commission, or as otherwise recommended by the City's Building Official.

Pursuant to SLMC §15.08.090(F), the geotechnical report must include a description of the geology of the site, a detailed subsurface investigation based on test borings, conclusions regarding the effect of geologic conditions on the proposed improvements, recommendations for grading procedures, design criteria for corrective measures, and any other recommendations related to the adequacy of the site to be developed. All recommendations must be incorporated into the project plans and confirmed by the City Building Official and/or City Engineer prior to issuance of a grading permit and/or building permit.

Compliance with existing City and CBC requirements for geotechnical studies, and implementation of recommendations in the geotechnical report, avoids/minimizes the potential for impacts associated with seismic events and seismic-related ground failure, including liquefaction and lateral spreading. Compliance with existing requirements ensures that impacts are ***less than significant.***

iii. Landslides. Landslides are generally described as mass downslope movements of soil and/or rock. Landslides are typically facilitated by natural hazard events, such as floods, wildfires, or earthquakes, and are more likely to occur in steep areas with weak rocks where the soil is saturated from heavy rains or snowmelt. Landslides may also occur as a result of earth-disturbing activities during construction, such as creating cut or fill slopes in areas with unstable geologic conditions.

Areas with very high landslide susceptibility include steep slopes over 20 percent in hard rocks; and moderately steep slopes to very steep slopes in weak rocks (15-25 percent). Areas in the City with the highest susceptibility for landslides are located primarily in the northern and western areas of the City, with pockets of land throughout the City having a moderate potential for landslides. These areas correlate to lands with slopes over 20 percent and are identified in the General Plan's Natural Resources Overlay Zone; future land development in these areas is limited or restricted.

Future development under the 2040 General Plan would be subject to the requirements for preparation of a geotechnical report as described under item ii. above. The geotechnical report would identify any site-specific issues related to slope stability and include recommendations for design measures or construction methods to minimize potential risks associated with landslides. SLMC §15.08.250 includes specific findings that must be made prior to approving projects in hillside areas, where the risk of landslides is greater. The required findings include:

- *The location and design of the proposed development will protect the safety of current and future residents, and will not create a significant threat to life and property due to slope instability, fire, flood, mud flow, erosion, or other hazards;*

- *All grading associated with the proposed development has been minimized to the extent possible, preserving the character of the property while utilizing appropriate erosion control practices as determined by the development services director or his/her designee to avoid erosion, slides, or flooding, in order to have as minimal an effect on said environment as practicable.*

Compliance with existing State and City requirements ensures that impacts related to landslides are ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.8-2	**Implementation of the 2040 General Plan could result in substantial soil erosion or the loss of topsoil.** ***Less-than-Significant Impact***

Development under the 2040 General Plan would involve excavation, grading activities, and installation of project components that would result in the temporary disturbance of soil and would expose disturbed areas to potential storm events. This could generate accelerated runoff, localized erosion, and the loss of topsoil. In addition, construction activities could expose soil to wind erosion that could adversely affect on-site soils and the revegetation potential of the area.

For projects over one acre in size, the developer is required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) permit for *Discharges of Storm Water Runoff Associated with Construction Activity* by submitting a Notice of Intent to the State Water Resources Control Board. The permitting process requires the development and implementation of an effective Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to minimize erosion.

Pursuant to SLMC §15.08.210(A)(8), all construction projects that disturb over one acre must include implementation of erosion control plans prepared by a qualified licensed professional. Temporary and permanent erosion control devices, designed and constructed in accordance with California Stormwater Quality Association (CASQA) BMPs and the City's construction standards, must be implemented to control erosion.

The erosion control plan must identify measures to retain sediment on the site (e.g., sediment basins and traps) and a schedule for their maintenance and upkeep; measures to be implemented to control surface runoff and erosion (e.g., types and methods of applying mulches, designs and specifications for diverters, dikes, and drains), and a schedule for their installation, maintenance, and upkeep; and a delineation and brief description of measures to be used to revegetate the site, including, but not limited to, types of seeds and fertilizer and their application rates; the type, location, and extent of pre-existing and undisturbed vegetation types; and a schedule for installation, maintenance, and upkeep.

Measures that may be implemented to minimize erosion include, but are not limited to: limiting construction to the dry season; use of straw wattles, silt fences, and/or gravel berms to prevent

sediment from discharging off-site; and revegetating temporarily disturbed sites upon completion of construction. Compliance with existing State and City regulations, including those identified in Section 4.8.3 (Regulatory Framework) ensures that impacts related to soil erosion and loss of topsoil would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.8-3	**Implementation of the 2040 General Plan would not result in development on land that may experience significant subsidence.** ***No Impact***

Land subsidence is a gradual settling or sudden sinking of the ground surface due to removal or displacement of subsurface earth materials. The principal causes of subsidence include the removal of groundwater, oil, natural gas, or mineral resources by pumping, fracking, or mining activities. Subsidence can also be caused by natural events such as earthquakes, soil compaction, erosion, and sinkhole formation. In California, the principal cause for land subsidence has been groundwater pumping (USGS, 2019).

A review of California Department of Water Resources (CDWR) records shows that as of January 2015, the City is not included in an area of recorded subsidence (CDWR, 2022). Further, because future development in the City would not involve groundwater pumping, and no fracking or mining activities are proposed, implementation of the 2040 General Plan would not increase the potential for land subsidence. There would be ***no impact.***

Mitigation Measures

No mitigation measures required.

Impact 4.8-4	**Implementation of the 2040 General Plan could result in development on expansive soils, resulting in substantial direct or indirect risks to life or property.** ***Less-than-Significant Impact***

Some soils have a potential to swell when they absorb water and shrink when they dry out. These expansive soils generally contain clays that expand when moisture is absorbed into the crystal structure. When these soils swell, the change in volume can exert significant pressure on loads that are upon them, such as buildings or underground utilities.

Section 1803.5.3 of the CBC states that in areas likely to have expansive soil, the Building Official shall require soil testing to determine where expansive soils exist. Soils meeting all four of the following criteria shall be considered to be expansive. If the test prescribed in item 4 is conducted, tests to show compliance with items 1, 2, and 3 are not required.

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D4318.
2. More than 10 percent of the soil particles pass a No. 200 sieve (75 μ75), determined in accordance with ASTM D422.

3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D422.

4. Expansion index greater than 20, determined in accordance with ASTM D4829.

As indicated in **Table 4.8-2**, based on general soil characteristics, the majority of soils in the City have a low shrink-swell potential, and none are identified as having a high shrink-swell potential.

Though expansive soils are not considered to pose a significant hazard in the City, site-specific reports specified in CBC Section 1803.6 must identify special design and construction provisions for foundations of structures founded on expansive soils. The City's Building Official is responsible for ensuring implementation of site-specific engineering design measures to ensure that impacts associated with expansive soils (if present) are ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.8-5	**Implementation of the 2040 General Plan could result in development on land that is incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available.** ***Less-than-Significant Impact***

The majority of properties in the City have access to the City's public sewer system. Developed properties in the westernmost area of the City (historically referred to as Summit City) have on-site wastewater treatment systems (OWTS) because they are outside of the City's current sewer service area.

According to the City's Wastewater Master Plan (WWMP), there are also properties within the City's sewer service area that are still served by an OWTS. These properties are at the northern extent of Black Canyon Road; Akrich Street just west of the eastern City limit; southern end of Larkin Avenue; and on Indian Avenue, Tomahawk Trail, Arrowhead Avenue, and Wintun Drive near the southern City limits. The WWMP states that there were ±500 points of septic service within the City limits as of 2016 (AKEL, 2016).

The City is in the process of completing a feasibility study to determine requirements for extending the public sewer system to the western area of the City, including infrastructure, right-of-way (ROW) acquisition, regulatory agency permits, and construction cost estimates. It may be years, however, before the public sewer system is extended to this area of the City. In the meantime, new development in the western areas of the City will continue to be served by OWTS.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than four feet. In these soils, the absorption field (also known as a leach field or drain field) may not adequately filter the effluent, particularly when the system is new. As a result, the groundwater may become contaminated. According to the NRCS, soils in the western areas of the City are primarily Auburn series (AnB, AnD, AsD2, AtE2, and AuF2), Boomer series (BkC, BkD, BkE, BoE3, and BoF3), and Goulding series (GdB and GeF2). As shown in **Table 4.8-2**, these soil types are generally very limited for the use of septic systems, primarily due to the shallow depth to bedrock and steep slopes.

The Shasta County Environmental Health Division (EHD) is responsible for permitting and inspecting OWTS in Shasta County. Each OWTS must be installed in accordance with the Local Agency Management Program (LAMP) for OWTS (Shasta County, 2019). All OWTS permit applications for new construction, replacements, repairs, or additions within the County must include soil test data (e.g., soil profile, percolation test results, groundwater monitoring results, and/or soil boring logs) as deemed necessary by Shasta County EHD. EHD staff typically conducts a site visit to verify that the soils data and site plan accurately reflect conditions at the site. After confirming that the OWTS is expected to function property, an OWTS permit is issued by EHD.

Review of site-specific soils data by the Shasta County EHD prior to issuance of an OWTS permit, and confirmation that the OWTS permit has been issued prior to issuance of a building permit by the City, ensures that impacts associated with installation of septic systems are ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.8-6	**Implementation of the 2040 General Plan could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.** ***Less-than-Significant Impact***

Paleontology refers to the study of prehistoric life forms, other than humans. Paleontological resources include fossils and the deposits that contain fossils. Fossils are evidence of ancient life preserved in sediments and rock, such as the remains of animals, animal tracks, plants, and other organisms. Fossils are found primarily in sedimentary rocks; however certain volcanic rocks and low-grade metamorphic rocks may be fossiliferous if formed under certain conditions.

The Society of Vertebrate Paleontology (SVP) has developed a guidance document entitled *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* (SVP, 2010) that provides procedures for determining the potential presence of paleontological resources and guidance for developing measures to mitigate adverse impacts.

Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data (SVP, 2010).

The first step is to evaluate rock units to determine if they have a high, undetermined, low, or no potential for containing significant paleontological resources as described below:

> **No Potential.** Rock units that have no potential to contain significant paleontological resources include high-grade metamorphic rocks such as gneisses and schists, and plutonic igneous rocks, such as granites and diorites. Artificial fill materials are also placed in this category.
>
> **Low Potential.** Rock units that have a low potential for yielding significant fossils are those that are poorly represented by fossil specimens in institutional collections or have

preserved fossils only in rare circumstances (e.g., basalt flows or recent colluvium). Rock units with low potential typically will not require mitigation measures to protect fossils.

High Potential. Rock units classified as having a high potential for containing paleontological resources include, but are not limited to, some volcaniclastic formations (e.g., ashes or tephras) and some low-grade metamorphic rocks that contain significant paleontological resources anywhere within their geographical extent; and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).

Undermined Potential. Rock units for which little information regarding their age, paleontological context, and depositional environment are considered to have undetermined potential, and further study is needed to determine if these rock units have a potential to contain significant paleontological resources.

A review of U.C. Berkeley Museum of Paleontology records showed that there are 826 sites in Shasta County in which paleontological resources have been discovered; within these sites, 11,054 fossils have been recorded in the County. Specific locations of these specimens are not disclosed, however, based on review of publicly-available records, the nearest site in which fossils have been discovered is as close as ±5 miles northeast of the City near Lake Shasta.

As described in **Table 4.8-1**, three rock formations in the City, the Chico Formation (Kc), Kennett Formation (Dk), and Red Bluff Formation, have the highest potential to contain paleontological resources. As shown in **Figure 4.8-1**, these rock formations are located along the southern City limits and in the south-central area of the City, although there is always some potential for discovery of paleontological resources in other areas during earth-disturbing activities.

A significant impact would occur if future development directly or indirectly damaged a unique paleontological resource. Direct impacts could occur during earthwork activities (e.g., mass grading/excavation) if such activities cut into fossiliferous deposits with buried fossils.

As described in Section 4.8.3, the federal Paleontological Resources Preservation Act of 2002 and PRC Section 5097.5 provide for the protection of paleontological resources. Future projects will be reviewed on a case-by-case basis to determine the potential for a project to adversely impact paleontological resources. Mitigation measures would be implemented as necessary to avoid/minimize impacts. Therefore, impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

4.8.8 References

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SECTION

4.9

Hazards and Hazardous Materials

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4.9 Hazards and Hazardous Materials

This section describes potential impacts associated with the use, handling, disposal, and transportation of hazardous wastes and materials, and potential emissions associated with hazardous wastes and materials that could occur as a result of implementation of the 2040 General Plan. This section also addresses the potential for adverse effects on an emergency response plan or emergency evacuation plan that could occur as a result of development under the 2040 General Plan.

Potential impacts associated with wildfire hazards are addressed in section 4.19 (Wildfire).

4.9.1 Study Methods

The following evaluation of potential impacts related to hazards and hazardous materials is based on review of the following:

- U.S. Environmental Protection Agency (USEPA) National Priorities List (NPL) of Superfund Sites
- List of Hazardous Waste and Substances Sites from the Department of Toxic Substances Control (DTSC)
- List of Hazardous Waste Facilities Subject to Corrective Action pursuant to §25187.5 of the California Health and Safety Code, as compiled by the DTSC
- List of Leaking Underground Storage Tank Sites from the State Water Resources Control Board's (SWRCB) GeoTracker Database
- List of Solid Waste Disposal Sites Identified by the SWRCB with waste constituents above hazardous waste levels
- List of Active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the SWRCB

4.9.2 Environmental Setting

California Health and Safety Code §25501 defines a hazardous material as any substance or combination of substances that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, products that require the manufacturer or producer to prepare a Materials Safety Data Sheet (MSDS), radioactive materials, a Caltrans-regulated hazardous material, hazardous substances, and any material which a handler or responsible agency has a reasonable basis for believing that the material would be harmful to people or the environment if released.

Hazardous wastes are hazardous substances/materials that no longer have a practical use and/or have been discarded, spilled, discharged, or are being stored until they can be disposed of properly. Hazardous wastes can be a solid, semi-solid, liquid, or contained gaseous substances. Hazardous wastes will have one or more of the following characteristics: ignitable, toxic, reactive, and/or corrosive. Various developments in the City use, store, and transport hazardous materials. Common hazardous materials associated with residential uses include household cleaning supplies, swimming pool chemicals, fertilizers, pesticides, gasoline for landscaping equipment, etc.

Hazardous waste associated with residential uses may include used motor oil and oil filters, antifreeze, car batteries, household batteries, fluorescent light bulbs, paint, and propane cylinders. Small quantities of hazardous materials in the City are used, stored, and transported by light industrial, commercial, and retail businesses. These materials may include the same materials as those associated with residential uses, as well as diesel fuel, propane, paint, petroleum oil, hydraulic oil, chlorine, ammonia, etc.

In addition, electronic waste, or e-waste, refers to electrical and electronic equipment that has been discarded as waste without the intent of re-use. Almost all items with circuitry or electrical components with power or battery supply are considered e-waste. Examples of e-waste include televisions, monitors, computers, LED lamps, refrigerators, air conditioners, washing machines, microwaves, mobile phones, and photovoltaic panels. E-waste frequently contains hazardous materials, predominantly lead and mercury. Improper disposal of e-waste in landfills or other sites poses a threat to public health and the environment. When electronics are improperly disposed of and end up in landfills, toxic chemicals are released and can impact air quality, soil, and groundwater. The City of Redding accepts e-waste from residents and businesses in Shasta County at their Transfer Station on Abernathy Lane in Redding. E-waste is accepted at no charge, with the exception of large copiers and microwaves which are accepted for a fee.

Facilities that use large quantities of hazardous materials and facilities generating hazardous waste are subject to stringent federal, State, and local regulations and requirements, including those identified in Section 4.9.3 (Regulatory Framework). Hazardous wastes associated with industrial and manufacturing processes may include spent solvent wastes, and wastes from electroplating and metal finishing. In addition, during construction activities, limited quantities of hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, paints, etc. are transported to, used, and sometimes stored, at construction sites. Major roadways in the City, primarily Pine Grove Avenue and Ashby Road, which provide access to industrial areas, are used for routine transport of hazardous materials/substances. Hazardous materials are also transported by the Union Pacific Railroad (UPRR), which bisects the City in a northeast to southwest direction.

Airports

According to the Federal Aviation Administration (FAA), the nearest public airports to the City are Redding Municipal Airport, ±10 miles southeast of the City, and Benton Field (O85), ±5.5 miles southwest of the City. The nearest private airport to the City is Tews Field (CA53) on Moody Creek Drive, immediately adjacent to the City's eastern City limit.

Hazardous Materials/Wastes Cleanup Sites

Table 4.9-1 identifies the locations of active hazardous materials/wastes cleanup sites within the City limits as of May 5, 2022.

It should be noted that the most significant clean-up case in the City, Valley Plating at 3920 El Cajon Avenue, was closed in April 2022 after years of monitoring and remediation activities. Valley Plating operated as an electroplating facility between 1962 and 1989. During its operation, plating wastes were disposed of without treatment directly to the ground and surface water. From 1984 to 1989, Valley Plating was discharging waste rinse water directly into the sanitary sewer system. On May 18, 2021, DTSC provided written notice to the property owner stating that DTSC has sampled groundwater wells from 1988 through 2018, and the contaminated groundwater plume has steadily reduced in both size and concentration to levels that require no further action. The monitoring wells have been decommissioned, and land use restrictions are scheduled to be rescinded on June 19, 2022.

Table 4.9-1
Active Hazardous Materials/Wastes Cleanup Sites in the City of Shasta Lake

Facility Name	Address	Description
Flying J Service Station #89349	5001 Shasta Dam Blvd.	According to the SWRCB GeoTracker database, this cleanup case was opened in 1990 due to the unauthorized release of ±1,200-1,500 gallons of unleaded gasoline. The service station was closed in early 1992 after three underground fuel tanks and contaminated soils adjacent to the tanks were removed. Soil and groundwater monitoring and remedial action to remedy contamination at the site have been ongoing since that time. On November 4, 2021, the Central Valley Water Quality Control Board (CVRWQCB) issued a public notice stating that the extent of remaining pollution is stable and contained on site, and pollutants within the groundwater plume will decrease over time. On January 10, 2022, CVRWQCB notified the property owner of their intent to close the case, pending recordation of a deed restriction to protect future occupants and utility workers from health risks related to subsurface petroleum pollution. The property owner must also destroy the monitoring and treatment system wells under County permit.
E-J Automotive (Case 2)	4309 Shasta Dam Blvd.	According to the SWRCB GeoTracker database, this site operated as a gasoline station prior to being used as an automotive repair shop. In 1998, all fuel dispensers and underground storage tanks (USTs) were removed from the property. The original case was opened in 1999 due to soil and groundwater contamination from the tanks. Following five years of monitoring and two years of surface water sampling, it was determined that pollutants were below environmental screening levels, and the case was closed in 2009. In January 2020, it was determined that gasoline from the E-J Automotive property was leaking offsite into Salt Creek, and the case was reopened. The property owner is in the process of securing funding from the SWRCB to conduct additional monitoring and remediation activities.
Buckeye Street, Shasta Lake	13744 Buckeye Street	According to the SWRCB GeoTracker database, this site reportedly operated as a service station many years ago. Two USTs were removed from the property under County Permit in May 2019. Soil and groundwater samples taken at that time showed chromium, lead, nickel, and zinc contamination as well as gasoline and diesel contamination.

		Monitoring wells have been installed on the property. Groundwater sampling conducted in June 2021 did not detect significant petroleum contamination. Petroleum compounds were found at only one monitoring well downgradient of the former USTs and were at low concentrations. The report concludes that minimal contaminant mass appears to exist onsite and that groundwater impacts do not appear to extend offsite. Quarterly groundwater monitoring will continue in accordance with the monitoring work plan approved by the CVRWQCB.

Figure 4.9-1 identifies locations of open hazardous materials cleanup sites in the City as well as prior cases that have been closed. As noted above, one of the cases, Valley Plating on El Cajon Avenue very recently closed after years of monitoring and site remediation. As indicated in **Figure 4.9-1**, the majority of cases in the City have been associated with leaking underground storage tanks.

Several businesses and facilities in the City are involved in the use, storage, transport, and/or disposal of hazardous materials. **Figure 4.9-2** shows the location of current and past handlers of hazardous materials in the City, as identified by the DTSC. These facilities include gasoline/service stations, automotive repair shops, and industrial facilities and are subject to stringent federal, State, and local regulations, including, but not limited to, those identified in Section 4.9.3 (Regulatory Framework).

4.9.3 Regulatory Framework

FEDERAL

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 (Title 42 USC 2) was the first major federal act that provided for regulation of the potential health and environmental impacts associated with solid waste and hazardous waste in the U.S. The U.S. Environmental Protection Agency (USEPA) has primary responsibility for implementing the RCRA.

The RCRA requires businesses, institutions, and other entities that generate hazardous waste to track such waste from the point of generation until it is recycled, reused, or properly disposed. The RCRA was amended in 1984 and 1986 to establish a process for eliminating land-based disposal as the primary disposal method for hazardous waste. RCRA amendments in 1991 addressed the design, construction, operation, monitoring, corrective action, and closure of disposal facilities.

USEPA's Risk Management Plan

Section 112(r) of the federal CAA (referred to as the USEPA's Risk Management Plan) specifically covers "extremely hazardous materials" which include acutely toxic, extremely flammable, and highly explosive substances. Facilities involved in the use or storage of extremely hazardous materials must implement a Risk Management Plan (RMP), which requires a detailed analysis of potential accident factors and implementation of applicable mitigation measures.

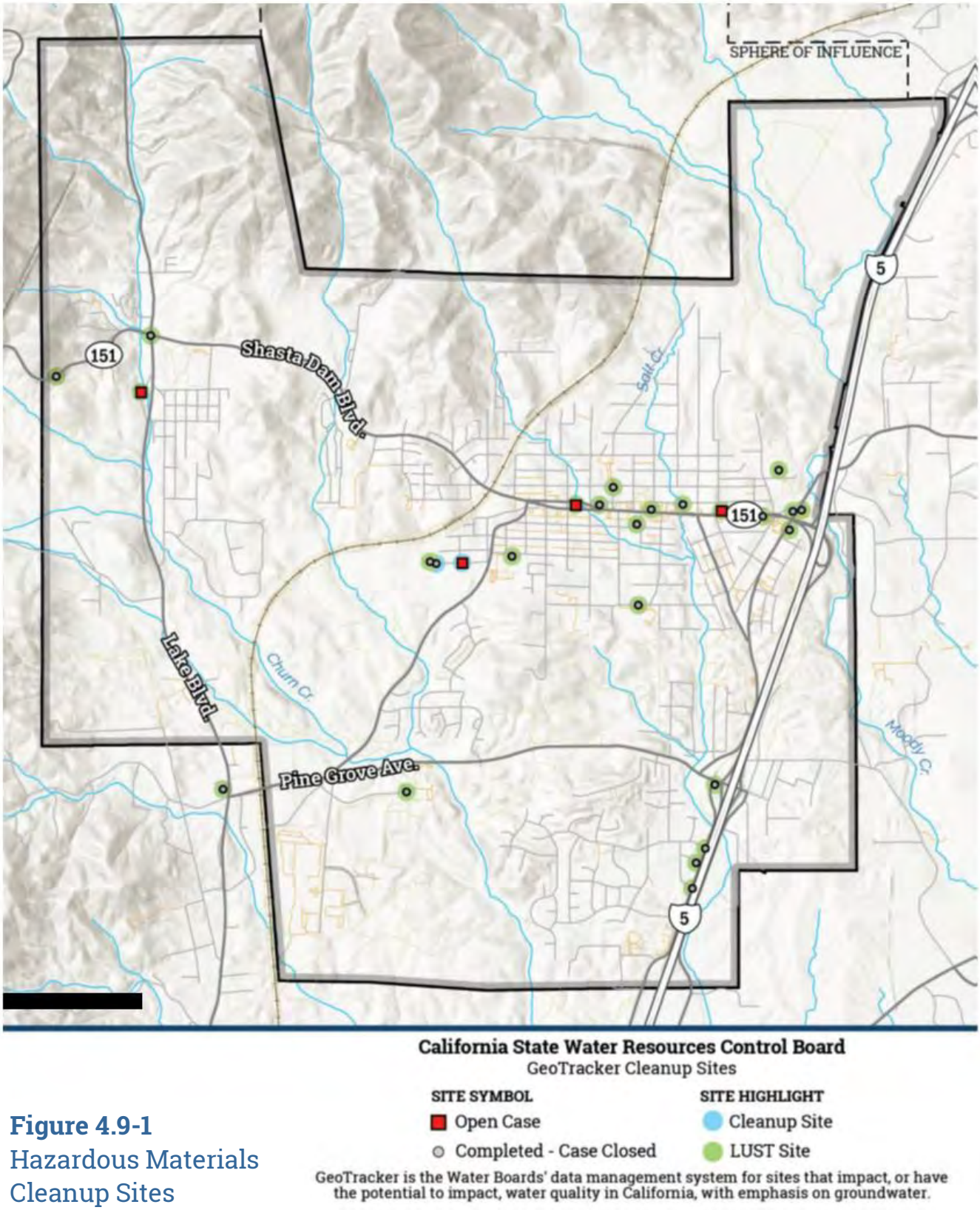


Figure 4.9-1
Hazardous Materials Cleanup Sites

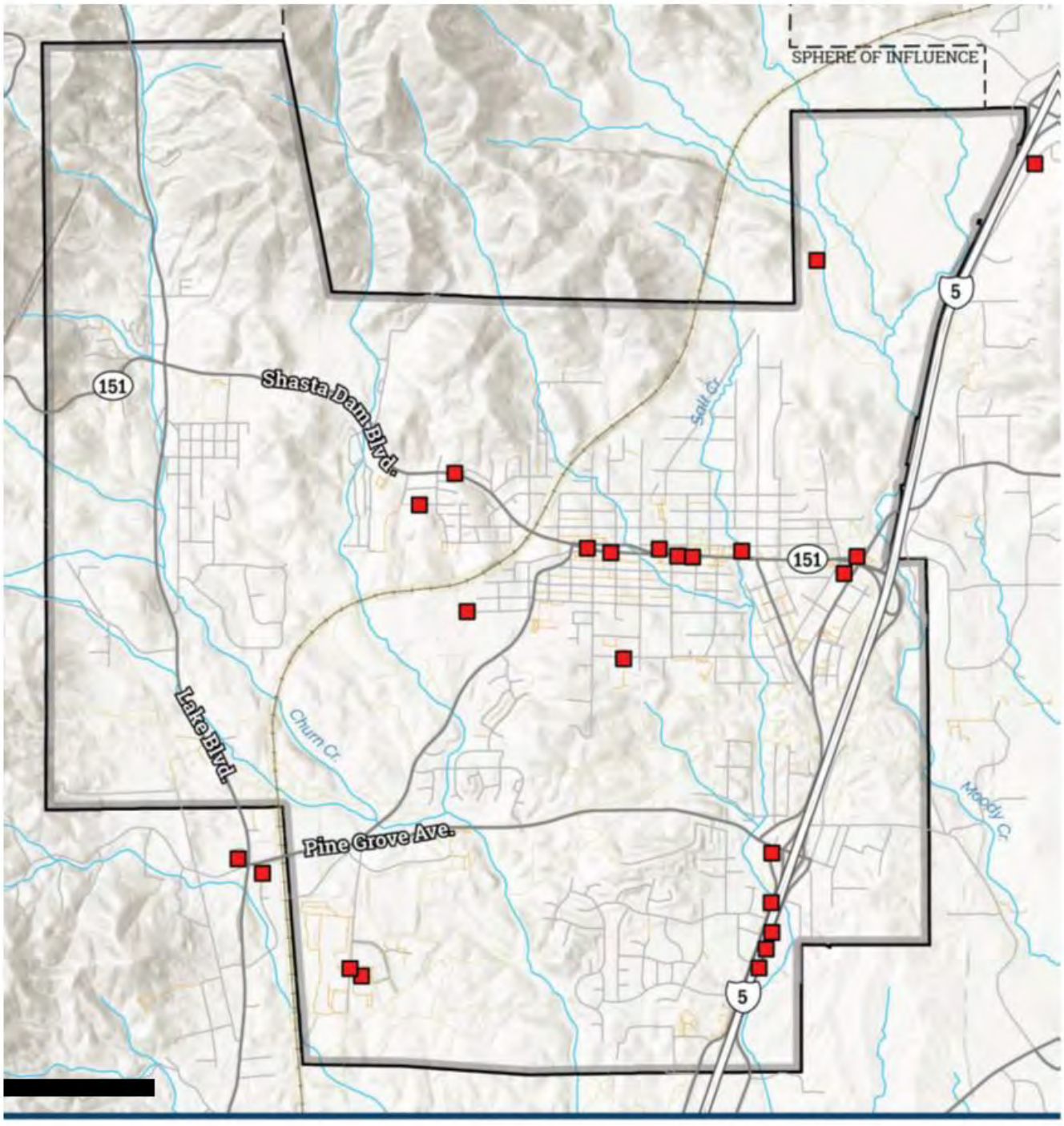


Figure 4.9-2
Hazardous Materials Handlers

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC §1906 *et seq.*), commonly known as Superfund, established requirements for closed and abandoned hazardous waste sites and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

CERCLA established liability of persons responsible for hazardous waste sites, and established a trust fund for cleanup of hazardous waste sites when a responsible party cannot be identified. The USEPA maintains the National Priorities List (NPL) of Superfund sites in the U.S. and its territories (USEPA, 2022). There is one Superfund site in Shasta County: Iron Mountain Mine, approximately 5.5 miles west of the City.

Federal Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Act (OSHA) of 1970 established regulations to protect the health and safety of workers who could be exposed to hazardous and toxic materials. OSHA regulations apply to the work place and cover activities ranging from confined space entry to toxic chemical exposure. Protections are included for both construction activities and manufacturing facility operations.

Hazardous Materials Transportation Act

The U.S. Department of Transportation regulates the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act of 1975 (Title 49 USC §5101-5127). This Act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as RCRA, discussed previously.

Clean Air Act

The Clean Air Act (CAA) protects the public from exposure to airborne contaminants that are known to be hazardous to human health. Under the CAA, the USEPA established National Emissions Standards for Hazardous Air Pollutants (NESHAP) which are emissions standards for air pollutants that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness.

Asbestos is one of the earliest hazardous air pollutants regulated by NESHAP. Compliance with the asbestos NESHAP regulations protects the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing material. Asbestos may be encountered during structure demolition or retrofit. Naturally occurring asbestos (NOA) also exists in many areas of California. The California Air Resources Control Board is responsible for enforcing the NESHAP.

STATE

California Government Code §65962.5 "Cortese List"

The provisions of California Government Code (CGC) §65962.5 are commonly referred to as the "Cortese List". The statute was enacted in 1985, and some of the provisions refer to agency activities that were conducted many years ago but are no longer being implemented; in some cases, the information to be included in the Cortese List no longer exists.

Although CGC §65962.5 refers to preparation of a list of hazardous waste sites by DTSC on an annual basis, information on hazardous waste sites is now widely available on responsible agency

websites; and review of on-line information provides the most current information regarding hazardous waste sites.

Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the State Hazardous Waste Control Law. Both laws impose "cradle-to-grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

DTSC established waste management rules for solar photovoltaic (PV) modules, and they are subject to requirements for "universal waste" pursuant to CCR Title 22, Division 4.5, Chapter 1, §66261.9 *et seq.*). The rules became effective on January 1, 2021.

Additional items that are managed as universal waste, meaning that they are not fully regulated as hazardous wastes, include batteries, electronic devices, mercury-containing equipment, lamps, cathode ray tubes (CRT), CRT glass, and aerosol cans (DTSC, 2020)

California Occupational Safety and Health Administration (Cal/OSHA)

The California Occupational Safety and Health Administration (Cal/OSHA) has primary responsibility for developing and enforcing State workplace safety regulations, including requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

Regional Water Quality Control Board

The SWRCB and RWQCBs regulate hazardous substances, materials, and wastes through a variety of State statutes, including the Porter-Cologne Water Quality Control Act and underground storage tank cleanup laws. The Regional Boards regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Any person proposing to discharge waste within the State must file a report of waste discharge with the appropriate regional board. The City is located within the jurisdiction of the CVRWQCB.

Hazardous Materials Emergency Response/Contingency Plan

Chapter 6.95, §25503, of the California Health and Safety Code requires businesses that handle/store a hazardous material or a mixture containing a hazardous material to implement a Business Plan for Emergency Response (Business Plan). A Business Plan is required when the amount of hazardous materials exceeds 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases. A Business Plan is also required if federal thresholds for extremely hazardous substances are exceeded. The Business Plan includes procedures to deal with emergencies following a fire, explosion, or release of hazardous materials that could threaten human health and/or the environment.

California Accidental Release Prevention Program (CalARP)

The goal of the California Accidental Release Prevention Program (CalARP) is to prevent accidental releases of substances that pose the greatest risk of immediate harm to the public and the environment. Facilities are required to prepare a Risk Management Plan in compliance with CCR Title 19, Division 2, Chapter 4.5, if they handle, manufacture, use, or store a federally regulated substance in amounts above established federal thresholds; or if they handle a State regulated substance in amounts greater than State thresholds and have been determined to have a high potential for accident risk.

California Environmental Protection Agency (CalEPA) Certified Unified Program

CalEPA oversees California's Unified Program that was developed to protect Californians from hazardous waste and hazardous materials by ensuring that local regulatory agencies consistently apply Statewide standards.

The Unified Program consolidates the administration, permit, inspection, and enforcement activities of several environmental and emergency management programs, including business plans for emergency response, the CalARP program, the underground storage tank program, hazardous materials management plans and hazardous material inventory statements, and other hazardous waste-related programs. CalEPA is responsible for certifying Unified Program Agencies at the State and local levels.

California Building Standards Code (CBSC)

Part 9 of the CBSC, the California Fire Code (CFC), establishes minimum requirements to protect the public health, safety, and general welfare from hazards related to fire, explosion, and other dangerous conditions. Part IV of the California Fire Code includes specific requirements for special occupancies and operations, such as fuel-dispensing facilities, automotive repair businesses, lumber yards and woodworking facilities, and processing and extraction facilities.

CFC Chapters 50-67 include specific requirements for the storage, use, dispensing and handling of hazardous materials, include aerosols, corrosive materials, explosives, flammable and combustible liquids, highly toxic materials, liquefied petroleum gases, unstable (reactive) materials. CFC Chapter 33 addresses potential temporary/short-term impacts and includes requirements for fire safety during construction and demolition.

LOCAL

Shasta County Environmental Health Division

The Shasta County Environmental Health Division (SCEHD) has been designated by CalEPA as the Certified Unified Program Agency (CUPA) for Shasta County. Shasta County is responsible for permitting, inspections, and/or enforcement for the following Unified Programs: Hazardous Materials Area Plans, Hazardous Materials Business Plans, Hazardous Waste and Hazardous Waste Treatment, Underground Storage Tanks, Aboveground Petroleum Spill Prevention, Control, and Countermeasure Plans, and CalARP.

Shasta County Hazardous Materials Area Plan

The Shasta County Hazardous Materials Area Plan (Shasta County, 2018) includes measures to protect the health and safety of Shasta County's citizens and the environment from the effects of hazardous materials emergency incidents in the County, including incidents in the cities of Redding, Anderson, and Shasta Lake.

The Area Plan describes the County's pre-incident planning and preparedness for hazardous materials releases; clarifies the roles and responsibilities of federal, State, and local agencies during a hazardous materials incident; and describes the County's hazardous materials incident response program, training, communications, and post-incident recovery procedures. The Area Plan describes operational and general response procedures for the Shasta-Cascade Hazardous Materials Response Team (SCHMRT), which is the primary hazardous materials response group for Shasta County.

Shasta County Emergency Operations Plan

The Shasta County Emergency Operations Plan (EOP) is the primary emergency planning and management document within the County (Shasta County, 2014). The EOP provides a framework for coordinated response and recovery activities during a large-scale emergency and describes how various agencies and organizations in the County (e.g., federal, State, local, and tribal governments and agencies, community organizations, faith-based organizations, private-sector partners, etc.) will coordinate resources and activities.

The EOP is activated in response to emergencies and disasters in the community, including hazardous materials incidents, when additional resources or extended response activities are needed. Government Code §8607(a) requires the use of the Standardized Emergency Management System (SEMS) for managing emergencies involving multiple jurisdictions and agencies as outlined in the California Code of Regulations §2400-2450. The EOS is based on the functions and principles of SEMS.

4.9.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to hazards and hazardous materials. Measures associated with wildfire hazards are identified in Section 4.19 (Wildfire).

GOAL HS-1	**Create and maintain a safe environment.**	
POLICIES	HS-1.1	Coordinate with State, county, and other local agencies to build mutual aid capacity for emergency events, especially through disaster preparedness training.
	HS-1.2	Expand emergency training and local expertise for hazard event response and recovery, including through volunteer roles.
	HS 1.5	All land divisions and development applications that have the potential for life-safety impacts shall be forwarded to the Shasta Lake Fire Protection District (SLFPD) for review.
IMPLEMENTATION ACTIONS	HS-1.1	Ensure developed properties are easily identifiable by emergency responders from the street.
	HS-1.2	Work to maintain an adequate emergency response time for all proposed urban development. Identify existing developed areas lacking adequate emergency service, especially focusing on neighborhoods in high wildfire hazard zones that do not have at least two emergency evacuation routes, both urban and rural.
	HS-1.3	Maintain mutual aid agreements with other agencies in Shasta County.
	HS-1.4	Identify and create evacuation zones based on area-specific considerations.
	HS-1.6	Provide rapid and timely response to all law enforcement and other emergencies. Work to maintain minimum average response times.
GOAL HS-10	**Protect the community from the release of hazardous materials and promote responsible waste disposal.**	
POLICIES	HS-10.1	Protect people and property from contact with hazardous materials through land use regulations, site design, public awareness campaigns, and emergency preparedness planning.

	HS-10.2	Support programs and recycling centers that accept household hazardous waste and electronic waste.
IMPLEMENTATION ACTIONS	HS-10.1	Maintain a citywide emergency preparedness plan for hazardous materials and coordinate emergency drills with affected departments and agencies.
	HS-10.2	Work with business and neighborhood associations, community groups, and utility providers to promote community awareness of hazardous waste disposal and recycling opportunities.

4.9.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact related to hazards and hazardous materials if it would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

2. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

3. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment.

4. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

5. For a project located within an airport land use plan area or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

Note: Potential hazards associated with wildfires are addressed in Section 4.19 (Wildfire).

4.9.6 Issues Not Discussed Further

As stated in Section 4.9.2 (Environmental Setting), the nearest public airports or public use airports to the City of Shasta Lake are Redding Municipal Airport, ±10 miles southeast of the City, and Benton Field, ±5.5 miles southwest of the City. Due to the distance between the City and these airports, there would be no potential for safety hazards associated with these airports.

The nearest private airport to the City is Tews Field on Moody Creek Drive, immediately adjacent to the City's eastern City limit. Properties in the City that are adjacent to the airstrip are proposed for designation as Mixed Use; however, due to topographical constraints and access issues, it is unlikely that development would be proposed immediately adjacent to the airstrip. If development is proposed in this area, the City will consider whether the type of development proposed would be susceptible to safety hazards associated with Tews Field.

4.9.7 Impact Analysis and Mitigation Measures

Impact 4.9-1	**Implementation of the 2040 General Plan could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.** ***Less-than-Significant Impact***

During future construction activities, it is anticipated that limited quantities of hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, paints, etc. would temporarily be brought into areas where improvements are proposed. There is a possibility of accidental release of hazardous substances into the environment, such as spilling petroleum-based fuels used for construction equipment. However, construction contractors would be required to comply with applicable federal, State, and local environmental and workplace safety laws and implement BMPs for the storage, use, and transportation of hazardous materials. This includes compliance with CFC Chapter 33, which outlines general fire safety precautions during construction and demolition operations related to hazardous materials storage and use, fire protection systems, and firefighter access to the site.

Below is a discussion of the potential presence of specific hazardous materials that could be encountered during earth-disturbing and/or demolition activities.

Treated Wood Waste

Old telephone/utility poles, wooden sign posts, guardrail supports, and similar structures may have been treated with preserving chemicals that may include, but are not limited to, arsenic, chromium, copper, creosote, and pentachlorophenol. These chemicals are known to be toxic or carcinogenic and require specific handling prescribed by State and federal regulations. When the treated wood has reached the end of its usefulness, it is regarded as treated wood waste (TWW). If TWW is not properly disposed of, the chemicals it contains can contaminate surface water and groundwater. This poses a risk to human health and the environment.

The handling, storing, transporting, and disposing of TWW is subject to provisions included in California Health and Safety Code §25230 *et seq.* Projects are reviewed on a case-by-case basis to determine the potential presence of TWW and ensure the proper removal and disposal of TWW in accordance with these requirements.

Asbestos-Containing Material

Asbestos, a known human carcinogen, is commonly found in older homes and non-residential structures, primarily in wall and pipe insulation, floor and ceiling tiles, and joint compounds. In most cases, if left undisturbed, asbestos does not present a hazard. However, during demolition or rehabilitation of older structures, asbestos fibers can be released into the air where they can be inhaled deep into the lungs. Asbestos fibers in the lungs may be retained there for long periods of time, or may migrate to other parts of the body. Inhalation of asbestos fibers can result in cancer or other asbestos-related illness, which may not become apparent for many years, even long after the end of exposure (COEHHA, 2000).

DTSC classifies asbestos-containing material as hazardous waste if it is friable (can be reduced to a powder or dust under hand pressure when dry) and contains one percent or more asbestos. Due to the age of many structures in the City, asbestos-containing materials may be present in structures proposed for demolition. Asbestos sampling and testing must be conducted by a duly licensed professional prior to demolition. If asbestos levels exceed permissible standards, asbestos-containing materials must be removed by a qualified asbestos abatement contractor and disposed of at a landfill approved to receive asbestos-containing waste material.

Pursuant to the Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) (California Health and Safety Code §39658(b)(1)), written notification of regulated demolition and renovation activities is required. In Shasta County (a non-delegated air district), a copy of the NESHAP notification form must be submitted to the USEPA and the California Air Resources Board. The City's Building Official ensures that the written notification is provided prior to issuance of a building permit.

Lead-Based Paint

Lead was a key component in house paint before its use was banned in 1978; therefore, it should be assumed that pre-1978 homes have a high potential to contain lead-based paint. Lead-based paint may also be present in older commercial structures, and in roadway striping (particularly yellow paint), or other structures.

CCR Title 17, Division 1, Chapter 8 §35001-36100 (Accreditation, Certification, and Work Practices for Lead-Based Paint and Lead Hazards) requires that work on any structure built before January 1, 1978, must use lead-safe work practices. Individuals who perform lead abatement must be certified. Cal EPA requires that presumed (pre-1978) lead-based paint chips and dust be disposed of as hazardous waste. The City's Building Official ensures compliance with applicable regulations pertaining to lead-based paint.

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) is known to be present in most counties in the State, including Shasta County. Serpentinite may contain asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. NOA can also be associated with other rock types in California, though much less frequently than with serpentinite and/or ultramafic rock. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges (California Governor's Office of Planning and Research, 2007).

NOA can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. When construction, grading, excavation, or other ground-disturbing activities occur in areas known or suspected to contain NOE, the local air quality management district must be notified, and dust control measures must be implemented as necessary.

A review of Department of Conservation (DOC) records showed that the nearest mapped areas with the potential for NOA are ±20 miles west and ±19 miles north of the City. The nearest known occurrence of NOA is a former asbestos mine ±23 miles north of the City. In addition, the Geologic Map of California shows that there are no serpentinite or ultramafic rocks in the project area. Therefore, the potential for NOA to be present in the planning area is very low.

Aerially Deposited Lead

Aerially deposited lead (ADL) from historical use of leaded gasoline is known to occur along older roadways throughout California. The potential for ADL to be present is highest along roadways that had high traffic volumes or high vehicle emissions due to congestion or stop-and-go traffic prior to the mid-1980s. In the early 1970s, the USEPA established national regulations to gradually reduce the lead content in gasoline. In addition, in 1976, the California Air Resources Board (CARB) adopted regulations that led to a phase-out of lead in gasoline. As of January 1, 1992, California banned the use of leaded gasoline in motor vehicles (California Code of Regulations §2253.4 *et seq.*).

The main transportation routes in the City limits prior to 1980 included Interstate 5 (Historic Highway 99), State Highway 151 (Shasta Dam Boulevard), Ashby Road, Cascade Boulevard, and Lake Boulevard. Although Pine Grove Avenue between Cascade Boulevard and Lake Boulevard is now a main arterial street in the City, construction of this roadway was completed in 1999, and areas adjacent to the road would not have elevated concentrations of ADL.

The population of what is now the City of Shasta Lake was estimated to be ±6,222 in 1980 (1,139 for Summit City, 1,659 for Project City, and 3,424 for Central Valley) (Rocca, n.d.). According to the U.S. Department of Transportation (USDT), traffic volumes on SR 151 in 1980 were ±1,950 annual average daily trips (AADT) at Lake Boulevard, ±2,400 AADT near Ashby Road, ±4,650 AADT at Hardenbrook Avenue, and ±9,000 AADT at the SR 151/I-5 Interchange.

Due to the rural character of the area, low population, and relatively low traffic volumes in the City during the time leaded gasoline was in use, the potential for ADL to be present adjacent to roadways in the City is low.

Operational impacts associated with future development under the 2040 General Plan could involve the transport, use, and disposal of hazardous materials, and there is a potential for hazardous materials to be released into the environmental.

As stated in Section 4.9.3 (Regulatory Framework), there are stringent federal, State, and local regulations and requirements that apply to all development that involves hazardous materials. Proposed projects in the City that have a potential for adverse effects associated with hazardous materials are referred to applicable State and local agencies for review. These agencies include, but may not be limited to, the DTSC, CVRWQCB, SCEHD, Shasta County Air Quality Management District, and the SLFPD.

It is the responsibility of the City's Building Official to review final construction plans and documents to ensure that the appropriate level of review has occurred, that necessary hazardous materials plans have been completed, and that all required regulatory agency permits have been acquired.

Therefore, compliance with the General Plan policies and implementation actions, and the regulations identified in Section 4.9.3, ensures that potential impacts associated with hazards and hazardous materials would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.9-2	**Development under the 2040 General Plan could emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.** ***Less-than-Significant Impact***

Current schools in and adjacent to the City include Grand Oaks Elementary School on Grand Avenue, Shasta Lake Elementary School on Vallecito Street, Central Valley High School on La Mesa Street, and Mountain Lakes High School on Shasta Dam Boulevard at its intersection with Lake Boulevard.

While it is possible that future development could involve the transport, storage, and/or use of hazardous materials, substances, or waste within one-quarter mile of a school, and could result in the discharge of hazardous emissions, future projects would be reviewed on a case-by-case basis to ensure compliance with regulatory requirements, including, but not necessarily limited to, those identified in Section 4.9.3 (Regulatory Framework). The City's Building Official is responsible for ensuring that all projects are reviewed by applicable regulatory agencies (e.g., DTSC, CVRWQCB, SCEHD, Shasta County Air Quality Management District, SLFPD, etc.) prior to issuance of a building permit. Compliance with existing regulations ensures that impacts are ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.9-3	**Development under the 2040 General Plan could be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment.** ***Less-than-Significant Impact***

As stated in Section 4.9.2 (Environmental Setting), there are currently three active hazardous waste clean-up sites in the City, and additional sites could be identified during earth-disturbing activities (e.g., discovery of old underground fuel tanks or evidence of soil contamination).

If potentially hazardous soil or groundwater conditions are discovered, the developer would be responsible for reporting the issue to the SCEHD. Depending on the type and severity of the contamination, the CVRWQCB or DTSC would become the oversight agency for monitoring and remediation activities. No further development in the area of contamination could occur without case closure or approval by the oversight agency. If necessary, the oversight agency would require recordation of a deed restriction that identifies prohibited land uses and/or activities on the clean-up site. Therefore, potential impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.9-4	**Implementation of the 2040 General Plan would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.** ***No Impact***

As stated in Section 4.9.3 (Regulatory Framework), the Shasta County Hazardous Materials Area Plan (Shasta County, 2018) serves as the local emergency response plan for hazardous materials. The 2040 General Plan does not include any components that would interfere with this plan.

In addition, a Wildland Fire Evacuation Plan for the City of Shasta Lake was prepared by the Shasta Lake Fire Protection District (SLFPD) (undated). The Plan identifies primary emergency travel routes in the City (Shasta Dam Boulevard, Cascade Boulevard, Pine Grove Avenue, Ashby Road, and Lake Boulevard), which generally funnel traffic to Interstate 5 (I-5).

Lake Boulevard is the key north-south egress route for the western portion of the City and for recreational areas located around Shasta Dam north of the City. Cascade Boulevard is the key north-south egress route for the eastern areas of the City on the west side of I-5 and extends south to Oasis Road in the City of Redding. Ashby Road is also a key north-south egress route in the central area of the City and extends between Shasta Dam Boulevard and Pine Grove Avenue. Grand Coulee Boulevard between Shasta Dam Boulevard and Cascade Boulevard is also identified as an evacuation route.

Shasta Dam Boulevard and Pine Grove Avenue are the two primary east-west evacuation routes that extend from I-5 to Lake Boulevard. On the east side of I-5, Virginia Avenue (between Akrich Street and Pine Grove Avenue) and Twin View Boulevard (from Pine Grove Avenue, south to Oasis Road in the City of Redding) are the primary north-south egress routes. Akrich Street is the east-west egress route on the east side of I-5 and routes traffic east and then south to Oasis Road in the City of Redding. **Figure 4.9-3** shows these primary evacuation routes.

Although some neighborhoods in the City have only one ingress/egress point, new major subdivisions and commercial/industrial centers in the City are required to provide two points of access to facilitate the evacuation of people in the event of an emergency and to allow emergency responders to access the area. All development projects in the City are reviewed by the SLFPD, and the SLFPD identifies specific requirements for fire access roads, turnarounds, turnouts, and other measures that ensure that adequate emergency access is provided. These measures must be implemented into building/site plans and verified by the City's Building Official prior to issuance of building permits. The SLFPD and Building Official verify that all required improvements are completed prior to issuance of a Certificate of Occupancy. Therefore, implementation of the 2040 General Plan would have ***no impact*** on an adopted emergency response plan or emergency evacuation plan.

Mitigation Measures

No mitigation measures required.

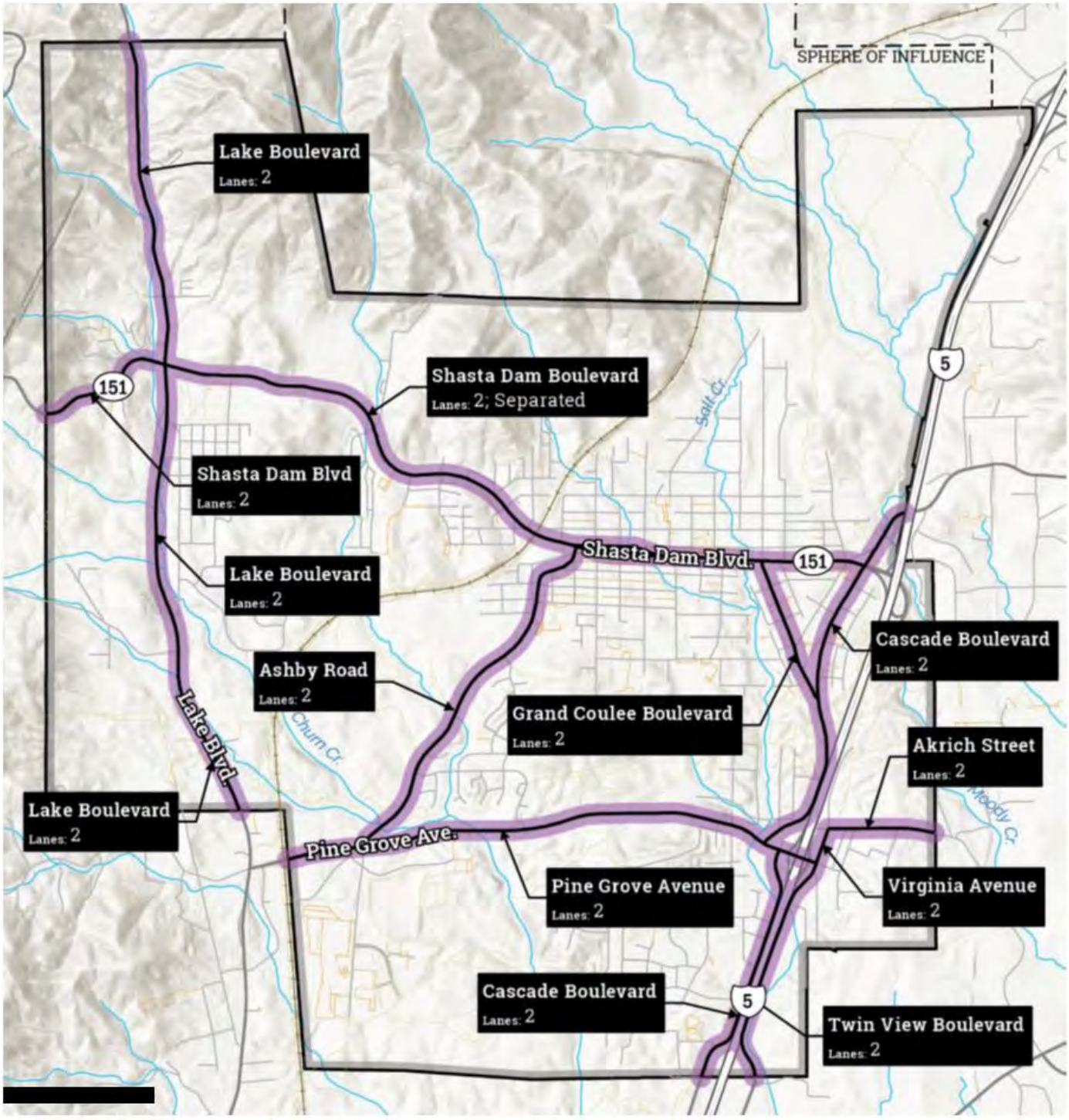


Figure 4.9-3
Evacuation Routes

4.9.8 References

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SECTION

4.10

Hydrology-Water Quality

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4.10 Hydrology and Water Quality

This section describes applicable regulations associated with hydrology and water quality and evaluates whether implementation of the 2040 General Plan would violate water quality standards or waste discharge requirements, impede sustainable groundwater management, or substantially alter the existing drainage pattern of the area.

4.10.1 Study Methods

The evaluation of potential impacts on hydrology and water quality is based on review of the Stillwater-Churn Creek Watershed Assessment prepared by North State Resources (NSR) in 2007, and reports and data from the Federal Emergency Management Agency (FEMA), State Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), and the Central Valley Regional Water Quality Control Board (CVRWQCB).

4.10.2 Environmental Setting

REGIONAL

The City of Shasta Lake is located within the Stillwater-Churn Creek Watershed, which encompasses ±77,735 acres. The headwaters of both Stillwater Creek and Churn Creek originate in the hills between Redding and Lake Shasta and flow in a north to south direction, entering the Sacramento River south of Redding. The steep, hilly headwaters constitute a heavy precipitation zone that typically receives over 60 inches of rain annually in non-drought years. **Figure 4.10-1** identifies regional watersheds in relation to the City of Shasta Lake as identified by the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD). Boundaries are shown for hydrologic unit codes (HUC) 8, 10, and 12.

Watersheds are areas in which water, sediment, and dissolved materials flow to a common outlet. What happens in one part of the watershed can affect the quality and quantity of the overall water supply. Open space areas and permeable surfaces are important for ensuring water quality. When stormwater, or other urban water runoff, passes over these areas and surfaces, some of it is absorbed into the ground and cleansed by natural filtration processes.

Maintaining water quality is important to public health, wildlife, and economic prosperity and is a requirement of the federal Clean Water Act. As runoff increases in developed areas, water quality preservation and runoff management require protection of key open space areas and permeable surfaces within watersheds.

Water Quality Control Plan (Basin Plan)

The CVRWQCB adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, Fifth Edition, that designates beneficial uses, establishes water quality objectives, and identifies implementation programs and policies to achieve those objectives for all waters addressed through the plan.

The Basin Plan does not specifically identify beneficial uses for waterways in the City; however, Section 2.1 of the Basin Plan states that the beneficial uses of any identified water body generally apply to its tributary streams (CVRWQCB, 2019). The Basin Plan identifies beneficial uses for the reach of the Sacramento River between Shasta Dam and the Colusa Basin Drain. All streams in the City are tributary to the Sacramento River; thus, beneficial uses applicable to streams in the City are as follows:

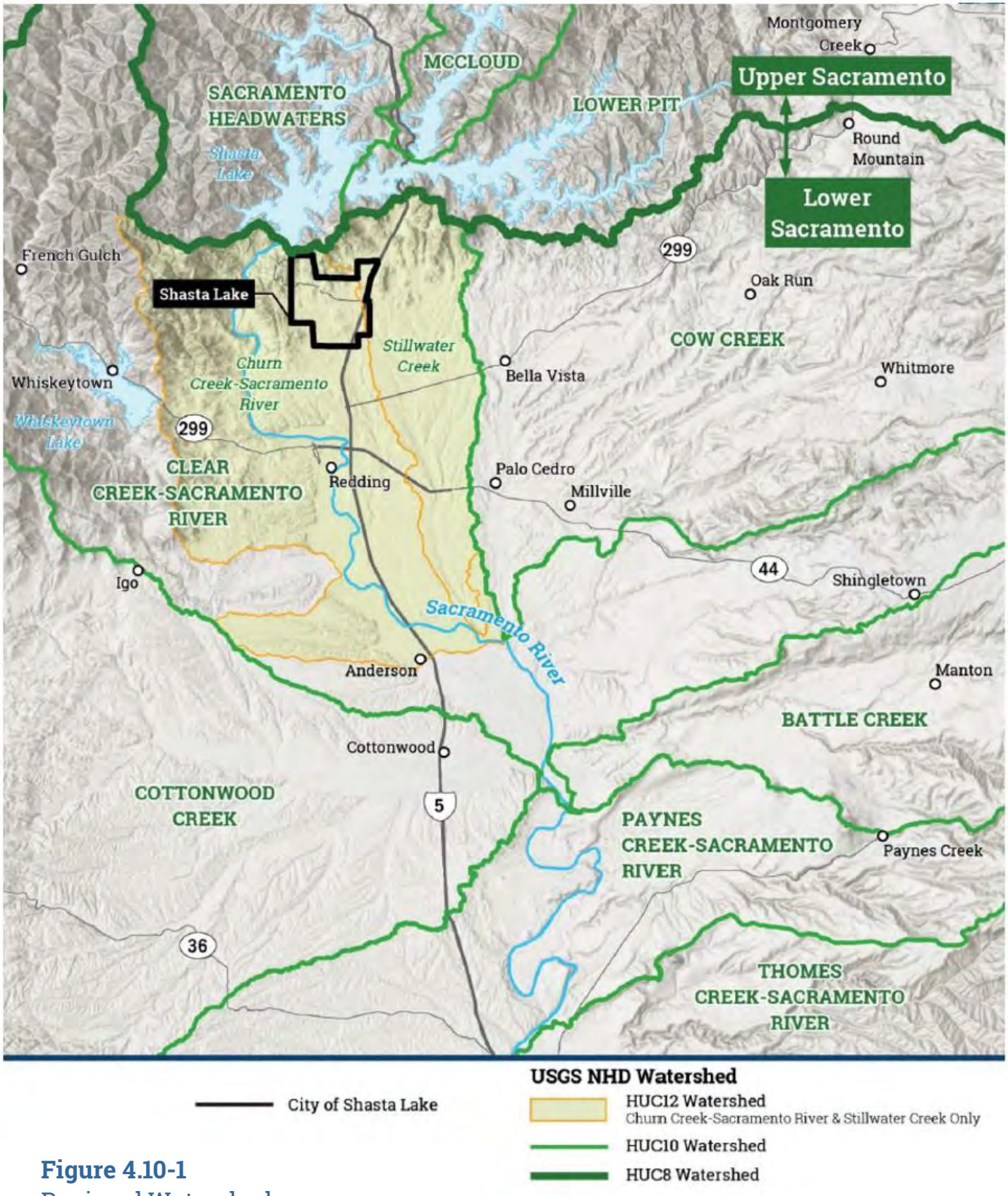


Figure 4.10-1
Regional Watersheds

Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial service supply (IND); hydropower generation (POW); water contact recreation, including canoeing and rafting (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm and cold (SPWN): wildlife habitat (WILD), and navigation (NAV). Existing beneficial uses for groundwater are identified as MUN, AGR, IND, and industrial process supply (PRO).

LOCAL

Climate and Precipitation

Climactic conditions in the City are characterized by a Mediterranean climate with cool, wet winters and hot, dry summers. The average annual temperature is about 75 degrees Fahrenheit (˚ F). Monthly mean maximum temperatures range from a high of 95˚ F in July to a low of 31˚ F in January. Daily high temperatures commonly exceed 100˚ F during the summer. Precipitation is about 63 inches per year in a non-drought year.

Surface Water/Drainage Facilities

The three major streams in the City are Churn Creek, Salt Creek, and Moody Creek, each of which drains sizeable areas ranging between 2,400 and 6,000 acres. Salt Creek collects runoff from the central core of Shasta Lake and converges with Churn Creek in the City of Redding. Moody Creek drains a small area in the northeastern area of the City.

Additional streams that flow through the City of Shasta Lake include Rich Gulch Creek, Little Churn Creek, Nelson Creek, and Rancheria Creek. The drainage pattern in the City generally flows from the northwest to the southeast. The City's storm drain system consists of natural and manmade open channels and ditches, and a system of storm drain pipes, inlets/outlets, area drains, and catch basins. Runoff from new development projects is commonly controlled with detention basins.

Surface Water Conditions

According to the Sacramento River Watershed Program (SRWP), no comprehensive water quality studies have been performed on Churn Creek or Stillwater Creek (SRWP, n.d.). There are no known studies prepared for other streams within the City, although some data exists from periodic sampling by state water resource agencies and from the City of Shasta Lake Wastewater Treatment Plant (WWTP), which discharges treated effluent to Churn Creek.

Available data indicate that water quality is generally good; however, there have been concerns with turbidity and suspended solids generated by local construction and from channel erosion sources. High sediment loads can be carried to the Sacramento River during peak runoff events. There is also a potential for elevated bacterial concentrations from urban runoff, failing septic systems, and domestic livestock.

Section 303(d)(1) of the federal Clean Water Act requires states to identify surface waters that do not meet applicable water quality standards and prioritize such surface waters for the purposes of developing a total maximum daily load (TMDL). According to the SWRCB 2020-2022 Integrated Report, there are no surface waters within the City limits on the 303(d) list (SWRCB, 2022).

Groundwater and Groundwater Recharge

The DWR is responsible for designating groundwater basins in the State. Designated groundwater basins reflect where most of the groundwater production in the State occurs. The City of Shasta Lake is not included in a State-designated groundwater basin. Non-basin areas generally consist of impermeable rocks, where groundwater is found in fractures or other voids. In non-basin areas, groundwater typically yields quantities sufficient only for limited domestic use or for agricultural stock use (DWR, 2021). Groundwater use in the City has been limited to a few domestic wells for individual single-family homes. Although not a considerable source of water supply, non-basin areas provide for groundwater recharge, which occurs when water seeps into the ground to replenish underground aquifers. The City is located immediately north and west of the Enterprise Groundwater Subbasin, and recharge within the City may benefit the aquifer system. Groundwater recharge in the City is mostly by infiltration of stream flows.

Flooding

Past flood events in the City have been primarily localized, and caused by rainfall volumes exceeding the capacity of storm drain facilities. Heavy seasonal rainfall occurs typically between November and May, and has resulted in backyard flooding, flooding to garages, and some street flooding. Flooding also occurs in areas adjacent to creeks following prolonged rain events that generate a high volume of runoff in areas with saturated soils from previous rain events. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) identify several properties in the City within designated flood hazard zones. These areas are shown in **Figure 4.10-2.**

4.10.3 Regulatory Framework

FEDERAL

Clean Water Act (CWA)

The CWA (33 USC §1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality and was established to *"restore and maintain the chemical, physical, and biological integrity of the Nation's waters."* Pertinent sections of the Act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 (Water Quality Certification) requires an applicant for any federal permit that would authorize a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Act.
- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB and is discussed in detail below.
- Section 404, jointly administered by the USACE and USEPA, establishes a permit program for the discharge of dredged or fill material into waters of the United States.

Federal Anti-Degradation Policy

The federal Anti-Degradation Policy is part of the CWA (Section 303(d)) and is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that protects designated uses of water bodies (e.g., fish and wildlife, recreation, water supply, etc.). The water quality necessary to support the designated use(s) must be maintained and protected.

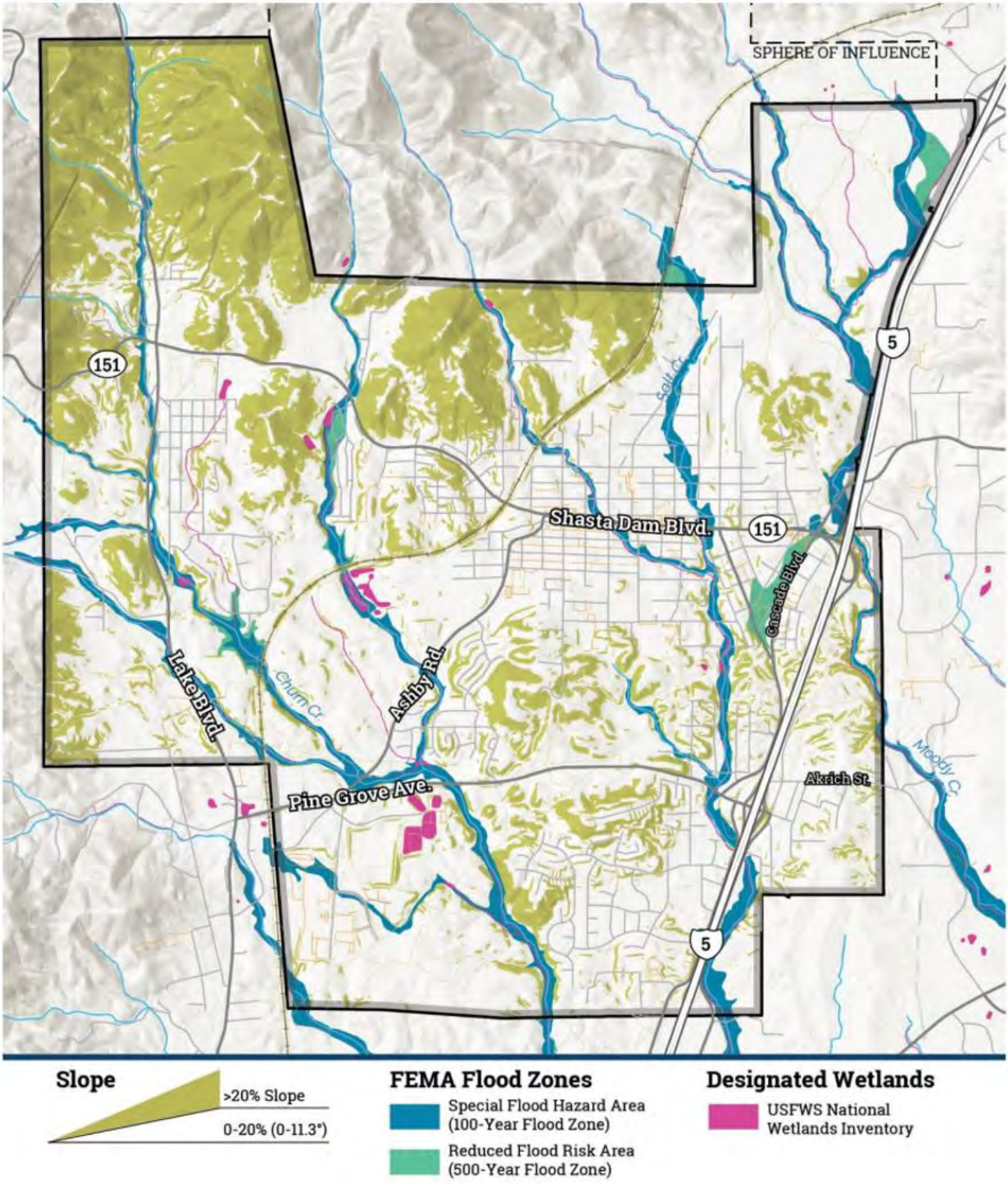


Figure 4.10-2
Natural Resources Overlay Zone

Safe Drinking Water Act

Under the 1974 Safe Drinking Water Act, most recently amended in 1996, USEPA regulates contaminants of concern to domestic water supply, which are those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are classified as either primary or secondary Maximum Contaminant Levels (MCLs). MCLs and the process for setting these standards are reviewed triennially.

Federal Emergency Management Agency (FEMA)

FEMA is responsible for mapping flood-prone areas under the National Flood Insurance Program (NFIP). Communities that participate in the NFIP are required to adopt and enforce a floodplain management ordinance to reduce future flood risks related to new construction in a flood hazard area. In return, property owners have access to affordable federally funded flood insurance policies.

National Pollution Discharge Elimination System (NPDES)

Under Section 402(p) of the CWA, the USEPA established the NPDES to enforce discharge standards for both point-source and non-point-source pollution. Dischargers can apply for individual discharge permits, or apply for coverage under the General Permits that cover certain qualified dischargers. Point-source discharges include municipal and industrial wastewater, stormwater runoff, combined sewer overflows, sanitary sewer overflows, and municipal separate storm sewer systems. NPDES permits impose limits on discharges based on minimum performance standards or the quality of the receiving water, whichever type is more stringent in a given situation.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code §13000 *et seq.*) is the principal law governing water quality in California. It establishes a comprehensive program to protect water quality and the beneficial uses of waters of the State. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater, and to both point and non-point sources of pollution. The Act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The RWQCBs enforce waste discharge requirements (WDRs) identified in the Report.

State Anti-Degradation Policy

In 1968, as required under the Federal Anti-Degradation Policy, the SWRCB adopted an Anti-Degradation Policy, formally known as the *Statement of Policy with Respect to Maintaining High Quality Waters in California* (State Water Board Resolution No. 68-16). Under the Anti-Degradation Policy, any actions that can adversely affect water quality in surface or ground waters must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial use of the water, and not result in water quality less than that prescribed in water quality plans and policies.

Water Quality Control Plan (Basin Plans)

The CVRWQCB adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, Fifth Edition, in May 2018, as well as subsequent amendments to the Plan. The Basin Plan identifies beneficial uses to be protected for both surface water and groundwater and establishes water quality criteria designed to protect those uses. WDRs were

adopted in order to attain the beneficial uses identified in the Basin Plan. Water quality affects municipal, industrial, agricultural, and in-stream water uses as well as the health of terrestrial habitats. Because changes in water quality can indicate changes in other watershed processes or components, measurements of water quality are a favored, non-biological indicator of watershed condition.

State Water Resources Control Board (SWRCB)/CVRWQCB

National Pollution Discharge Elimination System (NPDES) Program

Pursuant to the federal Clean Water Act, responsibility for enforcing the NPDES program has been delegated to the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB). The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. In California, NPDES permits are also referred to as waste discharge requirements (WDRs). Point sources are discrete conveyances such as pipes or man-made ditches. Typical activities that could affect water quality and trigger the requirement for an NPDES permit include, but are not limited to:

- Discharges of process wastewater not discharging to a sewer (e.g., factories, cooling water, etc.)
- Waste containments (landfills, waste ponds, etc.)
- Construction sites
- Discharges of pumped groundwater and cleanup activities (underground tank cleanup, dewatering activities, spills, etc.)
- Material handling areas draining to storm drains
- Sewage treatment facilities

The SWRCB and CVRWQCB have several General Permits that apply to specific activities. In addition, individual NPDES permits are issued to facilities not covered under a General Permit. For example, the City's WWTP is covered under NPDES CA0079511 (Order R5-2020-0058), which includes WDRs specific to the WWTP (CVRWQCB, 2020). Below is a description of some common NPDES General Permits.

Statewide NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES No. CAS000002)

This NPDES Permit is currently under review by the SWRCB, and it is anticipated that the revised permit will be reissued in September 2022. This permit is also known as the Construction General Permit and includes WDRs for discharges of stormwater runoff associated with construction and land disturbance activities that disturb one acre or more of total land area. The permit also applies to construction activity that results in less than one acre of land disturbance if the construction activity is part of a larger common plan of development that in total disturbs one or more acres. The permitting process requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

Coverage under the Construction General Permit is obtained by submitting a Notice of Intent (NOI) to the SWRCB and preparing the SWPPP prior to the beginning of construction. The SWPPP must include Best Management Practices (BMPs) to reduce pollutants and any more stringent controls necessary to meet water quality standards. Dischargers must also comply with water quality objectives as defined in the applicable Basin Plan. If Basin Plan objectives are exceeded, corrective measures are required.

General WDRs/NPDES Permit for Limited Threat Discharges to Surface Waters
(Order R5-2022-0006/NPDES Permit CAG995002)

Order R5-2022-0006, adopted by the CVRWQCB on February 17, 2022, applies to individuals, public agencies, private businesses, and other legal entities that discharge clean or relatively pollutant-free wastewaters that pose little or no threat to water quality, as well as discharges that may contain toxic organic constituents, volatile organic compounds, petroleum fuel pollution constituents, pesticides, inorganic constituents, chlorine, and/or other chemical constituents that require treatment prior to discharge.

Examples of activities covered under this General Order include construction dewatering, filter backwash water, pump/well testing, and well development. Activities that may be covered with treatment prior to discharging include cleanup site wastewater and equipment decontamination that do not meet effluent limitations without treatment, and groundwater cleanup of petroleum fuel pollution. Dischargers obtain coverage under this permit by submitting a Notice of Intent (NOI) to the CVRWQCB, along with a detailed description of the project, discharge type, and a description of where treatment is required to reduce pollutants to levels that will meet effluent limitations. This permit requires BMPs to be developed and implemented to prevent the generation and potential release of pollutants from the discharge facility to waters of the State and to ensure compliance with the effluent limitations identified in the Order.

Statewide General WDRs for Sanitary Sewer Systems (Order No. 2006-0003-DWQ), and Amended Monitoring and Reporting Program (WQ 2013-0058-EXEC)

SWRCB Order No. 2006-0003-DWQ requires that all public entities that own or operate sanitary sewer systems greater than one mile in length prepare a Sewer System Management Plan (SSMP). The SSMP must include a spill response plan that establishes standard procedures for immediate response to a sanitary sewer overflow (SSO), defined as any overflow, spill, release, discharge, or diversion of treated or partially treated wastewater from a sanitary sewer system. The Order requires implementation of a Monitoring and Reporting Program. On August 6, 2013, the SWRCB amended the Monitoring and Reporting Program requirements by issuing Order WQ 2013-0058-EXEC.

WDRs for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4) (Water Quality Order 2013-0001-DWQ, as amended).

On April 30, 2003, the SWRCB adopted *WDRs for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Phase II MS4s).* A municipal separate storm sewer is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains. The Phase II MS4 General Order is intended to minimize adverse impacts associated with stormwater runoff.

Sustainable Groundwater Management Act (SGMA)

The SGMA, enacted in September 2014, establishes a framework for groundwater resources to be managed by local agencies in areas designated by the Department of Water Resources as medium- or high-priority basins and basins identified as critically overdrafted. Basins are prioritized based, in part, on groundwater elevation monitoring conducted under the California Statewide Groundwater Elevation Monitoring (CASGEM) program. Local agencies in medium- and high-priority basins, and areas identified as critically overdrafted are required to form Groundwater Sustainability Agencies and to be managed in accordance with locally developed Groundwater Sustainability Plans (GSPs).

LOCAL

City of Shasta Lake

Phase II MS4 General Order

The City of Shasta Lake is a Regulated Small MS4 and must comply with requirements of the Phase II MS4 General Order described above, including ensuring compliance with the MS4 requirements for post-construction stormwater management, stormwater and non-stormwater discharge prohibitions, effluent limitations, receiving water limitations, public education, staff training, construction site operator training, water quality monitoring, and other requirements intended to minimize adverse impacts associated with stormwater runoff. Post-construction requirements are outlined in a standardized Post-Construction Standards Plan that has been implemented in other municipalities in CVRWQCB's jurisdiction (City of Redding, n.d.).

Shasta Lake Municipal Code (SLMC) Chapter 13.36 (Storm Water Quality Management)

SLMC Chapter 13.36 was adopted to protect and enhance the water quality of watercourses and water bodies and ensure compliance with the Federal CWA and Porter-Cologne Water Quality Control Act. SLMC Chapter 13.36 provides the City with the legal authority to fully implement and enforce provisions set under NPDES General Permit CAS000004, *Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4)* (Water Quality Order 2013-0001-DWQ, as amended).

SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development)

SLMC Chapter 15.08, §15.08.210(A)(8), requires that all construction projects involving site grading shall include erosion control plans prepared by a registered civil engineer, qualified SWPPP developer (QSD), or other licensed or certified stormwater professional. Temporary and permanent erosion control devices, designed and constructed in accordance with the California Stormwater Quality Association (CASQA) BMPs and the City's Construction Standards, shall be provided to control erosion. The applicant must provide sufficient equipment and qualified personnel to conduct emergency erosion control as identified in the SWPPP and/or erosion control plan.

SLMC Chapter 13.28 (Industrial Wastewater Pretreatment Standards)

SLMC Chapter 13.28 includes uniform requirements for users of the publicly owned treatment works (POTW) to ensure that the City complies with all applicable State and federal laws, including the Clean Water Act and federal General Pretreatment Regulations 40 Code of Federal Regulations, Part 403). The chapter authorizes the City to issue wastewater discharge permits; provides for monitoring, compliance, and enforcement activities; establishes administrative review procedures; and requires user reporting.

SLMC Chapter 15.04 (Floodplain Management)

SLMC Chapter 15.04 includes requirements for new development and substantial rehabilitation of structures within FEMA-designated flood hazard areas. The purpose of the Floodplain Management requirements is to protect human life and health, protect property, and minimize damage to public facilities, utilities, streets, and bridges. This Chapter includes methods and provisions to:

- Restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards, or that result in damaging increases in erosion or flood height or velocities;
- Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;

- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;
- Control filling, grading, dredging, and other development which may increase flood damage; and
- Prevent or regulate the construction of flood barriers, which will unnaturally divert flood waters or that may increase flood hazards in other areas.

Sewer System Management Plan (SSMP)

The City prepared an updated SSMP on August 4, 2020, as required by SWRCB Order 2006-003-DWQ, Statewide General WDRs for Sanitary Sewer Systems. The City's SSMP establishes a plan to properly manage, operate, and maintain the sanitary sewer system to prevent sanitary sewer overflows (SSOs) and mitigate any SSOs that do occur. The SSMP identifies preventative operation and maintenance activities, and provides a SSO emergency response plan.

Pyrethroid Management Plan

As required by CVRWQCB's Pyrethroid Pesticides Control Program, PACE Engineering, Inc., prepared a Pyrethroid Management Plan for the City in August 2021 (PACE, 2021). The purpose of the Plan is to control the discharge of pyrethroid pesticides throughout the Sacramento and San Joaquin River Basins to protect waters with aquatic life beneficial uses. Under the Management Plan, the City will provide information to the public about the harmful effects of pyrethroid pesticides and will implement an Integrated Pest Management Plan (IPM) that includes measures to promote the use of environmentally sensitive pest management strategies in a manner that protects human health and the environment.

City of Shasta Lake Construction Standards

Section 200.00 of the City's Construction Standards (Drainage Criteria) requires drainage calculations to be submitted to the City demonstrating that post-construction runoff from a project does not increase the pre-development peak flows for the 10-, 25-, and 100-year design storm events at any location downstream.

4.10.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to hydrology and water quality:

GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU-3.8	Require that new industrial development be designed to avoid adverse impacts to adjacent non-industrial uses, including noise, dust, vibration, water quality, air quality, agricultural resources, and biological resources.
	LU-3.9	In order to ensure orderly growth and development, the minimum size for newly created parcels not served by public sewer or a package sewage treatment facility, or for parcels not contributing to a sewer assessment district, should be five acres in the Suburban Residential and two acres in the Urban Residential and Urban Residential High A and B land use designations. Modifications to these standards may be allowed if consistent with state and Shasta County environmental health and water quality standards.

	LU-3.10	Work to protect important natural resource areas and the scenic beauty of mountains and rolling hills around the City as the community develops. For new development located along existing creeks and streams, incorporate bank naturalizing approaches for channeled sections as a means of creek and stream restoration where appropriate.
	LU-3.15	Encourage sustainable, resilient development that conserves water and energy resources and incorporates best practices for avoiding and minimizing damage from flood, earthquake, wildfire, and other hazards. Explore incentives and other methods for addressing conservation and resiliency in existing development.
IMPLEMENTATION ACTION	LU-3.6	Develop specific or area plans, as needed, that cover services and facilities necessary to serve an identified area based on ultimate development potential. Services and facilities include, but are not limited to, roads, water, sewer, storm drainage, power, law enforcement, fire protection, schools, libraries, parks, trees and landscaping in public spaces, and trail systems. These plans should include a schedule for the phasing of public improvements and anticipated development, and timing of preliminary grading and tree removal and replacement.
GOAL CON-1	**Protect and conserve water resources and improve and maintain water quality.**	
POLICIES	CON-1.1	Protect and improve the quality of surface water.
	CON-1.2	Protect existing wetlands to the greatest extent possible, consistent with achieving the vision expressed in the General Plan.
	CON-1.3	Maintain and improve current conveyance capacity for both natural and constructed drainages.
	CON-1.4	Minimize the alteration of creek courses and bottoms.
	CON-1.5	Integrate stormwater management techniques and low impact development best practices to minimize runoff. Encourage water conservation efforts by residents, businesses, and industry.
	CON-1.6	Require new development annexed to the City be connected to the City's wastewater collection system whenever possible.
IMPLEMENTATION ACTIONS	CON-1.1	Continue enforcement of illegal discharges into Stillwater and Churn Creeks.
	CON-1.2	Continue to educate the community about septic systems and water quality contamination problems with failure.
	CON-1.3	Continue to educate the community about water conservation.
	CON-1.4	Design and monitor irrigation systems in medians and other common areas to maximize efficiency and reduce runoff.
	CON-1.5	Upgrade aging infrastructure to reduce leakage and eliminate pollutant sources from degraded pipelines and evaluate the costs and benefits of upgrading existing capacities.
	CON-1.6	Maintain an inventory of known sources of groundwater and soil contamination, including underground storage tanks, landfills, septic tanks, and industrial uses. Coordinate monitoring efforts for groundwater quality and support regional water quality efforts to eliminate groundwater and soil contamination.
GOAL CON-2	**Continue regional relationships that ensure a flexible and sustainable water supply.**	

POLICIES	CON-2.1	Continue to work with regional water authorities, including the Central Valley Regional Water Quality Control Board and Shasta County Environmental Health Department, to implement land use controls for the protection of water quality.
	CON-2.2	Coordinate with regional water authorities to ensure that applicable requirements are included in new development projects and City ordinances.
	CON-2.3	Work with regional stakeholders to protect and restore watershed viability and protect the health of wildlife and natural habitat in an integrated watershed management approach that aligns with regional, state, and federal policies that may apply.
IMPLEMENTATION ACTION	CON-2.1	Coordinate with the California Division of Water Resources and regional water agencies to implement educational programs regarding the interaction of groundwater, surface water, stormwater, and other surface flows, and the effects of contaminants in surface flows, consistent with MS4 permit requirements.
GOAL CON-3	**Conserve and manage significant fish, wildlife, and vegetation resources, enhance the area's natural beauty, and provide residents with a healthy environment.**	
POLICIES	CON-3.6	Create easements where practical for public access to streams and waterways.
IMPLEMENTATION ACTION	CON-3.2	Establish standards that provide public access in the floodplain and in stream buffer areas while preserving these sensitive habitats.
GOAL CON-4	Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.	
POLICIES	CON-4.1	Explore alternatives to stormwater collection methods, including the use of detention or retention basins to implement the "no net runoff" concept.
	CON-4.2	Recognize that conservation goals and development practices may, on occasion, conflict and will need to be resolved according to policies specified in the General Plan.
	CON-4.3	Promote cost-effective water and energy consumption in the City as much as possible; continue and build upon existing programs to reduce water and energy consumptions in the City.
	CON-4.4	Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally-sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.
	CON-4.5	Incorporate erosion mitigation practices into construction and development projects.
	CON-4.6	Define transition zones between development areas and open space or conservation areas to provide for further conservation of habitat and wildlife areas.
	CON-4.7	Promote clustered development in foothill areas.
IMPLEMENTATION ACTIONS	CON-4.1	Require construction best practices to reduce erosion that take into account site and climate conditions, consistent with the MS4 stormwater program standards.
	CON-4.2	Encourage the highest feasible water conservation possible when reviewing landscaping plans for new projects and ensure the landscape watering ordinance contains best practices for water conservation.

	CON-4.3	Work with the largest users of water and energy in the City to establish incentives, offer recommendations, and explore other programs and policies for lowering consumption.
	CON-4.5	Foster and encourage landowner education on the benefits and feasibility of establishing conservation easements within subdivisions and on individual properties.
	CON-4.6	Protect and preserve natural resource areas by amending the zoning ordinance to include habitat protection standards, particularly buffering, for sites abutting areas of natural resource value.
GOAL OS-3	**Ensure that open space planning and development practices are consistent with hazard and flood mitigation efforts.**	
POLICY	OS-3.1	Use a comprehensive approach that includes implementation of hazard mitigation plan development policies, as well as open space design strategies such as encouraging natural drainage areas and wetlands.
IMPLEMENTATION ACTIONS	OS-3.1	Implement the Hazard Mitigation Plan as it pertains to development and open space ratios integrated into land use districts. Require a minimum of 100-year flood protection for new construction projects.
	OS-3.2	Encourage development of future detention and retention basins for joint stormwater management and park use, where feasible, and require coordinated City review regarding the selection of sites for any detention or retention basins and the use of stormwater runoff controls built into the landscape.
GOAL HS-2	**Minimize the risk to life and property from natural disasters.**	
POLICIES	HS-2.1	Implement the City of Shasta Lake Hazard Mitigation Plan.
	HS-2.2	Educate the public about natural hazard risks, mitigation, and hazard preparedness.
	HS-2.3	Participate in region-wide emergency preparedness plans to protect the public from hazards.
	HS-2.4	Locate, to the extent feasible, new essential public facilities (e.g., schools, health care facilities, emergency shelters, emergency response centers) outside of hazard areas, such as high severity fire zones and the 100-year floodplain, considering future climate change projected increase in hazard areas.
IMPLEMENTATION ACTIONS	HS-2.1	Update the HMP regularly and as required to stay in compliance with relevant FEMA and state requirements.
	HS-2.2	Prioritize and apply for funding through the FEMA Hazard Mitigation Assistance grant program and through CALFIRE for mitigation actions identified in the HMP.
	HS-2.3	Create and maintain a "Hazard Preparedness" page or pages on the City's website to educate the public about the flood hazard in Shasta Lake.
GOAL HS-4	**Minimize the risk to life and property from flood.**	
POLICIES	HS-4.1	Protect public health and safety from flooding through floodplain management which regulates the types of land uses which may locate in the floodplain, prescribes construction designs for floodplain development, and requires mitigation measures for development which would impact the floodplain by increasing runoff quantities.
	HS-4.2	Regulate new development in floodplains through zoning regulations addressing land use type, density, and siting of structures.

	HS-4.3	Support project level flood control measures that also further the goals of recreation, resource conservation (including streamside vegetation and habitat modification when necessary), and the preservation of the scenic values of water resources.
	HS-4.4	Design or approve flood control measures which avoid, to the extent feasible, the alteration of creeks, wetlands, and riparian buffer areas.
	HS-4.5	Continue collaborative working relationships among regional public agencies with responsibility for flood protection and participate in region-wide emergency preparedness plans to protect the public from flooding hazards.
	HS-4.6	Participate in the preparation of a region-wide flood control drainage plan to reduce existing and future regional flooding.
	HS-4.7	Continue participation in the National Flood Insurance Program (NFIP).
	HS-4.8	Periodically update the citywide Master Drainage Plan, reducing existing and future flooding hazards.
	HS-4.9	Maintain Flood Hazard Maps to aid in the project review process.
	HS-4.10	Require mitigation for impacts of new development on the floodplain or other downstream areas due to increased runoff, potentially through low impact design best practices.
IMPLEMENTATION ACTIONS	HS-4.1	As part of project review, ensure that structures subject to the 100-year flood provide adequate protection from flood hazards.
	HS-4.2	In designing flood control facilities, consider the need to protect anadromous fisheries and allow for adequate water passage to ensure the survival of downstream riparian ecosystems.
	HS-4.3	Conduct regular meetings with city staff to review effectiveness of the floodplain management ordinance and identify areas for improvement.

4.10.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on hydrology and water quality if it would:

1. Violate any water quality standards or waste discharge requirements by substantially degrading surface or groundwater quality.
2. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
3. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
4. Substantially alter existing drainage patterns, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:
    a. Result in substantial erosion or siltation on- or off-site or provide substantial additional sources of polluted runoff.
    b. Substantially increase the rate or amount of surface runoff and result in flooding on- or off-site.

c. Substantially create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

d. Impede or redirect flood flows.

5. In flood hazard or seiche zones, risk release of pollutants due to project inundation.

4.10.6 Issues Not Discussed Further

All issues identified in Section 4.10.5 are discussed below.

4.10.7 Impact Analysis and Mitigation Measures

Impact 4.10-1	**Implementation of the 2040 General Plan could violate water quality standards or waste discharge requirements by substantially degrading surface or groundwater quality.** ***Less-than-Significant Impact***

Development under the 2040 General Plan has the potential to temporarily degrade water quality due to increased runoff and erosion during construction. As discussed under Section 4.10.3 (Regulatory Framework), discharges from construction sites that disturb one acre or more of land, or are less than one acre but part of a larger common plan of development, are subject to the SWRCB's NPDES Construction General Permit. The permitting process requires the development and implementation of an effective SWPPP that includes BMPs to reduce pollutants and any additional controls necessary to meet water quality standards.

Measures that may be implemented to minimize erosion include, but are not limited to: limiting construction to the dry season; use of straw wattles, silt fences, and/or gravel berms to prevent sediment from discharging off-site; and revegetating temporarily disturbed sites upon completion of construction.

Additionally, the City is a Regulated Small MS4 and must comply with provisions of the Phase II MS4 General Order. Under the Phase II MS4 permit, the City must ensure that development projects incorporate measures to reduce stormwater runoff both during construction and post-construction to minimize the potential for long-term impacts.

Post-construction measures include site design measures (e.g., stream setbacks and vegetated buffer strips/swales to provide filtration and bio-uptake of pollutants, tree planting and preservation, use of porous pavement, etc.) and stormwater treatment measures (e.g., retention and detention basins, bioretention/rain gardens). Major development projects are required to prepare an Operations and Maintenance Plan describing how post-construction measures will be maintained in the long-term. Post-construction measures are verified by the City Engineer and City Building Official prior to issuance of grading permits or building permits. Implementation of the post-construction measures is verified prior to issuance of a Certificate of Occupancy or approval of a final inspection for the project. In the event that resource agency permits are required, the City would verify that the developer obtains the required permits prior to issuance of any development permits by the City.

Future industrial development projects would be subject to the City's regulations that were adopted to avoid potential impacts related to water quality. As outlined in SLMC Chapter 13.28 (Industrial Wastewater Pretreatment Standards), industrial projects are required to submit specific information to the City regarding chemicals and materials that could be introduced into the City's

sewer system. The WWTP operator would review the information and may require the applicant to obtain a Wastewater Discharge Permit from the City that identifies effluent limits and self-monitoring, sampling, reporting, notification, and record-keeping requirements. If deemed necessary, the applicant would be required to install a sampling station to allow the City to sample the facility's industrial waste stream to ensure compliance with the City's waste discharge requirements under the NPDES permit for the WWTP.

Future projects would also be subject to the resource agency requirements identified in Section 4.10.3 (Regulatory Framework) that were enacted to protect water quality and the beneficial uses of waters of the State. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater, and to both point and non-point sources of pollution. The Act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state.

The City submits proposed development projects to the CVRWQCB for review and comment to determine permits and approvals necessary to ensure compliance with State water quality standards and WDRs. Depending on operational activities, future industrial facilities may be required to obtain an individual NPDES permit from the CVRWQCB. If necessary, the City implements mitigation measures to ensure compliance with State water quality standards. Implementation of the 2040 General Plan policies and implementation actions identified in Section 4.10.4, compliance with conditions of resource agency permits, and implementation of project-specific mitigation measures ensures that future development under the 2040 General Plan would not violate water quality standards or WDRs, or substantially degrade surface or groundwater. Potential impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.10-2	**Implementation of the 2040 General Plan would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.** ***Less-than-Significant Impact***

As stated in Section 4.10.2 (Environmental Setting), the City is not located within a State-designated groundwater basin and is not subject to a sustainable groundwater management plan.

As documented under Impact 4.10-1, future development under the 2040 General Plan must comply with the federal, State, and local regulations identified in Section 4.10.3 (Regulatory Framework) and the General Plan policies and implementation actions identified in Section 4.10.4 pertaining to the protection of water quality. Future development proposals would be reviewed on a case-by-case basis to ensure compliance with regulations that were enacted to ensure compliance with the Basin Plan, including but not limited to, the regulations identified in Section 4.10.3 (Regulatory Framework). If necessary, project-specific mitigation measures would be implemented to ensure that potential impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.10-3	**Implementation of the 2040 General Plan would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.** ***Less-than-Significant Impact***

As stated in Section 4.10.2 (Environmental Setting), the City is not included in a State-designated groundwater basin, and groundwater use in the City has been limited to a few domestic wells for individual single-family homes. Future projects in the City would connect to the City's public water system, and development under the 2040 General Plan would not result in an increase in groundwater pumping.

Although not a considerable source of water supply, areas in the City provide for groundwater recharge, which occurs when water seeps into the ground to replenish underground aquifers. The City is located immediately north and west of the Enterprise Groundwater Subbasin, and groundwater recharge within the City may benefit the aquifer system.

Development under the 2040 General Plan would increase the amount of impervious surface and reduce the amount of land available for groundwater recharge. However, groundwater recharge in the City is mostly by infiltration of stream flows within floodplains. Because development in the floodplain is limited, these areas would remain available for recharge. In addition, the 2040 General Plan increases the amount of designated open space by ±117 acres as compared to the current General Plan, and these areas would provide for groundwater recharge. Therefore, implementation of the 2040 General Plan would have a ***less-that-significant*** impact related to groundwater supplies and groundwater recharge.

Mitigation Measures

No mitigation measures required.

Impact 4.10-4	**Implementation of the 2040 General Plan would not substantially alter existing drainage patterns, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:** **a. Result in substantial erosion or siltation on- or off-site or provide substantial additional sources of polluted runoff.** **b. Substantially increase the rate or amount of surface runoff and result in flooding on- or off-site.** **c. Substantially create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.** **d. Impede or redirect flood flows.** ***Less-than-Significant Impact***

a-b. Development under the 2040 General Plan would increase the amount of impervious surfacing in the City by constructing roads, driveways, parking areas, and rooftops. An increase in impervious surface area could increase the volume of runoff leaving the development site and could result in flows that carry sediments and pollutants (e.g., dirt, chemicals, trash, etc.) into surface waters, both on-site and off-site. Increased runoff could

also exceed the capacity of the City's stormwater drainage system and result in increased flooding on- or off-site. Construction activities would also result in soil erosion/siltation due to earth-moving activities such as stockpiling, grading, and excavation.

As discussed above, projects that result in the disturbance of over one acre or are part of a larger common plan of development must obtain coverage under the NPDES Construction General Permit, which includes WDRs for discharges of stormwater runoff associated with construction and land disturbance activities. A SWPPP that includes BMPs and other controls to reduce pollutants must be implemented throughout the duration of construction. The City must ensure that development projects incorporate measures to reduce stormwater runoff post-construction to minimize the potential for long-term impacts. These requirements are specified in the City's Phase II MS4 Post-Construction Standards Plan, SLMC Chapter 13.36 (Storm Water Quality Management), and the SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development).

Under the Phase II MS4 Program, small projects that create or replace between 2,500 to 5,000 square feet of impervious surface must implement site design measures such as stream setbacks and vegetated buffers that filter out pollutants, provide stabilization of erodible banks, and help slow peak flows; adding soil amendments that create a higher organic content to decrease erosion risk and maintain healthy plants; tree planting and preservation; rooftop and impervious area disconnection; and use of porous pavement, green roofs, vegetated swales, and/or rain barrels.

Large "regulated" projects that create or replace 5,000 square feet or more of impervious surface must implement source control measures to minimize the impact of pollutant-generating activities. Low Impact Development (LID) standards also must be incorporated into the project design. LID measures may include concentrating development on portions of the site with less permeable soils and preserving areas that can promote infiltration, limiting overall impervious coverage of the site, preserving significant trees, replicating the site's natural drainage patterns, and detaining and retaining runoff throughout the site.

The City's Construction Standards (Drainage Criteria) require drainage calculations to be submitted to the City demonstrating that post-construction runoff from a project does not increase the pre-development peak flows for the 10-, 25-, and 100-year design storm events at any location downstream.

Future development under the 2040 General Plan would be reviewed on a case-by-case basis to ensure compliance with applicable regulatory requirements, including, but not limited to, those identified in Section 4.10.3 (Regulatory Framework). Future development would also be subject to the General Plan policies and implementation actions identified in Section 4.10.4. If necessary, project-specific mitigation would be implemented to ensure that potential impacts related to erosion, surface runoff, and flooding, would be ***less than significant.***

c-d. If drainage is not adequately managed, runoff associated with future projects could exceed the capacity of the City's storm drain system and potentially impede or redirect flood flows. Pursuant to SLMC Section 15.08.090(D), all grading plans must include detailed plans of all surface and subsurface drainage devices, including brow ditches, retaining walls, cribbing, dams, protective fencing, and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains. SLMC Section 15.08.160 requires final plans to be

submitted to the City upon completion of rough grading work prior to any precise/fine grading, and at the final completion of the work.

Final plans must include a record grading plan prepared by the project civil engineer or other authorized licensed professional, including original ground surface elevations, as-graded ground surface elevations, lot drainage patterns and locations and elevations of all surface and subsurface drainage facilities. Drainage calculations will be reviewed by the City Engineer to ensure that post-construction runoff from a project does not increase the pre-development peak flows for the 10-, 25-, and 100-year design storm events at any location downstream.

SLMC Section 15.04.140 (Duties and responsibilities of the floodplain administrator) requires that documentation be submitted to the City to verify that a proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined. "Adversely affect" means that the cumulative effect of the proposed development when, combined with all other existing and anticipated development, would increase the water surface elevation of the base flood more than one foot at any point.

Improvement plans for future projects would be reviewed by the City Engineer and City Building Official to ensure compliance with the City's requirements for storm drain systems; therefore, the potential for impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.10-5	**Implementation of the 2040 General Plan could result in the release of pollutants due to inundation of a project in flood hazard or seiche zones.** ***Less-than-Significant Impact***

A seiche is a large wave generated in an enclosed body of water in response to ground shaking. Seiches could potentially be generated in Lake Shasta due to very strong ground-shaking; however, it is not likely that such ground shaking would cause a seiche large enough to overtop Shasta Dam. According to the FEMA Flood Insurance Rate Maps, there are several properties in the City located within designated flood hazard areas (see **Figure 4.10-2**).

SLMC Chapter 15.04 (Floodplain Management) includes requirements for new development and for substantial rehabilitation within FEMA-designated flood hazard areas. As stated in Section 4.10.3 (Regulatory Framework), SLMC Chapter 15.04 includes methods and provisions to restrict or prohibit uses that are dangerous to health, safety, and property due to water or erosion hazards, or that result in damaging increases in erosion or flood height or velocities.

Section 15.04.160 (Standards of Construction) requires that residential structures be elevated at least one foot above the base flood elevation (BFE) to minimize the potential for inundation of the structure during a flood. Non-residential construction must be elevated above the BFE and/or floodproofed below the BFE so that the structure is watertight with walls substantially impermeable to the passage of water.

SLMC Section 15.04.170 requires that all new and replacement water supply and sanitary sewage systems must be designed to avoid/minimize the potential for the infiltration of flood waters into the systems, and discharges from the systems into flood waters. On-site waste disposal systems

must be located to avoid impairment to them, or contamination from them, during flooding. SLMC 15.04.180 includes specific requirements for subdivisions.

Future development under the 2040 General Plan would be subject to the standards included in SLMC Chapter 15.04, which would minimize the potential for project inundation in a flood hazard zone. Compliance with applicable requirements would be confirmed by the City's Floodplain Administrator, City Engineer, and/or Building Official; therefore, the potential for release of pollutants due to project inundation would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

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4.11

Land Use and Planning

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4.11 Land Use and Planning

This section analyzes the 2040 General Plan's consistency with relevant plans, policies, and regulations that were adopted for the purpose of avoiding or mitigating environmental effects and evaluates whether implementation of the 2040 General Plan has any components that would physically divide an established neighborhood.

4.11.1 Study Methods

The following evaluation of potential impacts related to land use and planning is based on review of the proposed 2040 General Plan Land Use Element and Circulation Element Map, City of Shasta Lake Municipal Code, Shasta Regional Transportation Plan/Sustainable Communities Strategy, and other local planning documents. For purposes of this PEIR for the proposed 2040 General Plan, the Planning Area is identified as all land within the City limits and the City's sphere of influence (SOI).

4.11.2 Environmental Setting

The City of Shasta Lake provides a wide range of residential, commercial, industrial, and recreational uses to meet the needs of the community. Existing commercial uses are concentrated along Shasta Dam Boulevard, generally between the Interstate 5 (I-5)/ Shasta Dam Boulevard Interchange and the Union Pacific Railroad (UPRR) trestle; and along Cascade Boulevard, generally between Pine Grove Avenue and the southern City limits. Light Industrial uses are located along Cascade Boulevard, generally south of Shasta Dam Boulevard to just south of Morning Star Way. Uses on Twin View Boulevard between Pine Grove Avenue and the southern City limit are a combination of commercial and light industrial uses. Heavy industrial uses are located east of the UPRR trestle, from the Sierra Pacific Industries lumber mill on El Cajon Avenue to the southern City limits.

The Land Use Element of the 2040 General Plan provides a description of each land use designation, including the maximum allowable densities for residential uses, and maximum floor area ratios (FAR) for non-residential uses.

Figure 4.11-1 and **Figure 4.11-2** identify existing and proposed General Plan designations. **Figure 4.11-3** is a Natural Resources overlay map that identifies areas in the City with development constraints due to floodplains and steep slopes. Additional development constraints, such as the presence of special-status species, wetlands, and other jurisdictional waters of the U.S. and State are identified during review of specific development projects. These areas are generally avoided, or mitigation measures are implemented to minimize adverse impacts. Development in areas shown in the Natural Resources overlay map are not necessarily prohibited, but they are limited to improvements that are demonstrated to have minimal impacts on sensitive resources and areas.

Table 4.11-1 provides an overview of proposed changes in residential land use designations and densities; **Table 4.11-2** identifies proposed changes in commercial/industrial land use designations and floor area ratios (FAR); and **Table 4.11-3** identifies changes for lands identified as public facilities, community parks, open space, and federal land, as well as public rights-of-way (ROW).

A description of all proposed land use designations is included in the Land Use Element of the General Plan.

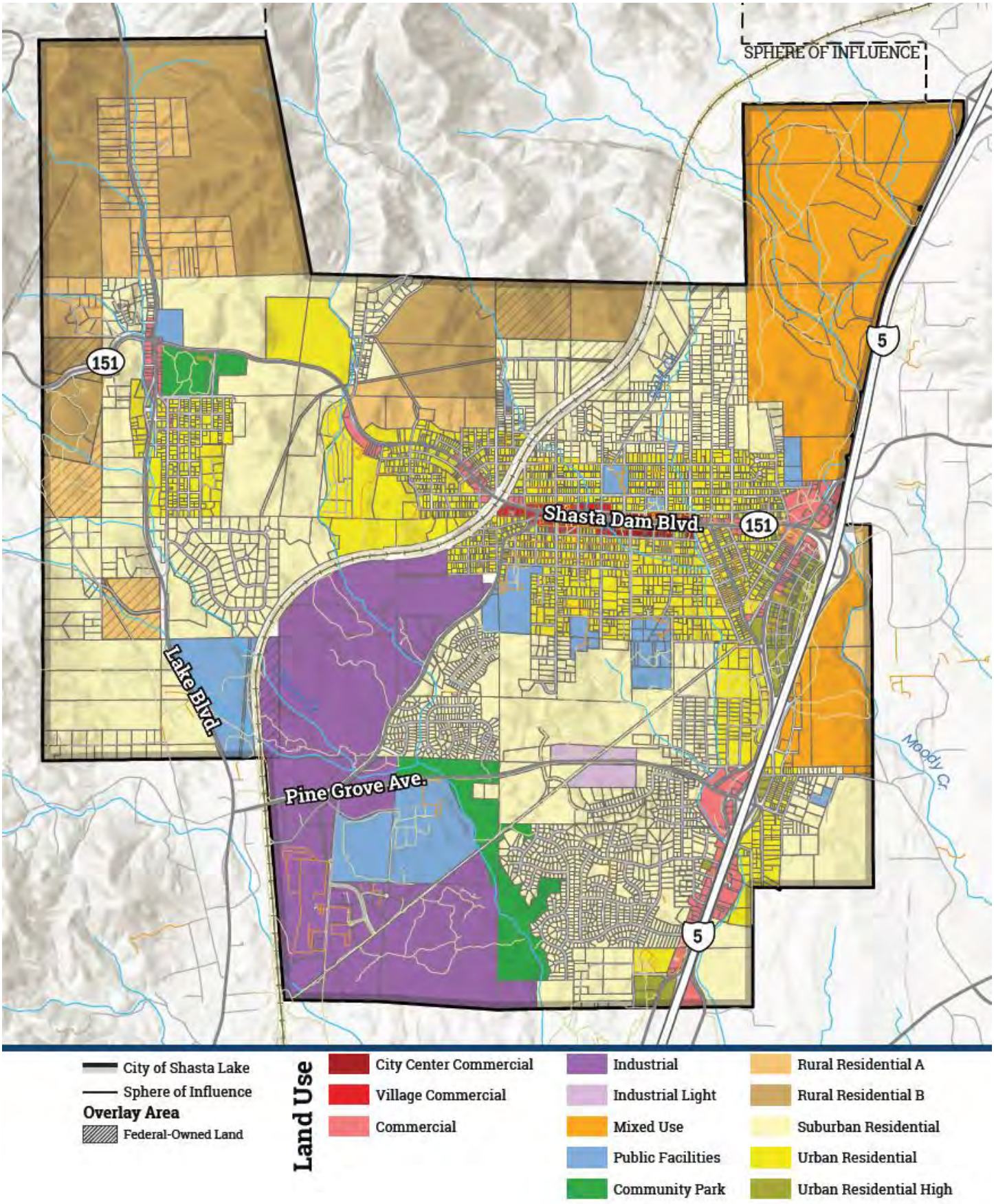


Figure 4.11.1
Current General Plan Designations

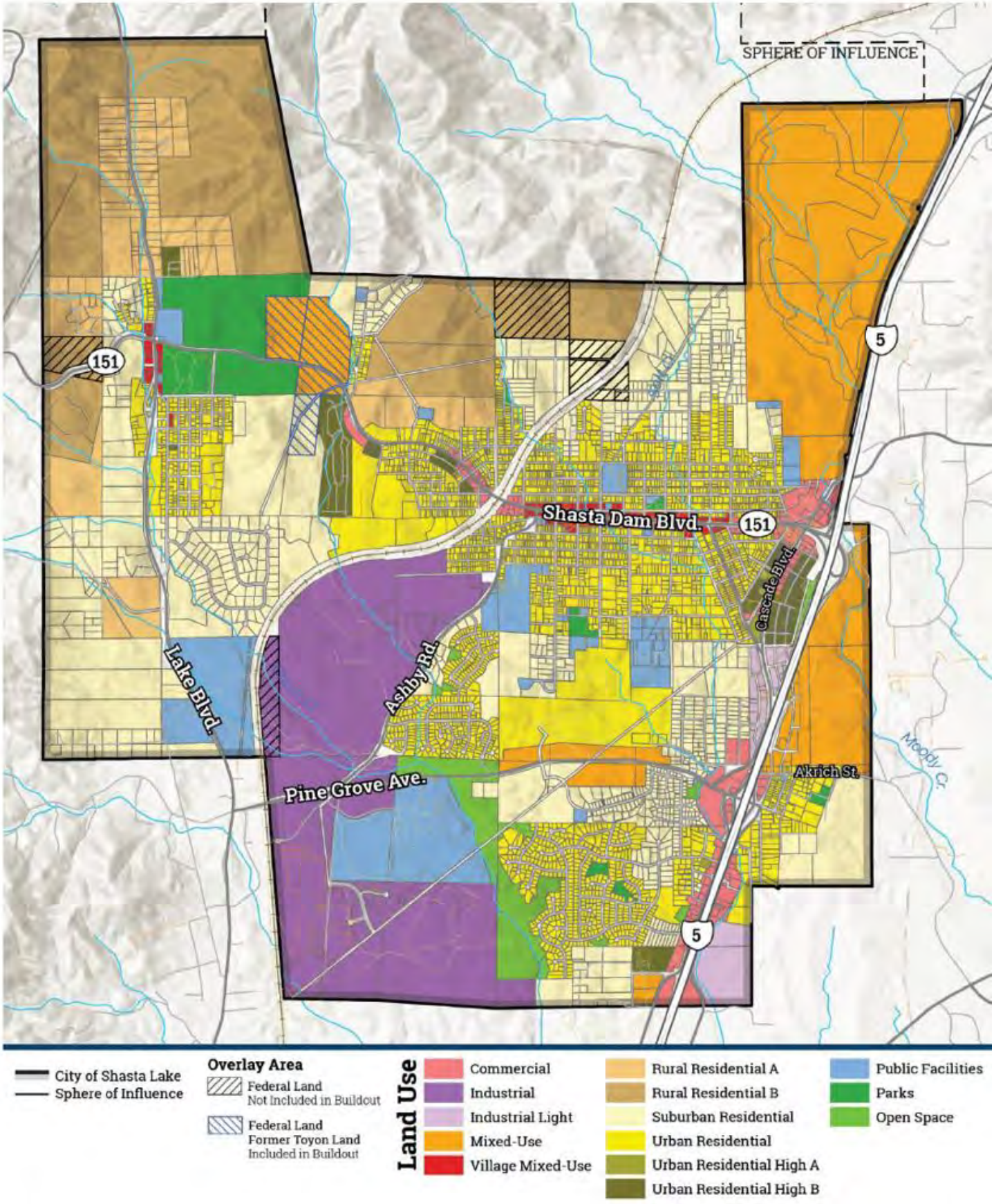


Figure 4.11-2
Proposed 2040 General Plan Designations

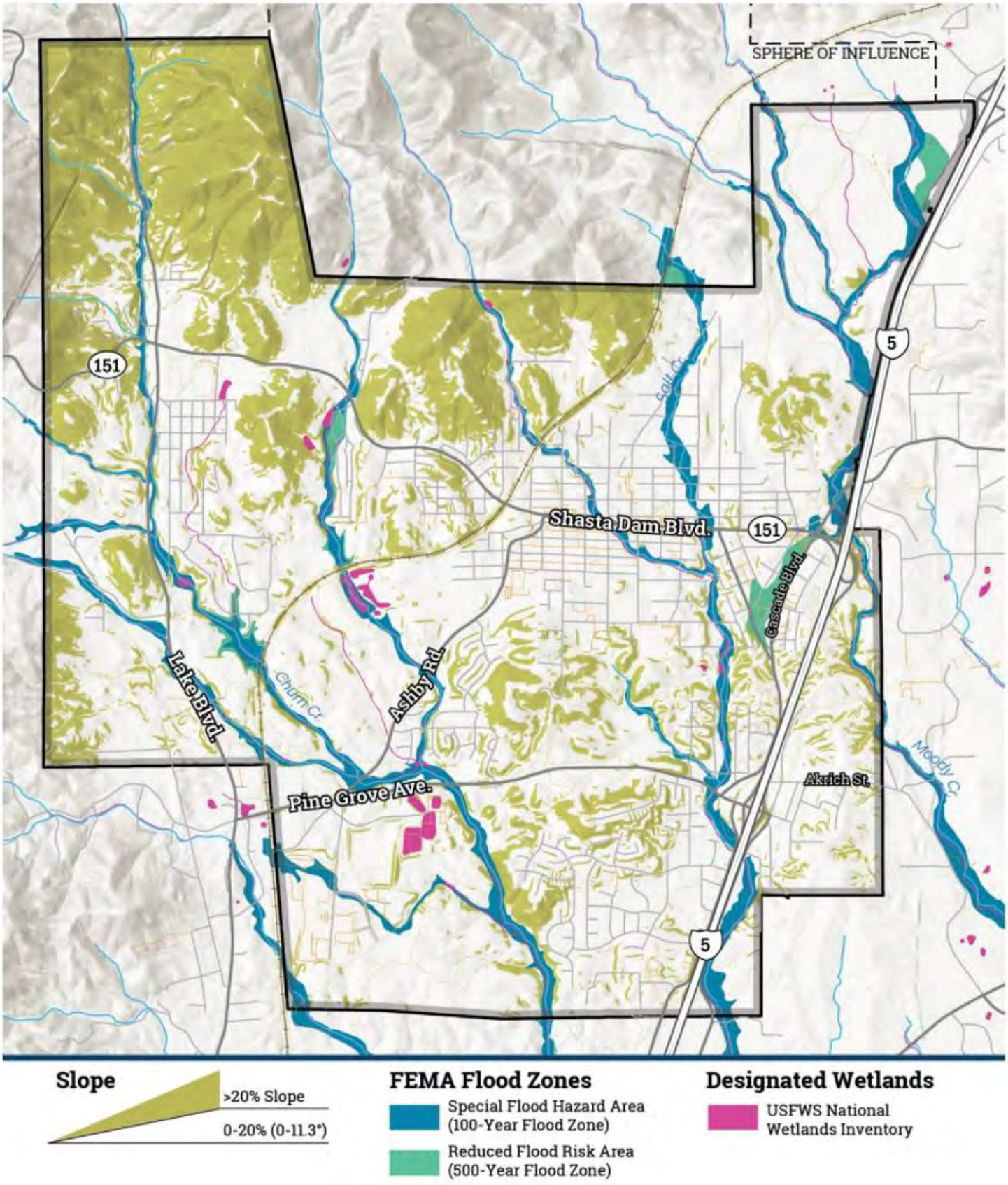


Figure 4.11-3
Natural Resources Overlay Zone

Table 4.11-1
Existing and Proposed General Plan Land Use Calculations – Residential Uses

General Plan Land Use Designation	Gross Acres		Developable Acres		Allowable Densities		Buildout		Difference in Buildout Between 1999 and 2040 General Plans
	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	
Rural Residential A	382	347	142	118	0.5	0.5	85	76	-9
Rural Residential B	697	701	77	80	0.2	0.2	15	16	+1
Suburban Residential	1,899	1,360	1,385	954	3	3	2,639	2,049	-590
Urban Residential	807	1,102	673	914	10	12	3,823	6,674	+2,851
Urban Residential High (URH)	52	-	49	-	20	-	745	-	-745
URH A	-	5	-	4	-	30	-	105	+105
URH B	-	93	-	76	-	20	-	950	+950
Village Commercial (Residential Uses)	9	-	8	-	20	-	129	-	-129
Village Mixed-Use (Residential Uses)	-	17	-	22	-	30	-	561	+561
Mixed-Use (Residential Uses)	359	440	284	350	20	30	5,664	10,475	+4,811
Total Residential:	4,205	4,065	2,618	2,518	-	-	13,100	20,906	+7,806

Table 4.11-2
Existing and Proposed General Plan Land Use Calculations – Commercial and Industrial Uses

General Plan Land Use Designation	Gross Acres		Developable Acres		Allowable FAR		Buildout		Difference in Buildout Between 1999 and 2040 General Plans
	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	Existing 1999 General Plan	Proposed 2040 General Plan	
City Center Commercial	11	-	344,695	-	0.25	-	36,353	0	-36,353
Village Commercial (Commercial Uses)	9	-	285,023	-	0.25	-	29,343	0	-29,343
Village Mixed-Use (Commercial Uses)	-	17	-	253,594	-	3	0	559,992	+559,992
Mixed-Use (Commercial Uses)	359	440	9,904,860	12,205,524	1	1	9,902,082	12,196,853	+2,294,771
Commercial	114	117	3,057,560	3,154,025	0.25	2	529,502	6,007,280	+5,477,778
Industrial	714	713	21,658,515	21,622,411	0.40	1	7,541,075	20,499,867	+12,958,792
Light Industrial	31	67	966,292	1,741,726	0.30	1	289,888	1,734,486	+1,444,598
Total Commercial/Industrial:	1,238	1,354	36,216,945	38,977,280			18,328,243	40,998,478	+22,670,235

Table 4.11-3
Existing and Proposed General Plan Land Use Calculations – Other Uses

Other Land Use Designations	Gross Acres		Difference between 1999 and 2040 General Plans
	Existing 1999 General Plan	Proposed 2040 General Plan	
Public Facilities	307	326	+19
Community Park	138	163	+25
Open Space	0	117	+117
ROW/ Easements	656	744	+88
Gov. Owned	380	157	-223
Total Other	1,481	1,507	26

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Table 4.11-4 identifies anticipated residential development over the 20-year planning period for the 2040 General Plan. **Table 4.11-5** identifies anticipated commercial and industrial development over the 20-year planning period for the 2040 General Plan.

The projections are based on developable land and do not include land with designated flood hazard area, wetlands as shown on the U.S. Fish and Wildlife Service National Wetlands Inventory, or areas with slopes over 20 percent. It also includes proportional area splitting for mixed-use parcels and lot efficiency factors for each land use. Employment growth is Estimated from U.S. EIA median square feet (SF) per worker by land use (Commercial, 410 SF; Industrial and Light Industrial, 750 SF; Mixed-Use, 403 SF; Village Mixed-Use, 425 SF).

Table 4.11-4
Residential Growth Projections (Population and Housing)

Housing Type	Existing Units	Additional Units at Buildout	Total Number of Units at Buildout	20-Year Projections		Annual Projections	
				Unit Growth	Population Growth	Unit Growth	Population Growth
Single-Family	3,645	8,815	12,460	542	1,350	27	67
Multi-Family	542	1,055	1,597	142	354	7	18
Mixed-Use	38	11,036	11,074	152	378	8	19
Total	**4,225**	**20,906**	**25,131**	**836**	**2,082**	**42**	**104**

Table 4.11-5
Commercial, Industrial, and Mixed-Use Commercial Growth Projections (Square Footage and Jobs)

Category	Existing Square Footage	Additional SF at Buildout	Total SF at Buildout	20-Year Projections		Annual Projections	
				SF Growth	Job Growth	SF Growth	Job Growth
Commercial	316,096	6,007,280	6,323,376	60,073	147	3,004	7
Industrial	1,122,544	20,499,867	21,622,411	184,499	246	9,225	12
Light Industrial	7,240	1,734,486	1,741,726	20,814	28	1,041	1
Mixed-Use	8,671	12,196,853	12,205,524	109,772	272	5,489	14
Village Mixed-Use	228,948	559,992	788,940	5,600	13	280	1
Total	**1,683,499**	**40,998,478**	**42,681,977**	**380,758**	**706**	**19,039**	**35**

4.11.3 Regulatory Framework

FEDERAL

There are no federal regulations pertaining to land use and planning that apply to the proposed plan.

STATE

California Government Code

California Government Code (CGC) §65300 *et seq.* contains many of the State laws pertaining to the regulation of land uses by cities and counties. These regulations include requirements for general plans, specific plans, subdivisions, and zoning. State law requires that all cities and counties adopt General Plans that include seven mandatory elements: land use, circulation, conservation, housing, noise, open space, and safety. A General Plan is defined as a comprehensive long-term plan for the physical development of the county or city, and any land outside its boundaries that is determined to bear relation to its planning. A development project must be found to be consistent with the General Plan prior to project approval.

CGC §65302(a) describes the required content of a land use element and states that the land use element must designate the proposed general distribution, general location, and extent of land uses for housing, businesses, industry, open space, recreational facilities, public facilities, areas subject to flooding, and other categories of public and private uses. The land use element correlates with the circulation element to ensure connectivity between residential uses, services, and employment centers. The land use element assists in guiding decision-making related to zoning, subdivisions, and public works.

Cortese-Knox-Hertzberg Local Government Reorganization Act

Under the Cortese-Knox Hertzberg Local Government Reorganization Act of 2000 (Act), Local Agency Formation Commissions (LAFCO) must approve changes to local agency boundaries, including city incorporations, annexations to a city or special district, and consolidations of cities and special districts. LAFCOs are also responsible for establishing spheres of influence (SOI). The Shasta LAFCO is the agency responsible for these functions in Shasta County.

LOCAL

City of Shasta Lake

The Shasta Lake Municipal Code (SLMC) implements the City's General Plan. The purpose of the land use and planning provisions of the Code (Title 17, Zoning) is to provide for the orderly and efficient application of regulations.

Additional SLMC sections that implement and supplement federal and State laws include, but are not limited to:

- SLMC Chapter 15.02 (Building Standards Code) implements the California Administrative Building, Residential, Electrical, Mechanical, Plumbing, Energy, Fire, Green Building, and Referenced Standards Codes and the Uniform Housing Code.
- SLMC Chapter 15.04 (Floodplain Management) implements the requirements of the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP).

- SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development) implements various State Codes related to water quality, storm drain management, and environmental quality).
- SLMC Title 16 (Subdivisions) implements and supplements the California Subdivision Map Act (California Government Code §66410 *et seq).*
- SLMC Chapter 13.28 (Industrial Wastewater Pretreatment Standards) implements Federal and State laws, including the federal Clean Water Act, federal General Pretreatment Regulations, and State water quality standards and waste discharge requirements.
- SLMC Chapter 13.36 (Storm Water Quality Management) implements the federal Clean Water Act, State water quality standards, and requirements under the NPDES permit for Storm Water Discharges from Small Municipal Storm Sewer Systems.

In addition to City plans and regulations, the City is responsible for ensuring that development complies with the permit and/or approval requirements of various federal, State, and local agencies. Depending on the location, type, and/or intensity of development, these agencies include, but are not limited to:

- Shasta County Environmental Health Division (hazardous materials-related plans, food facility approval, on-site wastewater treatment system permits, etc.)
- Shasta County Air Quality Management District (permit to operate, authority to construct, smoke management plans, stationary backup generator permits, etc.)
- California Department of Transportation (encroachment permits for work in the State road right-of-way, including new driveways).
- U.S. Army Corps of Engineers (Section 404 permit for the discharge of dredged or fill materials into wetlands and waters of the U.S.)
- State Water Board/Central Valley Regional Water Quality Control Board (Section 401 Water Quality Certification or waiver, National Pollutant Discharge Elimination System permits).
- California Department of Fish and Wildlife (Section 1600 Lake and Streambed Alteration Agreement)

Shasta Local Agency Formation Commission (LAFCO)

Shasta LAFCO prepares a Municipal Services Review (MSR) for all cities and special districts in Shasta County. The MSR is a comprehensive study designed to better inform LAFCO, local agencies, and the community about the provision of municipal services. Service reviews analyze the efficiencies of service providers and identify opportunities for greater coordination and cooperation between providers. The service review is a prerequisite to a SOI determination and may also lead a LAFCO to take other actions under its authority. The most recent MSR for the City of Shasta Lake was completed in November 2014 (Shasta LAFCO, 2014).

Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region

As required by the Code of Federal Regulations (CFR) Title 450.300, Subpart C, and California Government Code Section 65080 et seq., the Shasta Regional Transportation Agency (SRTA) prepared the 2018 Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region (RTP/SCS). The RTP is a comprehensive plan that addresses all modes of transportation used by people and for goods and freight movement (i.e., streets/roads, public transit, pedestrian and bicycle facilities, aviation, and rail) in the Shasta Region.

The 2018 RTP includes an updated SCS as required by the Sustainable Communities and Climate Protection Act of 2008 (SB 375), which demonstrates how the region will meet greenhouse gas (GHG) emissions reduction targets established by the California Air Resources Board (CARB). CARB established emission reduction targets for California's eighteen metropolitan planning organization (MPO) regions for the year 2020 and 2035. Shasta County was assigned a 0% per capita change when compared to the 2005 baseline year, and the 2018 RTP/SCS reflects this target. SB 375 (2008) requires that local housing projects are consistent with the RTP/SCS (SRTA, 2018).

4.11.4 Proposed General Plan Goals, Policies, and Implementation Actions

Because the Land Use Element of the General Plan interacts with all other Elements, there are numerous goals, policies, and implementation actions that provide for the orderly development of the City and the protection of natural resources. These goals, policies and implementation actions are identified in each resource section of this Draft PEIR. Goals, policies, and implementation actions in the General Plan Land Use Element focus on managing land uses in a flexible and sustainable manner by providing a diverse mix of land uses in order to meet the needs of all residents. The Land Use Element also includes policies and implementation actions that foster a robust local economy and create and maintain employment opportunities.

4.11.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on land use/planning if it:

1. Physically divided an established community.
2. Caused a significant environmental impact due to a conflict with a land use plan, policy, or regulation that was adopted to avoid/mitigate an environmental effect.

4.11.6 Issues Not Discussed Further

Both issues identified in Section 4.11.5 are addressed below.

4.11.7 Impact Analysis and Mitigation Measures

Impact 4.11-1	**Implementation of the 2040 General Plan would not physically divide an established community.** ***No Impact***

Improvements that have a potential to physically divide an established community typically include new major roadways that remove access points to residential and commercial areas, or construction of new buildings that includes vacating an established road right-of-way that previously connected community neighborhoods.

The proposed 2040 General Plan does not include any new major roadways or abandonment of any existing roadways that would physically divide an established community. Rather, the 2040 General Plan strives to improve connectivity of all land uses. As emphasized in the Land Use Element, connections between residential neighborhoods and commercial and industrial areas need to serve the transportation needs of residents and businesses alike. The General Plan Circulation Element includes goals, policies, and implementation actions that will result in

circulation systems that accommodate planned growth, minimize environmental degradation, complement regional transportation and land use plans, and ensure that new growth does not burden current residents.

The transportation network under the 2040 General Plan is balanced and connected to provide community access for all ages and abilities; this includes safe and efficient roadways, pedestrian-friendly sidewalks and paths, trails, bicycle amenities, and public transportation. The policies and implementation actions in the Land Use Element directly tie to those highlighted in the Circulation Element. Therefore, implementation of the 2040 General Plan would not physically divide an established community, and there would be ***no impact***.

Mitigation Measures

No mitigation measures required.

Impact 4.11-2	**Implementation of the 2040 General Plan could result in an environmental impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.** ***Significant and Unavoidable Impact***

Plans, policies and/or regulations that were adopted for the purpose of avoiding or mitigating an environmental effect are described in detail in each resource section of this Draft PEIR. Compliance with existing federal, State, and local regulations, and compliance with the policies and implementation actions included in the 2040 General Plan would reduce most of the potential environmental effects to a less-than-significant level; however, the following impacts were determined to be significant and unavoidable.

Air Quality

Impact 4.3-1: Implementation of the 2040 General Plan could conflict with or obstruct implementation of the Northern Sacramento Valley Triennial Air Quality Attainment Plan.

Impact 4.3-2: Implementation of the 2040 General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.

Biological Resources

Impact 4.4-1: Implementation of the 2040 General Plan could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

Greenhouse Gas Emissions

Impact 4.7-3: Implementation of the 2040 General Plan could generate greenhouse gas emissions, directly and indirectly, resulting in a significant impact on the environment.

Impact 4.7-4: Implementation of the 2040 General Plan could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.

Transportation

Impact 4.17-2: Implementation of the 2040 General Plan could conflict with criteria for analyzing transportation impacts based on vehicle miles traveled (VMT) pursuant to CEQA Guidelines §15064.3(b).

Projects under the 2040 General Plan will be reviewed on a case-by-case basis to ensure compliance with applicable federal, State, and local plans, policies, and regulations that are in place at the time an application for development is submitted to the City.

Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level, resulting in a conflict with plans, policies and/or regulations that were adopted for the purpose of avoiding or mitigating an environmental effect. Impacts are considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

4.11.8 References

City of Shasta Lake. 2022. City of Shasta Lake Municipal Code. https://library.municode.com/ca/shasta_lake/codes/code_of_ordinances?nodeId=CITY_SHASTA_LAKEMUCO1998. Accessed May 2022.

Shasta Local Agency Formation Commission (LAFCO). 2014. Municipal Services Review and Sphere of Influence Update, City of Shasta Lake. http://www.shastalafco.org/local-agencies/cities-county. Accessed May 2022.

Shasta Regional Transportation Agency. 2018. Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region. https://www.srta.ca.gov/DocumentCenter/View/4285/2018-Regional-Transportation-Plan--Sustainable-Communities-Strategy-adopted-Oct-9-2018?bidId=. Accessed March 2022.

SECTION

4.12

Mineral Resources

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4.12 Mineral Resources

This section addresses mineral resources in and adjacent to the planning area and potential impacts on mineral resources that could occur as a result of implementation of the 2040 General Plan.

4.12.1 Study Methods

The following evaluation of potential impacts on mineral resources included a review of the Shasta County and City of Redding General Plans and records available from the U.S. Geologic Survey (USGS) and California Department of Conservation (DOC). Information on the location of mines was determined by reviewing the DOC Division of Mine Reclamation's *Mines Online* mapping program, the USGS Mineral Resources Data System, and aerial imagery.

4.12.2 Environmental Setting

REGIONAL

In 1997, the DOC, Division of Mines and Geology, published a report entitled *Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite Within Shasta County, California.* The purpose of the report was to describe important industrial mineral resources that were being mined in Shasta County at that time. The DOC study also considered areas adjacent to active mining operations that had similar geologic formations.

The Surface Mining and Reclamation Act (SMARA) requires the State Geologist to classify lands into Mineral Resource Zones (MRZs) based on the known or inferred presence of significant mineral deposits. The classification is based solely on geology and does not consider land ownership, zoning, or other issues. The main purpose of the classification system is to ensure that the potential for mineral resources to be present in an area is considered in the land use planning process. Lands designated MRZ-2a and MRZ-2b are considered areas of mineral-resource significance. The classifications are described below.

MRZ-1: Areas where geologic information indicates that there is little or no likelihood for the presence of significant mineral deposits.

MRZ-2a: Areas underlain by mineral deposits where geologic data shows that significant resources are present. Lands classified MRZ-2a contain discovered mineral deposits as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Lands designated MRZ-2a are of prime importance due to known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history.

MRZ-3a: Areas containing known mineral deposits that may qualify as mineral resources. Areas classified as MRZ-3a are considered to have a moderate potential for the discovery of economic mineral deposits.

MRZ-3b: Areas containing inferred mineral deposits that may qualify as mineral resources. Areas classified MRZ-3b represent areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. MRZ-3b is applied where geologic evidence leads to the conclusion that economic mineral deposits may be present.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources. The MRZ-4 designation indicates that there is a lack of knowledge regarding the presence of mineral deposits, and further exploration work is needed.

As a result of the 1997 study, areas north and northeast of the City in the unincorporated community of Mountain Gate that were being mined at that time were designated MRZ-2a and MRZ-2b due to the presence or inferred presence of concrete-grade alluvial aggregate suitable for the manufacture of portland cement and asphalt; crushed stone resources (shale) used for base aggregate and as an additive in the manufacture of portland cement; and McCloud limestone used in the manufacture of portland cement, as an agricultural soil conditioner, as decorative stone, and as aggregate (DOC, 1997).

No lands within the City limits or within the City's SOI are classified as MRZ-2a or MRZ-2b; however, based on geologic formations in the area, it is likely that mineral resources are present in other lands that have not been classified by DOC.

The 1997 DOC study also contains 50-year projections for per-capita consumption of aggregate and a comparison between the 50-year aggregate demand and 1997 reserves. As described in the report, a community's baseline aggregate demand can be shown to be related to its need for building- and road-construction aggregate. The aggregate demand is necessary to satisfy a community's need for growth and is essential for its continued vitality. As a community's population increases, there is a corresponding need for construction aggregate (DOC, 1997).

The report states that known concrete-grade alluvial aggregate reserves within Shasta County were calculated to be approximately 30.3 million tons. Based on a historic aggregate consumption rate of 8.0 tons per person per year, it was estimated that known reserves were likely to be depleted within 17 years. This information highlights the importance of protecting both known and inferred mineral deposits from encroachment by potentially incompatible land uses.

LOCAL

According to the DOC, thirty different mineral commodities have been mined in Shasta County since gold was first discovered along Clear Creek in 1848. Two large sulfide metallic districts – the West Shasta Copper-Zinc District and the East Shasta Copper-Zinc District – were once considered "world class status" and yielded massive tonnages of exceedingly rich copper, zinc, silver, gold, and iron ore from the late 1800s to the mid-1990s. Both of these Districts encompassed areas within the current City limits, and the DOC identifies several historic mine locations within and adjacent to the City.

There are presently no commercial-scale mining operations in the City limits, although remnants of past mining activities, primarily old mining ditches, have been identified in several areas of the City. Active mining operations are located north and northeast of the City in the unincorporated community of Mountain Gate. According to the DOC, the Falkenbury Shale Quarry is ±0.5 miles to the north; Mountain Gate Quarry, a limestone quarry, is ±2 miles to the northeast; Fawndale Rock Quarry, a sand and gravel quarry, is ±2.5 miles to the northeast.

A small area (±9.9 acres) just inside the northern City limits is currently zoned Mineral Resource (MR). This property is currently owned by Minnesota Mining and Manufacturing Company (3M). Although the General Plan designation for this property is Rural Residential B (RB), SLMC Chapter 17.12 (Mineral Resource (MR) District), §17.12.010 states that the MR zone district is consistent not only with the MR General Plan designation but also other areas where there are mineral deposits that can be mined commercially. Land within the City that is zoned MR abuts land in Shasta County that is zoned MR and is within the City's sphere of influence (SOI). The MR land in the County is also presently owned by 3M.

In addition, as detailed in Section 4.12.3 below, the City's Zoning Code states that the exploration, extraction, and processing of minerals, rock, sand, gravel, topsoil, or steam for commercial purposes, and accessory uses, may be allowed in most zone districts, provided that a use permit is issued. Asphalt and cement batch plants are allowed only in the General Industrial (M) zone district, provided that a use permit is issued.

3M previously submitted an application to Shasta County for development of the Moody Flats Quarry, a hard-rock aggregate quarry, processing facility, cement plant, and asphalt plant on ±800 acres immediately north of the northern City limits. A Draft EIR for the project was prepared and circulated by Shasta County in December 2014. The majority of the site was zoned MR. The project included a general plan amendment and rezone to change the designation of the following properties to MR: ±234 acres that were designated Suburban Residential (Interim Rural Residential zoning), and ±135 acres designated Industrial (General Industrial zoning).

The EIR for the project was not certified, and the project has not been approved by the County. As stated in Section 3.3 (Project Description) of this Draft PEIR, the property proposed for development of the Moody Flats Quarry is located within the City's SOI. During public review of the DEIR for the Moody Flats Quarry, concerns were expressed due to the project's proximity to existing residences, both in the County and City, and proposed residential developments within the City.

4.12.3 Regulatory Framework

FEDERAL

There are no federal regulations pertaining to mineral resources that apply to the proposed project.

STATE

Surface Mining and Reclamation Act of 1975 (SMARA)

SMARA, PRC Chapter 9, Division 2, §2710-2796, was enacted in 1975 to address the State's need for a continuous supply of mineral resources and to prevent/minimize the negative impacts of surface mining on public health, property, and the environment.

SMARA provides a comprehensive surface mining and reclamation policy to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition following mining operations. PRC §2207 provides annual reporting requirements for all mines in the State. Following submittal of the annual report to the DOC and lead agency, a mine inspection is conducted by a qualified mine inspector in accordance with PRC §2774(b) to ensure compliance with SMARA.

LOCAL

City of Shasta Lake Municipal Code (SLMC)

SLMC Chapter 17.12 (Mineral Resource (MR) District) allows exploration work for minerals outright in the MR zone district without issuance of a use permit. Mining activities, either underground or open pit, as defined by SMARA, and mills and other facilities related to or used in connection with the storing, transportation, processing, or refining of mined materials or products are allowed in the MR zone pursuant to issuance of a use permit.

SLMC §17.12.010 states that the purpose of the MR district is to protect lands with substantial mineral resources that are currently being mined or are likely to be used for mineral extraction. The MR zone district is consistent not only with the Mineral Resource General Plan designation but also other areas where there are mineral deposits that can be mined commercially, provided there are no conflicts with other general plan policies.

In addition, SLMC Chapter 17.88 (Special Uses), §17.88.020 (Mining) states that with the exception of gravel crushing and asphalt and cement batch plants, the exploration, extraction, and processing of minerals, rock, sand, gravel, topsoil, or steam for commercial purposes and accessory uses may be allowed in most zone districts, provided that a use permit is issued. Pursuant to SLMC §17.58 (General Industrial (M) District), concrete and asphalt batch plants are allowed in the M zone district provided that a use permit is issued.

4.12.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan's goals, policies, and implementation actions are intended to safeguard open space resources and also offer protection to the City when considering mining-related activities within the City and when reviewing proposals for mining operations in proximity to the City. The 2040 General Plan includes the following goals, policies, and implementation actions related to mineral resources:

GOAL OS-1	**Conserve and manage open space and recreation resources for use and enjoyment by City residents and visitors in a manner that balances public access, resource protection, and private property rights. Ensure future development incorporates open space and recreation resources as appropriate.**	
POLICY	OS-1.6	Safeguard open space resources when faced with the potential for pressure to mine areas near the City boundary.
GOAL CON-5	**Protect critical mineral resource areas from encroachment by incompatible land uses when possible.**	
POLICY	CON-5.1	Protect known significant mineral resources from land uses which would be incompatible with mining operations where such protections do not preclude successful implementation of the General Plan.
IMPLEMENTATION ACTIONS	CON-5.1	Large-scale mineral resource areas identified as MRZ-2 should be designated Natural Resources Overlay - Mineral Resource, if identified. Based on the results of mineral resource exploration, additional lands may be placed in this category. Uses permitted in these areas shall include mineral exploration and extraction, processing, and accessory uses.

CON-5.2 Development and uses within and abutting Mineral Resource lands shall be regulated so that proposed land uses avoid or mitigate incompatibilities with mineral extraction operations.

CON-5.3 All approved mining or mineral extraction operations shall have a reclamation plan for the rehabilitation, reuse, erosion control, and water quality protection of mineral resource lands.

CON-5.4 Ensure that mining operations are conducted in a manner which protects the public health, safety, and welfare by minimizing impacts on adjacent land uses and mitigating potential adverse cumulative environmental impacts.

CON-5.5 If aggregate mineral resources of regional or statewide significance are identified by the state, the General Plan may be amended, and the area designated with the Natural Resources Overlay where appropriate, and zoning regulation should be applied permitting extraction as a conditional use and prohibiting incompatible uses, consistent with state law.

CON-5.6 Within areas classified as Mineral Resource Zones by the State Division of Mines and Geology, mining may be permitted in the in-stream, floodplain, or gravel-bar areas of a river or creek provided removal of sand and gravel is:

1. Conducted during a declared civil or hazardous material emergency or natural disaster to relieve or correct potential hazards to the public health, safety, or welfare caused by such emergency or disaster.
2. For removal of dredger tailings for reclamation purposes only.
3. To protect a public structure, such as a bridge, when it is determined to be necessary by the public entity responsible for said structure.
4. To remove a buildup of sand and gravel to maintain the channel capacity to prevent flooding.

For Items 2, 3, and 4 above, a use permit and reclamation plan for mining of said areas shall be based on a stream-management program, prepared by qualified professionals in appropriate disciplines, which includes data and analysis to show that:

- There will be no significant adverse impact on in-stream habitat; riparian habitat; wetlands; or rare, threatened, or endangered species of fish, wildlife, or plants.
- There will be no significant adverse impact on existing structures, including bridges or levees. There will be no significant increase in bank erosion, deposition, or flooding.
- There will be no significant adverse impacts to surrounding properties or uses, including, but not limited to, noise, visual impacts, dust, traffic, and similar impacts.

4.12.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on mineral resources if it:

1. Resulted in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State.

2. Resulted in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

4.12.6 Issues Not Discussed Further

Both issues identified in Section 4.12.5 are addressed below.

4.12.7 Impact Analysis and Mitigation Measures

Impact 4.12-1 and Impact 4.12-2	**Implementation of the 2040 General Plan would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State, and would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.** ***No Impact.***

As discussed in Section 4.12.2, there are presently no commercial-scale mining operations within the City, although a ±9.9-acre parcel at the northern City limits is currently zoned MR. This property is currently owned by 3M and abuts land in the County and City's SOI that is also zoned for mineral resource extraction.

Active mining operations are located north and northeast of the City in the unincorporated community of Mountain Gate. According to DOC records, the Falkenbury Shale Quarry is ±0.5 miles to the north; Mountain Gate Quarry, a limestone quarry, is ±2 miles to the northeast; Fawndale Rock Quarry, a sand and gravel quarry, is ±2.5 miles to the northeast.

These areas are classified by DOC as MRZ-2a and MRZ-2b due to the presence or inferred presence of concrete-grade alluvial aggregate, crushed stone resources (shale), and limestone (DOC, 1997). No lands within the City limits or within the City's SOI are classified as MRZ-2a or MRZ-2b; however, based on geologic formations in the area, it is likely that mineral resources are present in other properties that have not been evaluated and classified by DOC.

Presently, land uses that abut the County's MR zone district include single-family residences on Shasta Park Drive and Pickard Street. In addition to the ±9.9-acre parcel identified above, undeveloped parcels in the City that abut the property in the County that is zoned MR have a General Plan designation of Rural Residential B (maximum 1 dwelling unit per five acres). One of the undeveloped parcels (±75.2 acres) is privately owned, and one (±40 acres) is federal land. No residences or other sensitive uses abut the 9.9-acre parcel that is within the City.

The 2040 General Plan does not include any goals, policies, or implementation actions that would preclude mining activities or directly impact significant mineral resources. However, indirect impacts on future mineral resource extraction operations could occur if residences or other sensitive receptors are introduced in proximity to lands that are zoned for mineral resource extraction, potentially making it less likely that a mining operation would be approved. Although future conflicts could occur due to incompatible uses, no changes to land use designations are proposed for properties adjacent to lands in the City or County that are designated MR.

Any future applications for mining operations would be reviewed by the City on a case-by-case basis during the use permit process. The City will also continue to work with the County in review of applications for mining operations in proximity to the City. Because the 2040 General Plan does not include any amendments that would increase potential development adjacent to existing or future mining operations, and no goals, policies, or implementation actions are proposed that would preclude future mineral resource extraction, there would be ***no impact*** on mineral resources.

Mitigation Measures

No mitigation measures required.

4.12.8 References

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SECTION

4.13

Noise

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4.13 Noise

This section describes the existing ambient noise environment in the City of Shasta Lake and potential increases in noise levels that could occur as a result of implementation of the 2040 General Plan. This section also describes existing and future sensitive receptors that could be most impacted by increases in noise levels from mobile and stationary sources.

4.13.1 Study Methods

The following evaluation of potential impacts related to noise is based on review of noise measurements taken by RBF Consulting in 2014, the Traffic Impact Analysis for the 2040 General Plan prepared by Ganddini Group in February 2022 (Ganddini, 2022), noise modeling prepared by Ganddini Group in July 2022, and the California Governor's Office of Planning and Research 2017 General Plan Guidelines. **Table 4.13-1** identifies commonly used technical acoustical terms and their definitions.

Table 4.13-1
Commonly Used Acoustical Terms

Term	Definition
Ambient Noise	The distinctive pre-project acoustical characteristics of a given area consisting of all noise sources audible at that location.
Decibel (dB)	The fundamental unit of measurement that indicates the intensity of a sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
A-Weighted Decibel (dBA)	A-weighting is a frequency correction that de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear.
Community Noise Equivalent Level (CNEL)	The average equivalent A-weighted sound level during a 24-hour period, obtained after adding 5 dB to sound levels in the evening between 7:00 PM and 10:00 PM, and adding 10 dB to sound levels in the night between 10:00 PM and 7:00 AM.
Equivalent Sound Level (L_{eq})	L_{eq} is the average of the fluctuating sound levels in decibels over a specified period of time. L_{eq} includes both steady background sounds and transient short-term sounds.
Day/Night Average Sound Level (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location, calculated by averaging the Leq for each hour of the day at a given location, after adding 10 dB to sound levels between 10:00 PM and 7:00 AM to account for the increased sensitivity of people to noises that occur at night.
Maximum Sound Level (L_{max})	The highest sound level (dBA) occurring over a given time period (root mean square).
Minimum Sound Level (L_{min})	The lowest sound level (dBA) occurring over a given time period (root mean square).

NOISE MODELING

Noise modeling was conducted to identify noise contours for primary noise sources in the City, which include traffic, the Union Pacific Railroad (UPRR) line, and two industrial facilities: the Sierra Pacific Industrial (SPI) sawmill on El Cajon Avenue and the Knauf Insulation facility on Ashby Road.

Noise contours were established by using two different modeling programs. The SoundPLAN acoustical modeling software was used to create noise level contour maps for roadways and railways within the City as well as key stationary noise sources. The FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) was used to create roadway noise contours in tabular format. Each method is described below. Data associated with the noise modeling is included in **Appendix D.**

SoundPLAN Acoustical Modeling Software (Version 8.2)

Roadway Noise

SoundPLAN was used to create existing and year 2040 noise level contour maps for all General Plan designated roadways. Model parameters included average daily traffic (ADT) volumes; day/evening/night split; and roadway classification, width, speed, and truck mix. Roadway data was obtained from the *Shasta Lake General Plan Update Traffic Impact Analysis* (Ganddini Group, Inc., May 9, 2022) and the California Department of Transportation traffic census program.

Future ADT estimates on Interstate 5 were developed based on an annual growth rate of 3.65 percent per year determined from the average growth for I-5 as documented in the ShastaSIM 1.2 Model Development Report (October 2018). Surfaces adjacent to all modeled roadways were assumed to have a "moderately hard site" to predict conservative noise levels. Due to the large study area, possible reductions in noise levels due to intervening topography and buildings were not accounted for in this analysis.

Railroad and Stationary Industrial Noise

SoundPLAN was also used to model stationary industrial noise sources using a point source and representative noise measurement data; railroad noise was modeled using a line source and representative noise measurement data collected adjacent to the UPRR rail line (refer to **Figure 4.13-1** and **Tables 4.13-2 and 4.13-3** below).

Federal Highway Administration (FHWA) Traffic Noise Prediction Model

Existing and year 2040 roadway noise and increases in ambient noise levels associated with project-generated vehicular traffic were modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108. Although this is an older and more rudimentary model compared to SoundPLAN, it is useful as the SoundPLAN noise model does not provide tabular data listing the distances to each noise contour. Some variations in the outputs are expected.

Vehicular noise along major roadways was modeled to estimate existing noise levels based on average daily traffic (ADT). ADT was based on traffic counts conducted in June 2012. Additional traffic counts were conducted on February 26, 2020, and December 9, 2020, and compared to 2012 traffic counts to determine the need for additional noise modeling.

Future roadway noise levels were projected using the FHWA Traffic Noise Prediction Model (RD-77-108), together with several roadway and site parameters. The FHWA model is based upon reference energy mean emission levels (REMELs).

The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the REMEL. In California, the national REMELs are substituted with the California Vehicle Noise (Calveno) Emissions Levels.[1] Adjustments are then made to the REMEL to account for total average daily traffic volumes, roadway classification (i.e., collector, secondary, major or arterial), the roadway active width (i.e., distance between the center of the outermost travel lanes on each side of the roadway), travel speed, truck mix (i.e., percentage of automobiles, medium trucks, and heavy trucks in the traffic volume), roadway grade and site conditions (hard or soft ground surface, which affects the absorption of sound).

The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses.

4.13.2 Environmental Setting

EXISTING NOISE SOURCES

As described below, significant noise sources in the City include traffic noise on Interstate 5 (I-5) and major roadways in the City; Union Pacific Railroad (UPRR) line operations, and noise associated with commercial and industrial operational activities.

Traffic Noise

The primary sources of traffic noise in the City are I-5, which bisects the eastern area of the City; State Route (SR) 151 (Shasta Dam Boulevard), which extends east to west between I-5 and the western City limits; Pine Grove Avenue, which extends east to west between I-5 and Lake Boulevard; Lake Boulevard, which extends north to south between the northern and southern City limits; Ashby Road, which extends north to south between Shasta Dam Boulevard and Pine Grove Avenue; and Cascade Boulevard, which extends north to south from ±0.25 miles north of Shasta Dam Boulevard to the southern City limit.

Truck traffic is heaviest along Pine Grove Avenue between I-5 and Ashby Road, Ashby Road south of Pine Grove Avenue, Shasta Gateway Drive, Iron Court, and Bronze Court; these are the main access routes to industrial uses on Ashby Road and in the Shasta Gateway Industrial Park.

Truck traffic is also heavy on Ashby Road between Pine Grove Avenue and El Cajon Avenue, and on El Cajon Avenue, the main access route to the Sierra Pacific Industries sawmill. Undeveloped properties on the east side of Ashby Road between Pine Grove Avenue and El Cajon Avenue are designated for industrial development, as are undeveloped properties south and east of the southern terminus of Shasta Gateway Drive.

Union Pacific Railroad

The Union Pacific Railroad (UPRR) tracks bisect the City in a northeast-southwest direction. An average of 25 freight trains travel through the City on a daily basis.

The number of freight trains traveling along this segment can vary from day to day, depending on demand, and there are currently no hourly limitations during which freight train travel is limited. The UPRR does not anticipate substantial changes in freight train traffic in future years. Amtrak also utilizes the UPRR for passenger service, providing connections to destinations such as Portland and Seattle to the north, and Sacramento, San Francisco, and Los Angeles to the south.

[1] California Department of Transportation Environmental Program, Office of Environmental Engineering. Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction. September 1995. TAN 95-03.

The nearest Amtrak station is located in the City of Redding, approximately five miles south of the Shasta Lake City limits. Two Amtrak trains currently pass through the City, typically between the early morning hours of 2:15 AM and 3:15 AM.

Public Transit

The Redding Area Bus Authority (RABA) provides fixed-route bus service in the City on weekdays and Saturdays. The fixed-route in the City is a looped service, with hourly stops at several locations along Shasta Dam Boulevard, Cascade Boulevard, and Lake Boulevard. RABA's service hours are 5:35 A.M. to 7:30 P.M. Monday through Friday and 8:35 A.M. to 7:30 P.M. on Saturday. No fixed-route service is offered on Sundays or major holidays. As development in the City occurs, it is expected that the demand for transit services will increase as well. RABA is consulted on all major development projects in the City to determine potential locations for additional bus stops.

Airports and Flight Paths

The nearest public airports or public use airports to the City are Redding Municipal Airport, ±10 miles southeast of the City, and Benton Field, ±5.5 miles southwest of the City. The Redding Airport is a full-service regional airport that provides commercial airline passenger service, aviation related services, aircraft hangar facilities, and two runways. Benton Field serves primarily single-engine and small twin-engine aircraft on a single runway. According to City of Redding GIS data (City of Redding, 2022), no portion of the City of Shasta Lake is located within the 60 decibel (dB) community noise level equivalent (CNEL) noise contour boundaries of either of these airports. Flight paths for these and other airports cross over the City, and aircraft flying overhead are occasionally audible; however, aeronautical operations in the area are not considered significant source of noise for the City.

The nearest private airport to the City is Tews Field on Moody Creek Drive, immediately east of the eastern City limit. Properties in the City that are adjacent to the airstrip are proposed for designation as Mixed Use; however, due to topographical constraints and access issues, it is unlikely that development would be proposed immediately adjacent to the airstrip. If development is proposed in this area, the City will consider whether the type of development proposed would be exposed to excessive noise associated with Tews Field.

Industrial Operations

Shasta Gateway Industrial Park, Knauf Insulation Facility, and Surrounding Areas

A primary location that generates noise from industrial activities is in the southwestern area of the City adjacent to Ashby Road south of Pine Grove Avenue (Knauf Insulation), and miscellaneous industrial uses in the Shasta Gateway Industrial Park along Shasta Gateway Drive, Iron Court, and Bronze Court. This area is bound by the UPRR tracks to the west, undeveloped land to the south and east, and the City's Wastewater Treatment Plant (WWTP) to the north and east.

The nearest residential areas are immediately west and southwest of the Knauf Insulation facility in an unincorporated area of Shasta County, along Newtown Road, Pine Cone Drive, and Tiptoe Lane. The nearest residences in the City of Shasta Lake are in the Windsor Estates Subdivision to the east. Common noise generators in this area of the City include the use of trucks, forklifts, heavy machinery, loading and unloading of vehicles and trucks, and the use of back-up alarms. Outdoor mechanical equipment (e.g., heating and air conditioning units, fans, filtration systems, generators, etc.) is also a source of noise, and could be significant if not properly screened. Noise levels near the Knauf Insulation facility are further discussed below under *Noise Measurements and Projections* and *Noise Contours*.

Sierra Pacific Industries Sawmill

The Sierra Pacific Industries sawmill (SPI) on El Cajon Avenue is also a major source of industrial noise. Operations at the mill consist primarily of the milling and drying of lumber. The majority of noise is generated from sawing, planing, unloading and stacking large logs, and from the use of forklifts and trucks with emergency back-up alarms. Outdoor mechanical equipment and the use of other heavy equipment also generate noise from the facility.

SPI is bounded to the north and west by the UPRR tracks, undeveloped land to the south, and Ashby Road to the east. The nearest residences are along El Cajon Avenue, immediately north of SPI, and in the Ranchera Pines Subdivision to the west, immediately west of the UPRR tracks. Single-family residences are also located along Ashby Road south and east of SPI. The Hazelwood Subdivision, with access from Woodley Avenue, is located south of SPI. Central Valley High School is located to the east along Ashby Road. Noise levels near the SPI sawmill are further discussed below under *Noise Measurements* and *Noise Modeling and Contours*.

Other Contributing Noise Sources

Other sources that contribute to the noise environment in the City include activities at parks and school playing fields. Noise levels at these facilities depend on the age and number of people using the facility at any given time, and the type of activities that are occurring. School playground use tends to generate more noise than neighborhood parks because the intensity of activities tends to be much higher. Team sports events and outdoor concerts also generate higher noise levels, especially if amplifiers are used to project sound. Trash collection services also generate increased noise levels; However, collection services occur only one time per week and are not a significant contributing factor to ambient noise levels.

Construction Noise

Construction-related activities, including clearing, grading, building homes and other structures/facilities, installation/replacement of utility lines, street paving, and associated activities, would cause a temporary increase in noise levels in the vicinity of the project. Temporary noise impacts would occur due to an increase in traffic from construction workers commuting to the site, delivery of construction equipment and materials to a project site, and use of equipment and tools.

NOISE MEASUREMENTS

In order to characterize the existing ambient noise environment, RBF Consulting conducted short-term daytime noise measurements on February 4 and 5, 2014, between 9:00 AM to 4:00 PM at ten locations throughout the City. Nighttime noise measurements were taken at three locations on February 4 between the hours of 8:45 PM and 10:27 PM.

Noise levels at the selected sensitive receptor sites were measured using a Brüel & Kjær model 2250 sound level meter (SLM) equipped with Brüel & Kjær pre-polarized freefield microphone, which meets the standards of the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Each measurement was for ten minutes, except for the night noise measurement at Site 2 (UPRR,) which was a one-hour measurement; the sound meter was calibrated prior to noise monitoring.

Noise measurement locations are identified in **Figure 4.13-1** and described below. Detailed results of the noise measurements are included in **Tables 4.13-2 and 4.13-3.**

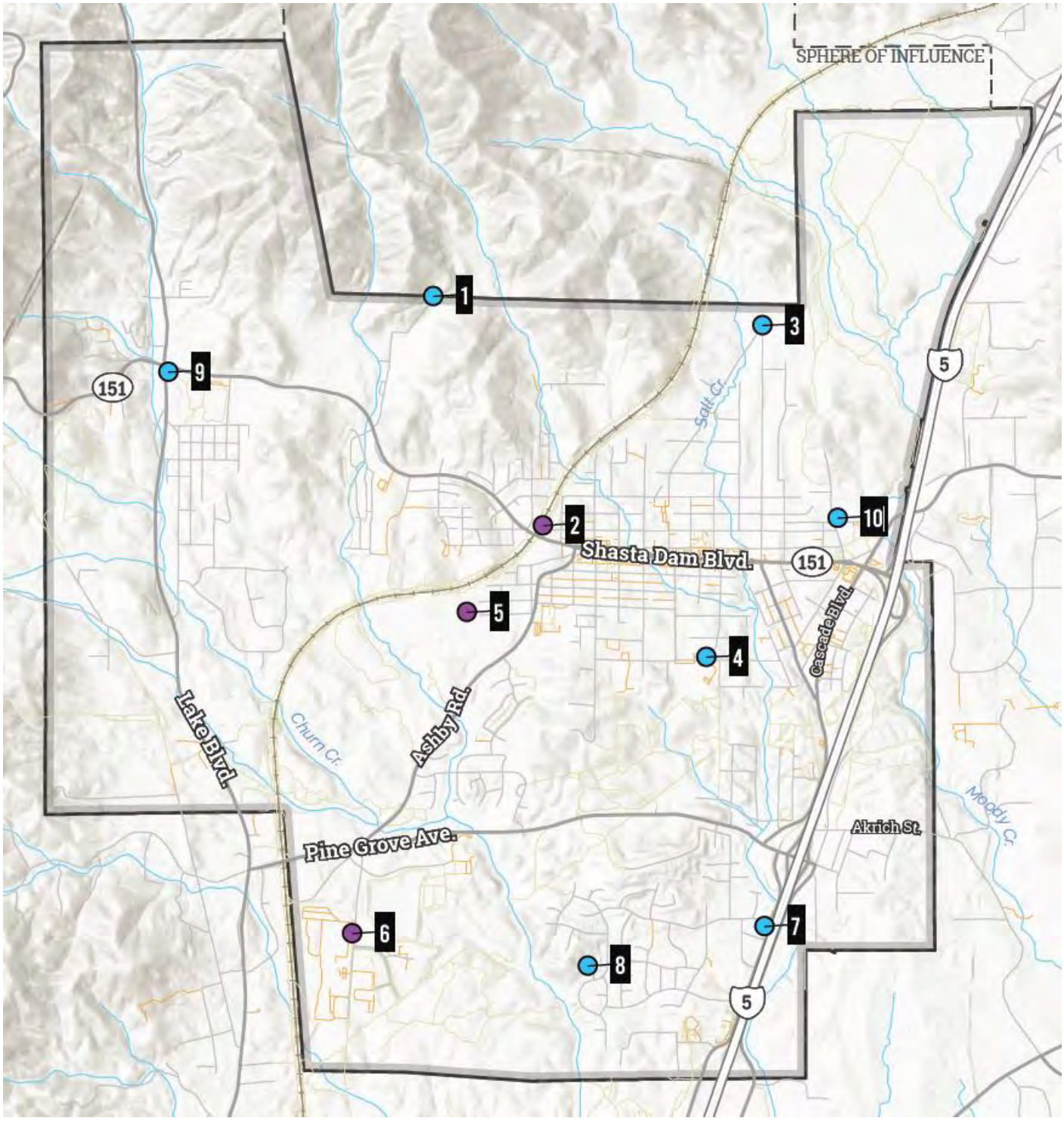


Figure 4.13-1
Noise Measurement Locations

● Daytime Noise Measurement Location
● Day- & Nighttime Noise Measurement Location

- Day Measurement Site 1 was located on the northern shoulder of the Shasta Park Drive/Digger Bay Road intersection, near residential uses to the south. Sources of peak noise included birds chirping, unknown rustling noise in the nearby bushes, and a car driving on Shasta Park Drive. The average noise level at Site 1 was 46.3 dBA.
- Day Measurement Site 2 was located adjacent to the Union Pacific Railroad, to the west of the Lassen Avenue/Main Street intersection. Sources of peak noise included traffic along Shasta Dam Boulevard, and birds chirping. The average noise level was 48.0 dBA.
- Day Measurement Site 3 was located on the west side of Black Canyon Road, in a shoulder/vacant area where the paved portion of Black Canyon Road transitions to a dirt road. Single-family residential uses were located to the east, south, and west. The average noise level was 45.1 dBA, with the majority of noise from dogs barking, birds chirping, and a man talking.
- Day Measurement Site 4 was located on the sidewalk adjacent to a church near the Deer Creek Road/Vallecito Street intersection, across the street from Shasta Lake Elementary School. Sources of peak noise included HVAC units outside of the church, dogs barking, cars pulling in and out of the school parking lot to the south, wind, and cars/traffic on Vallecito Street. The average noise level was 57.2 dBA.
- Day Measurement Site 5 (Sierra Pacific Industries Site) was located adjacent to the Sierra Pacific Industries sawmill, to the north of El Cajon Avenue. Sources of peak noise were from heavy trucks driving along El Cajon Avenue, trucks/heavy equipment on Sierra Pacific Industries property, and machinery. The average noise level was 62.6 dBA.
- Day Measurement Site 6 (Knauf Insultation Facility Site) was located on the eastern shoulder of Ashby Road, across the street from the Knauf Insulation facility (south of Pine Grove Avenue). Sources of peak noise included cars/trucks driving on Ashby Road, heavy trucks on Ashby Road pulling in and out of the industrial/warehousing facility, an unknown buzzing noise, birds chirping, and dogs barking. The average noise level was 55.6 dBA.
- Day Measurement Site 7 was located in a vacant lot adjacent to the Trinity Street/Cascade Boulevard intersection, next to I-5. The average noise level was 67.1 dBA and peak noise included traffic/trucks on I-5, and cars and trucks driving on Trinity Street and Cascade Boulevard.
- Day Measurement Site 8 was located in a residential cul-de-sac (Quigley Drive) in the southern portion of the City. Sources of peak noise included birds chirping, wind chimes, and dogs barking. The average noise level was 43.3 dBA.
- Day Measurement Site 9 was located at a vacant parking lot near Toyon Learning Center and Gateway U.S.D. School, near the Shasta Dam Boulevard/Lake Boulevard intersection. The average noise level was 56.7 dBA with peak noise from cars/traffic on Shasta Dam Boulevard and Lake Boulevard, birds chirping, cars pulling in/out of the school parking lot, and kids talking outside of their classroom.
- Day Measurement Site 10 was located at the Grand Oaks Elementary School parking lot. The average noise level was 59.3 dBA. The source of peak noise included airplanes flying overhead, children at recess, dogs barking, cars on Grand Avenue, and ambient traffic noise from nearby roadways.

- Night Measurement Site 2 was located adjacent to the Union Pacific Railroad, to the west of the Lassen Avenue/Main Street intersection. Sources of peak noise included a train passing by, music from a nearby unknown source, and industrial activities at Sierra Pacific Industries. The average overall noise level (from 8:45 PM to 9:45 PM) was 66.9 dBA. The average noise level generated during the train pass by (9:40 PM to 9:42 PM) was 80.8 dBA.
- Night Measurement Site 5 (Sierra Pacific Industries Site) was located adjacent to Sierra Pacific Industries, to the north of El Cajon Avenue. The average noise level was 58.3 dBA. Sources of peak noise were from machinery and heavy equipment on Sierra Pacific Industries property, and cars/trucks driving on El Cajon Avenue.
- Night Measurement Site 6 (Knauf Insultation Facility Site) was located on the eastern shoulder of Ashby Road, across the street from the Knauf Insulation facility (south of Pine Grove Avenue). Sources of peak noise were from heavy trucks on Ashby Road pulling in/out of an industrial/warehousing facility, an unknown buzzing noise, and machinery/industrial equipment at the industrial/warehousing facility. The average noise level was 52.3 dBA.

Monitoring results for daytime noise measurements are shown in **Table 4.13-2.** Results for nighttime noise measurements are shown in **Table 4.13-3.**

Table 4.13-2
Daytime Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Date and Time *
1	Near the intersection of Shasta Park Dr and Digger Bay Rd	46.3	23.6	69.0	-	February 4, 2014 1:50 PM – 2:04 PM
2	Adjacent to the Union Pacific Railroad (west of Lassen Ave/Main St intersection)	48.0	35.0	72.2	95.4	February 4, 2014 2:17 PM – 2:27 PM
3	Northernmost portion of Black Canyon Rd (where paved road turns to dirt), near single family residence	45.1	25.8	69.9	91.8	February 4, 2014 2:46 PM – 2:56 PM
4	Deer Creek Rd/Vallecito St, near Deer Creek Church of Christ	57.2	51.3	72.5	96.5	February 4, 2014 3:10 PM – 3:20 PM
5	Sierra Pacific Industries	62.6	54.4	76.1	98.5	February 4, 2014 3:28 PM – 3:38 PM
6	Industrial/warehousing facility along Ashby Rd, south of Pine Grove Ave	55.6	40.9	74.6	93.9	February 4, 2014 3:48 PM – 3:58 PM
7	Vacant lot adjacent to Trinity St/Cascade Boulevard intersection (adjacent to I-5)	67.1	49.0	80.5	99.4	February 5, 2014 9:21 AM – 9:31 AM
8	Cul-de-sac in residential neighborhood (Quigley Court) in southern portion of City	43.3	28.1	75.1	100.9	February 5, 2014 9:42 AM – 9:52 AM

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Date and Time *
9	Vacant parking lot near Mt. Lakes High School (near Shasta Dam Blvd/Lake Blvd intersection)	56.7	29.5	75.0	92.2	February 5, 2014 10:46 AM – 10:56 AM
10	Grand Oaks Elementary School parking lot	59.3	75.9	38.7	103.1	February 5, 2014 11:15 AM – 11:25 AM
* Each ten-minute measurement was taken during non-peak traffic hours because free flowing traffic conditions yield higher noise levels, as opposed to rush hour traffic during peak hours when vehicle speeds and heavy truck volumes are low.						

Source: RBF Consulting, February 4 and 5, 2014

Table 4.13-3
Nighttime Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Date and Time *
2	Adjacent to the Union Pacific Railroad (west of Lassen Ave/Main St intersection)	66.9 ** (overall)	40.4 **	91.6 **	103.5	February 4, 2014 8:45 PM – 9:45 PM
		80.8 ** (train passby)	63.0 **	91.6 **	103.5	February 4, 2014 9:40 PM – 9:42 PM
5	Sierra Pacific Industries	58.3	50.3	74.5	99.9	February 4, 2014 9:58 PM – 10:08 PM
6	Industrial/warehousing facility along Ashby Rd, south of Pine Grove Ave	52.3	48.0	75.2	96.7	February 4, 2014 10:17 PM – 10:27 PM
* Each ten-minute measurement was taken during non-peak traffic hours because free flowing traffic conditions yield higher noise levels, as opposed to rush hour traffic during peak hours when vehicle speeds and heavy truck volumes are low. ** Noise levels based on an approximate distance of 75 feet to the UPRR track centerline.						

Source: RBF Consulting, February 4, 2014

NOISE MODELING AND CONTOURS

Noise Contours

The City prepared noise contour maps to demonstrate existing noise conditions in the City associated with relevant sources of concern, which include traffic, the UPRR line, the SPI sawmill on El Cajon Avenue, and the Knauf Insulation facility on Ashby Road.

Figure 4.13-2 shows general traffic noise contours for I-5, Pine Grove Avenue, Lake Boulevard, and Ashby Road (60, 65, 70, and 75 dB CNEL). As would be expected, the highest levels of traffic noise are generated by I-5 where traffic volumes are the highest. **Figure 4.13-2** also shows the existing noise contours for the UPRR line.

Figure 4.13-3 identifies existing noise contours for the SPI facility; **Figure 4.13-4** shows existing noise contours for the Knauf Insulation facility. Contours for these facilities are shown for the 45, 50, 55, and 60 dBA Leq contours.

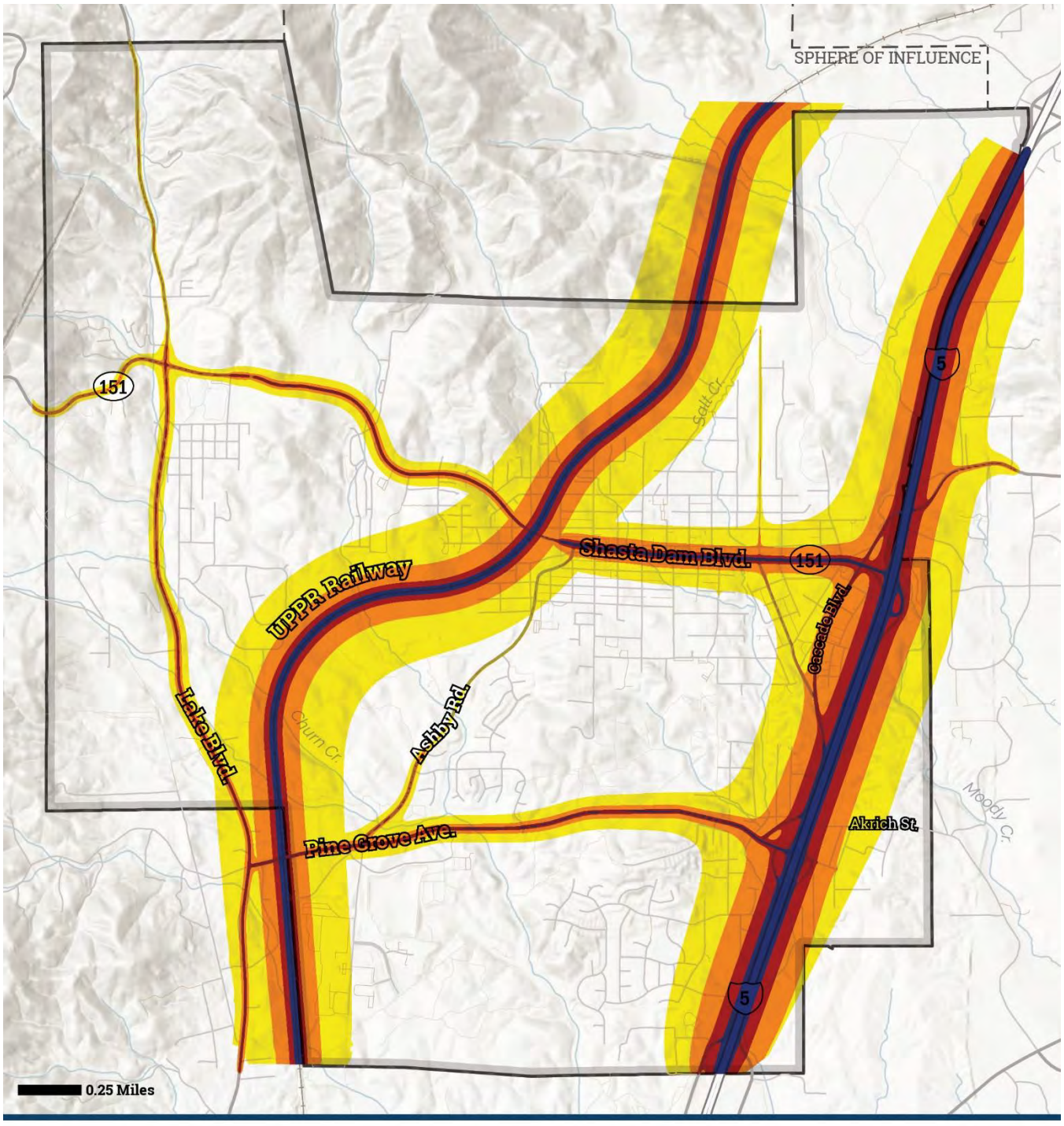


Figure 4.13-2
Existing Roadway and Railroad Noise Contours

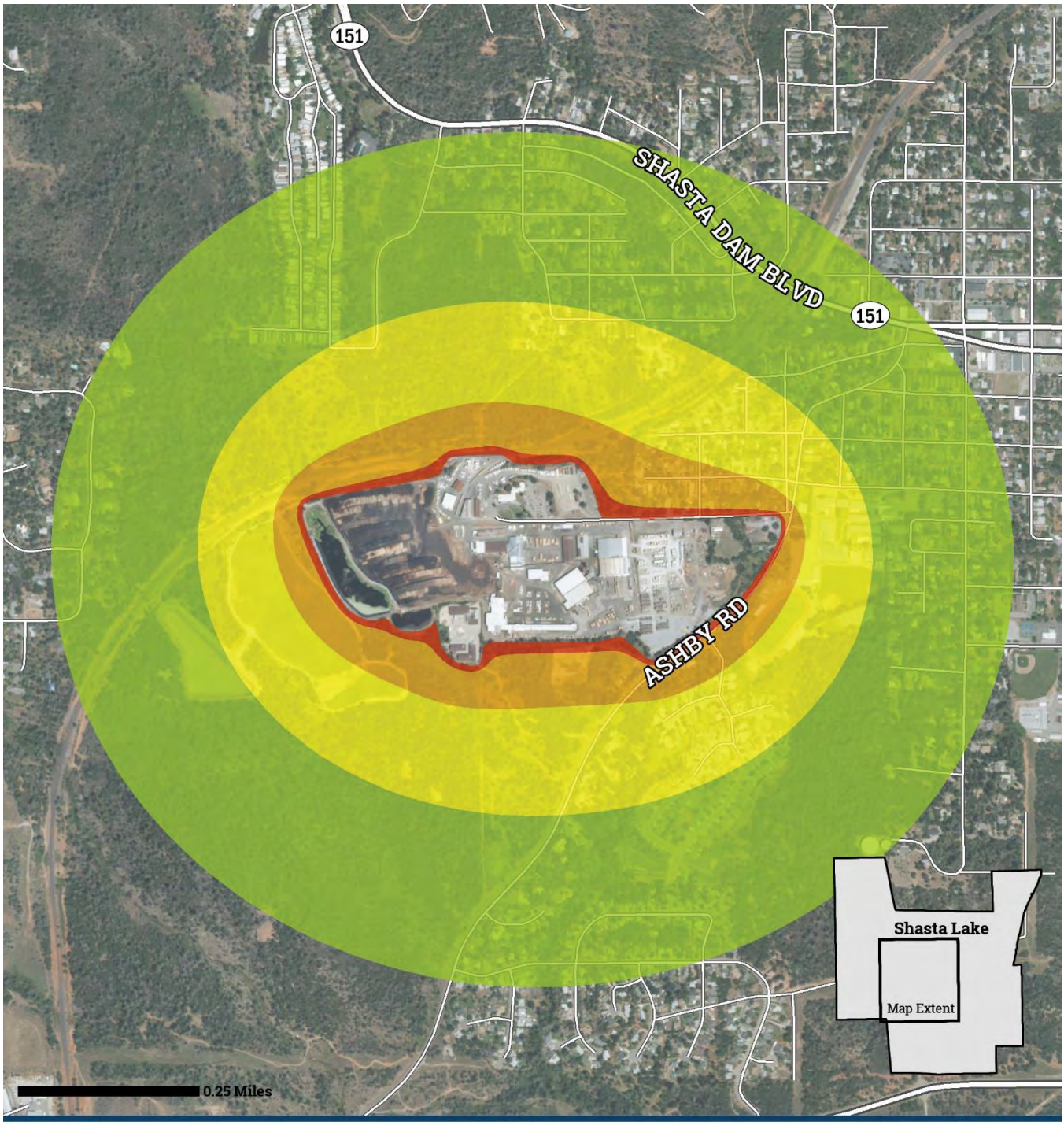


Figure 4.13-3
Sierra Pacific Industries Facility Noise Contours

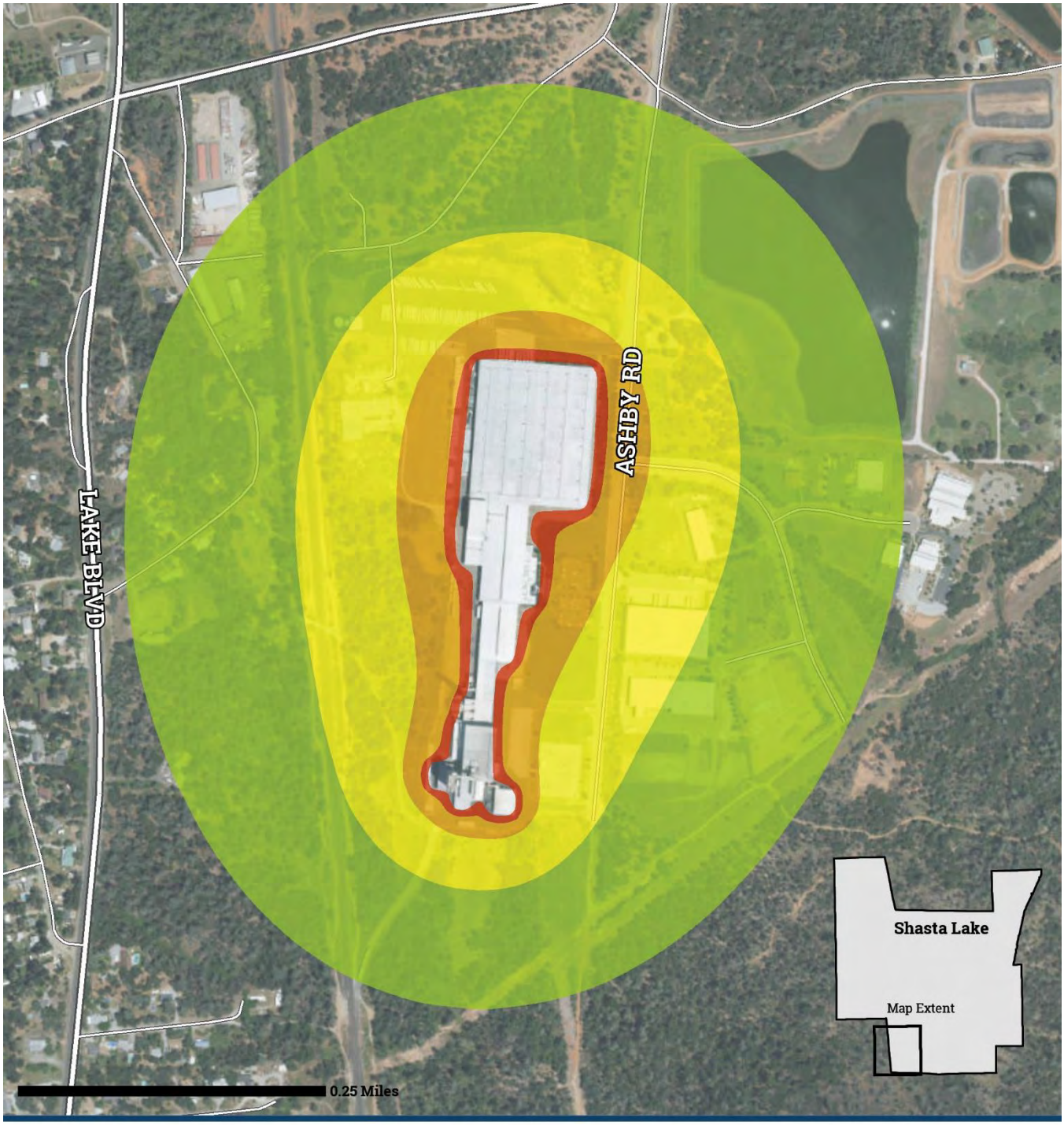


Figure 4.13-4
Knauf Insulation Facility Noise Contours

Table 4.13-4 identifies assumptions that were used for the traffic noise modeling.

Table 4.13-4
Roadway Modeling Assumptions
Existing and Future Estimated Traffic Volumes

Roadway	Segment	Existing ADT	Future (2040) Estimated ADTs	Speed (mph)	Roadway Type
Shasta Dam Blvd (SR 151)	Shasta Lake City Limit to Lake Blvd[1]	1,502	2,537	45	2-Lane Undivided Arterial
Shasta Dam Blvd (SR 151)	Lake Blvd to Sacramento St	1,502	2,537	45	2-Lane Undivided Arterial
Shasta Dam Blvd (SR 151)	Sacramento St to North Blvd[1]	4,206	5,756	45	2-Lane Undivided Arterial
Shasta Dam Blvd (SR 151)	North Blvd to Lassen Ave	4,206	5,756	30	2-Lane Undivided Arterial
Shasta Dam Blvd (SR 151)	Lassen Ave to Nell Orr St[1]	12,032	13,001	40	2-Lane Undivided Arterial
Shasta Dam Blvd (SR 151)	Nell Orr St to Shasta Way	12,032	13,001	40	2-Lane Undivided Arterial
Shasta Dam Blvd (SR 151)	Shasta Way to Cascade Blvd	13,300	14,269	40	4-Lane Divided Arterial
I-5 NB Off-On Ramp	Shasta Dam Blvd east of Cascade Blvd	13,064	15,502	40	4-Lane Divided Arterial
Red Bluff St	Montana Ave to Locust Ave	103	243	25	Residential Collector
Red Bluff St	Grand River Ave to Washington Ave	315	330	25	Residential Collector
Main St	Montana Ave to Locust Ave	166	186	25	Residential
Main St	Grand River Ave to Washington Ave	215	226	25	Residential
La Mesa Ave	Lassen Ave to San Gorgonio Ave	695	729	25	Residential Collector
Vallecito St	Montana Ave to Hardenbrook Ave	599	1,119	25	Residential Collector
Vallecito St	Ellen Dr to Washington Ave	1,049	1,348	25	Residential Collector
Coeur D'Alene Ave	Ashby Rd to D'Alene Ave	400	476	25	Residential
Pine Grove Ave	Lake Blvd to Ashby Rd[1]	3,865	5,632	50	2-Lane Undivided Arterial
Pine Grove Ave	Ashby Rd to Coeur D'Alene Ave	3,809	4,601	50	2-Lane Divided Arterial

Roadway	Segment	Existing ADT	Future (2040) Estimated ADTs	Speed (mph)	Roadway Type
Pine Grove Ave	Coeur D'Alene Ave to Smith Ave (S)	4,901	7,932	50	2-Lane Divided Arterial
Pine Grove Ave	Smith Ave to Cascade Blvd (N)	5,036	5,828	50	2-Lane Divided Arterial
Pine Grove Ave	Cascade Blvd (N) to Virginia Ave[1]	5,036	5,828	50	2-Lane Divided Arterial
Pine Grove Ave	Virginia Ave to Marilyn Ave	516	1,308	25	2-Lane Undivided Arterial
Pine Grove Ave	Marilyn Ave to Leona Ave1	516	1,308	25	2-Lane Undivided Arterial
Akrich St	Virginia Ave to Marilyn Ave	548	1,943	25	2-Lane Undivided Arterial
Trinity St	Butterfly Lane to Sioux Dr	1,142	1,474	25	Residential Collector
Lake Blvd	North of Mason Dr[1]	1,051	1,353	35	2-Lane Undivided Arterial
Lake Blvd	Mason Dr to Duval Dr	1,051	1,353	35	2-Lane Undivided Arterial
Lake Blvd	Duval Dr to Buckeye St[1]	1,870	2,178	50	4-Lane Undivided Arterial
Lake Blvd	Buckeye St to Hill Blvd	1,870	2,178	50	4-Lane Undivided Arterial
Lake Blvd	Hill Blvd to Flanagan Rd	2,582	2,709	50	2-Lane Undivided Arterial
Lake Blvd	Flanagan Rd to Construction Way[1]	2,810	2,948	50	2-Lane Undivided Arterial
Lake Blvd	Shasta Lake City Limit to Construction Way	2,810	2,948	50	2-Lane Undivided Arterial
Ashby Rd	South of Shasta Dam Blvd to Flower St	2,889	3,088	25	2-Lane Collector
Ashby Rd	Flower St to San Gorgonio Ave[1]	2,889	3,088	25	2-Lane Collector
Ashby Rd	San Gorgonio Ave to Los Gatos Ave	2,470	2,876	25	2-Lane Collector
Ashby Rd	Los Gatos Ave to Arlene Court	2,470	2,876	25	2-Lane Collector
Ashby Rd	Arlene Court to Coeur D'Alene Ave	2,310	2,524	50	2-Lane Collector
Ashby Rd	Coeur D'Alene Ave to Pine Grove Ave[1]	2,310	2,524	50	2-Lane Collector
Montana Ave	Main St to Front St	351	378	25	2-Lane Collector

Roadway	Segment	Existing ADT	Future (2040) Estimated ADTs	Speed (mph)	Roadway Type
Montana Ave	Shasta Dam Blvd to La Mesa Ave	1,069	1,121	25	Residential Collector
Black Canyon Rd	North of Mussel Shoals Rd[1]	253	316	25	Residential Collector
Black Canyon Rd	Arrow Rock St to Pensacola St	253	316	25	Residential Collector
McConnel Ave	Main St to Front St	265	278	25	2-Lane Collector
Cabello St	Shasta Dam Blvd to La Mesa Ave	704	739	25	Residential
Cabello St	Bonneville St to Vallecito St	492	524	25	2-Lane Collector
Median Ave	Front St to Shasta Dam Blvd	1,205	1,264	25	Residential Collector
Mussel Shoals Ave	Black Canyon Rd to Chico St[1]	760	963	25	Residential Collector
Mussel Shoals Ave	Chico St to Main St	760	963	25	Residential Collector
Mussel Shoals Ave	Main St to Front St[1]	828	1,036	25	2-Lane Collector
Mussel Shoals Ave	Front St to Shasta Dam Blvd	828	1,036	25	2-Lane Collector
Grand Coulee Blvd	Shasta Dam Blvd to Fort Peck St	774	895	35	Residential Collector
Grand Coulee Blvd	Fort Peck St to Boulder St	701	832	35	Residential Collector
Grand Coulee Blvd	Boulder St to Cascade Blvd[1]	701	832	35	Residential Collector
Shasta Way	Front St to Shasta Dam Blvd	743	1,409	25	Residential Collector
Shasta St	Shasta Dam Blvd to Fort Peck St	632	829	25	2-Lane Undivided Arterial
Cascade Blvd	North of Kennett St[1]	2,066	2,438	40	2-Lane Undivided Arterial
Cascade Blvd	Kennett St to Shasta Dam Blvd	2,066	2,438	40	2-Lane Undivided Arterial
Cascade Blvd	Shasta Dam Blvd to Second St	4,123	5,045	40	2-Lane Undivided Arterial
Cascade Blvd	Second St to Fell St[1]	4,123	5,045	40	2-Lane Undivided Arterial
Cascade Blvd	Fell St to Cottage Ave	2,955	3,877	40	2-Lane Undivided Arterial
Cascade Blvd	Cottage Ave to Pine Grove Ave	3,012	4,437	40	2-Lane Undivided Arterial

Roadway	Segment	Existing ADT	Future (2040) Estimated ADTs	Speed (mph)	Roadway Type
Cascade Blvd	Pine Grove Ave to Riddle Rd[1]	3,012	4,437	40	2-Lane Undivided Arterial
Cascade Blvd	Riddle Rd to Arrowhead Ave	3,058	3,236	40	2-Lane Undivided Arterial
Virginia Ave	Akrich St to Pine Grove Ave	1,126	2,521	25	2-Lane Collector
Twin View Blvd	Virginia Ave to Poppy Lane	652	684	40	2-Lane Collector
Twin View Blvd	Poppy Lane to Mendocino St[1]	652	684	40	2-Lane Collector
Twin View Blvd	Mendocino St to Shasta Lake City Limit	438	1,911	40	2-Lane Collector
Deer Creek Rd	Deer Creek Rd South of Shasta Dam Blvd[1]	315	330	25	Major Collector
Interstate 5	North of Shasta Dam Blvd	22,600	32,300	65	Freeway
	Shasta Dam Blvd to Pine Grove Ave	31,000	44,400	65	Freeway
	Pine Grove Ave to Arrowhead Ave	35,500	50,800	65	Freeway

Source: Existing and GP Buildout traffic volumes and roadway types obtained from the Shasta Lake General Plan Update Traffic Impact Analysis, Ganddini Group, Inc. (May 9, 2022) and Caltrans count data found at https://dot.ca.gov/programs/traffic-operations/census (accessed on June 20, 2022).

(1) Average daily vehicle trips for these segments were not provided in the Traffic Analysis (Ganddini Group, May 9, 2022). Therefore, to be conservative, the average daily vehicle trips for these segments was assumed to be the highest of the segments located adjacent to the North/South or East/West of these segments; however, the segment of Deer Creek Road was estimated based on a similar roadway, Red Bluff Street.

Vehicle Mix
For Interstate 5
North of 151 - Caltrans Mix - 68.3% Autos, 8.9% Medium Trucks, & 22.8% Heavy Trucks
Pine Grove Avenue to 151 - Caltrans Mix - 76.9% Autos, 6.3% Medium Trucks, & 16.8% Heavy Trucks
Oasis to Pine Grove Avenue - Caltrans Mix - 79.5% Autos, 5.6% Medium Trucks, & 14.9% Heavy Trucks
For Shasta Dam Boulevard (151)
Lake Boulevard to Lassen Avenue vehicle mix from Caltrans - 95.3% Autos, 3.6% Medium Trucks, & 1.1% Heavy Trucks
Nell Orr St to Cascade Blvd vehicle mix from Caltrans - 96.8% Autos, 2% Medium Trucks, & 1.2% Heavy Trucks
For all other roadways
Light mix - 97% Autos, 2% Medium Trucks, & 1% Heavy Trucks
Heavy mix - 95% Autos, 3% Medium Trucks, & 2% Heavy Trucks

Table 4.13-5 identifies the existing modeled traffic noise levels at 100 feet from the centerline of the identified roadway segment (dBA CNEL) and identifies the distance from the roadway centerline to the 60, 65, 70, and 75 dB CNEL contours.

Table 4.13-5
Existing Modeled Traffic Noise Levels

Roadway	Segment	Noise Level at 100 feet from Centerline (dBA CNEL)	Distance to Contours (feet)			
			75	70	65	60
Shasta Dam Blvd (SR 151)	Shasta Lake City Limit to Lake Blvd	60.1	10	22	47	102
Shasta Dam Blvd (SR 151)	Lake Blvd to Sacramento St	60.1	10	22	47	102
Shasta Dam Blvd (SR 151)	Sacramento St to North Blvd	62.0	14	29	63	136
Shasta Dam Blvd (SR 151)	North Blvd to Lassen Ave	58.7	8	18	38	82
Shasta Dam Blvd (SR 151)	Lassen Ave to Nell Orr St	61.0	12	25	54	116
Shasta Dam Blvd (SR 151)	Nell Orr St to Shasta Way	61.0	12	25	54	116
Shasta Dam Blvd (SR 151)	Shasta Way to Cascade Blvd	66.0	25	54	116	251
I-5 NB Off-On Ramp	Shasta Dam Blvd east of Cascade Blvd	59.4	-	20	42	91
Red Bluff St	Montana Ave to Locust Ave	39.7	0	1	2	4
Red Bluff St	Grand River Ave to Washington Ave	44.5	1	2	4	9
Main St	Montana Ave to Locust Ave	41.8	1	1	3	6
Main St	Grand River Ave to Washington Ave	42.9	1	2	3	7
La Mesa Ave	Lassen Ave to San Gorgonio Ave	48.0	2	3	7	16
Vallecito St	Montana Ave to Hardenbrook Ave	47.3	1	3	7	14
Vallecito St	Ellen Dr to Washington Ave	49.8	2	4	10	21
Coeur D'Alene Ave	Ashby Rd to D'Alene Ave	45.6	1	2	5	11
Pine Grove Ave	Lake Blvd to Ashby Rd	64.9	21	46	99	213
Pine Grove Ave	Ashby Rd to Coeur D'Alene Ave	64.9	21	45	98	211
Pine Grove Ave	Coeur D'Alene Ave to Smith Ave (S)	66.0	25	54	116	249
Pine Grove Ave	Smith Ave to Cascade Blvd (N)	66.1	25	55	118	254

Roadway	Segment	Noise Level at 100 feet from Centerline (dBA CNEL)	Distance to Contours (feet)			
			75	70	65	60
Pine Grove Ave	Cascade Blvd (N) to Virginia Ave	66.1	25	55	118	254
Pine Grove Ave	Virginia Ave to Marilyn Ave	52.1	3	6	14	30
Pine Grove Ave	Marilyn Ave to Leona Ave	52.1	3	6	14	30
Akrich St	Virginia Ave to Marilyn Ave	52.4	3	7	14	31
Trinity St	Butterfly Lane to Sioux Dr	50.1	2	5	10	22
Lake Blvd	North of Mason Dr	57.0	6	14	29	63
Lake Blvd	Mason Dr to Duval Dr	57.0	6	14	29	63
Lake Blvd	Duval Dr to Buckeye St	61.8	13	28	61	131
Lake Blvd	Buckeye St to Hill Blvd	61.8	13	28	61	131
Lake Blvd	Hill Blvd to Flanagan Rd	57.7	7	15	33	70
Lake Blvd	Flanagan Rd to Construction Way	58.0	7	16	34	73
Lake Blvd	Shasta Lake City Limit to Construction Way	63.5	17	37	80	172
Ashby Rd	South of Shasta Dam Blvd to Flower St	49.5	2	4	9	20
Ashby Rd	Flower St to San Gorgonio Ave	54.2	4	9	19	41
Ashby Rd	San Gorgonio Ave to Los Gatos Ave	53.5	4	8	17	37
Ashby Rd	Los Gatos Ave to Arlene Court	53.5	4	8	17	37
Ashby Rd	Arlene Court to Coeur D'Alene Ave	59.3	9	19	42	90
Ashby Rd	Coeur D'Alene Ave to Pine Grove Ave	59.3	9	19	42	90
Montana Ave	Main St to Front St	45.0	1	2	5	10
Montana Ave	Shasta Dam Blvd to La Mesa Ave	49.8	2	5	10	21
Black Canyon Rd	Arrow Rock St to Pensacola St	43.6	1	2	4	8
Black Canyon Rd	North of Mussel Shoals Rd	43.6	1	2	4	8
McConnel Ave	Main St to Front St	43.8	1	2	4	8
Cabello St	Shasta Dam Blvd to La Mesa Ave	48.0	2	3	7	16
Cabello St	Bonneville St to Vallecito St	46.5	1	3	6	13
Median Ave	Front St to Shasta Dam Blvd	50.4	2	5	11	23
Mussel Shoals Ave	Black Canyon Rd to Chico St	48.4	2	4	8	17

Roadway	Segment	Noise Level at 100 feet from Centerline (dBA CNEL)	Distance to Contours (feet)			
			75	70	65	60
Mussel Shoals Ave	Chico St to Main St	48.4	2	4	8	17
Mussel Shoals Ave	Main St to Front St	48.7	2	4	8	18
Mussel Shoals Ave	Front St to Shasta Dam Blvd	48.7	2	4	8	18
Grand Coulee Blvd	Shasta Dam Blvd to Fort Peck St	51.2	3	6	12	26
Grand Coulee Blvd	Fort Peck St to Boulder St	50.8	2	5	11	24
Grand Coulee Blvd	Boulder St to Cascade Blvd	50.8	2	5	11	24
Shasta Way	Front St to Shasta Dam Blvd	48.3	2	4	8	16
Shasta St	Shasta Dam Blvd to Fort Peck St	47.6	1	3	7	15
Cascade Blvd	North of Kennett St	50.8	11	24	52	113
Cascade Blvd	Kennett St to Shasta Dam Blvd	60.8	11	24	52	113
Cascade Blvd	Shasta Dam Blvd to Second St	63.8	18	38	83	178
Cascade Blvd	Second St to Fell St	63.8	18	38	83	178
Cascade Blvd	Fell St to Cottage Ave	62.3	14	31	66	143
Cascade Blvd	Cottage Ave to Pine Grove Ave	62.4	14	31	67	145
Cascade Blvd	Pine Grove Ave to Riddle Rd	62.4	14	31	67	145
Cascade Blvd	Riddle Rd to Arrowhead Ave	62.5	15	31	68	146
Virginia Ave	Akrich St to Pine Grove Ave	50.1	2	5	10	22
Twin View Blvd	Virginia Ave to Poppy Lane	51.7	3	6	13	28
Twin View Blvd	Poppy Lane to Mendocino St	51.7	3	6	13	28
Twin View Blvd	Mendocino St to Shasta Lake City Limit	50.0	2	5	10	21
Deer Creek Rd	Deer Creek Rd South of Shasta Dam Blvd	44.5	1	2	4	9
Interstate 5	North of SR 151	79.1	187	402	866	1,867
	Shasta Dam to Pine Grove	79.3	194	418	900	1,939
	Pine Grove Ave to Arrowhead Ave	79.5	199	429	924	1,991

4.13.3 Regulatory Framework

FEDERAL

Environmental Protection Agency (EPA), Federal Noise Control Act of 1972

The Noise Control Act of 1972 created a national policy to protect all Americans from noise levels that could adversely affect their health or welfare. In establishing the Noise Control Act, the EPA found that exterior noise levels in residential areas that did not exceed 55 dBA L_{dn} and interior noise levels that did not exceed 45 dBA L_{dn} would not interfere with sleep, speech, and other types of activity. The EPA also found that 5 dBA is an adequate margin of safety before the increase in noise level results in a significant increase, provided that existing noise levels did not exceed 55 dBA L_{dn}.

Department of Housing and Urban Development (HUD)

HUD-funded new residential projects in areas with noise levels that exceed 65 dBA L_{dn} must incorporate noise attenuation features to maintain acceptable interior noise levels. HUD's standard is that noise sensitive interior spaces in residences not exceed 45 dB L_{dn}; HUD's standard for outdoor noise levels is a maximum of 65 dB L_{dn} (Code of Federal Regulations (CFR) Title 24, Part 51).

Federal Highway Administration (FHWA)

The FHWA has established standards for completing noise assessment studies for federal highway projects and federally funded highway projects. Noise abatement measures must be implemented if a project will cause a significant increase in noise levels, or if a projected noise level approaches or exceeds noise abatement criteria for activities occurring on lands adjacent to the project.

STATE

California Department of Transportation (Caltrans)

Projects receiving federal transportation funds that are administered by Caltrans are subject to the following Caltrans standard specification for construction noise:

- Do not exceed 86 dBA L_{max} at 50 feet from the job site activities from 9:00 PM to 6:00 AM.

California Noise Control Act

The California Noise Control Act (California Health and Safety Code §46000 *et seq.*) acknowledges that the State has a responsibility to protect the health and welfare of its citizens by controlling, preventing, and abating noise. The Act encourages local agencies to enact and enforce noise ordinances and establish technically sufficient noise abatement measures.

California Government Code §65302(f), General Plan Noise Elements

California Government Code §65302(f) requires a Noise Element to be included in all city and county General Plans. The Noise Element must identify and appraise major noise sources in the community (e.g., highways and freeways, airports, railroad operations, local industrial plants, etc.).

The California Governor's Office of Planning and Research (OPR) prepared guidelines for completion of General Plans, including Noise Elements (OPR, 2017). The guidelines include noise compatibility recommendations for various land uses to provide the community with a means of

determining whether a noise level for a particular land use is normally acceptable, conditionally acceptable, normally unacceptable, or clearly unacceptable. These guidelines are shown in **Figure 4.13-5**. The noise compatibility recommendations are used as a guide for establishing the community's noise sensitivity standards.

The Noise Element must include a noise contour diagram that depicts major noise sources in the community for purposes of establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise.

Noise contours must be shown for highways/freeways, primary arterials and major local streets, passenger and freight online railroad operations, aviation-related operations, local industrial plants, and other ground stationary sources identified by local agencies. The Noise Element must include implementation measures and possible solutions that address existing and foreseeable noise levels. The Noise Element serves as a guideline for compliance with the State's noise insulation standards.

California Building Code

The CBC (CCR Title 24, Part 2) includes noise insulation standards that apply to all new construction. The CBC requires that interior noise levels attributable to exterior sources not exceed 45 dB in any habitable room.

The Code also specifies that multi-family residential buildings or structures that will be located within exterior CNEL (or Ldn) contours of 60 dB or greater of sources such as a freeway, expressway, parkway, major street, thoroughfare, airport, rail line, or industrial noise source shall require an acoustical analysis showing that the building has been designed to limit intruding noise to an interior CNEL (or Ldn) of 45 dB.

Worst case noise levels must be used to determine compliance. Predictions must also be made for future noise levels for a period of at least ten years from the time of building permit application. The noise metric (i.e., day-night average sound level [Ldn] or the community noise equivalent level [CNEL]) must be consistent with the Noise Element of the jurisdiction's general plan. Compliance with the noise insulation standards is verified through the building permit process.

LOCAL

Shasta Lake Municipal Code

Shasta Lake Municipal Code (SLMC) Title 17 (Zoning) and the City's Land Use Map establish a land use pattern that provides a separation between noise-intensive land uses, such as industrial facilities, and sensitive receptors, such as residences. On-site performance standards are included in the Zoning Code for the Mixed-Use, Commercial-Light Industrial, and Light Industrial zoning districts to ensure that uses do not create vibration detectable without instruments at the property line, and that projects comply with applicable federal, State, and local noise standards.

Any use that has a potential to generate unacceptable noise levels in the Public Facilities, Light Industrial, General Industrial, and Shasta Gateway Industrial Park Planned Development zoning districts are required to obtain a use permit from the Planning Commission. Through the use permit and CEQA review processes, mitigation measures are imposed as necessary to ensure compliance with the City's noise level standards.

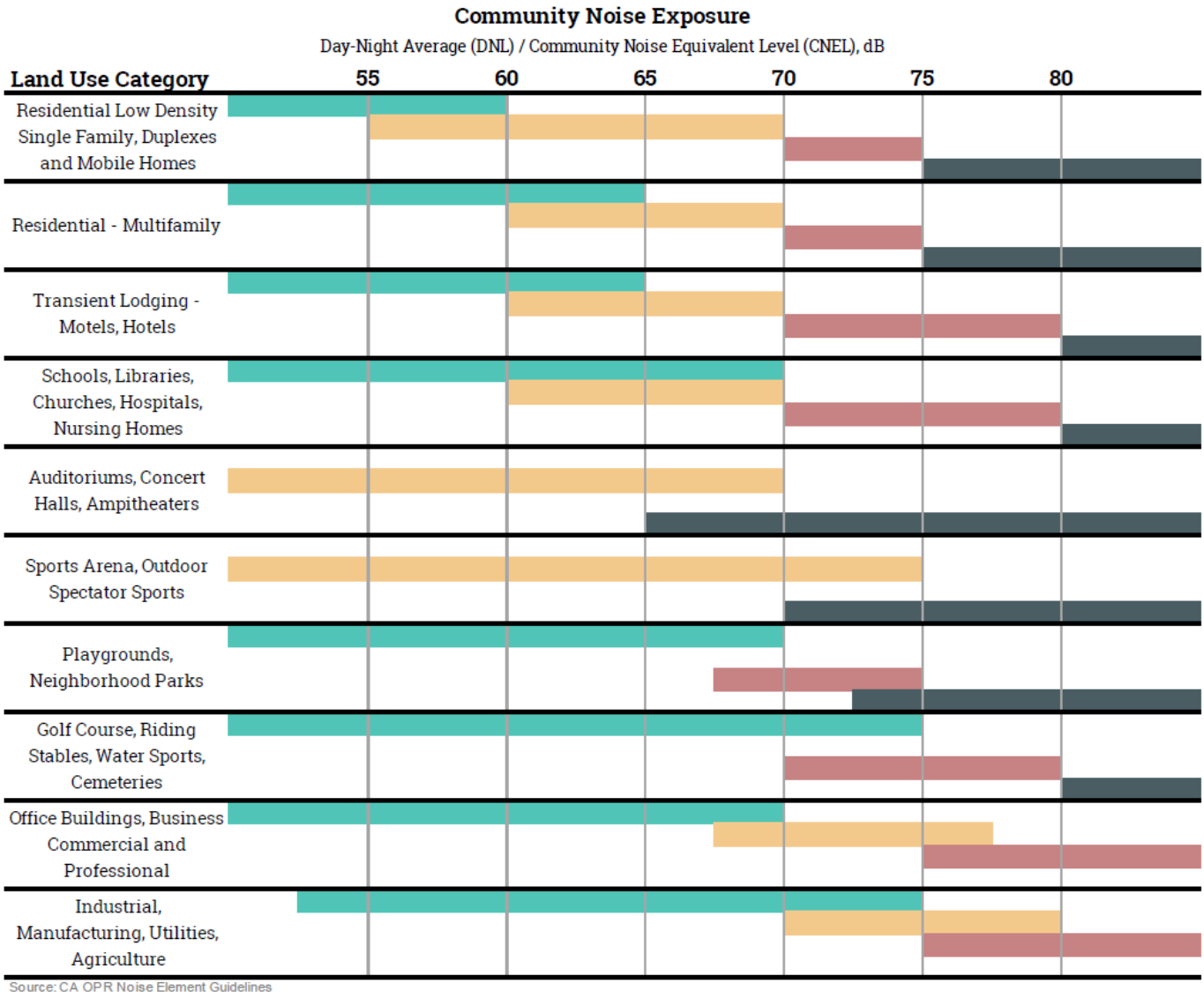


Figure 4.13-5
Noise Compatibility Guidelines

4.13.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to noise.

GOAL HS-8	**Protect the community from excessive noise.**	
POLICIES	HS-8.1	Protect the community from excessive noise through thoughtful siting and adequate buffering where new uses have the potential to cause negative noise impacts on health and wellness.
	HS-8.2	Protect noise-sensitive uses and areas from significant sources of noise, including from transportation and stationary noise-generating uses.
	HS-8.3	New development shall use appropriate site planning and building design to reduce undesirable noise impacts in accordance with standards established through the Noise Ordinance.
	HS-8.4	The noise sensitivity of land uses as established in Figure 7-24 [Figure 4.13-5 of this Draft PEIR] shall be used in the location of new development, new circulation improvements, and preparation of general plan amendments and specific plans. The noise exposure level shall be established by reference to the noise contour maps (Figure 7-26 and Figure 7-27) [Figures 4.13-2, 4.13-3, 4.13-4, and 4.13-7 of this Draft PEIR] or project-specific measurements or calculations made pursuant to the Noise Ordinance. The guidelines in Figure 7-24 [Figure 4.13-5 of this Draft DEIR] shall be with the degree of flexibility required in each case to achieve a sound and feasible land use decision.
IMPLEMENTATION ACTIONS	HS-8.1	Buffer noise-sensitive uses and areas adjacent to existing and new sources of noise, such as Interstate 5 and industrial areas and uses, through the implementation of various methods, including but not limited to: • Establishing land use compatibility standards; • Enforcing Noise standards; • Insulating or buffering residences exposed to excessive levels of noise; • Minimizing traffic noise through responsive site design techniques and physical barriers; and • Regulating new development to limit noise impacts through site and building design and operational conditions.
	HS-8.2	Design new transportation system improvements to minimize noise impacts on adjacent land uses and mitigate significant noise impacts from existing transportation routes.
	HS-8.3	Coordinate with Caltrans to obtain landscaping or other types of improvements needed to reduce highway traffic noise impacts on existing and future residential areas and other sensitive uses along state-routes and highways.
	HS-8.4	Condition approval of all new development in residential areas on the use of noise mitigation measures to reduce exterior sound levels to less than or equal to 60 dB CNEL.

	HS-8.5	Where noise mitigation measures are anticipated to be needed based on review of a project, require that project applicants secure the services of a qualified acoustical engineer to perform a detailed technical study and to design mitigation measures.
	HS-8.6	Site-specific noise studies shall be prepared for noise sensitive development projects anticipated to be affected by elevated noise exposure levels. Generalized noise contours are shown on the Noise Contour Maps [Figures 4.13-2, 4.13-3, 4.13-4, and 4.13-7 of this Draft PEIR] and serve as a "trigger" indicating where future study is advisable.
	HS-8.7	Control noise at the source through use of insulation, berms, building design and orientation, buffer yards, staggered operating hours, and other techniques; where necessary, use noise barriers to attenuate noise to acceptable levels; require that barriers are landscaped to reduce negative visual impacts on the community when necessary.
	HS-8.8	Encourage noise attenuation programs that avoid visible sound walls, where practical. Open space, parking, accessory buildings, frontage roads, and landscaping can be used to buffer development from noise.
GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU-3.8	Require that new industrial development be designed to avoid adverse impacts to adjacent non-industrial uses, including noise, dust, vibration, water quality, air quality, agricultural resources, and biological resources.
	LU-3.19	Limit residential development and require adequate setbacks or other physical improvements for development next to Interstate 5 to reduce public health impacts from interstate traffic, such as noise and air pollution.

4.13.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact related to noise/vibration if it would:

1. Cause a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance or of applicable standards of other agencies.

2. Cause excessive groundborne vibration or groundborne noise levels.

3. Expose people residing or working in the project area to excessive noise levels from a private airstrip.

4. For projects within the boundaries of an airport land use plan area, or, in areas where such a plan has not been adopted, within two miles of a public airport or a public use airport, expose people residing or working in the project area to excessive noise levels.

4.13.6 Issues Not Discussed Further

As stated in Section 4.13.2 (Environmental Setting), the nearest public airports or public use airports to the City of Shasta Lake are Redding Municipal Airport, ±10 miles southeast of the City, and Benton Field, ±5.5 miles southwest of the City.

According to City of Redding GIS data (City of Redding, 2022), no portion of the City of Shasta Lake is located within the 60 decibel (dB) community noise level equivalent (CNEL) noise contour boundaries of either of these airports. Therefore, implementation of the Shasta Lake 2040 General Plan would have no impacts associated the noise from a public airport of public use airport, and this issue is not further discussed.

4.13.7 Impact Analysis and Mitigation Measures

Impact 4.13-1	**Implementation of the 2040 General Plan could cause a substantial temporary or permanent increase in ambient noise levels in excess of standards established in the local general plan or of applicable standards of other agencies.** ***Less-than-Significant Impact***

Development under the Shasta Lake 2040 General Plan would result in temporary increases in noise during construction as well as long-term operational noise, which could result in adverse impacts on sensitive receptors. Areas that may contain high concentrations of noise-sensitive receptors in the City include residential areas, schools, day care centers, and long-term residential care/skilled nursing facilities.

A change in noise levels of 1 dBA generally cannot be perceived by humans; a 3 dBA change is considered to be a barely noticeable difference; a 5 dBA change is typically noticeable; and a 10 dBA increase is considered to be a doubling in loudness.

If the increase in noise exposure level is greater than 3 dBA, the significance of the impact will depend on the ambient noise level and the presence of noise-sensitive sites. Noise impacts are possibly significant if increases in noise exposure levels are expected to be greater than 5 dBA with implementation of a project. Noise impacts are generally significant if a proposed project increases noise levels by 6–10 dBA in built-up areas, or by 10 dBA or more in rural areas.

Depending on the type of construction, interior noise levels are about 10-15 dBA lower than exterior levels with the windows partially open, and approximately 20-25 dBA lower than exterior noise levels with the windows closed.

Temporary Construction Noise

During construction of individual development projects and associated off-site improvements, noise would be generated from an increase in traffic from construction workers commuting to the site; from construction equipment and materials being delivered to the site; and from the use of construction equipment and tools. Noise impacts resulting from construction activities would depend on: 1) the noise generated by various pieces of construction equipment; 2) the timing and duration of noise-generating activities; 3) the distance between construction noise sources and noise-sensitive receptors; and 4) existing ambient noise levels. The effect of noise on the individual and the community varies with its duration, intensity, and the tolerance level of the individual. In addition, people react differently to sounds, even to the same sound.

Figure 4.13-6 shows noise levels of common activities to enable the reader to compare construction and operational noise that could occur as a result of implementation of the General Plan with common activities.

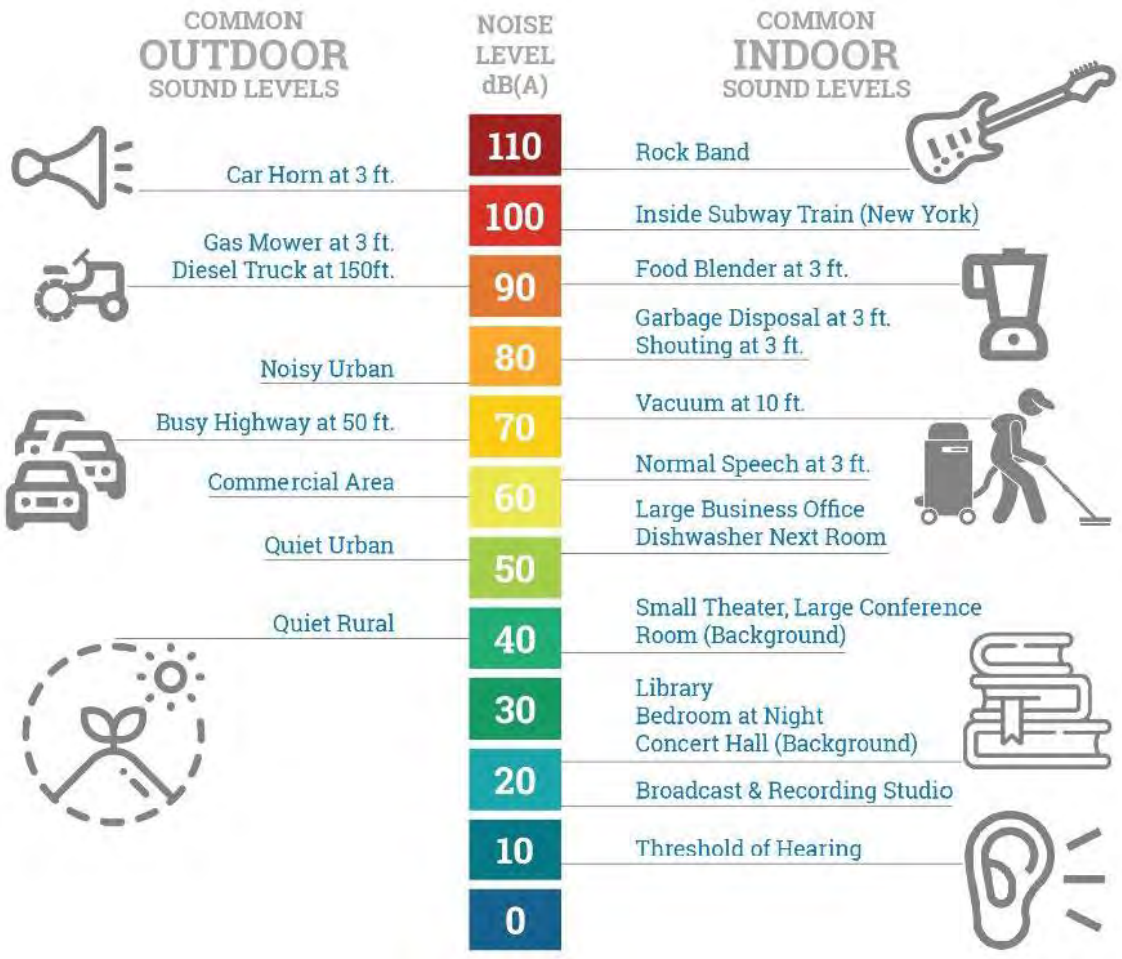


Figure 4.13-6
Comparative Noise Levels (dBA)

Noise levels from construction-related activities would fluctuate, depending on the number and type of construction equipment operating at any given time. As shown in **Table 4.13-6**, construction equipment anticipated to be used for project construction typically generates maximum noise levels ranging from 74 to 89 decibels (dBA) at a distance of 50 feet.

Table 4.13-6
Examples of Construction Equipment
Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 feet from Source
Concrete Vibrator	76
Saw	76
Pump	77
Backhoe	80
Air Compressor	80
Loader	80
Generator	82
Compactor	82
Concrete Pump	82
Compactor (ground)	82
Crane, Mobile	83
Truck	84
Roller	85
Concrete Mixer	85
Dozer	85
Excavator	85
Grader	85
Paver	85
Scraper	85
Jack Hammer	88
Rock Drill	95
Pile-driver (sonic)	95
Pile-driver (impact)	101

Sources: U.S. Department of Transportation, Federal Transit Administration, 2018.

Noise from construction activities generally attenuates at a rate of 6 dBA (on hard and flat surfaces) to 7.5 dBA (on soft surfaces, such as uneven and/or vegetated terrain) per doubling of distance. For example, if an excavator were to generate a noise level of 85 dBA at a distance of 50 feet, the noise level at a distance of 100 feet would drop to 79 dBA if the intervening ground surface were paved or consisted of packed earth, or would drop to 77.5 dBA if the ground surface were uncompacted earth or vegetated.

If the receptor is far from the noise source, other factors come into play. For example, barriers such as fences or buildings that break the line of sight between the source and the receiver may reduce sound levels by 5 dBA or more. Likewise, wind can reduce noise levels by 20 to 30 dBA over long distances.

Because it is a logarithmic unit of measurement, a decibel cannot be added or subtracted arithmetically. The combination of two or more identical sound pressure levels at a single location involves the addition of logarithmic quantities as shown in **Table 4.13.7.** A doubling of identical sound sources results in a sound level increase of approximately 3 dB. Three identical sound sources would result in a sound level increase of approximately 4.8 dB. For example, if the sound from one backhoe resulted in a sound pressure level of 80 dB, the sound level from two backhoes would be 83 dB, and the sound level from three backhoes would be 84.8 dB.

Table 4.13.7
Cumulative Noise: Identical Sources

Number of Sources	Increase in Sound Pressure Level (dB)
2	3
3	4.8
4	6
5	7
10	10
15	11.8
20	13

Sources: U.S. Department of Transportation, Federal Transit Administration, 2018. The Engineering Toolbox, 2018.

In addition, as shown in **Table 4.13.8**, the sum of two sounds of a different level is only slightly higher than the louder level. For example, if the sound level from one source is 80 dB, and the sound level from the second source is 85 dB, the level from both sources together would be 86 dB; if the sound level from one source is 80, and the sound level from the second source is 89 dB, the level from both sources together would be 89.5 dB.

Table 4.13.8
Cumulative Noise: Different Sources

Sound Level Difference between two sources (dB)	Decibels to Add to the Highest Sound Pressure Level
0	3
1	2.5
2	2
3	2
4	1.5
5	1
6	1

Sound Level Difference between two sources (dB)	Decibels to Add to the Highest Sound Pressure Level
7	1
8	0.5
9	0.5
10	0.5
Over 10	0

Sources: U.S. Department of Transportation, Federal Transit Administration, 2018. The Engineering Toolbox, 2018.

The exposure to loud noises (above 85 dB) over a long period of time may lead to hearing loss. The longer the exposure, the greater the risk for hearing loss, especially when there is not enough time for the ears to rest between exposures. Hearing loss can also result from a single extremely loud sound at very close range, such as sirens and firecrackers (Centers for Disease Control, 2018). Even when noise is not at a level that could result in hearing loss, excessive noise can affect quality of life, especially during nighttime hours. The California Division of Safety and Health and OSHA have established thresholds for exposure to noise in order to prevent hearing damage. The maximum allowable daily noise exposure is 90 dBA for 8 hours, 95 dBA for 4 hours, 100 dBA for 2 hours, 105 dBA for 1 hour, 110 dBA for 30 minutes, and 115 dBA for 15 minutes (Caltrans, 2013).

The City's standard construction measure for noise limits construction activities to between the hours of 7:00 AM and 7:00 PM, Monday through Friday, and from 8:00 AM to 5:00 PM on Saturdays, with no construction allowed on Sundays. Construction outside of this timeframe may occur if the City Engineer issues an exemption for activities that require interruption of utility services to allow work during low demand periods, or to alleviate traffic congestion and safety hazards.

If construction activities occur in close proximity to sensitive receptors, mitigation measures would be implemented to provide noise attenuation, such as temporary barriers between sensitive receptors and construction activities.

Traffic Noise

Table 4.13-9 identifies the future modeled traffic noise levels at 100 feet from the centerline of the identified roadway segment (dBA CNEL) and identifies the distance from the roadway centerline to the 60, 65, 70, and 75 dB CNEL contours.

Table 4.13-9
Future Modeled Traffic Noise Levels

Roadway	Segment	Noise Level at 100 ft from Centerline (dBA CNEL)	Distance to Contours (ft)			
			75	70	65	60
Shasta Dam Blvd (SR 151)	Shasta Lake City Limit to Lake Blvd	62.4	14	31	67	145
Shasta Dam Blvd (SR 151)	Lake Blvd to Sacramento St	62.4	14	31	67	145
Shasta Dam Blvd (SR 151)	Sacramento St to North Blvd	63.4	17	36	78	167

Roadway	Segment	Noise Level at 100 ft from Centerline (dBA CNEL)	Distance to Contours (ft)			
			75	70	65	60
Shasta Dam Blvd (SR 151)	North Blvd to Lassen Ave	60.1	10	22	47	101
Shasta Dam Blvd (SR 151)	Lassen Ave to Nell Orr St	65.9	25	53	115	247
Shasta Dam Blvd (SR 151)	Nell Orr St to Shasta Way	65.9	25	53	115	247
Shasta Dam Blvd (SR 151)	Shasta Way to Cascade Blvd	66.3	26	57	122	263
I-5 NB Off-On Ramp	Shasta Dam Blvd east of Cascade Blvd	66.6	28	60	129	277
Red Bluff St	Montana Ave to Locust Ave	43.4	1	2	4	8
Red Bluff St	Grand River Ave to Washington Ave	44.7	1	2	4	10
Main St	Montana Ave to Locust Ave	42.2	1	1	3	7
Main St	Grand River Ave to Washington Ave	43.1	1	2	3	7
La Mesa Ave	Lassen Ave to San Gorgonio Ave	48.2	2	4	8	16
Vallecito St	Montana Ave to Hardenbrook Ave	50.0	2	5	10	22
Vallecito St	Ellen Dr to Washington Ave	50.8	2	5	11	25
Coeur D'Alene Ave	Ashby Rd to D'Alene Ave	46.3	1	3	6	12
Pine Grove Ave	Lake Blvd to Ashby Rd	66.6	27	59	127	274
Pine Grove Ave	Ashby Rd to Coeur D'Alene Ave	65.7	24	52	111	239
Pine Grove Ave	Coeur D'Alene Ave to Smith Ave (S)	68.0	34	74	160	344
Pine Grove Ave	Smith Ave to Cascade Blvd (N)	66.7	28	60	130	280
Pine Grove Ave	Cascade Blvd (N) to Virginia Ave	66.7	28	60	130	280
Pine Grove Ave	Virginia Ave to Marilyn Ave	56.2	6	12	26	55
Pine Grove Ave	Marilyn Ave to Leona Ave	56.2	6	12	26	55
Akrich St	Virginia Ave to Marilyn Ave	57.9	7	16	34	72
Trinity St	Butterfly Lane to Sioux Dr	51.2	3	6	12	26
Lake Blvd	North of Mason Dr	58.1	8	16	35	75
Lake Blvd	Mason Dr to Duval Dr	58.1	8	16	35	75
Lake Blvd	Duval Dr to Buckeye St	62.4	15	31	67	145
Lake Blvd	Buckeye St to Hill Blvd	62.4	15	31	67	145
Lake Blvd	Hill Blvd to Flanagan Rd	63.4	17	36	78	168
Lake Blvd	Flanagan Rd to	63.7	18	38	83	178

Roadway	Segment	Noise Level at 100 ft from Centerline (dBA CNEL)	Distance to Contours (ft)			
			75	70	65	60
	Construction Way					
Lake Blvd	Shasta Lake City Limit to Construction Way	63.7	18	38	83	178
Ashby Rd	South of Shasta Dam Blvd to Flower St	54.4	4	9	20	43
Ashby Rd	Flower St to San Gorgonio Ave	54.4	4	9	20	43
Ashby Rd	San Gorgonio Ave to Los Gatos Ave	54.1	4	9	19	41
Ashby Rd	Los Gatos Ave to Arlene Court	54.1	4	9	19	41
Ashby Rd	Arlene Court to Coeur D'Alene Ave	59.7	10	21	45	96
Ashby Rd	Coeur D'Alene Ave to Pine Grove Ave	59.7	10	21	45	96
Montana Ave	Main St to Front St	45.3	1	2	5	11
Montana Ave	Shasta Dam Blvd to La Mesa Ave	50.0	2	5	10	22
Black Canyon Rd	Arrow Rock St to Pensacola St	44.5	1	2	4	9
Black Canyon Rd	North of Mussel Shoals Ave	44.5	1	2	4	9
McConnel Ave	Main St to Front St	44.0	1	2	4	9
Cabello St	Shasta Dam Blvd to La Mesa Ave	48.2	2	4	8	16
Cabello St	Bonneville St to Vallecito St	46.7	1	3	6	13
Median Ave	Front St to Shasta Dam Blvd	50.6	2	5	11	24
Mussel Shoals Ave	Black Canyon Rd to Chico St	49.4	2	4	9	20
Mussel Shoals Ave	Chico St to Main St	49.4	2	4	9	20
Mussel Shoals Ave	Main St to Front St	49.7	2	4	10	21
Mussel Shoals Ave	Front St to Shasta Dam Blvd	49.7	2	4	10	21
Grand Coulee Blvd	Shasta Dam Blvd to Fort Peck St	51.9	3	6	13	29
Grand Coulee Blvd	Fort Peck St to Boulder St	51.5	3	6	13	27
Grand Coulee Blvd	Boulder St to Cascade Blvd	51.5	3	6	13	27
Shasta Way	Front St to Shasta Dam Blvd	51.0	3	5	12	25
Shasta St	Shasta Dam Blvd to Fort Peck St	48.7	2	4	8	18
Cascade Blvd	North of Kennett St	51.5	13	27	58	126
Cascade Blvd	Kennett St to Shasta Dam Blvd	61.5	13	27	58	126
Cascade Blvd	Shasta Dam Blvd to Second St	64.6	20	44	95	204
Cascade Blvd	Second St to Fell St	64.6	20	44	95	204
Cascade Blvd	Fell St to Cottage Ave	63.5	17	37	79	171

Roadway	Segment	Noise Level at 100 ft from Centerline (dBA CNEL)	Distance to Contours (ft)			
			75	70	65	60
Cascade Blvd	Cottage Ave to Pine Grove Ave	64.1	19	40	87	187
Cascade Blvd	Pine Grove Ave to Riddle Rd	64.1	19	40	87	187
Cascade Blvd	Riddle Rd to Arrowhead Ave	62.7	15	33	70	152
Virginia Ave	Akrich St to Pine Grove Ave	53.6	4	8	17	37
Twin View Blvd	Virginia Ave to Poppy Lane	51.9	3	6	13	29
Twin View Blvd	Poppy Lane to Mendocino St	51.9	3	6	13	29
Twin View Blvd	Mendocino St to Shasta Lake City Limit	56.4	6	12	27	57
Deer Creek Rd	Deer Creek Rd South of Shasta Dam Blvd	44.7	1	2	4	10
Interstate 5	North of SR 151	80.6	237	510	1,099	2,368
	Shasta Dam to Pine Grove	80.9	246	531	1,144	2,464
	Pine Grove Ave to Arrowhead Ave	81.0	253	545	1,174	2,528

Figure 4.13-7 shows future noise contours for I-5, Pine Grove Avenue, Lake Boulevard, and Ashby Road based on anticipated land uses and projected traffic volumes in 2040 (refer to **Table 4.13-4**). **Figure 4.13-7** also shows future contours for the UPRR line.

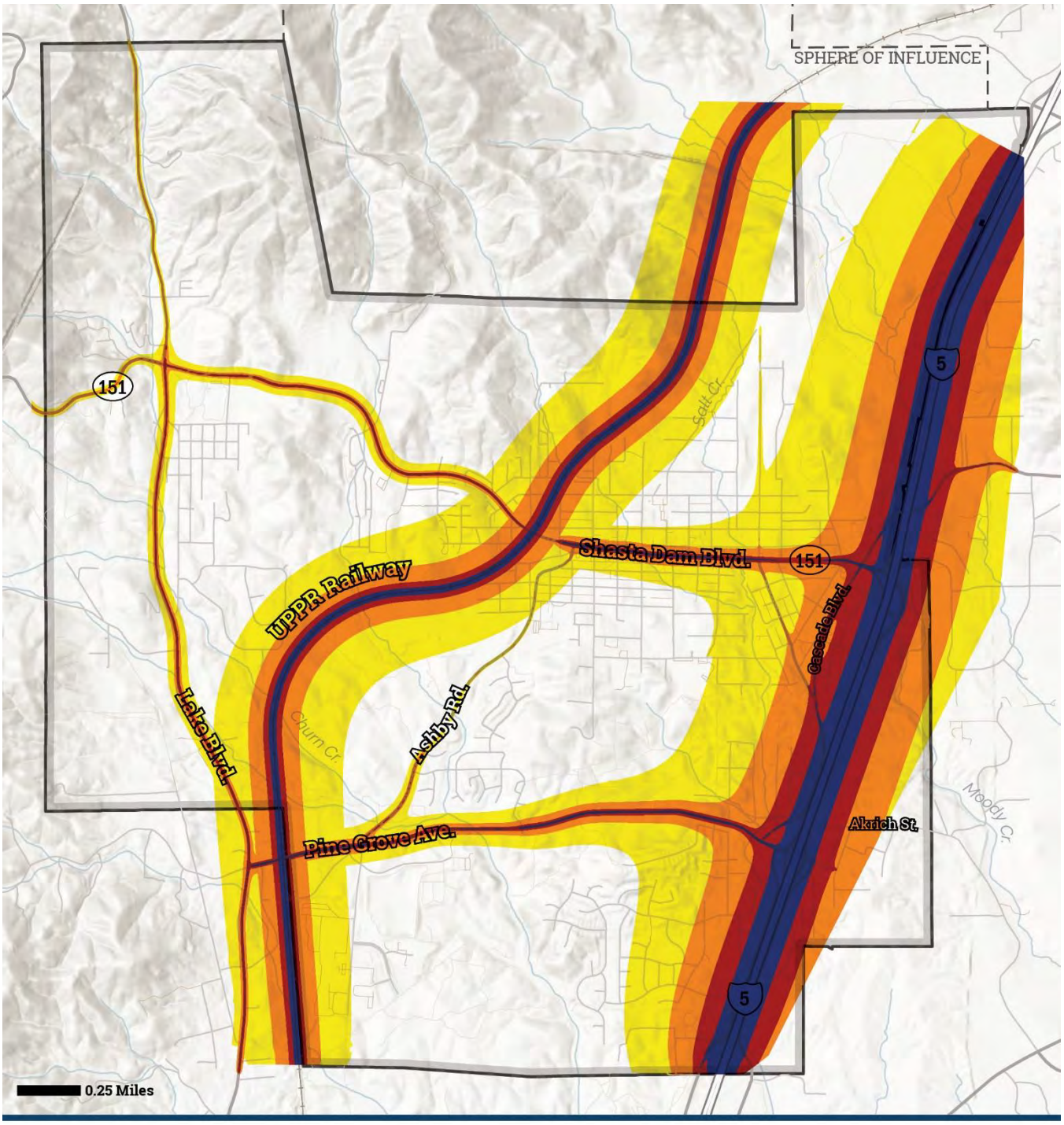


Figure 4.13-7
Future Roadway and Railroad Noise Contours

Table 4.13-10 provides a comparison between existing and future modeled traffic noise levels at 100 feet from the centerline of the identified roadway segment (dBA CNEL).

Table 4.13-10
Comparison of Existing and Future Modeled Traffic Noise Levels

Roadway	Segment	Existing Noise Level 100 ft from Centerline (dBA CNEL)	Future Noise Level 100 ft from Centerline (dBA CNEL)	Difference
Shasta Dam Blvd (SR 151)	Shasta Lake City Limit to Lake Blvd	60.1	62.4	+2.3
Shasta Dam Blvd (SR 151)	Lake Blvd to Sacramento St	60.1	62.4	+2.3
Shasta Dam Blvd (SR 151)	Sacramento St to North Blvd	62.0	63.4	+1.4
Shasta Dam Blvd (SR 151)	North Blvd to Lassen Ave	58.7	60.1	+1.4
Shasta Dam Blvd (SR 151)	Lassen Ave to Nell Orr St	61.0	65.9	+4.9
Shasta Dam Blvd (SR 151)	Nell Orr St to Shasta Way	61.0	65.9	+4.9
Shasta Dam Blvd (SR 151)	Shasta Way to Cascade Blvd	66.0	66.3	+0.3
I-5 NB Off-On Ramps	Shasta Dam Blvd east of Cascade Blvd	59.4	66.6	+7.2
Red Bluff St	Montana Ave to Locust Ave	39.7	43.4	+3.7
Red Bluff St	Grand River Ave to Washington Ave	44.5	44.7	+0.2
Main St	Montana Ave to Locust Ave	41.8	42.2	+0.4
Main St	Grand River Ave to Washington Ave	42.9	43.1	+0.2
La Mesa Ave	Lassen Ave to San Gorgonio Ave	48.0	48.2	+0.2
Vallecito St	Montana Ave to Hardenbrook Ave	47.3	50.0	+2.7
Vallecito St	Ellen Dr to Washington Ave	49.8	50.8	+1.0
Coeur D'Alene Ave	Ashby Rd to D'Alene Ave	45.6	46.3	+0.7
Pine Grove Ave	Lake Blvd to Ashby Rd	64.9	66.6	+1.7
Pine Grove Ave	Ashby Rd to Coeur D'Alene Ave	64.9	65.7	+0.8
Pine Grove Ave	Coeur D'Alene Ave to Smith Ave (S)	66.0	68.0	+2.0
Pine Grove Ave	Smith Ave to Cascade Blvd (N)	66.1	66.7	+0.6
Pine Grove Ave	Cascade Blvd (N) to Virginia Ave	66.1	66.7	+0.6
Pine Grove Ave	Virginia Ave to Marilyn Ave	52.1	56.2	+4.1

Roadway	Segment	Existing Noise Level 100 ft from Centerline (dBA CNEL)	Future Noise Level 100 ft from Centerline (dBA CNEL)	Difference
Pine Grove Ave	Marilyn Ave to Leona Ave	52.1	56.2	+4.1
Akrich St	Virginia Ave to Marilyn Ave	52.4	57.9	+5.5
Trinity St	Butterfly Lane to Sioux Dr	50.1	51.2	+1.1
Lake Blvd	North of Mason Dr	57.0	58.1	+1.1
Lake Blvd	Mason Dr to Duval Dr	57.0	58.1	+1.1
Lake Blvd	Duval Dr to Buckeye St	61.8	62.4	+0.6
Lake Blvd	Buckeye St to Hill Blvd	61.8	62.4	+0.6
Lake Blvd	Hill Blvd to Flanagan Rd	57.7	63.4	+5.7
Lake Blvd	Flanagan Rd to Construction Way	58.0	63.7	+5.7
Lake Blvd	Shasta Lake City Limit to Construction Way	63.5	63.7	+0.2
Ashby Rd	South of Shasta Dam Blvd to Flower St	49.5	54.4	+4.9
Ashby Rd	Flower St to San Gorgonio Ave	54.2	54.4	+0.2
Ashby Rd	San Gorgonio Ave to Los Gatos Ave	53.5	54.1	+0.6
Ashby Rd	Los Gatos Ave to Arlene Court	53.5	54.1	+0.7
Ashby Rd	Arlene Court to Coeur D'Alene Ave	59.3	59.7	+0.4
Ashby Rd	Coeur D'Alene Ave to Pine Grove Ave	59.3	59.7	+0.4
Montana Ave	Main St to Front St	45.0	45.3	+0.3
Montana Ave	Shasta Dam Blvd to La Mesa Ave	49.8	50.0	+0.2
Black Canyon Rd	Arrow Rock St to Pensacola St	43.6	44.5	+0.9
Black Canyon Rd	North of Mussel Shoals Ave	43.6	44.5	+0.9
McConnel Ave	Main St to Front St	43.8	44.0	+0.2
Cabello St	Shasta Dam Blvd to La Mesa Ave	48.0	48.2	+0.2
Cabello St	Bonneville St to Vallecito St	46.5	46.7	+0.2
Median Ave	Front St to Shasta Dam Blvd	50.4	50.6	+0.2
Mussel Shoals Ave	Black Canyon Rd to Chico St	48.4	49.4	+1.0
Mussel Shoals Ave	Chico St to Main St	48.4	49.4	+1.0
Mussel Shoals Ave	Main St to Front St	48.7	49.7	+1.0
Mussel Shoals Ave	Front St to Shasta Dam Blvd	48.7	49.7	+1.0
Grand Coulee Blvd	Shasta Dam Blvd to Fort Peck St	51.2	51.9	+0.7

Roadway	Segment	Existing Noise Level 100 ft from Centerline (dBA CNEL)	Future Noise Level 100 ft from Centerline (dBA CNEL)	Difference
Grand Coulee Blvd	Fort Peck St to Boulder St	50.8	51.5	+0.7
Grand Coulee Blvd	Boulder St to Cascade Blvd	50.8	51.5	+0.7
Shasta Way	Front St to Shasta Dam Blvd	48.3	51.0	+2.7
Shasta St	Shasta Dam Blvd to Fort Peck St	47.6	48.7	+1.1
Cascade Blvd	North of Kennett St	50.8	51.5	+0.7
Cascade Blvd	Kennett St to Shasta Dam Blvd	60.8	61.5	+0.7
Cascade Blvd	Shasta Dam Blvd to Second St	63.8	64.6	+0.8
Cascade Blvd	Second St to Fell St	63.8	64.6	+0.8
Cascade Blvd	Fell St to Cottage Ave	62.3	63.5	+1.2
Cascade Blvd	Cottage Ave to Pine Grove Ave	62.4	64.1	+1.7
Cascade Blvd	Pine Grove Ave to Riddle Rd	62.4	64.1	+1.7
Cascade Blvd	Riddle Rd to Arrowhead Ave	62.5	62.7	+0.2
Virginia Ave	Akrich St to Pine Grove Ave	50.1	53.6	+3.5
Twin View Blvd	Virginia Ave to Poppy Lane	51.7	51.9	+0.2
Twin View Blvd	Poppy Lane to Mendocino St	51.7	51.9	+0.2
Twin View Blvd	Mendocino St to Shasta Lake City Limit	50.0	56.4	+6.4
Deer Creek Rd	Deer Creek Rd South of Shasta Dam Blvd	44.5	44.7	+0.2
Interstate 5	North of Shasta Dam Blvd	79.1	80.6	+1.5
	Shasta Dam Blvd to Pine Grove Ave	79.3	80.9	+1.6
	Pine Grove Ave to Arrowhead Ave	79.5	81.0	+1.5

As indicated in **Table 4.13-10**, five roadway segments are projected to result in an increase in traffic noise over 5 dBA: Akrich Street between Virginia Avenue and Marilyn Avenue (5.5 dBA increase), Lake Boulevard between Hill Boulevard and Flanagan Road (5.7 dBA increase), Lake Boulevard between Flanagan Road and Construction Way (5.8 dBA), Twin View Boulevard between Mendocino Street and the southern City limits (6.4 dBA increase), and the I-5 northbound off-on ramps (7.2 dBA increase).

Operational Noise

Uses with the highest potential to generate noise from operational activities include industrial, light industrial, commercial, public works, and parks and recreational facilities (e.g., lumber mills, trucking operations, batch plants, manufacturing plants, recycling centers, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works facilities (e.g., wastewater treatment plant, water treatment plant), and parks/athletic

fields). Fixed noise sources that result in elevated noise levels include, but are not limited to, HVAC systems, boilers, fans, air compressors, heavy equipment, grinders, gas or diesel motors, welders, cutting equipment, outdoor speakers, blowers, generators, pump stations, and lift stations.

The City has received noise complaints in the past regarding industrial facilities that operate equipment during nighttime hours due to the use of reverse signal alarms. OSHA regulations state that no employer shall use any motor vehicle, earthmoving, or compacting equipment that has an obstructed view to the rear unless the vehicle has a reverse signal alarm audible above the surrounding noise level or the vehicle is backed up only when an observer signals that it is safe to do so. Although these regulations require an alarm to be only at a level that is distinguishable from the surrounding noise level (±5 dB), some vehicles are pre-equipped with non-adjustable alarms that range from 97 to 112 dBA. This should be taken into consideration when reviewing applications for commercial and industrial facilities. In addition, as new uses are developed in the City, there would be a corresponding increase in traffic and traffic noise.

Regardless of how noise is perceived on the individual level, the locations of existing and planned land uses must be considered when placing facilities that generate significant volumes of noise. Noise in the City of Shasta Lake is principally caused by mobile sources including automobiles, trucks, and trains, and machinery/equipment used in conjunction with commercial and industrial activities. Noise affects the quality of the environment at home, and at work, as well as the enjoyment of recreational activities. Excessive noise may adversely affect physical activity and psychological stability.

As required by General Plan Policy HS-8.4, the noise compatibility guidelines shown in **Figure 4.13-5** of this Draft PEIR will be taken into consideration when reviewing new development proposals, circulation system improvements, and future general plan amendments and specific plans. General Plan Policy HS-8.3 requires that new development use appropriate site planning and building design to reduce undesirable noise impacts in accordance with standards established in the City's Noise Ordinance, which will be prepared following adoption of the 2040 General Plan.

Implementation Action HS-8.6 requires that site-specific noise studies be prepared for noise sensitive development projects anticipated to be affected by elevated noise exposure levels. Generalized noise contours are shown on the noise contour map (**Figures 4.13-2, 4.13-3, 4.13-4, and 4.13-7)** and serve as a "trigger" indicating where future study is advisable.

As stated above, a change of 1 dBA generally cannot be perceived by humans; a 3 dBA change is considered to be a barely noticeable difference; a 5 dBA change is typically noticeable; and a 10 dBA increase is considered to be a doubling in loudness.

If the increase in noise exposure level is greater than 3 dBA, the significance of the impact will depend on the ambient noise level and the presence of noise-sensitive sites. Noise impacts are possibly significant if increases in noise exposure levels are expected to be greater than 5 dBA with implementation of a project. Noise impacts are generally significant if a proposed project increases noise levels by 6–10 dBA in built-up areas, or by 10 dBA or more in rural areas.

When a residential development is proposed near a primary noise source (e.g., a roadway or industrial facility), and when an industrial or commercial development is proposed near a sensitive receptor, the City may require preparation of a noise study to determine ambient noise levels, anticipated increases in noise from a proposed project, and noise attenuation measures that would ensure compliance with the City's noise standards.

Mitigation measures for residential projects could include specific requirements for noise-rated windows, wall assemblies, and/or insulation in the residences, or use of berms/barriers to minimize noise at the sensitive receptor. Mitigation measures for non-residential development could include limiting hours of operation, limiting outdoor activities, and/or implementing noise attenuation for outdoor generators and mechanical equipment. Therefore, because mitigation measures would be implemented as necessary to minimize construction and operational noise, and the Building Official would review all construction documents to ensure that all mitigation measures are incorporated into construction and improvement plans, noise impacts associated with development under the 2040 General Plan would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.13-2	**Implementation of the 2040 General Plan could cause excessive groundborne vibration or groundborne noise levels.** ***Less-than-Significant Impact***

Future development under the 2040 General Plan may require use of equipment with high vibration levels, both during construction and operation. Potential effects of ground-borne vibration include perceptible movement of building floors, rattling windows, shaking of items on shelves or hangings on walls, and rumbling sounds. In extreme cases, vibration can cause damage to buildings. Both human and structural responses to ground-borne vibration are influenced by various factors, including ground surface, distance between the source and the receptor, and duration.

The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV). PPV is a measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. Although there are no federal, State, or local regulations for ground-borne vibration, Caltrans has developed criteria for evaluating vibration impacts, both for potential structural damage and for human annoyance (Caltrans, 2020).

Table 4.13-11 includes the potential for damage to various building types as a result of ground-borne vibration. Equipment or activities typical of single-impact (transient) vibration include blasting, impact pile driving, drop balls, and crack-and-seat equipment. Equipment or activities typical of continuous vibration include excavation equipment, vibratory pile driving, static compaction equipment, and tracked vehicles.

Table 4.13-11
Structural Damage Thresholds from Ground-Borne Vibration

Structure Type	Vibration Level (Inches per Second PPV)	
	Transient Sources	Continuous/Frequent/ Intermittent Sources
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
Newer residential structures	1.0	0.5
Newer industrial/commercial buildings	2.0	0.5

Source: Caltrans, 2020

Table 4.13-12 indicates the potential for annoyance to humans as a result of ground-borne vibration.

Table 4.13-12
Human Response to Ground-Borne Vibration

Human Response	Vibration Level (Inches per Second PPV)	
	Transient Sources	Continuous/Frequent/ Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Disturbing	2.0	0.4

Source: Caltrans, 2020

Table 4.13-13 indicates vibration levels for various types of equipment.

Table 4.13-13
Examples of Ground-Borne Vibration Levels

Equipment Type	Inches per Second PPV at 25 feet
Bulldozer (small)	0.003
Bulldozer (large)	0.089
Jackhammer	0.035
Loaded trucks	0.076
Vibratory roller	0.210

Source: Caltrans, 2020

Vibration levels from construction equipment use at varying distances from the source can be calculated using the following formula:

$$PPV_{Equipment} = PPV_{Ref} \times (25/D)^{n}$$

In this equation, PPV_{Ref} = reference PPV at 25 feet, D = distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through ground).

Development under the 2040 General Plan would be reviewed based on the above guidelines for assessing structural damage and human annoyance, or similar guidelines that may be available in the future. Mitigation would be implemented as necessary to ensure that future developments do not result in adverse effects related to vibration. Impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.13-3	**Implementation of the 2040 General Plan could expose people residing or working in the project area to excessive noise levels from a private airstrip.** ***Less-than-Significant Impact***

The nearest private airstrip to the City is Tews Field on Moody Creek Drive, immediately adjacent to the City's eastern City limit. Properties in the City that are adjacent to the airstrip are proposed for designation as Mixed Use. Due to topographical constraints and access issues, it is unlikely that development would be proposed immediately adjacent to the airstrip; however, people working and residing in this area could be exposed to noise from the airstrip. If development is proposed in this area, the City will consider whether the type of development proposed would be susceptible to noise associated with Tews Field. Mitigation measures would be implemented as necessary to ensure compliance with the City's noise level standards; therefore, potential impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

4.13.8 References

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SECTION

4.14

Population and Housing

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4.14 Population and Housing

This section identifies applicable State and local regulations associated with the provision of housing and analyzes potential impacts related to population and housing that could occur due to implementation of the 2040 General Plan.

4.14.1 Study Methods

The following evaluation of potential impacts on population and housing is based on review of the Background Report for the 2020-2028 General Plan Housing Element (City of Shasta Lake, 2020) and Department of Finance (DOF) demographic information (DOF, 2007, 2021, 2022).

4.14.2 Environmental Setting

As a result of construction of Shasta Dam, which commenced in 1938, U.S. Bureau of Reclamation (USBR) employees, construction workers, and their families settled into "boomtown" communities: Central Valley (originally named Boomtown), Project City (originally named Midway), Summit City, and Pine Grove (see Section 4.5, Cultural Resources). Some people built permanent homes and some, who anticipated leaving soon after the Dam was completed, built tarpaper shacks. Soon thereafter, commercial business, including cafes, taverns, gas stations, grocery stores, and service-related businesses were constructed in the area.

By 1939, these new towns included several hundred houses, a private company distributed water from wells to homes, Pacific Gas & Electric (PG&E) supplied electricity, and septic disposal systems were installed. At completion of construction of the Dam in 1945, the boomtown communities included 3,500 permanent residents. The Shasta Dam Area Public Utility District (SDAPUD), established in 1947, entered into agreement with the USBR to purchase water from Lake Shasta, and water reached homes in the former boomtowns on February 12, 1948.

In 1957, the utility district installed an electrical distribution system that served most residents. The SDAPUD expanded the electricity system in 1962, with the construction of a transmission line from Keswick Dam to the District, and in 1980, when the SDAPUD purchased PG&E distribution facilities within the District. By 1976, the SDAPUD had constructed a sewer collection and treatment system and also owned and operated seven parks throughout the District. In 1993, the towns of Pine Grove, Project City, Central Valley, Summit City, and Toyon were incorporated to form the City of Shasta Lake.

The Department of Finance (DOF) extrapolated data from the 1990 census and established the City's population base at 8,967 in 1994. In 1995, the City's population was estimated at 9,029 (DOF, 2007). The most recent population and housing estimates for Counties and cities in the State were published by the DOF Demographic Unit in May 2022. DOF's historical demographic records are periodically revised when updated information becomes available. For example, additional information regarding housing and population from the 2020 census is expected to be released in 2023 and will likely result in modifications to DOF's population and housing estimates.

Table 4.14-1 shows the City's population between 2010 and 2022, as estimated by DOF based on administrative records of several State and federal government agencies, and more detailed information from local governments. **Table 4.14-2** shows estimated housing units in the City between 2010 and 2022 as reported by the DOF.

Table 4.14-1
City of Shasta Lake Population Estimates, 2010-2022

Year	Population	Change	Average Annual Growth
2010	10,164	-	-
2011	10,122	-42	-0.4
2012	10,122	0	0
2013	10,244	+122	1.2
2014	10,264	+20	0.2
2015	10,270	+6	0.1
2016	10,255	-15	-0.1
2017	10,287	+32	0.3
2018	10,414	+127	1.2
2019	10,575	+161	1.5
2020	10,626 (1)	+51	0.5
2021	10,318	-308	-2.9
2022	10,237	-81	-0.8

Sources: California Department of Finance, E-5 Population and Housing Estimates, 2021.
(1) Population for 2020 revised from 10,626 to 10,336 per E-5 Population and Housing Estimates, reported April 1, 2020.

Table 4.14-2
City of Shasta Lake Housing Estimates, 2010-2020

Year	Housing Units	Change	Average Persons per Household
2010	4,209	-	2.57
2011	4,185	-24	2.58
2012	4,179	-6	2.58
2013	4,178	-1	2.58
2014	4,180	2	2.58
2015	4,187	7	2.58
2016	4,197	10	2.55
2017	4,209	12	2.55
2018	4,241	32	2.55
2019	4,272	31	2.56
2020	4,307	35	2.56
2021	4,391	84	2.51
2022	4,401 (1)	10	2.48

Sources: 2020-2028 Housing Element Background Report (City of Shasta Lake, 2020); Department of Finance, 2022.
(1) Detailed analysis completed by Dynamic Planning + Science for the 2040 General Plan Update estimated that there were 4,225 housing units in the City as of December 31, 2021.

As shown in **Table 4.14-3**, the 2040 General Plan Land Use Element provides residential growth projections for both housing units and population, including build-out projections, projections for the 20-year planning period, and anticipated annual projections during the 20-year planning period.

Table 4.14-3
Residential Growth Projections (Population and Housing)

Housing Type	Existing Units	Additional Units at Buildout	Total Number of Units at Buildout	20-Year Projections		Annual Projections	
				Unit Growth	Population Growth	Unit Growth	Population Growth
Single-Family	3,645	8,815	12,460	542	1,349	27	67
Multi-Family	542	1,055	1,597	142	354	7	18
Mixed-Use	38	11,036	11,074	152	379	8	19
Total	**4,225**	**20,906**	**25,131**	**836**	**2,082**	**42**	**104**

Source: Dynamic Planning + Science, Shasta Lake 2040 General Plan Projections.

4.14.3 Regulatory Framework

FEDERAL

There are no federal regulations pertaining to population or housing that apply to the proposed project.

STATE

State Housing Law

The State Housing Law (Division 13, Part 1.5 of the California Health and Safety Code, §17910-§17998.3) was enacted in 1961 to assure the availability of affordable housing and uniform statewide code enforcement to protect the health, safety, and general welfare of the public, and occupants of housing and accessory buildings. Regulations implementing building standards for new residential construction under the State Housing Law are found in the California Code of Regulations (CCR), Title 24 (California Building Standards Code). Regulations for use, maintenance, and occupancy of existing residential buildings are found in CCR Title 25, Division 1, Chapter 1, Subchapters 1 and 2.

State Housing Element Law, California Government Code (CGC) §65580 *et seq.*

California Government Code (CGC) §65580 *et seq.* requires a Housing Element to be included in all city and county General Plans. The California Department of Housing and Community Development (HCD) is required to prepare a Regional Housing Needs Allocation (RHNA) plan for each region in the State. The RHNA plan allocates a specific number of housing units that are required to meet the housing needs for each of the four income categories (very-low, low, moderate, and above-moderate) over the eight-year planning period. Counties and cities are required to update their Housing Elements with each RHNA cycle to identify the community's housing needs, to state the community's goals and policies with regard to housing production, rehabilitation, and conservation to meet those needs, and to define the implementation programs that achieve the stated goals and policies.

A key component of the Housing Element is demonstrating that the City has enough land zoned for housing at appropriate densities to accommodate its RHNA.

Regional Transportation Plan and Sustainable Communities Strategy

The California Sustainable Communities and Climate Protection Act, enacted by Senate Bill 375 of 2008 requires that all metropolitan planning organizations (MPOs), or regional transportation planning agencies for areas that do not have an MPO, prepare a Sustainable Communities Strategy (SCS) as part of the Regional Transportation Plan. The goal of this Act is to tie together the regional allocation of housing needs and regional transportation planning in an effort to reduce greenhouse gas emissions from motor vehicle trips. The Act changed housing element law to synchronize the schedule and develop common land use assumptions for regional housing and transportation planning.

LOCAL

Shasta Lake Housing Element and Regional Housing Needs Allocation

The City's current Housing Element was adopted by the City on August 4, 2020, for the 2020-2028 Housing Element planning period. In a December 21, 2018, letter to the County of Shasta, HCD identified Shasta County's RHNA for the projection period (December 31, 2018, through April 15, 2028), which is the time period for which the RHNA is calculated. The distribution of the RHNA for Shasta County is shown in **Table 4.14-4.**

Table 4.14-4
Shasta County RHNA by Income Category
December 31, 2018, through April 15, 2028, Projection Period

Jurisdiction	Very-Low	Low	Moderate	Above-Moderate	Total
Shasta County Total	**885**	**591**	**636**	**1,563**	**3,675**
Shasta Lake	56[1]	39	42	101	238
Percentage of Total	*23.4%*	*16.5%*	*17.7%*	*42.5%*	*6.5%*
Anderson	54	37	41	109	241
Percentage of Total	*22.6%*	*15.3%*	*17.0%*	*45.1%*	*6.6%*
Redding	502	336	360	893	2,091
Percentage of Total	*24.0%*	*16.1%*	*17.2%*	*42.7%*	*56.9%*
Unincorporated	273	179	193	460	1,105
Percentage of Total	*24.7%*	*16.2%*	*17.5%*	*41.6%*	*30.1%*

Source: City of Shasta Lake 2020-2028 Housing Element (City of Shasta Lake, 2020)
(1) Projected housing need is 28 extremely low and 28 very low housing units.

In accordance with State housing law, the City's RHNA can be reduced by the number of new housing units built or approved since the beginning of the RHNA projection period (December 31, 2018) through December 31, 2019. The Housing Element included a residential land inventory to identify land suitable for residential development, including vacant sites and sites having the potential for redevelopment.

Factors that were considered included properties that are zoned to allow residential development, the availability of public infrastructure to these sites, and potential environmental constraints (e.g., designated flood hazard areas, wetlands and other jurisdictional waters, slopes in excess of 20 percent, etc.). The inventory shows that there are adequate vacant sites with no development constraints to accommodate housing needs for all income levels.

Table 4.14-5 shows the adjusted RHNA based on new dwelling units that were constructed in the City between December 31, 2018, and December 31, 2019, and the number of housing units that could be accommodated based on the vacant lands inventory. As indicated, the City has adequate sites to accommodate housing units for all income levels for the 2020-2028 Housing Element planning period.

Table 4.14-5
City of Shasta Lake Vacant Site Inventory

	Very-Low	Low	Moderate	Above-Moderate
Available Sites - Residential Unit Capacity	85	67	1,415	191
2020-2028 Planning Period Housing Need	26	39	0	101
Housing Unit Capacity Deficit/Surplus	**+59**	**+28**	**+1,415**	**+90**

Source: City of Shasta Lake 2020-2028 Housing Element (City of Shasta Lake, 2020)

The Housing Element must include quantified objectives that identify the maximum number of housing units likely to be constructed, rehabilitated, and conserved/preserved over the eight-year Housing Element planning period. The total number of housing units must be identified by income category, including extremely low-income units. The City's quantified objectives are identified in **Table 4.14-6.**

Table 4.14-6
City of Shasta Lake - Quantified Objectives for the 2020-2028 Planning Period

Income Level	New Construction	Rehabilitation	Conservation	Total
Extremely-Low	6	4	2	12
Very-Low	6	4	1	11
Low	12	12	2	26
Moderate	14	15	0	29
Above-Moderate	6	12	0	18
Total	**44**	**47**	**5**	**96**

Source: City of Shasta Lake 2020-2028 Housing Element (City of Shasta Lake, 2020)

The City is required to prepare an annual Housing Element report to document progress made toward achieving the quantified objectives and implementation programs identified in the Housing Element.

4.14.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2020-2028 General Plan Housing Element includes the following goals, policies, and implementation actions related to the provision of housing:

GOAL HE-1	**To provide for a broad range of housing types to meet the needs of all residents.**	
POLICIES	HE-1.1	Adequate Housing Sites. The City shall ensure that there are adequate sites available to meet its regional housing needs allocation of 238 units (28 extremely low, 28 very low, 39 low, 42 moderate, and 101 above moderate).
	HE-1.2	Current Site Inventory. The City shall maintain an up-to-date site inventory of available sites for residential development.
	HE-1.3	Infill Development. The City shall support infill residential development on underutilized or vacant infill sites to facilitate production of housing units while also prioritizing minimal displacement of existing residents.
	HE-1.4	Parcel Consolidation. The City shall encourage the consolidation of underutilized or vacant parcels to facilitate residential development where appropriate.
	HE-1.5	Governmental Constraints. The City shall minimize governmental constraints to the development, improvement, and maintenance of its housing stock, such as reducing setbacks, height limitations, coverage ratios, parking requirements, and other development regulations.
	HE-1.6	Accessory Dwelling Units. The City shall encourage the construction of accessory dwelling units. The City shall also consider new housing construction methods and dwelling unit types that encourage affordability through innovative design.
	HE-1.7	Connectivity. The City shall encourage circulation improvements and subdivision layouts that promote community connectivity and livability.
IMPLEMENTATION ACTIONS	HE-1.1	Vacant Land Inventory to Accommodate Future Housing Needs. The City shall take the completed land inventory for the City, update it with the parcels created during the last planning period, and integrate it with the City's GIS system. The City will develop a process to update both the inventory and the GIS layers that relate to the inventory (including infrastructure) annually. The City will assemble Information in a form useful for marketing the properties.
	HE-1.2	Scattered Site Development. The City will map the single vacant lots, their sizes, and other characteristics using GIS data where available. The City will make this information available to the General Public.
	HE-1.3	Residential Property Development Project Identification. City staff will identify residential properties with impediments for development and help identify outside funding for projects that benefit the City.
	HE-1.4	State and Federal Funding. The City shall complete a report addressing potential sources of funding to help fund City needs and prioritize use of City or grant funds for projects. The City shall pursue appropriate State and Federal funding sources to support the efforts of non-profit and for-profit developers to meet new construction and rehabilitation needs of low- and moderate-income households. The City shall periodically update and review available housing programs to identify appropriate funding sources to meet the City's housing needs.

	HE-1.5	Objective Mixed Use and Multi-Family Residential Design Standards. The City shall establish clear objective design standards for mixed use and multi-family housing projects. Once the objective design standards are adopted, multi-family and mixed-use projects will be allowed by right and approved through a ministerial, staff-level review process.
	HE-1.6	Development Agreements. The City will enter into development agreements where appropriate to meet State law and provide for the City's interests in promoting quality land use development, and if applicable, long term housing affordability.
	HE-1.7	Homebuyer Assistance. The City shall continue the Homebuyer Program that promotes homeownership for low-income, first time homebuyers using HOME and CalHome as funding is available.
	HE-1.8	Collaboration with Affordable Housing Providers. The City will continue to seek out affordable housing partners. The City will initiate one-on-one discussions about how to access funding
	HE-1.9	Address Housing Opportunities and Constraints. The City shall evaluate the Municipal Code to determine what standards may need revision in order to encourage housing production. The revisions may include reducing parking standards, setbacks, height, or ability to use clustering without having to re-zone property to the Planned Development Zone, as well as addressing restrictive aspects of the grading and tree preservation ordinances as appropriate and consistent with this General Plan.
	HE-1.10	Annual Report on Housing Element Implementation. The City will complete an Annual Housing Report to submit to HCD and OPR by April 1st of each year, consistent with State law.
	HE-1.11	Online Web-based Mapping. The City shall hire a GIS staff person to maintain a web-based map of available housing sites. The web-based map will be made accessible to the public on the City website.
	HE-1.12	Mixed-Use Development. The City will evaluate commercial parcels and structures as part of the update to the General Plan. The evaluation will include identifying parcels/lots that are most appropriate for mixed commercial and residential uses.
	HE-1.13	Zoning Plan Consistency with State Law. The City shall continually review the Zoning Plan to address changes in State law pertaining to the streamlining of housing production including accessory dwelling units, SB 35 streamlining, and allowability of mobile home parks, employee housing (consistent with Cal. Gov't Codes §§ 17021.5 and 17021.6), and low barrier navigation centers.
GOAL HE-2	**To promote the construction and maintenance of quality affordable housing projects for extremely low-, very low-, and low-income households.**	
POLICIES	HE-2.1	Federal and State Funding. The City shall continue to support applications for Federal and State funding programs to assist in the development of affordable housing.
	HE-2.2	Homeownership. The City shall promote homeownership opportunities by providing support and available grant funds to lower-income first-time homebuyers.
	HE-2.3	Development Distribution. The City shall encourage distribution of development of affordable housing throughout the city to avoid over concentration in a particular area, excluding areas lacking necessary infrastructure or services.

	HE-2.4	Permit Processing Priority. The City shall give highest priority for permit processing to affordable housing projects.
	HE-2.5	Proximity to Services and Facilities. The City shall encourage affordable multifamily residential developments to be located within walking distance of key services and facilities (e.g., public transit, childcare facilities, schools, parks, neighborhood shopping centers, and other amenities).
IMPLEMENTATION ACTIONS	HE-2.1	Development Standards. The City shall review bi-annually and amend land use regulations, development standards, permitting procedures, and fees as needed, and where feasible, remove impediments to and reduce the cost of affordable residential development. In addition, to comply with AB 21623, the City will amend the Zoning Plan to allow supportive housing as a permitted use in zones where multifamily and mixed uses are permitted, including nonresidential zones permitting multifamily uses.
	HE-2.2	Pursue State and Federal Funding. The City shall actively pursue appropriate Federal and State funding sources, including HOME, CDBG, AHSC, and CalHome funds, to support the efforts of nonprofit and for-profit developers to meet new construction and rehabilitation needs of extremely low-, very low-, low-, and moderate-income households. The City shall periodically review available housing programs to identify additional funding sources.
	HE-2.3	Assisting Affordable Housing Developers. The City shall work with the Housing Authority to provide technical and/or financial assistance to affordable housing developers, such as site identification, site acquisition, and identification of subsidy sources including HOME and AHSC funds and CDBG monies. The City shall also make this information available on its website.
	HE-2.4	First-time Homebuyers. The City shall support workshops/educational classes on the benefits of homeownership and resources for first-time homebuyers.
GOAL HE-3	**To maintain and rehabilitate the existing housing stock to preserve community character and housing units affordable to a mix of income levels.**	
POLICIES	HE-3.1	Neighborhood Revitalization. The City, within its financial capabilities, shall support the revitalization of older neighborhoods by keeping streets, sidewalks and other municipal systems in good repair and providing neighborhood improvements, such as street lighting, landscaping, and recreation amenities that contribute to stable, quality neighborhoods.
	HE-3.2	Mobile Home Upkeep. The City shall promote the upkeep of existing mobile home parks.
	HE-3.3	Enforcement. The City shall continue code enforcement efforts.
	HE-3.4	Abatement. The City shall require the abatement of unsafe structures, giving property owners adequate opportunities to correct deficiencies.
	HE-3.5	Encourage Private Investment. The City shall encourage private reinvestment in older residential neighborhoods and private rehabilitation of housing.
	HE-3.6	Retain Affordable Housing. The City shall work with other agencies and non-profit organizations to prevent the conversion of subsidized, affordable housing to market-rate housing.

IMPLEMENTATION ACTIONS	HE-3.1	Housing Rehabilitation (Single-family). To conserve existing housing stock that currently needs substantial rehabilitation, including substandard homes initially built as Shasta Dam worker housing, the City will review the Housing Stock Inventory to assess potential rehabilitation needs, identify potential loan applicants, and initiate a program to serve those needs. This program can be operated in conjunction with the proposed energy efficiency program (HE 5.1) to maximize use of funds and accommodation of energy efficient measures lowering the overall operational costs for a home.
	HE-3.2	Housing Rehabilitation (Multifamily). The City will address the rehabilitation of multi-family units as a priority when applying for funding.
	HE-3.3	Foreclosure Impact Mitigation. The City shall communicate with banks in ownership of foreclosed homes to ensure the units are maintained, unoccupied until rented or sold, and do not become a fire hazard due to overgrown landscaping. The City shall partner with deed holders to inform the public about units available for sale or conversion to long-term rental housing.
	HE-3.4	Code Enforcement Procedures. The City shall amend Section 1.17.50 of the City Municipal Code to require administrative citations to include a list of potential resources available to property owners to correct violations.
GOAL HE-4	**To provide adequate infrastructure and services for residential development.**	
POLICIES	HE-4.1	Public service Maintenance. The City shall maintain an adequate level of public services, infrastructure, and park and recreational facilities to meet the needs of existing and projected development within the fiscal capacity of the City.
	HE-4.2	Public services for New Development. The City shall ensure that housing developments pay their fair share of public facilities and service costs. For affordable housing, the City shall secure funding wherever possible for the replacement or installation of off-site infrastructure.
	HE-4.3	Infrastructure Funding. The City shall seek federal, State, and local grants to fund infrastructure improvements.
IMPLEMENTATION ACTION	HE-4.1	Local, State, and Federal Funding for Infrastructure. The City will pursue funding for infrastructure that will support infill properties that can be used for residential development.
GOAL HE-5	**To support energy efficiency improvements and appropriate weatherization for all new and existing housing units.**	
POLICIES	HE-5.1	New Construction Efficiency. The City shall require new construction to meet Title 24 energy conservation requirements.
	HE-5.2	Conservation Programs & Measures. The City shall promote energy efficiency measures and energy conservation programs in accordance with applicable laws, including programs to support low-income households.
	HE-5.3	Passive Solar. During the tentative map review process, the City shall encourage new subdivision lots to be oriented to allow for both passive and active solar design to minimize energy losses.
IMPLEMENTATION ACTIONS	HE-5.1	Energy Efficiency Calculations. The City shall require all new construction to demonstrate compliance with Title 24 mandates during the planning and design process using energy efficiency calculations approved by the State.

	HE-5.2	Energy Efficiency. The City shall offer programs that comply with applicable laws that provide for weatherization and energy efficiency rebates for residential customers and support low-income households.
	HE-5.3	Green Building Incentives. The City shall encourage the implementation of the voluntary (Tier 2) provisions of the Green Building standards. The City will also provide information, on request, regarding green standards currently being applied.
	HE-5.4	Community Solar. The City shall explore locations and projects for "community solar" or utility-scale solar photovoltaic systems with supporting programs to directly serve the City's end-users' electricity needs with local renewable energy sources.
GOAL HE-6.1	**To provide a range of housing types and services for special needs groups.**	
POLICIES	HE-6.1	Special Needs Populations. The City shall work with non-profit agencies, Shasta County, neighboring cities, and developers on regional approaches to providing housing and services to special needs populations, including the elderly, persons with physical and mental disabilities (including developmental disabilities), female-headed households, large families, farmworkers, extremely low-income households, and veterans.
	HE-6.2	Special Housing Needs. The City shall seek to accommodate housing and emergency shelter for residents with special housing needs through appropriate zoning standards and permit processes.
	HE-6.3	Homelessness. The City shall continue to support the Shasta County Housing Authority, Shasta County Continuum of Care, Good News Rescue Mission, and all other homeless service providers in their efforts to provide housing and services for homeless persons and persons in need of supportive housing.
	HE-6.4	Housing Variety. The City shall encourage the development and rehabilitation of housing with a variety of unit sizes and number of bedrooms to address extremely low-income and large households' needs.
	HE-6.5	Transit Needs. The City shall encourage the development of new housing units designed for seniors and persons with disabilities to have readily accessible public transit and community services.
	HE-6.6	Rental Assistance. The City shall support the continued use of rental assistance opportunities for extremely low-income households, including HUD Housing Choice Vouchers.
	HE-6.7	Reasonable Accommodation. The City shall ensure equal access to housing by providing a process for individuals with disabilities to make requests for reasonable accommodation in regard to relief from land use, zoning, or building laws, rules, policies, practices, and/or procedures.
IMPLEMENTATION ACTIONS	HE-6.1	Reasonable Accommodation. The City shall continue to provide reasonable accommodations through a formal procedure by reviewing and approving requests for modifications to building or zoning requirements in order to ensure accommodations for persons with disabilities. Additionally, the City shall provide both printed information, and information on the City's website regarding reasonable accommodations by January 2023.

	HE-6.2	Assistance for Special Needs Populations. In order to assist in the housing needs for special needs populations, including the elderly, persons with physical and mental disabilities (including developmental disabilities), female-headed households, large families, farmworkers, extremely low-income households, and veterans, the City will engage with housing advocates, encourage housing providers to designate a portion of new affordable housing developments for special needs populations, and pursue funding sources designated for these groups. The City shall also partner with the Far Northern Regional Center to provide information and services to persons with developmental disabilities.
GOAL HE-7	**To require safe and sanitary housing and quality living environment for all Shasta Lake residents regardless of age, religion, race, ethnicity, creed, sex, sexual orientation, marital status, ancestry, national origin, disability, economic level, and other arbitrary factors.**	
POLICIES	HE-7.1	Fair Housing. The City shall prioritize fair housing and require compliance with fair housing laws.
	HE-7.2	Discrimination. The City shall cooperate with community-based organizations that provide services or information to victims of housing discrimination, including but not limited to, Shasta County, the Shasta County Housing Authority, and Fair Housing Advocates of Northern California.
IMPLEMENTATIO N ACTIONS	HE-7.1	Section 8 Rental Assistance. The City shall be in regular contact with the Housing Authority in order to obtain data and information about the Section 8 programs. Information will be made readily available to individuals and affordable housing developers.
	HE-7.2	Equal Housing Opportunity. The City shall provide information obtained from the Housing Authority (including brochures, flyers, posters, and similar publications) in public locations, including City offices. In addition, the City shall have such information available on the City's website and for distribution to interested parties who request it. Information shall be provided in languages other than English where appropriate.
	HE-7.3	Fair Housing. The City shall be a local contact point for fair housing complaints and will refer interested persons to the California Department of Fair Employment and Housing (DFEH) and the U.S. Department of Housing and Urban Development (for federally subsidized units) as complaints are received. The City will also display fair housing information at City offices and shall provide links on its website to these entities and their fair housing discrimination references, contacts, and compliance procedures.
	HE-7.4	Affirmatively Further Fair Housing. The City will coordinate with the Shasta County Housing Authority and/or Fair Housing Advocates of Northern California to develop a plan to Affirmatively Further Fair Housing (AFFH). The AFFH Plan shall take actions to address significant disparities in housing needs and in access to opportunities for all persons regardless of race, religion, sex, marital status, ancestry, national origin, color, familial status, or disability, and other characteristics protected by the California Fair Employment and Housing Act (Part 2.8 (commencing with Section 12900) of Division 3 of Title 2), Section 65008, and any other State and federal fair housing and planning law. The City shall pursue funding to provide services through these partnerships including:

1. Distributing educational materials to property owners, apartment managers, and tenants every two years.
2. Making public service announcements via different media (e.g. newspaper ads and public service announcements at local radio and television channels) at least two times a year.
3. Conducting public presentations with different community groups.
4. Responding to complaints of discrimination (e.g. in-taking, investigation of complaints, and resolution).
5. Referring services to appropriate agencies.

4.14.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact related to population and housing if it:

1. Induced substantial unplanned population growth in an area either directly (e.g., by proposing new homes and/or businesses) or indirectly (e.g., through the extension of roads or other infrastructure).

2. Displaced substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

4.14.6 Issues Not Discussed Further

All issues identified in Section 4.14.5 are addressed below.

4.14.7 Impact Analysis and Mitigation Measures

Impact 4.14-1	**Implementation of the 2040 General Plan would not induce substantial unplanned population growth in the City, either directly or indirectly.** ***Less-than-Significant Impact***

Implementation of the 2040 General Plan would directly induce population growth due to the construction of new housing units. In addition, new commercial and industrial businesses in the City would bring jobs and services to the area, which could draw people to live in the City.

Indirect population growth could occur if a project was required to extend utilities and roads, thereby making it more economical for adjacent properties to be developed. However, it is unknown whether infrastructure improvements alone would have a major influence on the development of adjacent undeveloped lands because there are many other factors that influence the density and timing of development (e.g., cost of completing project-specific improvements, regulatory controls, economic conditions, property owner decisions, and other market forces).

Population Projections

As shown in **Table 4.14-1**, estimated population in the City has fluctuated since 2012 with the highest average annual growth rate of 1.5 percent reported in 2019. There have also been reported declines in population in 2011, 2016, 2021, and 2022, although this could be due, in part, to adjustments to population data made by DOF to incorporate new information. It is likely that

population estimates will be revised again following the release of additional 2020 Census data, which is expected to occur in 2023.

A project would induce unplanned population growth if it conflicted with a local land use plan (e.g., a General Plan) and induced growth in areas that aren't addressed in a General Plan or other land use plan. Although the 2040 General Plan increases residential densities and floor area ratios (FARs) for commercial and industrial uses in some areas in the City, growth projections are estimated at 42 housing units per year, and the annual population growth is estimated at 104 during the 20-year planning period for the 2040 General Plan. Because growth is market driven, it is not expected that growth under the 2040 General Plan would significantly differ from growth under the existing General Plan over the next 20 years.

Development of housing units to accommodate anticipated growth has a potential to result in significant environmental impacts. Future development under the 2040 General Plan would be reviewed on a case-by-case basis to ensure compliance with General Plan goals, policies, and implementation actions. Mitigation measures would be implemented as necessary to ensure that increases in population do not have an adverse impact on the environment or on human beings, either directly or indirectly. Therefore, the potential for adverse impacts would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.14-2	**Implementation of the 2040 General Plan would not displace existing people or housing.** ***No Impact***

The 2040 General Plan does not include any goals, policies, or implementation actions that would displace existing people or housing. Rather, the 2040 General Plan would result in development of a wide variety of housing types of various densities to accommodate all economic sectors of the community. Therefore, there would be ***no impact.***

Mitigation Measures

No mitigation measures required.

4.14.8 References

California Department of Finance (DOF). 2022. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2021-2022 with 2020 Benchmark. https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2022/. Accessed May 2022.

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City of Shasta Lake. 2020. 2020-2028 Housing Element Background Report. https://ceqanet.opr.ca.gov/2020079006/2. Accessed April 2022.

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SECTION

4.15

Public Services

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4.15 Public Services

This section describes public services within the City and evaluates whether implementation of the 2040 General Plan would result in the need for new or expanded public services/facilities and whether construction or expansion of such facilities would result in significant environmental impacts.

4.15.1 Study Methods

The following evaluation of potential impacts on public services is based on a review of records from the City of Shasta Lake, Shasta County Sheriff's Department, Shasta Lake Fire Protection District, Gateway Unified School District, California Department of Education, Shasta Local Agency Formation Commission, and the Shasta County Health and Human Services Agency (HHSA). Public services that are addressed in this section include fire protection, police protection, schools, and public health. Potential impacts on park facilities are addressed in Section 4.16 (Recreation).

4.15.2 Environmental Setting

FIRE PROTECTION

Fire protection, fire prevention, and emergency medical services in the City are provided by the Shasta Lake Fire Protection District (SLFPD), a special district separate from the City. The SLFPD was formed on December 9, 1994, to establish a single fire protection agency to provide services in areas previously covered by the Central Valley Fire Protection District, the Summit City Fire Protection District, and small portions of the Buckeye Fire Protection District, Mountain Gate Community Services District, and Shasta County Fire Department (CSA #1). The SLFPD is governed by a five-member Board of Directors who are elected to four-year staggered terms by registered voters who live within the District boundaries.

The SLFPD provides services within the City limits as well as one square mile east of the City in unincorporated Shasta County. The current service area for SLFPD is ±8,320 acres (±13 square miles). The SLFPD's sphere of influence (SOI) includes an additional ±6,875 acres (±10.74 square miles) of land west and north of the City limits.

The SLFPD currently employs ten full-time employees: one fire chief, one fire marshal/battalion chief, one training officer/battalion chief, three fire captains, three engineers, and one administrative assistant (SLFPD, 2022). The SLFPD also relies on volunteers to respond to calls and provide fire protection (LAFCO, 2018). During peak fire season, additional firefighters are added to the roster as funding allows. The SLFPD responds to an average of ±1,500 calls per year, the majority of which are emergency medical and rescue calls. The SLFPD currently owns three fire stations within the City limits at the following locations:

Station 1: 4126 Ashby Court. Station 1 is the main fire station and is located in the center of the City. This station is staffed 24 hours per day, and all administrative functions are conducted at this location.

Station 2: 5270 Akrich Avenue: Station 2 is not staffed or used for day-to-day operations. It is currently used primarily for storage of fire apparatus. The building was constructed in the 1940s and does not meet current building standards.

Station 3: 13791 Lake Boulevard: Station 3 is not staffed on a daily basis and is used mainly for storage of fire apparatus and for training activities. Volunteers occupy this station during peak fire season as needed. The SLFPD Board meetings are conducted at Station 3.

The SLFPD is funded primarily through property taxes, grants, fees, charges levied for services provided, and reimbursements from fire calls when dispatched outside of the District's service boundary (LAFCO, 2018). The District currently collects an annual *Fire Suppression Equipment and Apparatus Assessment* of $29.00 per parcel. Past ballot measures to establish a parcel tax to provide funding for the SLFPD have been defeated. The majority of voters approved a parcel tax proposed on the November 2018 ballot, with 57.45% in favor of the tax; however, a two-thirds vote was required in order for the measure to pass.

In 2009, the City approved a Fire Protection Facilities Impact Fee as requested by the SLFPD for parcels within the City limits. As stated in Shasta Lake Municipal Code (SLMC) §13.08.090, the purpose of the fee is to protect the health, safety, and welfare of the community by ensuring that funds are available for the improvement of fire protection facilities. The fee applies to new development and is paid directly to the SLFPD prior to issuance of a building permit by the City. According to the SLFPD Development Impact Fee Schedule, the impact fee as of January 1, 2022, is $1,046 per single-family dwelling unit, $859.94 per multi-family dwelling unit, and $0.38 per square foot for commercial/industrial development (may be adjusted based on construction type).

Insurance Services Office (ISO) Rating

The ISO, through the Public Protection Classification (PPC) program, evaluates the performance of municipal fire suppression capabilities based on three primary factors: receiving and handling of emergency calls, Fire Department staffing/equipment (number of employees and volunteers, and maintenance of crucial equipment), and water distribution and supply (including the number of fire hydrants and access to adequate water volumes).

An ISO Class 1 rating generally indicates superior fire protection in an area, and Class 10 indicates that the area's fire-suppression program doesn't meet ISO's minimum criteria. Many communities use the PPC as a benchmark for gauging the effectiveness of fire-protection services in order to budget for facilities, equipment, and training. Generally, insurance companies offer lower premiums in areas with better fire protection. The SLFPD maintains an ISO rating of 3 for properties within five road miles of a fire station and within 1,000 feet of a credible water supply. The rating is 3Y for properties within five road miles of a fire station, but more than 1,000 feet from a credible water supply (Pers. comm., S. Toso, SLFPD, 2022).

Mutual Aid

The SLFPD maintains a mutual aid agreement with the Shasta County Fire Department. In June 2020, the City entered into a Cooperative Agreement with the California Department of Forestry and Fire Protection (CAL FIRE) and the SLFPD for the purpose of administering a Wildland Fire Protection Agreement (WFPA). Under the WFPA, CAL FIRE will provide supplemental fire protection services in certain areas of the City. The coverage area under the WFPA is ±3,708 acres and includes areas of elevated risk of wildfire[1] where City electric utility infrastructure is located. Under the Agreement, an Operating Plan must be prepared prior to April 1 of each year. The Operating Plan requires implementation of a year-round, aggressive fire prevention program by the City. The fire prevention program would be developed using CAL FIRE and local guidelines.

POLICE PROTECTION

The City contracts with the Shasta County Sheriff's Office to provide law enforcement services in the City. The Shasta Lake Sheriff's Station is located at 4488 Red Bluff Street in the City, adjacent to City Hall. Staff includes one lieutenant, two sergeants, ten deputies, one community service officer, and two cadets. Additional services are available to the City from specialty teams through

[1] Areas of elevated risk are "Tier 2" areas identified by a CAL FIRE and California Public Utilities Commission threat assessment.

the County Sheriff's Office: the Major Crimes Unit, which investigates both crimes against people and crimes against property; the K-9 Team, which assists with narcotics searches, physical apprehensions, and arrests; the Special Weapons and Tactics Team (SWAT), which responds to critical incidents; and the Bomb Squad.

In addition, the Marijuana Eradication Team (MET), grant-funded through the Office of Emergency Services, investigates marijuana cultivation activity throughout the County in cooperation with other law enforcement agencies. The Shasta Interagency Narcotics Task Force (SINTF) is a collaborative effort to reduce narcotics in the County. Participating agencies include the Bureau of Narcotic Enforcement, Shasta County Sheriff's Office, Shasta County Probation, Redding Police Department, Anderson Police Department, and the California Highway Patrol. The Shasta Lake Sheriff's Office also has a citizen volunteer patrol, a community-based crime prevention program that patrols neighborhoods, conducts business and neighborhood watch activities, and reports suspicious persons and activities to the Sheriff's Office.

SCHOOLS

Public schools in the City are located within the Gateway Unified School District (GUSD). GUSD was officially organized in 1991 and covers ±500 square miles, including the entirety of the City of Shasta Lake and portions of the City of Redding and unincorporated areas of Shasta County. The District offices are located on Mountain Lakes Boulevard in the City of Redding.

Funding for new, expanded, and modernized school facilities is provided by State funds, voter-approved general obligation bonds, and developer impact fees that are paid prior to issuance of a building permit for new residential, commercial, and industrial construction that occurs within the GUSD service area. According to the Level I Developer Fee Study prepared for the GUSD by Jack Schreder & Associates, Inc. in March 2022 (Schreder & Associates, 2022), the school impact fee, effective August 1, 2022, will be $4.79 per square foot of residential construction, $0.78 per square foot for commercial/industrial construction, and $0.08 per square foot for mini-storage facilities. The fee may be adjusted every two years based on the applicable inflation rate.

As shown in **Figure 4.15-1**, public schools within the City of Shasta Lake are Central Valley High School on La Mesa Avenue (grades 9-12), Mountain Lakes Continuation High School (grades 10-12) and Gateway Community Day School (grades 7-12) on Shasta Dam Boulevard, Grand Oaks Elementary School on Grand Avenue (transitional kindergarten [TK]-grade 5), and Shasta Lake School on Vallecito Street (grades TK-8) (California Department of Education, 2021).

GUSD has experienced an overall decline in enrollment in the past several years, dropping from 3,853 in 2014-15 to 2,344 in 2020-21; these numbers reflect all schools within the GUSD, including schools outside of the City limits. As detailed in **Table 4.15-1**, enrollment for the schools that are within the City limits was 1,728 in 2014-15 and 1,512 in 2020-21; overall enrollment has remained relatively steady over the past five years at the schools within the City limits.

According to a Fiscal Health Risk Analysis prepared by the Fiscal Crisis and Management Assistance Team (FCMAT) on September 3, 2019, one reason for the overall decline in enrollment in the GUSD is the approval of inter-district transfers. For the 2018-19 school year, a total of 400 students were allowed to transfer out of the GUSD, and it is expected that the overall decline in enrollment will continue into the future (FCMAT, 2019).

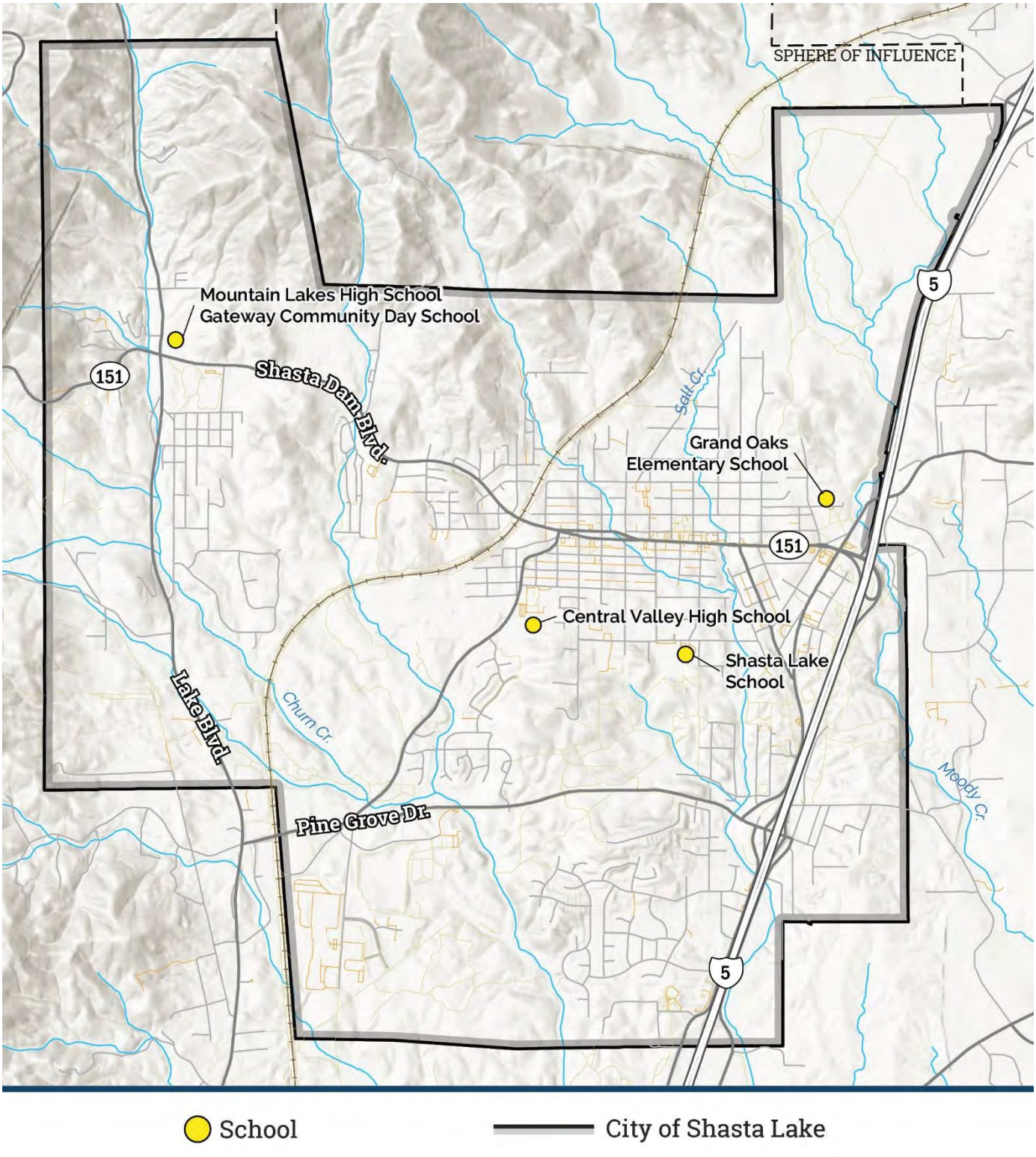


Figure 4.15-1
Public Schools

Table 4.15-1
Gateway Unified School District Enrollment

School	School Year						
	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16	2014-15
Central Valley High School	583	592	593	610	595	644	722
Grand Oaks Elementary	235	228	230	239	235	262	255
Shasta Lake School	631	649	651	663	641	630	684
Mountain Lakes High School	39	47	36	50	44	45	56
Gateway Community Day School	24	21	17	13	18	10	11
Totals	**1,512**	**1,537**	**1,527**	**1,575**	**1,533**	**1,591**	**1,728**

Source: California Department of Education, 2021.

PUBLIC HEALTH AND OTHER PUBLIC SERVICES

The Shasta County Health and Human Services Agency (HHSA) provides public health services in the City at their regional office on Shasta Dam Boulevard. Services include enrollment assistance for the CalFresh (food stamps) and MediCal programs, CalWORKs employment services, cash assistance, and behavioral health services. HHSA also provides assistance with housing programs for low-income community members. Women, Infants, and Children (WIC) services are also available at the Shasta Lake HHSA office.

4.15.3 Regulatory Framework

FEDERAL

There are no federal regulations pertaining to public services that apply to the proposed project.

STATE

California Emergency Services Act

The California Emergency Services Act (California Government Code §8550-8669.7), which established the State Office of Emergency Services (Cal OES), includes statewide emergency standards to be employed in the event of a large-scale natural, manmade, or war-caused emergency. §8615 of the Act facilitates the rendering of aid to areas stricken by an emergency and waives the requirement for an executed written agreement, provided that the area is covered by an adopted emergency plan. The State, each of its counties, incorporated cities, and fire protection districts, have adopted the Civil Defense Master Mutual Aid Agreement, which creates a formal structure whereby local jurisdictions retain control of their own facilities, personnel, and resources, but may also receive assistance from, or render assistance to, other jurisdictions in the State.

California Building Standards Code (CBSC)

CBSC Part 9 is the California Fire Code (CFC), which includes minimum requirements to safeguard the public health, safety, and general welfare of communities from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The CFC

includes minimum fire flow and flow duration requirements for buildings, based on the size of the building and type of construction. Where an existing water system is not able to provide adequate fire flows, upsizing of waterlines and/or construction of new or expanded water storage facilities may be required. The CFC also addresses fire apparatus access road requirements, which may require a project to construct off-site physical improvements.

California Department of Education

Sections 17210-17224 of the California Education Code govern the evaluation and selection of property for new schools and for expansion of existing schools. These code sections also apply to charter schools if a charter school is seeking State funding for the acquisition and/or construction of school facilities. §17212 of the Education Code requires the governing board of a school district to consider various factors prior to acquiring property for construction of a school building. Geological and soil engineering studies must be completed to provide an assessment of the site to determine the potential for impacts due to earthquakes or geologic hazards. In addition, an evaluation must be completed to address population, transportation, water supply, waste disposal facilities, utilities, traffic hazards, surface drainage conditions, and other factors.

Pursuant to §17251 of the California Education Code, CDE establishes standards for school sites and adopts school site regulations, which are contained in California Code of Regulations (CCR) Title 5, §14001 *et seq.* CDE prepared a *Guide to School Site Analysis and Development* to assist school districts in determining the amount of land needed to support their educational programs (CDE, 2000).

CDE recommends that the size of schools be calculated at 59 square feet per student for kindergarten through grade 6; at 80 square feet per student for grades 7 and 8; and an average of 92 square feet per student for grades 9 through 12. CDE recommends a minimum classroom size of 960 square feet for elementary classrooms and 1,350 square feet for kindergarten (CDE, 2000).

California Environmental Quality Act

CEQA §21151.2 requires school districts to notify the local jurisdiction's planning commission in writing prior to acquiring land for a new school or expanded school facilities. The planning commission has 30 days from receipt of the notice to report back to the school district and identify any concerns regarding the potential school site. The purpose of this requirement is to promote the safety of students and provide for comprehensive community planning. CEQA §21151.8 includes specific environmental review requirements for school districts for the purchase of a school site or the construction of a new elementary or secondary school by a school district.

LOCAL

There are no local regulations that dictate specific timing for providing new or expanded government facilities.

4.15.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions that influence the provision of public services, the increased demand for public services, and funding for new or expanded government facilities.

GOAL LU-2	**Foster a robust local economy through a stable and diverse mix of retail, commercial, industrial, and tourism sectors in order to meet the needs of all residents and to create sustainable job growth.**

POLICIES	LU-2.1	Review the community's available residential and commercial land use capacities every five years and modify as necessary to reflect development that has occurred, its impacts, the evolving market and economic conditions, and consistency with community values.
	LU-2.4	Guide the development of capital facilities and infrastructure to ensure adequate levels of services for existing and new growth, and to appropriately balance costs and revenues derived from new development. Use utility Master Plans to determine the needs for facilities and associated infrastructure based on the rate and direction of growth. Coordinate and support these needs through a Capital Improvement Plan and appropriate impact fee programs that will achieve conformance with the General Plan vision.
	LU-2.5	The City will prioritize funding of city municipal services and infrastructure to support economic development while maintaining fiscal sustainability for the City.
GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU-3.7	Approval of new industrial development should demonstrate that public services are available, the site is designed to be compatible with adjacent uses and is of adequate size to accommodate a variety of industrial uses, and that safe and adequate access is available.
	LU-3.17	Require that all specific and area plans include a fiscal impact analysis that demonstrates that existing city residents will not be burdened by increased costs or reduced services as the area develops.
	LU-3.18	Ensure fair financial management by requiring new development to pay its fair and proportional share of needed community improvements through impact fees, assessment districts, and other mechanisms.
IMPLEMENTATION ACTIONS	LU-3.4	Discourage development without a coordinated plan for land use or that is incompatible with adjacent residential areas, circulation limitations, available infrastructure capacity, or public service needs.
	LU-3.6	Develop specific or area plans, as needed, that cover services and facilities necessary to serve an identified area based on ultimate development potential. Services and facilities include, but are not limited to, roads, water, sewer, storm drainage, power, law enforcement, fire protection, schools, libraries, parks, trees and landscaping in public spaces, and trail systems. These plans should include a schedule for the phasing of public improvements and anticipated development, and timing of preliminary grading and tree removal and replacement.
GOAL LU-4	**Provide services to promote healthy lifestyles, safety, and the well-being of all residents.**	
POLICIES	LU-4.2	Ensure that adequate public service facilities/uses (e.g., schools, parks, fire stations, etc.) and public utilities (e.g., substations, pump stations, transmission lines, etc.) are in place in a timely fashion to protect public safety. Accomplish this through regular, comprehensive, and advanced infrastructure master planning efforts. Appropriate zoning for such facilities will be determined in response to the identified need as it occurs.
	LU-4.3	Provide adequate public facilities, services, and infrastructure in place and available to support all city residents, including for governance, public safety, seniors and youth, community gatherings, and comparable activities.

	LU-4.4	Promote the co-location of parks, schools, police, police and fire facilities, health services, and other community facilities to support community interaction, enhance neighborhood identify, and leverage limited resources.
	LU-4.5	Work with outside agencies and non-profit organizations to encourage the provision of services and facilities not subject to city jurisdiction, such as public schools and quasi-public recreational and other infrastructure.
IMPLEMENTATION ACTIONS	LU-4.1	Conduct infrastructure master planning over a 20-year time period as additional infrastructure may be identified. Establish financing mechanisms to ensure the necessary services, facilities, and maintenance resources are available when needed.
	LU-4.3	Notify the Gateway Unified School District, Shasta Lake Fire Protection District, Shasta Lake Sheriff's Office, and other entities that provide public services in the City in order to identify the need for new or expanded facilities during review of major development projects in the City.
GOAL CIR-4	**Maintain economic health and viability while making improvements to public facilities, utilities infrastructure, and transportation infrastructure, consistent with the General Plan.**	
POLICY	CIR-4.1	Continue to ensure that new development pays its fair share of the costs of transportation and public facilities improvements. Transportation improvements should be based on traffic generated and impacts on service levels and vehicle miles traveled. Ensure adequate public services and facilities are available at the time of project occupancy and that a funding mechanism is in place to ensure long-term maintenance of required public facilities.
GOAL HS-1	**Create and maintain a safe environment.**	
POLICIES	HS-1.1	Coordinate with state, county, and other local agencies to build mutual aid capacity for emergency events, especially through disaster preparedness training.
	HS 1.4	Establish level-of-service thresholds for fire protection and law enforcement services.
	HS-1.5	All land divisions and development applications that have the potential for life-safety impacts shall be forwarded to the Shasta Lake Fire Protection District (SLFPD) for review.
	HS-1.8	New and non-conforming development located in hazard areas requiring additional levels of law enforcement and fire services shall participate in offsetting costs for the additional services.
IMPLEMENTATION ACTIONS	HS-1.2	Work to maintain an adequate emergency response time for all proposed urban development. Identify existing developed areas lacking adequate emergency service, especially focusing on neighborhoods in high wildfire hazard zones that do not have at least two emergency evacuation routes, both urban and rural.
	HS-1.3	Maintain mutual aid agreements with other agencies in Shasta County.
	HS-1.6	Provide rapid and timely response to all law enforcement and other emergencies. Work to maintain minimum average response times.
	HS-1.7	Identify geographical areas or population groups experiencing noticeable crime victimization in order to improve effectiveness of crime prevention efforts and commit resources, as appropriate, to these areas to help them.
	HS-1.8	Periodically evaluate the cost and benefits of maintaining contract law enforcement services to determine if the city should establish its own police services.

GOAL HS-3	**Minimize the risk to life and property from wildfire.**	
POLICIES	HS-3.2	Ensure emergency responders have adequate water supplies around the city, particularly in developed areas with limited access in high fire hazard zones.
	HS-3.3	Limit new development in high fire hazard zones to those projects that can meet established standards for adequate emergency access and water supplies.
IMPLEMENTATION ACTIONS	HS-3.1	Strengthen site access, emergency water supply, vegetative fuel modification, and defensible space standards for new development, including for the long-term maintenance of such infrastructure. Develop fire protection and hazardous fuel reduction plans for new subdivisions in high fire hazard areas. Ongoing implementation of the plans should be required and funded by new development.
	HS-3.2	Identify residential areas within high fire hazard zones that do not have at least two routes for emergency egress, lack adequate emergency water supply, or need vegetative fuel modification to reduce risk. Work with affected residents and the SLFPD to identify potential area-specific solutions to ensure risk reduction.
GOAL HS-7	**Create and maintain a community with equitable access to healthy foods and adequate care services and with opportunities for healthy and active lifestyles.**	
POLICY	HS-7.6	Explore opportunities for community collaboration and the efficient use of limited resources to improve access and services for the community's seniors and children.
IMPLEMENTATION ACTIONS	HS-7.1	Collaborate with Shasta County Health and Human Services Agency (SCHHSA) to help identify funding sources to facilitate improved access to healthy and culturally appropriate foods, comprehensive health care services, nutrition programs, childcare, and supportive services, especially for disadvantaged populations.
	HS-7.6	Evaluate existing supportive service programs and promote new programs that increase the capacity for aging-in-place through active engagement with the senior community.

4.15.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on public services if it resulted in:

- The provision of or need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

    1. Fire protection.
    2. Police protection.
    3. Schools.
    4. Public health or other public services.

4.15.6 Issues Not Discussed Further

All issues identified in Section 4.15.5 are addressed below.

4.15.7 Impact Analysis and Mitigation Measures

Impact 4.15-1	**Implementation of the 2040 General Plan could result in the need for new and/or expanded fire protection facilities, the construction of which could cause significant environmental impacts.** ***Less-than-Significant Impact***

As stated in Section 4.15.2, the SLFPD, a special district separate from the City, provides fire protection and emergency medical response services in the City. In 2006, SLFPD prepared an impact fee study to identify future facility needs and costs associated with those facilities. The Impact Fee Study identified the potential need for a future fire station in the northeastern area of the City as that area develops. The study also stated that a new engine company would be needed for each incremental population growth of 2,500 persons.

For example, in 2012, an application for the Mountain Gate at Shasta project was submitted to the City for construction of up to 1,604 dwelling units and ±195,600 square feet of commercial development in the northeastern area of the City. Due to the anticipated population growth resulting from the project, SLFPD requested that land be set aside within the project boundaries for a future fire station. A mitigation measure was included requiring that prior to occupancy of the 500th residential unit, the developer would dedicate two acres of land to SLFPD for construction of a new fire station. Potential locations for a future fire station were identified, these areas were evaluated in the EIR for the project, and mitigation measures were included to minimize/avoid potential environmental impacts that could occur.

Future projects will be reviewed on a case-by-case basis to determine whether new or expanded fire facilities are required. Potential environmental effects of such facilities would be analyzed at that time, and mitigation measures would be imposed as necessary. Therefore, impacts associated with construction of future fire facilities that may be required as a result of implementation of the 2040 General Plan would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.15-2	**Implementation of the 2040 General Plan could result in the need for new and/or expanded police protection facilities, the construction of which could cause significant environmental impacts.** ***Less-than-Significant Impact***

As stated in Section 4.15.2, the City contracts with the Shasta County Sheriff's Office for police protection services. The Shasta Lake Sheriff's Station, constructed in 2013, is located at 4488 Red Bluff Street. The size of the Sheriff's Station was determined based on an analysis of future staffing needs and a determination that future on-site staff at the Shasta Lake Station would be 32 employees, double that of existing staffing levels. Additional police protection services are available on a case-by-case basis, but these services are housed in County buildings outside of the City limits. Although development under the 2040 General Plan would result in an increase in population that would increase the demand for police protection services, the need for new or expanded law enforcement facilities in the City is not expected because the existing building was sized to accommodate future staffing levels.

Future projects will be reviewed on a case-by-case basis to determine, based on project size, type, and location, whether new or expanded law enforcement facilities are required. Potential environmental effects of such facilities would be analyzed at that time, and mitigation measures would be imposed as necessary. Therefore, impacts associated with construction of future law enforcement facilities that may be required as a result of implementation of the 2040 General Plan would be ***less than significant***.

Mitigation Measures

No mitigation measures required.

Impact 4.15-3	**Implementation of the 2040 General Plan could result in the need for new and/or expanded school facilities, the construction of which could cause significant environmental impacts.** ***Less-than-Significant Impact***

Development under the 2040 General Plan would include construction of residences and a corresponding increase in population that could result in the need for new or altered school facilities. As noted in Section 4.15.2 (Environmental Setting), there are five public schools within the City limits: Central Valley High School (grades 9-12), Mountain Lakes High School (grades 10-12), Gateway Community Day School (grades 7-12), Grand Oaks Elementary School (grades TK-5), and Shasta Lake School (grades TK-8).

A Long-Range Facility Master Plan was prepared for GUSD by Eric Hall & Associates (EH&A) in January 2019. The purpose of the Plan was to identify enrollment projections over the next ten years, evaluate the District's ability to house current and future students, and identify the need for new or expanded school facilities and improvements to existing facilities. Factors considered during development of the GUSD enrollment projections included anticipated residential development within the District, anticipated birth rates, and historical enrollment trends. The Master Plan identified the anticipated number of students created by the addition of each new housing unit as shown in **Table 4.15-2**.

Table 4.15-2
Gateway Unified School District Student Generation Factors

School Type	Students Generated per New Residential Housing Unit
Elementary	**0.1358**
High School	**0.0740**
Total	**0.2098**

Source: GUSD Long-Range Facility Master Plan (EH&A, 2019).

Based on anticipated new development and student generation factors, enrollment projections were prepared for all schools within the GUSD. **Table 4.15-3** includes projections for schools within the City limits through the 2027-28 school year. The enrollment projections that were established in 2019 for the 2020-2021 school year are included to allow a comparison with the actual enrollment shown in **Table 4.15-1**. As indicated, actual enrollment for the 2020-21 school year was less than projected for Central Valley High School (25 fewer students), Shasta Lake School (30 fewer students), and Mountain Lakes High School (10 fewer students).

Actual enrollment for the 2020-21 school years was higher than projected for Shasta Lake School (3 additional students) and Gateway Community Day School (11 additional students).

Table 4.15-3
Gateway Unified School District Enrollment Projections

School	School Year							
	2020-21	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**
Central Valley High School	608	602	630	604	624	628	625	653
Grand Oaks Elementary	232	229	228	224	220	221	221	219
Shasta Lake School	661	689	672	685	677	681	672	665
Mountain Lakes High School	49	49	49	49	49	49	49	49
Gateway Community Day School	13	13	13	13	13	13	13	13
Total	**1,563**	**1,582**	**1,592**	**1,575**	**1,583**	**1,592**	**1,580**	**1,599**

Source: GUSD Long-Range Facility Master Plan (EH&A, 2019).

Table 4.15-4 shows the capacity of schools within the City limits. The capacity of Mountain Lakes High School and Gateway Community Day School are combined because both schools are housed at the same facility.

Table 4.15-4
Gateway Unified School District School Capacity

Classroom Type	School Capacity			
	Central Valley High School	**Grand Oaks Elementary**	**Shasta Lake School**	**Mountain Lakes High School and Gateway Community Day School**
Permanent	768	272	265	240
Portable	686	324	831	180
Total Capacity	**1,454**	**596**	**1,096**	**420**
Projected Enrollment for 2027-28 School Year	**653**	**219**	**665**	**49**

Source: GUSD Long-Range Facility Master Plan (EH&A, 2019).

As indicated, the District has capacity to accommodate additional students at each of the schools within the City through the 2027-28 school year and beyond. The Master Plan states that if planned development occurs as predicted, it will help keep the District's enrollment steady but will not increase enrollment significantly. If development does not occur as planned, the District will continue to experience a decline in enrollment, although not at the extent it experienced in the previous ten years (EH&A, 2019).

The Facility Master Plan does not identify the need for new or expanded school facilities in the near future; however, as the City's population increases, the demand for schools will increase as well. The construction of new or expanded school facilities, if required, would be subject to review under CEQA. All proposals for discretionary projects in the City are forwarded to GUSD for review and comment, and the need for new or expanded school facilities is identified at that time.

For example, during review of the Mountain Gate at Shasta project, GUSD stated that they did not have a master plan at that time that evaluated future facility needs, and they did not know whether

a school site would be required; however, they requested that land be set aside within the development for a future school. Subsequently, the developer entered into an agreement with GUSD to set aside up to 15 acres for a future school, should it be determined that a new school is needed. Potential locations for future school facilities were identified, and these areas were evaluated in the EIR for the project. Mitigation measures were included to minimize/avoid potential environmental impacts.

Due to the existing capacity of schools within the City (refer to **Table 4.15-4**), it is not expected that new or expanded school facilities, other than the school site identified within the Mountain Gate at Shasta development, would be needed as a result of implementation of the 2040 General Plan. The City will consult with GUSD during review of future residential development projects to identify the need for new or expanded school facilities in the City. Although there is no guarantee that construction of future school facilities would have no significant environmental impacts, the acquisition of property for school sites is subject to the stringent environmental review process described in Section 4.15.3 (Regulatory Framework) and in §17212 of the California Education Code.

Pursuant to CEQA §21151.2, GUSD must notify the City in writing prior to acquiring land for a new school or expanded school facilities to allow the City to determine potential environmental effects associated with the potential school site. CEQA §21151.8 includes specific environmental review requirements that apply to the purchase of school sites or the construction of a new elementary or secondary school by a school district.

The CEQA review process would allow for implementation of mitigation measures to avoid/minimize potential impacts that could occur with construction of a new school or expanded school facilities. Therefore, potential impacts associated with the construction or expansion of school facilities that may be required due to implementation of the 2040 General Plan are anticipated to be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.15-4	**Implementation of the 2040 General Plan could result in the need for new and/or expanded public health and/or other public services facilities, the construction of which could cause significant environmental impacts.** ***Less-than-Significant Impact***

As stated in Section 4.15.2 (Environmental Setting), the Shasta County Health and Human Services Agency (HHSA) provides public health-related services at their regional office in the City of Shasta Lake. As the City's population increases, the demand for public health services will increase, and the need for additional local government facilities may be identified. It is not possible to predict when or where new or expanded public health or other government facilities will be required. Future construction or expansion of government facilities would be subject to CEQA review, and the City would review future projects on a case-by-case basis to determine any potential for adverse environmental impacts. Mitigation measures would be implemented as necessary.

Implementation of project-specific mitigation measures would ensure that impacts are ***less than significant***.

Mitigation Measures

No mitigation measures required.

4.15.8 References

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SECTION

4.16

Recreation

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4.16 Recreation

This section describes existing parks and recreational facilities in the City and identifies potential impacts on such facilities that could result from implementation of the 2040 General Plan. This section also describes environmental impacts that could occur with construction of new parks and recreational facilities that would be required under the 2040 General Plan.

4.16.1 Study Methods

The following evaluation of potential impacts on parks and recreational facilities is based on review of existing reports and literature, including the City of Shasta Lake 2005 Park System Master Plan (MIG, 2005), the GoShasta Regional Active Transportation Plan (SRTA, 2019), and maps of trails in the area maintained by the City of Redding and Healthy Shasta.

4.16.2 Environmental Setting

REGIONAL

Numerous recreational opportunities are available in the region, including water sports, fishing, hiking, mountain biking, and camping in the Shasta-Trinity National Forest, Whiskeytown National Recreation Area, and Lassen Volcanic National Park. These areas also provide for winter sports during snowy winter months, including skiing, snowboarding, snowshoeing, and sledding. There are numerous trails in the region, including in areas surrounding Lake Shasta and Whiskeytown Lake, throughout the cities of Anderson, Redding, and Shasta Lake, and in unincorporated areas of Shasta County (City of Redding, Greater Redding Area Trails Map, 2022; Healthy Shasta Trail Maps, n.d.). The trails are maintained by the Bureau of Land Management, U.S. Forest Service, National Parks Service, cities of Anderson, Redding, and Shasta Lake, and Shasta County, depending on the location of the trails.

LOCAL

Shasta Lake residents have access to a variety of parks and recreational facilities within and adjacent to the City, including community and neighborhood parks, bicycle lanes/routes, and walking paths. Informal off-road trails are located along Churn Creek and on other undeveloped land throughout the City. Although steep terrain, the existence of water features and drainage corridors, and the reach of the floodplain in the City impact the development potential of certain areas in the City, these areas are often conducive to parks and recreational uses (MIG, 2005).

The City of Shasta Lake is the primary provider of parks and recreational facilities in the Planning Area. The Gateway Unified School District also provides a variety of athletic facilities that contribute to the diversity of facilities in the City.

City of Shasta Lake 2005 Park System Master Plan

The City's 2005 Park System Master Plan (MIG, 2005) identifies existing parks and recreational facilities in the City and identifies recommended improvements to the existing parks. The Plan envisions a park system that would serve Shasta Lake's entire population with interconnected and conveniently located parks facilities. The Master Plan also recommends new facilities to be constructed as population growth in the City increases the demand for parks and recreational facilities. **Table 4.16-1** identifies current parks facilities in the City.

Table 4.16-1
City of Shasta Lake Existing Parks Facilities[1]

Park Site	Acreage	Amenities
Mini Parks		
Blue Canyon Park, Central Avenue	1.02	Playground equipment, open grass play area, parking, picnic tables, etc.
Shasta Park, Shasta Park Drive	0.23	Playground equipment, open grass play area.
Subtotal	***1.25***	
Neighborhood Parks		
Akard Park, Akrich Street	2.92	Basketball court, open grass play area, picnic tables, dog park.
Subtotal	***2.92***	
Community Park		
Margaret V. Polf Park, Shasta Dam Boulevard/ Sacramento Street	25.84	Soccer field, playground equipment, bleachers, picnic tables, paved walking trail, parking lot, restrooms, BMX track.
Subtotal	***25.84***	
Special Use Areas		
Dam Builders Memorial Park	0.13	Picnic table, benches.
Harold "Bizz" Johnson Park, Shasta Dam Boulevard/ Sacramento Street.	7.15	Baseball field complex, bleachers, snack bar, playground equipment, parking, restrooms, etc.
Claire Engle Park, Median Avenue	2.80	Skate park, outdoor performance stage, open grass play area, playground equipment, picnic tables, restroom, etc.
Wynne Price Ball Field, Vallecito Street	4.32	Baseball field, bleachers, playground equipment, tennis/pickleball court, picnic tables, restrooms.
Subtotal	***14.40***	
Undeveloped Park Land/Open Space		
Churn Creek Land	100	Informal trail system along a portion of Churn Creek. Proposed future trailhead, improved trail system, connections linking Shasta Lake and Redding trail systems, parking.
Other Undeveloped Park Land	30.52	Future playgrounds, internal trails, open play areas.
Subtotal	**130.52**	
Total Acres	**174.93**	

Source: City of Shasta Lake Park System Master Plan (MIG, 2005).

[1] *Some of the parks and recreational facilities in Table 4.16-1 are on lands designated as Public Facilities (PF) in the General Plan.*

Table 4.16-2 identifies parks and recreational facilities associated with public schools within the City. These facilities have also been used by the City and other organizations for special community events.

Table 4.16-2
Public School Parks Facilities

School	Acres	Amenities
Central Valley High School	30.71	Softball field, football field (stadium-lighted), track, tennis courts (4), gym.
Shasta Lake School	29.96	Soccer field, multi-use backstop, basketball courts, gym.
Grand Oaks School	10.05	Multi-use field, basketball court, playground equipment, gym.
Mountain Lake High School (Previously Toyon Elementary School)	9.92	Multi-use field, basketball court, playground equipment, gym.
Total Acres	**80.64**	

Source: City of Shasta Lake Park System Master Plan (MIG, 2005).

The City's Parks Master Plan also addresses natural open space areas and states that some of these areas may be suitable for development of trails, seating, and viewing areas.

City of Shasta Lake 2009 Bicycle Transportation Plan

The City prepared a Bicycle Transportation Plan in 2009 (Omni-Means, 2009) to provide a long-term framework to improve and encourage bicycle transportation in the City. The overall goal of the Plan is to create a safe, efficient, and coordinated transportation environment that encourages bicycling in order to reduce vehicle emissions and promote a healthy environment with easy access to alternative forms of transportation. The Plan identifies proposed locations for Class 1 bikeways (separated paths for the exclusive use of bicycles and pedestrians), Class 2 bikeways (striped on-street lanes for one-way bike travel); and Class 3 bikeways/bike routes (signed areas of shared bicycle/motor vehicle traffic).

GoShasta Regional Active Transportation Plan

The GoShasta Regional Active Transportation Plan (ATP) (SRTA, 2019) provides a plan to strategically guide the development of programs and infrastructure for walking, bicycling, and connecting to transit in the Shasta Region. The ATP provides a regional vision and identifies projects and action lists for Shasta County and the incorporated cities of Anderson and Shasta Lake. Program recommendations are offered to support an effective active transportation network. Project recommendations are also identified for bicycle and pedestrian amenities. According to the GoShasta ATP, the City of Shasta Lake has ±0.93 miles of shared-use paths, ±10.85 miles of bike lane, and ±4.21 miles of bike routes, for a total of ±15.99 miles of bikeway facilities.

The ATP identifies improvements to the pedestrian network, including potential interchange and intersection improvements, community walking connections, and Safe Routes to School projects that would facilitate walking in the community. Recommendations to foster bicycling in the area are also provided. For the City of Shasta Lake, the ATP recommends an additional ±9.55 miles of shared-use paths, ±1.88 miles of buffered bike lane, ±5.03 miles of separated bike lane, ±6.92 miles of bike lane, ±5.63 miles of "bike boulevard," and ±4.41 miles of bike route, for a total of ±33.42 additional miles of bikeway facilities.

The ATP prioritizes projects based on safety, connectivity, demand, and equity (connections to disadvantaged communities). **Table 4.16-3** identifies priority pedestrian and bicycle projects identified in the City that will be integrated into the Shasta Regional Transportation Plan (RTP) fiscally-constrained project list.

Table 4.16-3
GoShasta Active Transportation Plan
City of Shasta Lake Priority Projects

Street Name	From Street	To Street	Description	Length (Miles)
Pedestrian Improvements				
Ashby Rd.	Los Gatos Ave.	Front Street/Shasta Dam Blvd.	Safe Routes to School (SR2S)	0.29
McConnell Ave.	Shasta Dam Blvd.	Main St.	Commercial/Civic Corridor	0.10
Ashby Rd.	Pine Grove Ave.	La Mesa Ave.	SR2S	1.20
Deer Creek Ave./ Vallecito St.	Cabello St.	Shasta Dam Blvd.	SR2S	0.53
Pine Grove Ave.	Jorzack Way	Ashby Rd.	Community Walking Connection	1.40
Cascade Blvd.	Pine Grove Ave.	Grand Coulee Blvd.	Community Walking Connection	0.67
Cascade Blvd.	Grand Coulee Blvd.	I-5 NB Offramp/R/ I-5 SB/R/ Shasta Dam Blvd.	Community Walking Connection	0.57
			Total Miles of Pedestrian Improvements	**4.76**
Bicycle Improvements				
Churn Creek Trail – Connection	Oasis Rd.	Pine Grove Ave.	Shared Use Path	1.73
Shasta Dam Blvd.	Ashby Rd.	Lake Blvd.	Buffered Bike Lane – Subject to Caltrans Process	1.88
			Total Miles of Bicycle Improvements	**3.61**

4.16.3 Regulatory Framework

FEDERAL

There are no federal regulations pertaining to recreation that apply to the proposed project.

STATE

California Subdivision Map Act (Quimby Act)

California Subdivision Map Act (SMA) §66477, also known as the Quimby Act, allows a city or county to require the dedication of land or payment of an in-lieu fee for park or recreational purposes as a condition of approval of a tentative or parcel map. Only the payment of fees may be

required in subdivisions containing 50 parcels or less. The dedication of land and/or payment of fees may not exceed the proportionate amount necessary to provide three acres of park per 1,000 persons residing in the subdivision. An exception is provided when the amount of existing neighborhood and community park area exceeds three acres per 1,000 persons; in this case, the legislative body may adopt a higher standard not to exceed five acres per 1,000 persons residing within a subdivision.

Quimby Act in-lieu fees may be used only for the purchase of park land and/or development of park or recreational facilities that would serve the subdivision. The fees cannot be used for the operation/maintenance of park facilities. In certain cases, the in-lieu fees may be used to develop or rehabilitate existing park or recreational facilities outside of the subdivision that is the subject of the fees if the legislative body makes a finding that it is reasonably foreseeable that future inhabitants of the subdivision will use the facilities in the neighborhood where the fees are used.

State Public Park Preservation Act

The State Public Park Preservation Act (PRC §5400-5409) states that cities, counties, public districts, and state agencies may not acquire by any means any property that is being used as a public park for the purpose of utilizing the property for nonpark purposes unless sufficient compensation or land, or both, are provided to replace the park land and park facilities.

LOCAL

City of Shasta Lake Municipal Code (SLMC)

The SLMC includes regulations that are intended to avoid/minimize potential impacts to parks and recreational facilities that could result from new development. These regulations include, but are not necessarily limited to:

SLMC Title 16 (Subdivisions), §16.08.100 (Dedication of Land)

SLMC §16.08.100 incorporates SMA §66477 (Quimby Act) and allows the Planning Commission to require the dedication of land and/or payment of in-lieu fees as a condition of approval of a tentative map. The amount of land required to be dedicated or irrevocably offered for dedication for park or recreational purposes may not exceed one acre per 100 lots or fraction thereof.

When the Ordinance was adopted in 2008, the in-lieu fee was $747 for single-family residential projects and $680 for multi-family residential projects. The fee has been adjusted annually since that time in accordance with the Construction Code Index as published in the November Engineering News Record. The in-lieu fee is typically paid prior to recordation of the final map and is in addition to the Park and Recreation Facilities Impact fee established in SLMC §16.08.100.

SLMC §13.08.050 (Park and Recreation Facilities Impact Fees)

SLMC §13.08.050 was enacted to provide for the planning, acquisition, improvement, expansion, and financing of public parks, playgrounds, and recreational facilities. The SLMC recognizes that if these needs were not met, the well-being of City residents could be adversely affected, and it is appropriate that new development pay for additional parks and recreational facilities attributable to the impact of such development. The fees are paid at the time of issuance of a building permit. As of January 1, 2022, the Park and Recreation Facilities Impact Fee was $3,178 per single-family residential unit and $2,890 per multi-family residential unit.

4.16.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to parks and recreational facilities:

GOAL OS-1	**Conserve and manage open space and recreation resources for use and enjoyment by City residents and visitors in a manner that balances public access, resource protection, and private property rights. Ensure future development incorporates open space and recreation resources as appropriate.**	
POLICIES	OS-1.2	Require the dedication of land and/or improvement of open space, parks, or the payment of in-lieu fees in accordance with City development standards as part of the entitlement and/or building permit process.
	OS-1.3	Support parks and recreational vehicle (RV) campgrounds which enhance the outdoor experience and provide recreational amenities beyond existing City owned parks if they meet minimum requirements for the application, development, operation, and maintenance of RV parks and campgrounds in the City.
	OS-1.4	Preserve open space along creeks and hillsides to maintain biological, scenic, and recreational resources in future development.
IMPLEMENTATION ACTIONS	OS-1.2	Develop access criteria for capital improvement projects to enhance access and signage to open spaces, walking paths, and bicycle trails in conjunction with the Shasta Regional Transportation Authority (SRTA) Active Transportation Plan (ATP). Criteria should include safety provisions, such as lighting and signage, as well as safe connections to open spaces and City centers.
	OS-1.3	Require developers and property owners to waive their right to protest formation of landscape and lighting assessment or other City maintenance districts as a condition of approval of new development.
	OS-1.4	Seek to provide five acres of parks to meet neighborhood, community, and habitat protection needs per 1,000 new residents, based on commonly used state or national standards. Strive to maintain a neighborhood park standard of at least 0.9 acres per 1,000 new residents.
GOAL OS-2	**Establish, improve, and maintain sufficient facilities and natural and man-made greenbelt areas along existing creeks, floodplains, natural open space areas, certain roadways, and bicycle and pedestrian trail systems.**	
POLICIES	OS-2.1	Planning, acquisition, development, and operation of parks and recreational systems should be coordinated among City, Shasta County, state, and federal governments, as well as schools and special districts, and should take advantage of opportunities for linkages between publicly-owned parks and publicly-owned state and federal lands.
	OS-2.2	Provide off-road pedestrian and non-motorized bicycle facilities where feasible and practicable. Implement the current proposal to connect Churn Creek Trail with Redding River Trail.
	OS-2.3	Use applicable statewide and national best practices to determine minimum goals for land requirements for protection of existing park space, as well as for planning of new park space and facilities.
	OS-2.4	Promote volunteerism as a means to improve and beautify greenbelt areas or parks.

IMPLEMENTATION ACTIONS	OS-2.1	Implement the Parks Master Plan as amended. Build upon the existing trail network, including Churn Creek Trail, bicycle and walking paths in Margaret Polf Park, and dirt trails that lead to Shasta Dam and connect to the Sacramento River Trail. Preserve and improve public access through new and existing development to enable future use of such trails.
	OS-2.2	Continue to use joint-use agreements with Gateway Unified School District to share in the use and maintenance of parks, sports facilities, playgrounds, and multi-purpose rooms. Such agreements could be beneficial to the City's development of recreational programs for youth.
	OS-2.3	Implement recommendations in the Parks Master Plan for improvements in the Pine Grove Avenue area along Churn Creek for a community park with trailhead, parking, enhanced trails, and connections linking Shasta Lake and Redding trail systems.
GOAL HS-7	**Create and maintain a community with equitable access to healthy foods and adequate care services and with opportunities for healthy and active lifestyles.**	
POLICY	HS-7.7	Provide a range of quality recreational facilities that represent the multicultural needs of the community, are well maintained, and have adequate lighting, signage, and hours of operation.
IMPLEMENTATION ACTION	HS-7.7	The City will provide leadership in identifying opportunities for healthy lifestyles through partnerships with school districts, community health providers, and neighborhood organizations. This may include: • Joint use agreements with local school districts to share facilities for recreation or other activities that can benefit all residents' health; • Requiring new housing projects to provide specific areas for community gardens and outdoor activity; • Promoting pedestrian and bicycle access between existing residential areas and community amenities such as parks and open spaces; • Partnering with other agencies to capture grant funding that will support healthy activities in Shasta Lake; and • Using city media tools and other resources to educate the public about the benefits of healthy lifestyles and good nutrition.
GOAL HE-4	**To provide adequate infrastructure and services for residential development.**	
POLICIES	HE-4.1	**Public Service Maintenance.** The City shall maintain an adequate level of public services, infrastructure, and park and recreational facilities to meet the needs of existing and projected development within the fiscal capacity of the City.
	HE-4.2	**Public Services for New Development.** The City shall ensure that housing developments pay their fair share of public facilities and service costs. For affordable housing, the City shall secure funding wherever possible for the replacement or installation of off-site infrastructure.
GOAL LU-1	**Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.**	
POLICIES	LU-1.14	The City will investigate the use of flexible development standards for projects that will provide new recreational or entertainment opportunities for citizens.

	LU-1.15	Land use districts should provide the opportunity for a range of public or commercial recreation uses and activities to be located in close proximity to residents, subject to appropriate permitting processes.
	LU-1.17	Federal and state lands are important parts of the community land use pattern because of the recreational opportunities they provide to residents. The City should maintain close working relationships with federal and state agencies to protect public lands adjacent to and within the City.
IMPLEMENTATION ACTION	LU-1.11	Provide increased public access opportunities to better connect existing and planned transportation corridors to the Bureau of Reclamation trail systems adjacent to the City while protecting and restoring the natural ecosystem and minimizing environmental damage, as appropriate.
GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU-3.2	Encourage development of residential uses in strategic proximity to employment, recreational facilities, schools, neighborhood commercial areas, and transportation routes.
	LU-3.18	Ensure fair financial management by requiring new development to pay its fair and proportional share of needed community improvements through impact fees, assessment districts, and other mechanisms.
IMPLEMENTATION ACTIONS	LU-3.6	Develop specific or area plans, as needed, that cover services and facilities necessary to serve an identified area based on ultimate development potential. Services and facilities include, but are not limited to, roads, water, sewer, storm drainage, power, law enforcement, fire protection, schools, libraries, parks, trees and landscaping in public spaces, and trail systems. These plans should include a schedule for the phasing of public improvements and anticipated development, and timing of preliminary grading and tree removal and replacement.
	LU-3.7	Periodically conduct comprehensive fee studies to determine whether impact fees fully account for the recovery of costs, consistent with applicable laws.
GOAL LU-4	**Provide services to promote healthy lifestyles, safety, and the well-being of all residents.**	
POLICIES	LU-4.1	Ensure sufficient parks, open space, and trails are planned throughout the City for existing and future residents to improve public health by promoting physical activity, giving residents an opportunity to connect with nature, and mitigating air and water pollution impacts on residents.
	LU-4.4	Promote the co-location of parks, schools, police and fire facilities, health services, and other community facilities to support community interaction, enhance neighborhood identity, and leverage limited resources.
	LU-4.5	Work with outside agencies and non-profit organizations to encourage the provision of services and facilities not subject to city jurisdiction, such as public schools and quasi-public recreational and other infrastructure.

IMPLEMENTATION ACTIONS	LU-4.1	Study and document construction, maintenance, and operational costs with a fiscal impact analysis of public services and facilities over a 20-year time period. Establish financing mechanisms to ensure the necessary services, facilities, and maintenance resources are available when needed.
	LU-4.2	Assess funding and siting opportunities for increased parks and open space within the City through a parks and recreation services master plan process. The plan should include acknowledging and prioritizing access to surrounding public land and recreational opportunities. Explore connections between the two community parks and low income and higher density residential properties.

4.16.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on recreational facilities if it would:

1. Increase the use of existing neighborhood and/or regional parks or other recreational facilities in a manner that would result in a substantial physical deterioration of the facilities or accelerate the deterioration of the facilities.

2. Require the construction or expansion of recreational facilities that would result in an adverse physical effect on the environment.

4.16.6 Issues Not Discussed Further

All issues identified in Section 4.16.5 are addressed below.

4.16.7 Impact Analysis and Mitigation Measures

Impact 4.16-1	**Implementation of the 2040 General Plan could increase the use of existing neighborhood and regional parks and other recreational facilities in a manner that substantial physical deterioration of such facilities could occur or be accelerated.** ***Less-than-Significant Impact***

Development under the 2040 General Plan would result in an increase in population and an incremental increase in the use of parks and recreational facilities in the City. Although the City has adopted a parks and recreation impact fee, these fees cannot be used for maintenance of park facilities. In addition, for tentative maps that pay a fee in lieu of dedicating land pursuant to SMA §66477 (Quimby Act), the funds may be used only for acquisition of park land and the development of new park or recreational facilities that are reasonably related to serving the subdivision (i.e., the in-lieu fees could be used for a community park even if the community park was not in the immediate area of the subdivision).

The City's Public Works Department employs two full-time individuals that maintain all of the City's park facilities. The primary source of funding for parks maintenance is from the General Fund and user fees. The City has also required the formation of assessment districts for new subdivisions in order to ensure that funds are available for long-term maintenance of open space areas and public facilities that are maintained by the City. Currently, there is a Mello-Roos community facilities

district (CFD) that provides funding for maintenance of storm drain facilities, parks, and open space areas in the Hazelwood Subdivision, Oakridge Subdivision, and Phase 2 of the Windsor Estates Subdivision.

A Landscaping and Lighting District and Drainage Maintenance District were formed for the Deer Creek Manor Subdivision and provide funding for maintenance of storm drain facilities, street lights, landscape improvements, and open space. The amount of the fee is calculated based on estimated annual costs associated with maintenance activities in the subdivision. The fee is divided by the number of developable parcels in the subdivision, and the fee is included in the Shasta County tax roll for the parcel.

Although development under the 2040 General Plan would increase the use of existing parks and recreational facilities in a manner that could accelerate physical deterioration of such facilities, proposed residential and mixed-use developments are reviewed on a case-by-case basis to determine potential impacts on existing facilities. When necessary, formation of a maintenance district or establishment of an alternative funding mechanism is required for new residential development to provide funds for long-term maintenance of potentially impacted recreational facilities. Therefore, impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.16-2	**Implementation of the 2040 General Plan could result in the construction or expansion of recreational facilities, which may have an adverse physical effect on the environment.** ***Less-than-Significant Impact***

Future development under the 2040 General Plan would result in the construction and/or expansion of parks and recreational facilities. Implementation Action OS-1.4 requires the City to seek to provide five acres of neighborhood, community, and natural habitat protection areas per 1,000 new residents, and to strive to maintain a neighborhood park standard of at least 0.9 acres per 1,000 new residents. According to the Department of Finance, the City's population as of May 2021 was 10,657.

As shown in **Table 4.16-1**, there are currently ±175 acres of land designated for parks and recreational purposes in the City, which equates to 53.28 acres per 1,000 residents, well above the five-acre standard. The 2040 General Plan includes changing the designation of ±114.5 acres of undeveloped City-owned land located north and east of Margaret Polf Park and Harold "Bizz" Johnson Park from Suburban Residential to Community Park. This would increase designated parks and recreational facilities and open space to a total of ±289 acres[2].

The population at build-out of the General Plan is estimated at ±52,056. To meet the standard of five acres per 1,000 residents, the City would need to provide a total of 260.6 acres of neighborhood, community, and natural habitat protection areas at build-out of the General Plan. As noted above, the 2040 General Plan will have enough land designated for parks and recreational uses to meet the City's standard for neighborhood, community, and natural habitat protection areas at build-out of the General Plan.

[2] *Total acreage of land designated for parks and recreational uses and open space may not match the acreage shown in build-out tables because some land designated Public Facilities is developed with park facilities.*

In addition, the Mountain Gate at Shasta project in the northeastern area of the City will include two neighborhood parks totaling 14.9 acres, a community park totaling 13 acres, and open space with recreational amenities (creekside trails and park) throughout the development, for a total of 60 acres of parks and recreational facilities. Potential environmental effects of the Mountain Gate at Shasta park improvements were analyzed in the EIR for the project, and mitigation measures were included to minimize/avoid potential environmental impacts that could occur.

Future parks and recreational facilities would be constructed/installed both within existing parks and in new parks that are constructed in conjunction with new residential development. Completion of the trail system along a portion of Churn Creek (i.e., future trailhead, improved trail system, parking, etc.) would be completed in previously undisturbed areas. Pedestrian and bicycle improvements, including those identified in **Table 4.16-3**, would occur in and adjacent to public road rights-of-way. Due to the conceptual nature of future park development, it is not possible to analyze potential environmental effects at this time. Projects would be reviewed on a case-by-case basis and mitigation measures would be imposed as necessary. Therefore, potential impacts associated with development of future parks and recreational facilities would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

4.16.8 References

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SECTION

4.17

Transportation

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4.17 Transportation

This section identifies applicable regulations pertaining to transportation and evaluates the potential impact of implementation of the 2040 General Plan on the City's circulation system, including public transit, roadways, and bicycle and pedestrian facilities, and addresses potential conflicts with programs, plans, ordinances, and policies related to the circulation system.

4.17.1 Study Methods

The following evaluation of potential impacts is based on information from the following documents and datasets:

- Shasta Lake General Plan Update Traffic Impact Analysis (February 2022) and Vehicle Miles Traveled Analysis (March 2022), Ganddini Group, (included as **Appendix E**).
- City of Shasta Lake Local Road Safety Plan, Omni-Means, January 2021.
- Recommendations to Improve Pedestrian and Bicyclist Safety in the City of Shasta Lake, California Walks and Berkeley SafeTREC, October 2016.
- 2018 Regional Transportation Plan and Sustainable Communities Strategy. Shasta Regional Transportation Agency (SRTA), October 2018.
- Supplemental Environmental Impact Report for the 2018 RTP/SCS, October 2018.
- Ways and Means: A Four-Year Progress Report on Mobility in the Shasta Region. Shasta Regional Transportation Agency, 2021.
- SRTA Long-Range Transit Plan (Nelson\Nygaard Consulting Associates, Inc., 2021).
- California Transportation Plan 2050. California Department of Transportation (Caltrans), 2021.
- California Road System (CRS) Functional Classification Data (Caltrans).
- California Air Resource Board's (CARB) 2017 Climate Change Scoping Plan.
- CARB's Draft 2022 Climate Change Scoping Plan.

4.17.2 Environmental Setting

ROADWAY NETWORK

The streets and highway classification system is based on functional categories used by federal, state, county, and regional agencies. The City identifies the designation of the street system within its boundaries, and many of these street classifications are incorporated into the plans and programs of other agencies. Functional classification is used in determining eligibility for federal funding and other transportation-related grant programs.

As described below, the functional classification system categorizes roadways as interstates, freeways/expressways, arterials (major and minor), collectors (major and minor), and local, based on the characteristics and function of the particular road. Roads within the City that have been officially designated by Caltrans, and future roads identified by the City, are shown in **Figure 4.17-1.**

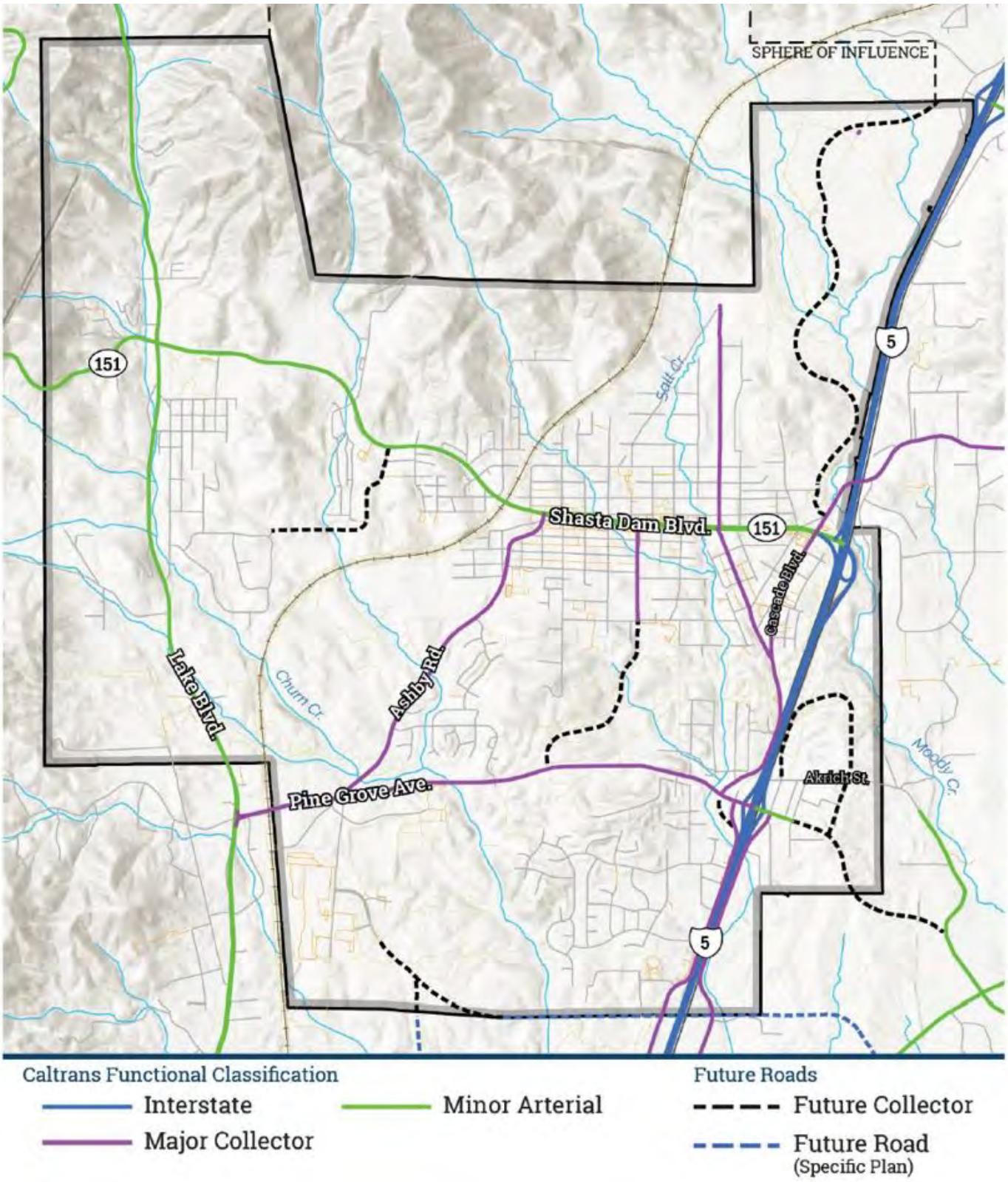


Figure 4.17-1
Functional Classification of Roadways

Interstates. Interstates are the highest classification of roadway and are designed for long-distance travel. Since its inception in the 1950s, the interstate system has provided high levels of mobility while linking major urban areas of the U.S. Roadways in this functional classification category are officially designated as Interstates by the federal Secretary of Transportation.

The City is served by one interstate route, Interstate 5 (I-5). I-5 bisects the southeastern area of the City. There are three interchanges within the City: at Pine Grove Avenue, State Route (SR) 151 (Shasta Dam Boulevard), and Old Oregon Trail/Wonderland Boulevard. Within the City, northbound I-5 has three traffic lanes between the southern City limits and just north of the SR 151 Interchange, where it reduces to two lanes and continues with two lanes to the northern City limits. Southbound I-5 has two traffic lanes between the northern City limits and just south of the SR 151 interchange, where it increases to three traffic lanes and continues with three lanes to the southern City limits.

Freeways and Expressways. Freeways and expressways are similar to interstates in that they are designed and constructed to maximize their mobility function, and abutting land uses are not directly served by them. Roads in this category typically are separated by some type of physical barrier. There are currently no roadways in the City that are designated as freeways or expressways.

Principal/Major Arterial Streets. Principal/major arterial streets serve primarily long-distance travel and are typically designed as either access-controlled or partially access-controlled with limited locations at which vehicles can enter and exit the roadway. Arterials typically have higher posted speed limits because vehicles encounter few or no at-grade intersections. There are currently no roadways in the City that are designated as principal/major arterials.

Minor Arterial Streets. Minor arterial streets provide service for trips of moderate length and distribute traffic to smaller geographic areas than those served by major arterials. Minor arterials are typically designed to provide relatively high overall travel speeds, with minimum interference to through traffic. The following road segments in the City are identified by Caltrans (Caltrans, 2022) as minor arterials:

> **SR 151** (Shasta Dam Boulevard), an east–west arterial that extends from I-5 to the western City limit, just west of Lake Boulevard. SR 151 is owned and maintained by the California Department of Transportation (Caltrans).
>
> **Lake Boulevard**, a north-south arterial in the western area of the City that extends from the southwestern City limit to the northwestern City limit.
>
> **Pine Grove Avenue (East).** A ±900-foot segment of Pine Grove Avenue on the east side of I-5 between the I-5/Pine Grove Avenue interchange and Leona Avenue is designated as a minor arterial street.

Major Collector Streets. Major collector streets route traffic from local streets to the arterial roadway network. Major collector streets are typically longer in length, serve higher-density residential and commercial/industrial areas, have higher annual average traffic volumes, have lower connecting driveway densities, are spaced at greater intervals, have higher speed limits, and may have more travel lanes than minor collector streets. The following road segments are identified by Caltrans as major collectors:

Pine Grove Avenue on the west side of I-5 between the I-5/Pine Grove Avenue interchange and Lake Boulevard.

Ashby Road between SR 151 (Shasta Dam Boulevard) and Pine Grove Avenue.

Cascade Boulevard from its northern extent to the southern City limits.

Mussel Shoals Avenue between Black Canyon Road and Shasta Dam Boulevard.

Grand Coulee Boulevard between Shasta Dam Boulevard and Cascade Boulevard.

Deer Creek Road between Shasta Dam Boulevard and Vallecito Street.

Minor Collector Streets. Minor collector streets also route traffic from local streets to the arterial roadway network. Minor collectors are generally located in lower density residential and commercial/industrial areas and have more access points than a major collector street. There are currently no roadways in the City that are identified by Caltrans as minor collectors; however, the City has designated the following streets as minor collectors:

- Red Bluff Street
- Fort Peck Street
- Vallecito Street
- Montana Avenue
- Hardenbrook Avenue
- Black Canyon Road
- Washington Avenue
- Ashby Road south of Pine Grove Avenue

Local Streets. Local streets provide direct access to adjacent land and route traffic to collector streets and/or arterials. Local streets are often designed to discourage through traffic. Public transit bus routes are generally not located on local streets. Local streets are often classified by default; once all arterial and collector streets have been identified, all remaining roadways are classified as local streets (FHWA, 2017).

Future Streets. As areas in the City develop, new roadways will be constructed and or extended. Depending on location and characteristics, the classification of roads may change. For example, the future extension of Shasta Gateway Drive would connect to Cascade Boulevard or Oasis Road, which may change the classification of Shasta Gateway Drive and Ashby Road south of Pine Grove Avenue to major collectors.

PEDESTRIAN AND BICYCLE FACILITIES

City of Shasta Lake 2009 Bicycle Transportation Plan

The City prepared a Bicycle Transportation Plan in 2009 (Omni-Means, 2009) to provide a long-term framework to improve and encourage bicycle transportation in the City. The overall goal of the Plan was to create a safe, efficient, and coordinated transportation environment that encourages bicycling in order to reduce vehicle emissions and promote a healthy environment with easy access to alternative forms of transportation. The Plan was prepared in accordance with

State requirements to allow the City to receive funding for bikeway improvements through the State's Bicycle Transportation Account.

In 2013, State legislation created the Active Transportation Program, which consolidated the Federal Transportation Alternatives Program, State Bicycle Transportation Account, and Federal and State Safe Routes to School programs.

The City subsequently teamed with the Shasta Regional Transportation Agency (SRTA) in preparation of the GoShasta Regional Active Transportation Plan (ATP), which is a regionwide planning effort that contains planned active transportation projects for the cities of Anderson, Shasta Lake, and unincorporated areas of Shasta County. Projects and programs identified in the 2009 Bicycle Transportation Plan have been updated and incorporated into the GoShasta ATP.

GoShasta Regional Active Transportation Plan

The GoShasta ATP (SRTA, 2019) provides a plan to strategically guide the development of programs and infrastructure for walking, bicycling, and connecting to transit in the Shasta Region. The ATP provides a regional vision and identifies projects and action lists for Shasta County and the incorporated cities of Anderson and Shasta Lake. **Figure 4.17-2** identifies existing and future bikeways, pedestrian facilities, and transit routes in the City.

Program recommendations include educational programs, bicycle theft prevention initiatives, and end-of-trip facilities such as bicycle storage, showers, and/or locker facilities. Sustainable growth policies that encourage walkable neighborhoods, mixed-use development, and infill development are included to reduce vehicle miles travelled (VMT), develop a comprehensive transportation network that is walkable and bikeable, and ensure that land uses and development support active transportation.

The ATP identifies a conceptual regional trunk line system for walking and bicycling between communities and activity centers. The goal is for trunk lines to serve people of all ages and physical abilities to encourage a higher number of people to walk or bike for all trip purposes. Ideally, trunk lines will have horizontal and vertical separation from vehicles, such as with a Class I shared use/side path or Class IV separated bike lanes (e.g., grade separations, curbs, planters, and other treatments) to provide a sense of safety and comfort for the pedestrian and/or bicyclist.

Due to insufficient right-of-way, topography, and/or other physical constraints, a trunk line also could be a Class II bike lane or Class III bike boulevard, with additional features that provide a sense of safety. Class III bike routes/shared roadways should be limited to areas with low vehicle volumes and speeds, and should include appropriate signage, adequate sight lines, and paved shoulders where feasible. The ATP identifies improvements to the City's pedestrian network, including potential interchange and intersection improvements, community walking connections, and Safe Routes to School projects that would facilitate walking in the community.

Recommendations to foster bicycling in the area are also provided. According to the GoShasta ATP, the City currently has ±0.93 miles of shared-use paths, ±10.85 miles of bike lane, and ±4.21 miles of bike routes, for a total of ±15.99 miles of bikeway facilities. The ATP identifies an additional ±9.55 miles of shared-use/side paths, ±5.03 miles of separated bike lane, ±5.63 miles of "bike boulevard," ±1.88 miles of buffered bike lane, ±6.92 miles of bike lane, and ±4.41 miles of bike route/shared roadway, for a total of ±33.42 additional miles of pedestrian and/or bicycle facilities in the City.

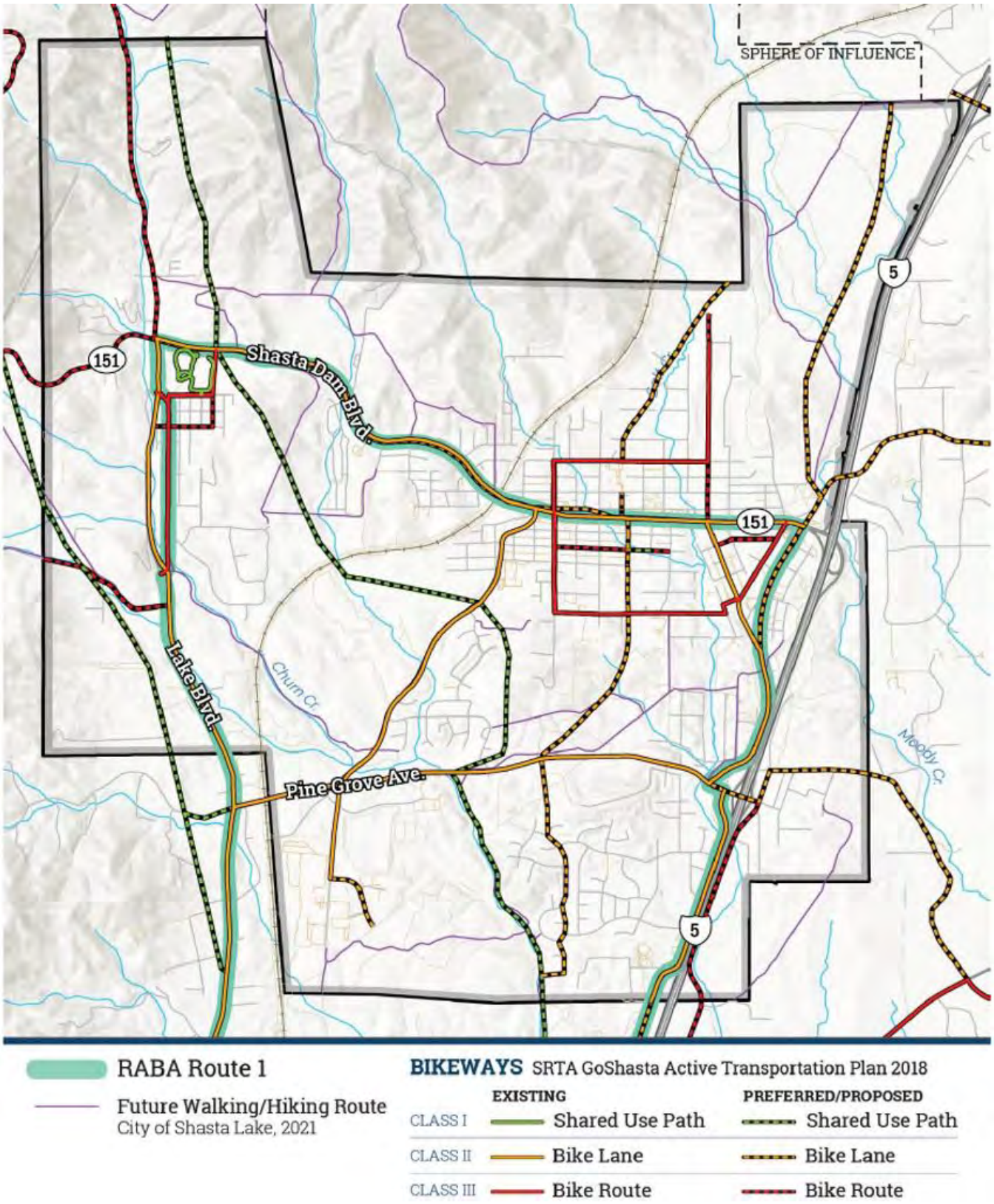


Figure 4.17-2
Existing and Future Bikeways, Trails, and Transit Routes

The ATP prioritizes projects based on safety, connectivity, demand, and equity (connections to disadvantaged communities). Prioritization of projects was based on extensive public outreach and public workshops in the community. **Table 4.17-1** identifies priority pedestrian and bicycle projects identified in the City that will be integrated into the Shasta Regional Transportation Plan (RTP) fiscally constrained project list.

Table 4.17-1
GoShasta Regional Active Transportation Plan
City of Shasta Lake Priority Projects

Street Name	From Street	To Street	Description	Length (Miles)
Pedestrian Improvements				
Ashby Rd.	Los Gatos Ave.	Front St./Shasta Dam Blvd.	Safe Routes to School (SR2S)	0.29
McConnell Ave.	Shasta Dam Blvd.	Main St.	Commercial/Civic Corridor	0.10
Ashby Rd.	Pine Grove Ave.	La Mesa Ave.	SR2S	1.20
Deer Creek Ave./ Vallecito St.	Cabello St.	Shasta Dam Blvd.	SR2S	0.53
Pine Grove Ave.	Jorzack Way	Ashby Rd.	Community Walking Connection	1.40
Cascade Blvd.	Pine Grove Ave.	Grand Coulee Blvd.	Community Walking Connection	0.67
Cascade Blvd.	Grand Coulee Blvd.	I-5 NB Offramp/R/ I-5 SB/R/ Shasta Dam Blvd.	Community Walking Connection	0.57
			Total Miles of Pedestrian Improvements	**4.76**
Bicycle Improvements				
Churn Creek Trail	Oasis Rd.	Pine Grove Ave.	Shared Use Path	1.73
Shasta Dam Blvd.	Ashby Rd.	Lake Blvd.	Buffered Bike Lane – Subject to Caltrans Process	1.88
			Total Miles of Bicycle Improvements	**3.61**

Source: GoShasta Regional Transportation Plan (SRTA, 2019).

The GoShasta ATP includes local action lists for each jurisdiction that are focused on increasing active transportation mode share, increasing safety and comfort of active transportation users, and investing in healthy, vibrant, sustainable, and people-centered communities. **Table 4.17-2** includes the City's Action List.

Table 4.17-2
GoShasta Regional Active Transportation Plan
City of Shasta Lake Action List

Category: Increase Active Transportation Mode Share
• Collaborate with SRTA and Shasta County Public Health to develop and implement a Multimodal Awareness Program (to increase awareness and respect among users of the road).
• Inventory complete street needs (infrastructure and right-of-way): o SR 151 – for circulation, emergency routes, and routes to infrastructure (water, dam, electric grid, and wastewater treatment plant) o Circulatory Streets o Streets accessing public uses – schools, parks, public building, public services (clinic, etc.) o Neighborhood through streets o Determine right-of-way needs for complete streets o Assess associated drainage infrastructure limiting complete street construction o Identify gaps in right-of-way, infrastructure, and funding
• Inventory off-street bike and walking paths.
• Coordinate data collection, including use with other partners.
• Create a GIS map inventory of improvements and lack of improvements noted above.
• Prioritize needs for access by residents, visitors, and commercial/industrial users.
• Determine partners for improvements and matching needs/funds.
• Review possible resources (financial and soft cost) to provide complete streets including project adjacency, regional, and emergency needs.
• Assess bus route use compared to user needs.
• Hold public workshops to provide complete street and bus information and identify public needs compared to gaps in inventory.
• Provide technical assistance and support of Caltrans local funding for SR 151 and roads intersecting and/or accessing SR 151.
Category: Increase Safety and Comfort of Active Transportation Users
• Establish routine meetings with the county sheriff's office to receive and discuss their active transportation collision reports, as well as CHP SWITRS reports, to address traffic hazards and potential projects to improve safety.
• Assess bus routes for ancillary needs like shelters, adjacent parking areas, signage, lighting, and landscaping.
• Assess crossings—formal and informal—for all ATP users. Identify issues for correction.
• Inventory and analyze impediments to people walking and riding bicycles.
• Identify volunteer organizations that can assist in public knowledge and where possible construction of amenities.
• Map transit routes and stops in comparison to street circulation and user needs identified above.
• Inventory parking available to ATP users.

• Engage ATP users including visitors. Use multiple means of engagement including surveys, walk/bike days, utility inserts and notices, door-hangers, and other forms of contact (group meetings including those for special populations like seniors, non-English speaking, and disabled).
• Consult with neighboring jurisdictions and SRTA when projects, programs, or actions/policies have the potential to either impact the neighboring jurisdiction or adversely impact the user experience when transitioning from one jurisdiction to another.
• Adopt guidance for full range of acceptable designs applicable to local conditions.
• Work with SRTA to potentially leverage funding for freight movement that also accommodates active transportation improvements.
• Integrate Safe Routes to School (SRTS) and other project-specific education and encouragement events/programs into grant application budgets for active transportation infrastructure. (Coordinate with SRTA and Shasta County Public Health)
Invest in Healthy, Vibrant, Sustainable, and People-Centered Communities
• Provide housing and income inventory data to insure small, effective projects are assisted.
• Partner with SRTA and private developers regarding infill projects to provide complete street access and funding.
• Work across city divisions and with SRTA on assembling projects that compete well for regional non-motorized funding.
• Adopt Circulation Element policies to encourage and require, where needed, complete street improvements and amenities.
• Identify areas that can use reduced street right-of-way and incorporate compete street standards for users.
• Work with SRTA to provide funding for right-of-way where needed.
• Provide transportation amenities where needed and where SRTA or other agency funding can be identified and used.
• Set priority policies relative to user needs.
• Provide active public engagement using online and in-person forums.
• Seek funding for transit/ATP uses and amenities.
• Identify other resources for funding amenities as well as ATP uses.

TRAFFIC CONDITIONS

Level of Service

Pursuant to Senate Bill 743 (2013), as of July 2020, Level of Service (LOS) is no longer the metric for determining transportation impacts under CEQA. For purposes of CEQA review, Vehicle Miles Travelled (VMT) is the metric that will be used. However, cities and counties may continue to use LOS as a planning tool to identify needed intersection improvements and to develop traffic impact fees to fund such improvements.

A Traffic Impact Analysis (TIA) for the 2040 General Plan Update was prepared by Ganddini Group in February 2022 to assess the City's roadway system and future operational conditions that would be expected as a result of implementation of the 2040 General Plan. The TIA is included as **Appendix E.**

The TIA evaluated 19 intersections and 48 roadway segments within the City. The TIA was based, in part, on traffic counts that were taken during February and December in 2020 as part of a separate City project. The 2020 traffic counts were compared to other historic traffic counts, and the more conservative (higher intensity) data was used. Peak-hour counts for each intersection were identified as the four consecutive 15-minute periods with the highest total volume when all movements were added together.

Intersection LOS

Level of Service (LOS) methodologies from the latest edition (6th Edition) of the Transportation Research Board Highway Capacity Manual (HCM) were used to evaluate the operation of driveways and intersections. The HCM methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle, LOS, and queuing. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay.

LOS is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all-way stop control, LOS is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), LOS is determined by the average control delay for the worst individual movement (or movements sharing a single lane). The intersection control delay is then correlated to Level of Service (LOS) based on the definitions shown in **Table 4.17-3**.

Table 4.17-3
Intersection Level of Service Definitions

Level of Service	Intersection Control Delay (Seconds/Vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10	≤ 10
B	> 10 to ≤ 20	> 10 to ≤ 15
C	> 20 to ≤ 35	> 15 to ≤ 25
D	> 35 to ≤ 55	> 25 to ≤ 35
E	> 55 to ≤ 80	> 35 to ≤ 50
F	> 80	> 50

The City has established LOS C as the minimum standard for intersections and roadways within the City of Shasta Lake. LOS D, E, or F operations are considered deficient for intersections/roadways within the City's jurisdiction. As of 2020, Caltrans no longer has LOS thresholds, and their evaluation of transportation impacts on State highway system projects is based on the VMT metric (Caltrans, 2020a and 2020b).

Existing 2022 Intersection LOS

As shown in **Table 4.17-4**, three of the 19 study intersections are currently operating below LOS C.

Table 4.17-4
Existing 2022 Intersection LOS

Intersection	Peak Hour	LOS
Mussel Shoals/Grand Coulee at SR 151	AM and PM	D
Cascade Blvd. at SR 151	AM and PM	D
South Cascade Blvd. at Pine Grove Ave.	PM	D

Source: Shasta Lake General Plan Update Traffic Impact Analysis. Ganddini Group, 2022.

Future General Plan Buildout Intersection LOS

As shown in **Table 4.17-5,** four of the 19 study intersections would operate below LOS C under the future General Plan buildout condition.

Table 4.17-5
Future General Plan Buildout Intersection LOS

Intersection	Peak Hour	LOS
Mussel Shoals/Grand Coulee at SR 151	AM	D
	PM	E
Cascade Blvd. at SR 151	AM and PM	D
South Cascade Blvd. at Pine Grove Ave.	PM	F
I-5 NB Ramps at Pine Grove Ave.	PM	F

Source: Shasta Lake General Plan Update Traffic Impact Analysis. Ganddini Group, 2022.

Improvements to Resolve Deficient LOS

Table 4.17-6 identifies improvements for each of the intersections identified in **Table 4.17-5** that would resolve deficient LOS, and the resulting LOS with implementation of the improvement.

Table 4.17-6
Proposed Improvements to Resolve Deficient Intersection LOS

Intersection	Improvement	Resulting LOS	
		Peak Hour	LOS
Mussel Shoals/Grand Coulee at SR 151	Restrict to NB/SB right turns only	AM and PM	B
Cascade Blvd. at SR 151	Modify signal phasing to permissive left-turn phasing for all approaches and optimize signal timing	AM	B
		PM	A
South Cascade Blvd. at Pine Grove Ave.	Install new traffic signal	AM and PM	B
I-5 NB Ramps at Pine Grove Ave.	Install new traffic signal	AM	A
		PM	B

Source: Shasta Lake General Plan Update Traffic Impact Analysis. Ganddini Group, 2022.

Roadway Segment LOS

Roadway segment LOS identifies the performance of the roadway based on the functional classification of the road, average daily trips (ADT), roadway design, maximum capacity of the roadway, and projected ADTs. LOS standards for existing and potential future roadway types within the City are identified in **Table 4.17-7**.

Table 4.17-7
Roadway Segment Daily Capacity and LOS Standards

Roadway Functional Classification	Lanes	Level of Service (Average Daily Vehicle Trips)				
		A	B	C	D	E
Expressway	6	36,000	42,000	48,000	54,000	60,000
Divided Arterial	6	32,000	38,000	43,000	49,000	54,000
Expressway	4	24,000	28,000	32,000	36,000	40,000
Divided Arterial	4	22,000	25,000	29,000	32,500	36,000
Undivided Arterial	4	18,000	21,000	24,000	27,000	30,000
Divided Arterial	2	11,000	12,500	14,500	16,000	18,000
Undivided Arterial	2	9,000	10,500	12,000	13,500	15,000
Collector	4	12,000	15,000	18,000	21,000	24,000
Collector	3	9,000	11,250	13,500	15,750	18,000
Collector	2	6,000	7,500	9,000	10,500	12,000
Residential Collector	2	1,600	3,200	4,800	6,400	8,000
Residential	2	600	1,200	2,000	3,000	4,500

Source: Shasta Lake General Plan Update Traffic Impact Analysis. Ganddini Group, 2022.

As documented in the TIA, all 48 roadway segments that were analyzed in the TIA are currently operating at an acceptable LOS. In addition, all 48 roadway segments would continue to operate at acceptable levels at buildout of the 2040 General Plan, and no improvements to roadways are required to accommodate vehicular traffic.

TRANSIT SERVICE

Redding Area Bus Authority (RABA)

RABA provides fixed-route bus service on weekdays and Saturdays, with most routes operating every 60 minutes. Fixed-route service primarily operates within the City of Redding with connections to the cities of Anderson and Shasta Lake. The fixed-route in the City of Shasta Lake is a looped service, with hourly stops at several locations along Shasta Dam Boulevard, Cascade Boulevard, and Lake Boulevard (see **Figure 4.17-2**). RABA's service hours are 5:35 A.M. to 7:30 P.M. Monday through Friday and 8:35 A.M. to 7:30 P.M. on Saturday. No fixed-route service is offered on Sundays or major holidays. Paratransit/demand-response service is available for persons with disabilities who are unable to use the fixed-route bus service.

Dignity Health Connected Living (DHCL)

DHCL provides door-to-door transportation services to residents aged 60 or older and mobility impaired persons 18 years of age or older. DHCL is also the designated Consolidated Transportation Services Agency (CTSA) for Shasta County pursuant to the Social Services

Transportation Improvement Act (AB 120, 1979) and provides transportation services to anyone living in rural Shasta County and outside the RABA service area. Services are provided Monday through Friday from 7:30 AM to 3:30 PM.

ShastaConnect

With funding through the Low Carbon Transit Operations Program (LCTOP), SRTA currently contracts with Dignity Health Connected Living to operate *ShastaConnect* services (SRTA, 2022). In October 2019, *ShastaConnect* began offering curb-to-curb on-demand transit service on Sundays from 6:30 AM to 7:30 PM. Sunday services are currently provided in higher-demand areas in the cities of Shasta Lake, Redding, and Anderson. Trips may be booked by phone, mobile app, or on the *ShastaConnect* website. Multiple people heading in the same direction share their ride on one of *ShastaConnect's* vans or buses. Continuing service is dependent upon funding availability.

ShastaConnect's Rural Public Transportation Services are provided in rural areas that are not within RABA's service area, including, but not limited to Cottonwood, Happy Valley, Bella Vista, Millville, Palo Cedro, Burney, Fall River, Cassel, and McArthur; services are provided Monday through Friday from 8:00 AM to 3:00 PM for the general public, as well as Consolidated Transportation Services Agency (CTSA) riders who are seniors (60+ years of age) and mobility-impaired individuals (18 and over).

4.17.3 Regulatory Framework

FEDERAL

Federal Highway Administration (FHWA)

The FHWA is a division of the U.S. Department of Transportation and oversees federal funds used for constructing and maintaining the National Highway System. Duties of the FHWA include contract administration and ensuring compliance with federal regulations and construction standards. The FHWA performs and sponsors research in the areas of roadway safety, congestion, highway materials, and construction methods, and provides funding to local technical assistance program centers to disseminate research results to local highway agencies.

The FHWA also publishes the Manual on Uniform Traffic Control Devices (MUTCD), which is used by most highway agencies in the U.S. The MUTCD specifies requirements for traffic signs, traffic signals, and road surface markings.

Title 23 of the Code of Federal Regulations (CFR) Part 515 (Transportation Asset Management Plan Final Rule) requires each state to develop a risk-based Transportation Asset Management Plan (TAMP) for the National Highway System (NHS) to improve and/or preserve the condition of the assets and the performance of the system in accordance with Moving Ahead for Progress in the 21st Century (MAP-21).

Highway Capacity Manual

The Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis (HCM), published by the Transportation Research Board of the Academy of Sciences, serves as a fundamental reference on concepts, performance measures, and analysis techniques for evaluating the multimodal operation of streets, highways, freeways, and off-street pathways. HCM has evolved over the years, as the focus of surface transportation planning and operations in the U.S. has moved from designing and constructing the Interstate highway system to managing a complex transportation system that serves a variety of users and travel modes.

STATE

California Department of Transportation (Caltrans)

Caltrans is responsible for managing the State's transportation network, improving the interregional mobility of people and goods, and working with local agencies to plan, design, and implement transportation facilities. The two primary State programming documents are the State Transportation Improvement Program (STIP) and State Highway Operation and Protection Program (SHOPP).

The STIP consists of two programs: the Interregional Transportation Improvement Program (ITIP), which receives 75 percent of the total STIP funding, and the Regional Transportation Improvement Program (RTIP), which receives the remaining 25 percent of the STIP funding. The ITIP funds projects that improve interregional movement for people and goods throughout California. The RTIP is further divided by formula and allocated to counties. The county Federal Transportation Improvement Program (FTIP) allocation funds projects nominated by Regional Transportation Planning Agencies (RTPA) to improve regional transportation systems.

Caltrans prepares a Federal Statewide Transportation Improvement Program (FSTIP) every two years in cooperation with the Metropolitan Planning Organizations (MPOs) and the Regional Transportation Planning Agencies (RTPAs) in California. The FSTIP is a federally mandated document that includes phases of capital and non-capital transportation projects prioritized to receive federal funding under Titles 23 and 49 of the U.S. Code over four federal fiscal years. It also includes regionally significant projects regardless of the funding source. Each of the State's eighteen MPOs prepares a FTIP, which includes State, local, and transit projects within its boundary.

SHOPP is a four-year program that funds safety and condition improvements on the State Highway System, which includes all Interstate routes, numbered highways, and other State-owned assets including bicycle and pedestrian facilities, culverts, Transportation Management Systems (TMS), safety roadside rest areas, and maintenance stations. The SHOPP also funds projects necessary to comply with the Americans with Disabilities Act (ADA) and stormwater control requirements. All projects funded by the SHOPP are limited to capital improvements that do not add new through highway lanes.

California Transportation Plan 2050

The California Transportation Plan 2050 (CTP 2050) was developed by Caltrans to provide a policy framework that addresses transportation needs of urban, suburban, rural, and tribal communities, and identifies a timeline, roles, and responsibilities for each plan recommendation.

The CTP 2050 goals, objectives, and recommendations inform updates to Caltrans' modal plans, which focus on priorities for specific modal components of the statewide transportation system (i.e., Interregional Transportation Strategic Plan, California Freight Mobility Plan, California Rail Plan, California Aviation System Plan, Statewide Transit Strategic Plan, and California Bicycle and Pedestrian Plan).

The CTP 2050 includes recommended action items required to close the gap between what the regional transportation plans (RTP) aim to achieve and additional actions that are needed to meet 2050 goals with goals and objectives that focus on improving safety of the transportation system, achieving statewide GHG emission reduction targets and increasing resilience to climate change, improving social equity and eliminating transportation burdens for disadvantaged communities, improving multimodal mobility and access for all users, improve quality of life and public health,

minimizing adverse environmental impacts on air quality, natural resources and ecosystems, and historic/cultural resources, support a vibrant, resilient economy, and preserving/maintaining the State's transportation infrastructure.

CTP 2050 includes a quantitative analysis of future travel accessibility, emissions, and economic impacts and concludes that implementation of the CTP 2050 would yield significant benefits of improved accessibility, reduced emissions, and economic growth by 2050.

Compared to the 2050 baseline, the CTP would reduce total VMT by up to 27 percent and would also support a shift from 13 percent to 23 percent of all trips occurring by walking, biking, transit, or other non-auto modes by 2050.

Executive Order N-79-20

A significant reduction in GHG emissions is expected to occur with implementation of Executive Order N-79-20. The Executive Order sets a goal that 100 percent of all in-state sales of new passenger cars and trucks, as well as drayage trucks, will be zero-emission by 2035; that 100 percent of medium- and heavy-duty vehicles in the state will be zero-emission by 2045; and that 100 percent of off-road vehicles and equipment will be zero-emission by 2035. The shift to a predominantly zero-emission vehicle fleet would result in reductions that surpass the State's legislative target of reducing GHG emissions to 80 percent below 1990 levels by 2050.

California Air Resources Board (CARB), 2020 Mobile Source Strategy

In September 2021, CARB published the 2020 Mobile Source Strategy (CARB, 2021). The 2020 Strategy is a framework that identifies actions needed to meet the State's goals for the reduction of emissions of criteria pollutants, GHGs, and toxic air contaminants from mobile sources. The 2020 Mobile Source Strategy uses the same targets for reducing VMT as the 2016 Mobile Source Strategy and 2017 Climate Change Scoping Plan, which aim to reduce light-duty vehicle VMT by 15 percent by 2050 compared to business as usual. The 2020 Mobile Source Strategy identifies strategies that CARB can take to assist in achieving additional reductions and support implementation of regional SCSs.

The 2020 Mobile Source Strategy identifies eight strategy areas for reducing VMT and are outlined in CARB's SB 375 Progress Report. The strategy areas are:

1. Increase Transportation Choices and Improve Access
2. Authorize and Implement Equitable Pricing of Transportation
3. Align State Funding Programs to Reduce Vehicle Travel and Achieve the State's Greenhouse Gas Emissions Reduction Goals
4. Shape the Deployment of New Mobility Options in Ways That Reduce VMT
5. Better Align Land Use Planning with the Scoping Plan's Goals
6. Accelerate Infill Housing Production
7. Support Local and Regional Partners to Implement VMT Reduction Measures
8. Elevate the State of Science to Inform the Development and Implementation of Sustainable Community and Transportation Policies

CARB has completed a Draft 2022 Climate Change Scoping Plan (CARB, 2022). The Plan states that sustained VMT reductions have been difficult to achieve, especially in areas with single-use zoning and lower-densities with fewer people working or living near each other. These land-use patterns foster single-occupancy vehicle travel and increase VMT.

CEQA Guidelines

SB 743 of 2013 (CEQA Guidelines §15064.3 *et seq.*) was enacted to balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and achieving reductions of GHGs. Pursuant to SB 743, traffic congestion is no longer considered a significant impact on the environment under CEQA. The new metric bases the traffic impact analysis on vehicle-miles travelled (VMT). VMT refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT, including whether to express the change in absolute terms, per capita, per household, or in any other measure.

LOCAL

City of Shasta Lake Municipal Code (SLMC),

In addition to the General Plan Goals, policies, and implementation actions, the SLMC includes regulations that are intended to avoid/minimize potential impacts on the transportation systems that could result from new development. These regulations include, but are not limited to:

SLMC Chapter 12.12 (Vehicle Congestion Management Program)

SLMC Chapter 12.12, applies to any significant trip generator as defined by Shasta County Air Quality Management District (SCAQMD) Rule 3:24, *Transportation Control Measure* (any employer, educational facility, employment complex, or other entity identified by the SCAQMD that has 100 or more persons scheduled to arrive at one site between the hours of 6:00 A.M. and 10:00 A.M, Monday through Friday.

The purpose of this regulation is to improve air quality, minimize traffic congestion, and reduce the number of single-occupant motor vehicle trips by encouraging ridesharing through public education and requiring annual trip reduction reports from significant vehicle trip generators.

Significant trip generators must submit an initial trip reduction report to the SCAQMD for review and approval. The report must identify measures to be used to reduce single-occupant motor vehicle trips and/or traffic congestion. The measures may include: subsidized public transit passes, telecommuting programs, guaranteed ride-home programs, flex-time programs, compressed work week schedules, financial travel allowances and rideshare subsidies, lunchtime trip-reduction programs such as bicycle and walking incentives, shuttle service to shopping, restaurants, etc., and/or on-site amenities such as food service, postal services, childcare services, etc.

Other options may include alternate mode commute time compensated (partially or fully) as work time, on-site bicycle lockers, on-site showers, subsidized walking shoes, bicycle parts and repair program, and company "fleet" bicycles for employee loan, development of a van or buspool program, and/or monthly or quarterly prize drawings for ride sharers.

The trip reduction report must include a list of any special trip-reduction measures that will be implemented to reduce motor vehicle trips in single-occupant motor vehicles during the high ozone season (May through October).

An annual report must the submitted to the SCAQMD that identifies implemented measures and the quantified measure of success of the program.

With respect to employers, educational facilities, employment complexes, and other entities that are smaller in size than the Significant Trip Generators, District Rule 3:24 states that the SCAQMD shall coordinate with Caltrans, Redding Area Bus Authority (RABA), other public transit providers, the Shasta Regional Transportation Agency (SRTA), and other city and county agencies regarding the distribution of written information on alternate transportation options.

SLMC Chapter 10.08 (Traffic Administration)

SLMC Chapter 10.08, §10.08.020 designates the City Engineer as the City's traffic and safety engineer. The traffic and safety engineer is responsible for determining locations for traffic control devices (e.g., traffic signals, stop signs), crosswalks, lane markings, roadway markings, and traffic signs.

SLMC §10.08.030 (Traffic Accident Studies and Reports) states that if the traffic and safety engineer determines that accidents at any particular location become numerous, he/she shall conduct studies of such accidents and determine remedial measures. To support these determinations, SLMC *§10.08.040 (Traffic Safety Reports)* requires that a traffic report be prepared annually and submitted to the City Council. The annual report must include:

- The number and location of traffic accidents, the number of persons killed, the number injured, and other pertinent traffic accident data.
- The number of traffic accidents investigated and other pertinent data on the safety activities of the police.
- Plans and recommendations for future traffic safety activities.

SLMC §13.08.070 (Transportation System Impact Fees)

The City of Shasta Lake adopted Shasta County's Major Road Impact Fee Program when the City incorporated in 1993. At that time, improvements identified in the impact fee program included improvements to Ashby Road between SR 151 and Central Valley High School, traffic signals on Shasta Dam Boulevard, I-5/Wonderland Boulevard freeway interchange improvements, improvements to Cascade Boulevard between SR 151 and Pine Grove Avenue, and the extension of Pine Grove Avenue between I-5 and Ashby Road.

In 2005, the City completed a traffic impact fee study, and an Ordinance was adopted in 2006 enacting transportation system impact fees (codified in SLMC §13.08.070). SLMC §13.08.070(A) states that the purpose of the fee is to provide funding for improvements to the citywide surface transportation system in accordance with the development forecast under the City's General Plan. The transportation impact fee zone is identified as the incorporated City limits. The fee that was established in 2006 has been increased annually based on the consumer price index (CPI).

Shasta Lake Local Hazard Mitigation Plan

The City's Local Hazard Mitigation Plan (LHMP) identifies potential hazards in the City, describes how hazards may impact the community, and identifies a mitigation strategy to reduce potential risks of identified hazards. The 2021 LHMP identifies the following high-priority actions related to emergency access:

- Assess emergency access routes for multiple egress options and adequate turn arounds and infrastructure; maintain and improve wildfire emergency access where needed.
- Implement pre-identified emergency evacuation zones, such as Zonehaven (an evacuation management platform), in coordination with the Shasta County Sheriff and County Office of Emergency Services (OES).

Shasta Regional Transportation Agency (SRTA)

The U.S. Department of Transportation has designated SRTA as the Metropolitan Planning Organization (MPO) for Shasta County and the cities of Anderson, Redding, and Shasta Lake. SRTA is a legally separate public agency with its own governing board of directors. The SRTA Board consists of three members of the Shasta County Board of Supervisors, one member from each of the cities of Anderson, Redding, and Shasta Lake, and one member of the Redding Area Bus Authority (RABA).

Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region

SRTA prepared the 2018 RTP/SCS as required by Code of Federal Regulations (CFR) Title 450.300, Subpart C and California Government Code Section 65080 *et seq.* The RTP is a comprehensive plan that addresses all modes of transportation used by people and for goods and freight movement (i.e., streets/roads, public transit, pedestrian and bicycle facilities, aviation, and rail) in the Shasta Region. The 2018 RTP includes the following goals:

Goal 1: Optimize the use of existing interregional and regionally significant roadways to prolong functionality and maximize return-on-investment.

Goal 2: Strategically increase capacity on interregional and regionally significant roadways to keep people and freight moving effectively and efficiently.

Goal 3: Provide an integrated, context-appropriate range of practical transportation choices.

Goal 4: Create people-centered communities that support public safety, health, and well-being.

Goal 5: Strengthen regional economic competitiveness for long-term prosperity.

Goal 6: Promote public access, awareness, and action in planning and decision-making processes.

Goal 7: Practice and promote environmental and natural resource stewardship.

The RTP must be fiscally constrained, meaning that the projects and programs identified in the RTP and subjected to environmental review must be consistent with reasonably anticipated revenue over the 20-year planning horizon of the RTP. The SCS for reducing per capita GHG emissions must also be fiscally constrained.

The Financial Element of the RTP identifies projected available funds, a list of fiscally constrained projects that is consistent with available funding, a list of unconstrained projects that may be implemented if additional funding becomes available (short- and long-term), and a discussion of potential funding shortfalls for projects in the long-range transportation plan.

The 2018 RTP includes an updated SCS as required by the Sustainable Communities and Climate Protection Act of 2008 (SB 375), which demonstrates how the region will meet the GHG emissions reduction targets established by CARB. CARB established emission reduction targets for California's eighteen MPO regions for the year 2020 and 2035. Shasta County was assigned a 0% per capita change when compared to the 2005 baseline year, and the 2018 RTP/SCS reflects this target.

On March 28, 2018, CARB adopted a target for the Shasta region of reducing per capita GHG emissions from passenger vehicles by four percent by the year 2035, when compared to a baseline year of 2005 (CARB, 2017). The 2022 RTP/SCS will be based on this target. The GHG reduction targets are periodically reviewed and updated by CARB based on progress toward meeting the targets and best available information.

The purpose of the SCS is to coordinate transportation and land use planning in order to reduce vehicle miles traveled (VMT) and associated GHG emissions from passenger vehicles and light trucks. The SCS identifies the following key variables, commonly referred to as the five "D" factors, that are known to effectively reduce VMT.

- Density – Number of persons, jobs, and dwellings
- Diversity – Balance of residential, retail, office, and other land uses
- Design – Street network and non-motorized travel accommodations
- Destination Accessibility – Number of jobs and other attractions accessible via any travel mode
- Distance to Transit – Proximity of high-quality public service to home and work

The RTP/SCS states that in Shasta County, achieving the "D" factors is challenging given the region's dispersed development patterns, segregation of land uses, limited access to practical travel alternatives, and slow growth rate. In addition, the RTP/SCS states that no single "D" factor by itself will adequately reduce VMT; a combination of the factors would be required and would depend on specific characteristics of a given area.

Areas most likely to reduce VMT with application of the "D" factors are existing urban centers and corridors where some measure of the "D" factors is already present; where the necessary infrastructure is largely in place; and where existing local plans permit an appropriate range and intensity of land uses. To this end, SRTA worked with the three incorporated cities in Shasta County to identify Strategic Growth Areas (SGAs) where application of the "D" factors was assumed to most effectively reduce VMT.

The SCS identifies the following strategies that are believed to offer the highest GHG reduction benefit per dollar investment: expanded plug-in vehicle charging infrastructure; expansion of interregional public transportation options; consolidated goods and freight hubs; expanded bicycle and pedestrian infrastructure; incentives for infill and redevelopment projects; and technology-based strategies (e.g., intelligent transportation systems applications that provide real-time travel information).

SRTA prepared a report in 2021 entitled "*Ways and Means – a Four-Year Progress Report on Mobility in the Shasta Region*" that identifies progress toward short-term (2018-2022) goals identified in the 2018 RTP, and new short-term goals being considered for the 2022 RTP (SRTA, 2021a). One strategy that has been developed in other communities that will be considered for inclusion in the 2022 RTP is establishing a VMT mitigation bank from which developers may purchase credits to mitigate for automobile traffic generated by their projects.

Funding

SRTA is responsible for researching the region's transportation needs, pursuing potential funding sources, and determining what improvements will be made. SRTA prepares an annual Overall Work Program (OWP) that identifies proposed transportation planning activities and funding programs, including:

> ***Federal Transportation Improvement Program (FTIP).*** SRTA prepares a FTIP every two years. The Shasta FTIP, adopted by the SRTA Board of Directors (Board) on February 23, 2021, covers federal fiscal years 2020/21 through 2023/24 (SRTA, 2021b) and includes $162 million to be used for operating assistance to transit agencies, safety improvements, bridge rehabilitation and reconstruction, and construction of bicycle and pedestrian facilities in Shasta County. The Shasta FTIP is amended as necessary when additional funding becomes available and projects are added to the funding list.
>
> ***State Transportation Improvement Program (STIP).*** The STIP is a multi-year capital improvement program that identifies transportation projects on and off the State highway system. Funding is provided by revenues from the State Highway Account and other funding sources.
>
> ***Regional Transportation Improvement Program (RTIP).*** SRTA prepares an RTIP every two years. The RTIP identifies regional transportation priorities that are eligible for STIP funding, based on consultation with local jurisdictions, federal land management agencies, and the public. The most recent RTIP was approved by the SRTA Board in December 2021 for incorporation into the 2022 STIP in March 2022 (SRTA, 2021c).

The OWP for Fiscal Year 2022-2023 was adopted by the SRTA Board on April 28, 2022 (SRTA, 2022a). FY 2022/23 regional planning priorities include system planning, non-motorized planning (active transportation planning and GoShasta ATP project implementation), development of planning tools (GIS and ShastaSIM Travel Demand Model), public transportation planning, corridor studies, alternative fuels vehicle planning, Highway 273 multi-modal corridor plan, and other special projects.

4.17.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to transportation:

GOAL CIR-1.1	**Develop a transportation system that meets the needs of all segments of the community, including residents, businesses, visitors, and the region, through a "complete streets" approach to transportation planning.**	
POLICIES	CIR-1.1	Coordinate policies for land development and circulation.

CIR-1.2 Evaluate the feasibility of including "complete streets" considerations in the design of all street improvement projects, including but not limited to:

- Water efficient, drought tolerant landscaping
- Public transit improvements
- Accessibility for disabled persons and Americans with Disabilities Act (ADA) compliance
- Safety criteria, such as traffic calming measures and lighting
- Sign and wayfinding design
- Sidewalk installation
- On- and off-street parking management
- Bicycle routes, facilities, and signage

CIR-1.3 Encourage practical parking solutions to serve community needs while avoiding excessive amounts of surface parking that disrupt the urban fabric of the city. Explore alternatives that reduce parking footprints, including decreasing or removing parking minimums, adding more public parking, and expansion or modification of on-street parking.

CIR-1.4 Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming.

CIR-1.5 Strive to attain a Level of Service (LOS) "C" and VMT reduction, so that potential congestion is minimized, VMT targets are met, and active transportation needs are addressed.

CIR-1.6 Improve unpaved roads, driveways, pedestrian and bicycle paths, and parking areas as appropriate and with consideration of reducing impervious surfaces.

CIR-1.7 Encourage connectivity and accessibility to a mix of land uses that meet residents' daily needs within walking distance, consistent with the Land Use Element.

CIR-1.8 Promote greater linkages between land uses and transit, as well as non-vehicular modes of transportation to reduce vehicular trip related emissions.

CIR-1.9 Take into account the specific needs of the population when designing roadways, including bicycle and pedestrian access, transit and drop-off needs, and safety around crosswalks, intersections, and roundabouts.

CIR-1.10 Improve air quality from transportation sources to protect human and environmental health and minimize impacts on sensitive populations by routing heavy truck traffic away from residential zones and promoting safety at rail crossings.

CIR-1.11 Plan for convenient and accessible parking facilities for persons with disabilities, consistent with Americans with Disabilities Act (ADA) requirements.

CIR-1.12 Protect natural features, to the degree feasible, when maintaining and expanding the City's circulation system.

IMPLEMENTATION ACTIONS	CIR-1.1	Program improvements to the transportation system based on demonstrated needs according to the collection of data on physical conditions, traffic volumes, and safety reports, for both active and vehicular transportation. Incorporate into a Capital Improvement Plan (CIP).
	CIR-1.2	Develop and adopt street standards that provide flexibility in design, especially in residential neighborhoods. Revise right-of-way and pavement standards to reflect adjacent land uses and anticipated traffic, and permit reduced right-of-way dimensions where necessary to maintain neighborhood character.
	CIR-1.3	Consider available data provided by outside agencies when developing transportation system improvements.
GOAL CIR-2	**Increase options and services for walking and bicycling while improving safety for all modes of transportation.**	
POLICIES	CIR-2.1	Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming. Strive to attain a Level of Service (LOS) "C" and VMT reduction to the maximum degree feasible to minimize potential congestion and increase safety on streets and at intersections.
	CIR-2.2	Provide access to public facilities, schools, parks, and shopping areas.
	CIR-2.3	Design intersections and public rights-of-way to include accessible, safe access for all users.
	CIR-2.4	Design sidewalks and pedestrian paths to provide sufficient space from vehicular traffic and adequate sight lines between adjoining development to ensure safety and security, as practicable.
	CIR-2.5	Continuously evaluate the operation of the City's transportation system to manage the speed of travel, manage queues at intersections, and develop improvements to increase safety of all transportation services.
	CIR-2.6	Coordinate with the Shasta County Sheriff to enforce traffic regulations with particular attention given to sensitive uses such as schools, senior centers, hospitals, community service facilities, and parks.
	CIR-2.7	Limit the intrusion of commercial truck traffic on City streets, especially in residential neighborhoods, by directing truck traffic to the City's designated truck routes.
IMPLEMENTATION ACTIONS	CIR-2.1	Continue a data collection program for the transportation system, to include a physical inventory, condition of surfacing, maintenance needs, traffic volumes, and accident reports. Update the program at least every five years.
	CIR-2.2	Respond quickly to correct traffic signal breakdowns and sign damages and losses.
	CIR-2.3	Review high frequency accident locations and develop specific mitigation measures or improvements.
	CIR-2.4	Provide an ongoing review of emergency operations plans and provisions to ensure that the City's program for emergency transportation services is coordinated with other local and regional jurisdictions and incorporates updated procedures and programs as appropriate.

GOAL CIR-3	**Promote alternative travel modes, including transit, pedestrian, and bicycle circulation systems to improve access and public health.**	
POLICIES	CIR-3.1	Coordinate transportation planning and implementation with regional and local plans.
	CIR-3.2	Plan for transportation modes and strategies that ensure good air quality, reduce greenhouse gas emissions, and reduce the need to devote additional lands to transportation uses.
	CIR-3.3	Encourage the development and expansion of local and regional public transit systems. Request improvements in transit service.
	CIR-3.4	Require sidewalks or an appropriate alternative in all new public and private developments.
	CIR-3.5	Continue to develop a system of bicycle and pedestrian transportation, both on and off-street.
	CIR-3.6	Encourage local transportation agencies to make public transit more comfortable and convenient, especially for underserved populations.
	CIR-3.7	Review proposed designs for large traffic-generating uses with transit service in mind, and, where feasible, require streets to be improved to provide bus loading and unloading without disruption of through-traffic.
	CIR-3.8	Where feasible and appropriate, and where non-motorized travel is reasonably expected, the width of existing streets should be reduced through bulbouts, medians, pedestrian islands and similar methods, and planting shade trees in landscaped areas within and adjacent to streets while not jeopardizing emergency response and future capacity requirements.
	CIR-3.9	Expand and maintain a safe and comprehensive bicycle system that connects the City's neighborhoods to public facilities, services, and recreational opportunities within the City.
	CIR-3.10	Encourage bicycle parking and related facilities in new employment-generating development and multi-family housing to facilitate multi-modal commute choices.
	CIR-3.11	Promote street trees in urbanized areas, especially along major thoroughfares such as Shasta Dam Boulevard and around active transportation infrastructure.
IMPLEMENTATION ACTIONS	CIR-3.1	Where feasible and appropriate, enhance pedestrian and bicycle circulation and planning, including enhancing the urban canopy with street trees, in coordination with the GoShasta Plan.
	CIR-3.2	Increase walking and bicycling to local destinations and regional transportation services by developing wayfinding signage for pedestrians and bicyclists.
	CIR-3.3	Develop measures to reduce conflict areas for bicyclists through methods such as brightly-colored paint or a one-foot buffer strip along bicycle routes, focusing on problem areas like right turn lanes and driveways.
	CIR-3.4	Consider applicable strategies prepared by outside agencies when developing transportation plans within the City.

	CIR-3.5	Construct, improve, and maintain the system of curb, gutters, sidewalks, and crosswalks for pedestrian and bicycle circulation safety and drainage control, prioritizing high traffic areas.
	CIR-3.6	Implement bicycle safety programs and cooperate with other agencies in the enforcement of bicycle safety.
GOAL CIR-4	**Maintain economic health and viability while making improvements to public facilities, utilities infrastructure, and transportation infrastructure, consistent with the General Plan.**	
POLICIES	CIR-4.1	Continue to ensure that new development pays its fair share of the costs of transportation and public facilities improvements. Transportation improvements should be based on traffic generated and impacts on service levels and vehicle miles traveled. Ensure adequate public services and facilities are available at the time of project occupancy and that a funding mechanism is in place to ensure long-term maintenance of required public facilities.
	CIR-4.2	Development shall mitigate any adverse impacts of a proposed development project on the existing street system.
	CIR-4.3	Emphasize transportation projects and programs that will contribute to a reduction in vehicles miles traveled per capita while maintaining economic vitality and sustainability.
	CIR-4.4	Coordinate transportation planning and implementation with state, regional, and local plans.
	CIR-4.5	Promote efficient expansion of broadband infrastructure to provide high-speed broadband internet service.
IMPLEMENTATION ACTIONS	CIR-4.1	Consider a comprehensive funding program for proposed bicycle and pedestrian system improvements.
	CIR-4.2	Update the Traffic Impact Fee Study. The fees should be reviewed or updated at least every three years.
	CIR-4.3	Generate a database of upcoming public infrastructure projects (i.e., water, sewer, roads, paving, etc.) in public rights-of-way, including location, routes, and estimated timelines, and coordinate infrastructure improvement whenever possible.
	CIR-4.4	The City will require development projects to construct all needed on- and off-site street improvements at the time of property development. When completion of improvements is determined infeasible, improvements may be deferred upon establishment of a Deferred Improvement Plan or other mechanism which identifies the improvements and costs, funding sources, and the responsible party. The City will also assess impact fees on new development that are sufficient to cover the fair share costs of mitigating growth impacts on the citywide transportation system. Exceptions may be granted when new development generates significant public benefits (e.g., low-income housing and primary-wage earner employment), and alternative sources of funding for the improvements can be obtained to offset any foregone revenues.
GOAL HS-7	**Create and maintain a community with equitable access to healthy foods and adequate care services and with opportunities for healthy and active lifestyles.**	

POLICY	HS-7.8	Promote physical activity in the daily routines of residents through targeted improvements to active transportation infrastructure, consistent with the Circulation Element.
IMPLEMENTATION ACTIONS	HS-7.5	Support the development and continuation of high-quality health care services, including services for vision, dental, and mental health, and promote connectivity to those services through transit and active transportation options, consistent with the Circulation and Land Use Elements.
	HS 7.7	The City will provide leadership in identifying opportunities for healthy lifestyles through partnerships with school districts, community health providers, and neighborhood organizations. This may include: • Joint use agreements with local school districts to share facilities for recreation or other activities that can benefit all residents' health; • Requiring new housing projects to provide specific areas for community gardens and outdoor activity; • Promoting pedestrian and bicycle access between existing residential areas and community amenities such as parks and open spaces; • Partnering with other agencies to capture grant funding that will support healthy activities in Shasta Lake; and • Using city media tools and other resources to educate the public about the benefits of healthy lifestyle and good nutrition.
	HS-7.8	Implement pedestrian enhancements along Shasta Dam Boulevard and other major streets to encourage walking and support healthier lifestyles, consistent with the Circulation Element, which could include: • Constructing new and widening existing sidewalks; • Eliminating obstructions; • Planting street trees and vegetative strips to buffer pedestrians from traffic; • Constructing additional improved crosswalks with clear signals to drivers; and • Installing street furniture to allow pedestrians to rest, especially the young and old and those with functional needs.
GOAL HS-9	**Protect the community from poor air quality.**	
POLICIES	HS-9.2	Cooperate with the Air Quality Management District and the Regional Transportation Agency to meet air quality standards and implement provisions of the California and Federal Clean Air Acts.
	HS-9.3	Encourage integration of land use, transportation, and energy planning efforts to help reduce air pollution.

	HS-9.6	Encourage a land use pattern that reduces reliance on the automobile and encourages alternative modes of transportation for travel to employment and shopping by encouraging: • Infill development; • Mixed-use development near employment centers (e.g., daycares, restaurants, and banks); • Increased residential densities near employment and shopping, and along major traffic corridors; and • Employment opportunities and shopping near to residential development.
	HS-9.7	Encourage a reduction in vehicle trips and vehicle miles traveled by promoting: • Public transportation; • Carpooling, ridesharing, and vanpooling; • Shortened and combined motor vehicle trips for work, shopping, and services; • Use of bicycles; and • Pedestrian access and walking.
	HS-9.8	Encourage pedestrian-oriented and transit-oriented design in new development.
	HS-9.9	Adopt guidelines for developers to encourage and promote pedestrian movement, bicycling, and public transit.
	HS-9.10	Encourage local development in order to encourage local employment and shopping opportunities and reduce the number and distance of vehicle trips.
	HS-9.11	Work with the Redding Area Bus Authority, Caltrans, and other agencies to establish multi-modal transfer sites for automobiles, bicycles, pedestrians, and public transit, consistent with the Circulation Element.
	HS-9.12	Develop a bikeway plan to encourage the use of bicycles, consistent with the Circulation Element.
	HS-9.13	Develop a pedestrian plan to encourage walking, consistent with the Circulation Element.
	HS-9.14	The City will support the Air Quality Management District's efforts to reduce and track emissions through appropriate analysis of project level air quality impacts during the CEQA process.
IMPLEMENTATION ACTION	HS-9.5	Encourage and promote public education regarding the link between air quality, transportation alternatives, and wood burning. Emphasize health hazards resulting from wildfire smoke and wood burning.
GOAL HE-1	**To provide for a broad range of housing types to meet the needs of all residents.**	
POLICY	HE-1.7	The City shall encourage circulation improvements and subdivision layouts that promote community connectivity and livability.
IMPLEMENTATION ACTION	HE-1.11	The City will evaluate commercial parcels and structures as part of the update to the General Plan. The evaluation will include identifying parcels/lots that are most appropriate for mixed commercial and residential uses.

GOAL HE-2	**To promote the construction and maintenance of quality affordable housing projects for extremely low-, very low- and low-income households.**	
POLICY	HE-2.5	The City shall encourage affordable multifamily residential developments to be located within walking distance of key services and facilities (e.g., public transit, childcare facilities, schools, parks, neighborhood shopping centers, and other amenities).
GOAL LU-1	**Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.**	
POLICIES	LU-1.3	Evaluate zoning proposals to prevent the overconcentration of land uses in any area of the City where land use intensities, commercial or industrial operations, or increased traffic would adversely impact the safety, health, and quality of life of residents.
	LU-1.13	Seek to establish a community "village" quality throughout the City where appropriate. The community "village" quality should focus on building orientation, form and massing, parking, and circulation.
	LU-1.16	Consider vegetation management and landscaping projects that can reduce the heat island effect and reduce pollutant transport and dispersion on high traffic roads, such as Shasta Dam Boulevard and frontage roads along the Interstate 5 corridor (Cascade Boulevard and Twin View Boulevard). Collaborate with the California Department of Transportation (Caltrans) to improve the landscaping in this area.
IMPLEMENTATION ACTION	LU-1.6	Adopt appropriate standards to improve the character of development along the Cascade Boulevard and Twin View Boulevard corridors, including, but not limited to, site access, building design and off-street parking orientation to street, building height, on-site lighting, signage, and appropriate buffer requirements adjacent to residential uses. Where appropriate, provide density and other incentives to encourage mixed-use.
GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICIES	LU-3.1	Where practical, promote mixed-use development patterns and higher densities that use land and resources efficiently, reduce automobile dependence and pollution, and facilitate walking, bicycling, and transit use.
	LU-3.2	Encourage development of residential uses in strategic proximity to employment, recreational facilities, schools, neighborhood commercial areas, and transportation routes.
IMPLEMENTATION ACTIONS	LU-3.4	Discourage development without a coordinated plan for land use or that is incompatible with adjacent residential areas, circulation limitations, available infrastructure capacity, or public service needs.
	LU-3.7	Periodically conduct comprehensive fee studies to determine whether impact fees fully account for the recovery of costs, consistent with applicable laws.
GOAL LU-4	**Provide services to promote healthy lifestyles, safety, and the well-being of all residents.**	

POLICIES	LU-4.2	Ensure that adequate water, sewer, and roads are in place in a timely fashion to protect public safety. Accomplish this through regular, comprehensive, and advanced infrastructure master planning efforts.
	LU-4.3	Provide adequate public facilities, services, and infrastructure in place and available to support all city residents, including for governance, public safety, seniors and youth, community gatherings, and comparable activities.
	LU-4.4	Promote the co-location of parks, schools, police, police and fire facilities, health services, and other community facilities to support community interaction, enhance neighborhood identity, and leverage limited resources.
IMPLEMENTATION ACTION	LU-4.1	Study and document construction, maintenance, and operational costs with a fiscal impact analysis of public services and facilities over a 20-year time period. Establish financing mechanisms to ensure the necessary services, facilities, and maintenance resources are available when needed.
IMPLEMENTATION ACTIONS	OS-1.2	Develop access criteria for capital improvement projects to enhance access and signage to open spaces, walking paths, and bicycle trails in conjunction with the Shasta Regional Transportation Authority (SRTA) Active Transportation Plan (ATP). Criteria should include safety provisions, such as lighting and signage, as well as safe connections to open spaces and City centers.
	OS-2.1	Implement the Parks Master Plan as amended. Build upon the existing trail network, including Churn Creek Trail, bicycle and walking paths in Margaret Polf Park, and dirt trails that lead to Shasta Dam and connect to the Sacramento River Trail. Preserve and improve public access through new and existing development to enable future use of such trails.

4.17.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on the transportation system if it would:

1. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, and/or bicycle and pedestrian facilities.
2. Conflict with criteria for analyzing transportation impacts based on vehicle miles traveled (VMT) pursuant to CEQA Guidelines §15064.3(b).
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
4. Result in inadequate emergency access.

4.17.6 Issues Not Discussed Further

All issues identified in Section 4.17.5 are addressed below.

4.17.7 Impact Analysis and Mitigation Measures

Impact 4.17-1	**Implementation of the 2040 General Plan would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, and bicycle and pedestrian facilities.** ***No Impact***

Local programs, plans, ordinances, and policies that address the City's transportation system are described in **Section 4.17.3** and include the Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS) for the Shasta Region, the GoShasta Active Transportation Plan, and SLMC Chapter 12.12 (Vehicle Congestion Management Program).

The Shasta Lake 2040 General Plan is consistent with these plans and programs because the 2040 General Plan Circulation Element focuses on developing a transportation system that meets the needs of all segments of the population through a complete streets approach. This includes increasing options for alternative transportation (public transit, walking, and bicycling); ensuring that pedestrian and bicycle systems connect residential neighborhoods to public facilities and services, schools, parks, and shopping areas; and other means to develop a multi-modal transportation system that meets the needs of all members of the community.

The City's Land Use, Housing, and Health and Safety Elements also support alternative transportation by promoting infill and mixed-use development, increasing residential densities along major traffic corridors and near employment opportunities and shopping, and encouraging circulation improvements that promote community connectivity. Discretionary projects are reviewed on a case-by-case basis to determine compliance with the City's Vehicle Congestion Management Program. When necessary, mitigation measures that reduce the number of single-occupant motor vehicle trips are imposed, and annual trip reduction reports from significant vehicle trip generators are required to confirm compliance with the measures.

Implementation of the 2040 General Plan would have a beneficial effect on the City's transportation system by enhancing safety on the roadway system and promoting alternative travel modes, including transit, pedestrian, and bicycle circulation systems. There would be ***no impact.***

Mitigation Measures

No mitigation measures required.

Impact 4.17-2	**Implementation of the 2040 General Plan could conflict with criteria for analyzing transportation impacts based on vehicle miles traveled (VMT) pursuant to CEQA Guidelines §15064.3(b).** ***Significant and Unavoidable Impact***

SB 743 of 2013 (CEQA Guidelines §15064.3 *et seq.*) established a new method for analyzing transportation impacts. The new metric focuses on VMT and promotes the State's goals of reducing GHG emissions and traffic-related air pollution, supporting infill development, and promoting the development of a multimodal transportation system. The California Governor's Office of Planning and Research (OPR) prepared a *Technical Advisory on Evaluating Transportation*

Impacts in CEQA in December 2018 (OPR, 2018), based on the new VMT metric. The OPR Advisory notes:

- New land use projects alone will not sufficiently reduce per capita VMT to achieve those targets, nor are they expected to be the sole source of VMT reduction.
- Interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT.
- Because location within the region is the most important determinant of VMT, in some cases, streamlining CEQA review of projects in travel-efficient locations may be the most effective means of reducing VMT.
- When assessing climate impacts of some types of land use projects, use of an efficiency metric (e.g., per capita, per employee) may provide a better measure of impact than an absolute numeric threshold.

VMT Screening Thresholds for Land Use Projects

Certain types of projects identified in State statute, the CEQA Guidelines, and/or OPR's Technical Advisory are presumed to have a less-than-significant impact on VMT and generally do not require a detailed VMT analysis. These projects generally include features that encourage and promote increased levels of walking, bicycling, access to transit, and other characteristics that reduce VMT. These project types include:

Small Projects. Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a SCS or general plan, projects that generate or attract fewer than 110 vehicle trips per day generally may be assumed to cause a less-than-significant transportation impact.

Residential and Office Projects in Low VMT Areas. Residential and office projects that locate in areas with low VMT and incorporate similar features (e.g., density, mixed-uses, multi-modal accessibility) will likely have a less-than-significant VMT impact. VMT data from a traffic survey or travel demand model can identify areas that are currently below established VMT thresholds.

Residential, Office, Retail, and Mixed-Use Projects in a Transit Priority Area. This category includes projects within ½ mile of an existing or planned major transit stop or an existing stop along a high-quality transit corridor.

A major transit stop is defined as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with service intervals of 15 minutes or less during the morning and afternoon peak commute periods (PRC §21064.3). A high-quality transit corridor is defined as a corridor with fixed-route bus service with service intervals no longer than 15 minutes during peak commute hours (PRC §21155).

Affordable Residential Development. Adding affordable housing to infill locations generally improves the jobs-housing match, in turn shortening commutes and reducing VMT. Low-income housing generates less VMT than market-rate housing (OPR, 2018). Evidence supports a presumption of a less-than-significant impact for a 100 percent affordable residential development (or the residential component of a mixed-use development) in infill locations (OPR, 2018). Lead agencies may develop their own

screening levels for affordable housing projects based on local circumstances and evidence.

Recommendations for Determining VMT Associated with a Project

A lead agency has discretion to choose the most appropriate method to evaluate a project's VMT, including whether to express the change in absolute terms, per capita, per household, or in any other measure. OPR's Technical Advisory (OPR, 2018) provides the following recommendations for determining VMT associated with a project:

Residential and Office Projects. A tour-based assessment is recommended for residential and office projects because it captures travel behavior more comprehensively. Where tour-based tools or data are not available for all components of an analysis, a trip-based assessment of VMT may be used.

When tour-based models are used to analyze an office project, either employee work tour VMT or VMT from all employee tours may be attributed to the project because workplace location influences overall travel.

For consistency, the significance threshold should be based on the same metric: either employee work tour VMT or VMT from all employee tours. For office projects with a customer component, such as a government office that serves the public, a lead agency can analyze the customer VMT component of the project using the methods for retail development.

Retail Projects. Generally, lead agencies should analyze retail projects by assessing the change in total VMT because retail projects typically re-route travel from other retail destinations. A retail project might lead to increases or decreases in VMT, depending on previously existing retail travel patterns.

Land Use Plans. For land use plans, such as a General Plan, agencies should analyze VMT outcomes of land use plans across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography. A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would, in aggregate, exceed the respective screening thresholds recommended above.

Considerations for all Projects. VMT analysis must include portions of trips that fall outside of the jurisdiction's boundary. Where VMT effects will grow over time, analyses should consider both a project's short-term and long-term effects on VMT.

Combining land uses for VMT analysis is not recommended because different land uses generate different amounts of VMT, and the outcome of such an analysis could depend more on the mix of uses than on their travel efficiency. Instead, OPR recommends analyzing each use separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold.

In the analysis of each use, a mixed-use project should take credit for internal capture. Any project that is within a ½ mile of an existing or planned major transit stop or an existing stop along a high-quality transit corridor may employ VMT as its primary metric for the entire project.

Significance Thresholds

There are no local VMT thresholds that would apply to the 2040 General Plan. OPR's Technical Advisory provides the following recommendations for environmental impact thresholds based on evidence that connects these thresholds to the State's GHG emissions reduction goals:

Residential: 15 percent below existing VMT per capita

Office: 15 percent below existing regional VMT per employee

Retail: No net increase in total VMT

2018 Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region (RTP/SCS)

According to the 2018 Shasta Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), residents in the City of Shasta Lake had a per capita VMT of 18.1, and had the lowest percentage of overall household VMT in the County (5 percent) (SRTA, 2018). The 2018 RTP/SCS projected that in the year 2035, residents in the City of Shasta Lake would make the fewest daily trips on average (6.0). The average trip length for households in the City of Shasta Lake is estimated at 7.36 miles by year 2035.

VMT Analysis

In order to determine changes in VMT that would occur as a result of implementation of the 2040 General Plan, Ganddini Group prepared a VMT Analysis using the ShastaSIM 1.2 activity-based travel demand model (TDM) (**Appendix E**). The 2018 TDM was adjusted to reflect actual year 2020 conditions based on development that had occurred in the City since the 2018 TDM was prepared. Therefore, for purposes of the following VMT analysis, year 2020 is considered the baseline condition.

As described above, OPR's Technical Advisory (OPR, 2018) recommends that for land use plans, such as a General Plan, VMT outcomes should be analyzed across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography. Because project-specific details are not available at this time, countywide VMT outcomes were considered for the following VMT analysis in accordance with OPR's recommendations.

The VMT analysis for future projects will utilize SRTA's most current TDM and will include parcel-specific inputs, including project location, applicable Traffic Analysis Zone(s) (TAZ), size of the parcel, type of development, the increase in population and jobs expected to be generated by the project, and other factors necessary to analyze the relationship between a project's land-use density/mix and VMT. Additional project-specific inputs will include features that would reduce VMT (e.g., installation of pedestrian, bicycle, and/or transit facilities, etc.).

Per capita VMT estimates for residential uses that are anticipated to occur under the 2040 General Plan are shown in **Table 4.17.8.** The table shows estimates of citywide and countywide VMT for both the current General Plan and the proposed 2040 General Plan to allow a comparison; however, the significance threshold is based on countywide year 2020 baseline conditions.

Table 4.17.8
Residential VMT Estimates

Year	No Project (Current General Plan)			Proposed 2040 General Plan		
	Residential VMT	Population	VMT per Capita	Residential VMT	Population	VMT per Capita
Citywide						
2020 (Baseline)	175,999	10,360	16.99	-	-	-
2040	216,248	12,025	17.98	225,466	12,578	17.93
Countywide						
2020 (Baseline)	3,516,912	191,905	18.33	-	-	-
2040	4,386,532	223,042	19.67	4,310,675	223,952	19.25

Source: Ganddini, 2022.

Based on countywide per capita residential VMT (18.33), the threshold for the 2040 General Plan is 15.58 or less per capita VMT for residential uses. Implementation of the 2040 General Plan would exceed this threshold by ±23.6 percent.

Table 4.17.9 identifies total countywide VMT, including residential-, employment-, and commercial-related VMT that would occur as a result of implementation of the 2040 General Plan.

Table 4.17.9
Total Countywide VMT Estimates

Year	No Project (Current General Plan)			Proposed 2040 General Plan		
	Total VMT	Population	VMT per Capita	Total VMT	Population	VMT per Capita
2020 (Baseline)	6,202,918	191,993	32.31	-	-	-
2040	7,846,822	223,042	35.18	7,869,715	223,952	35.14

Source: Ganddini, 2022.

Based on countywide total per capita VMT (32.31), the threshold for the 2040 General Plan is 27.46 or less total VMT. Implementation of the 2040 General Plan would exceed this threshold by ±28 percent.

Conclusions

As noted above, OPR's recommended thresholds for VMT are based on evidence that connects these thresholds to the State's GHG emissions reduction goals. Specifically, CARB's (statewide) 2016 Mobile Source Strategy and 2017 Climate Change Scoping Plan targets are to reduce light-duty VMT by 15 percent by 2050 compared to business as usual (CARB, 2021). CARB's 2020 Mobile Source Strategy uses the same targets for reducing VMT.

CARB's Draft 2022 Scoping Plan proposes a goal that VMT per capita be reduced 12 percent below 2019 levels by 2030, and 22 percent below 2019 levels by 2045; however, this target has not been formally adopted. Targets and VMT thresholds will undoubtedly change during the 20-year

planning period for the 2040 General Plan, depending on State and local progress toward achieving GHG reduction targets. Should this occur, future project level analysis will be adjusted to reflect a modification in VMT impact analysis thresholds.

As stated in Section 4.17.3 (Regulatory Framework), the purpose of SRTA's SCS is to coordinate transportation and land use planning in order to reduce VMT and associated GHG emissions from passenger vehicles and light trucks. The SCS identifies the following key variables, commonly referred to as the five "D" factors, that are known to effectively reduce VMT.

- Density – Number of persons, jobs, and dwellings
- Diversity – Balance of residential, retail, office, and other land uses
- Design – Street network and non-motorized travel accommodations
- Destination Accessibility – Number of jobs and other attractions accessible via any travel mode
- Distance to Transit – Proximity of high-quality public service to home and work

Areas most likely to reduce VMT with application of the "D" factors are existing urban centers and corridors where some measure of the "D" factors is already present; where the necessary infrastructure is largely in place; and where existing local plans permit an appropriate range and intensity of land uses. To this end, SRTA worked with the three incorporated cities in Shasta County to identify Strategic Growth Areas (SGAs) where application of the "D" factors was assumed to most effectively reduce VMT.

In the City of Shasta Lake, the SGA is generally described as the SR 151 (Shasta Dam Boulevard) corridor between the I-5/Cascade Boulevard Interchange and the Union Pacific Railroad (UPRR) and areas north and south of this corridor; and the Cascade Boulevard corridor generally between SR 151 and the southern terminus of Grand Coulee Boulevard and areas east and south of this corridor segment.

The City has been focusing efforts on obtaining funding for improvements in these areas. For example, the California Strategic Growth Council recently awarded $16.5 million to the City from the Affordable Housing and Sustainable Communities (AHSC) grant program toward construction of the *Shasta Lake Downtown Revitalization Project.* The purpose of the AHSC program is to reduce GHGs through projects that implement land use, housing, transportation, and other amenities to support infill and compact development.

The Downtown Revitalization Project is a mixed-use development within the Shasta Dam Boulevard SGA with 49 dwelling units, including 48 income-restricted units and 7,500 square feet of commercial space. AHSC funding will be used toward transit, pedestrian and bicycle improvements, and street trees throughout the downtown area. Pedestrian and bicycle facilities will also connect to the future Commercial Center project northwest of the intersection of Shasta Dam Boulevard and Cascade Boulevard. This is a good example of a project that would effectively reduce VMT.

The 2040 General Plan includes new policies and implementation actions that will increase opportunities for mixed-use development, and change residential density and floor area ratios (FARs) for non-residential uses to reduce VMT. The 2040 General Plan:

- Increases the amount of land designated Village Mixed-Use (VMU) (Village Commercial) from 9 acres to 17 acres.

- Increases the allowable density for the VMU designation from 20 units per acre to 30 units per acre.
- Increases the amount of land designated MU from 359 acres to 440 acres.
- Increases the allowable residential density for the MU designation from 20 units per acre to 30 units per acre.
- Increases the FAR for the VMU designation from 0.25 to 3 and increases the FAR for the Commercial designation from 0.25 to 2, providing increased opportunities for local job growth.
- Includes numerous policies that encourage a mix of land uses, provide for greater connectivity between land uses, and promote alternative travel modes (i.e., walking, bicycling, public transit) (See Section 4.17.4, Proposed General Plan Goals, Policies, and Implementation Actions).

As described above, future development under the 2040 General Plan will be reviewed on a case-by-case basis to determine increases in VMT that would occur from individual projects. Future projects would be required to comply with the 2040 General Plan policies identified in Section 4.17.4. If necessary, projects would be required to implement mitigation measures to ensure consistency with the General Plan's VMT-reduction policies, as well as applicable VMT thresholds that are in place at the time a development application is submitted to the City.

These measures could include those identified in the California Air Pollution Control Officers Association (CAPCOA) publication *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA, 2021).

Table 4.17-10 identifies potential quantifiable measures that could be applied to future projects.

Table 4.17-10
Potential Quantifiable Measures for
Greenhouse Gas Emission Reductions

CAPCOA Measure		Description	GHG Mitigation Potential
T-1	Increase Residential Density	Provide increased density compared to the average residential density in the U.S. (9.1 units per acre).	Up to 30% of GHG emissions from project VMT in the study area
T-2	Increase Job Density	Provide a higher density of jobs as compared to the average job density in the U.S. (i.e., 145 jobs per acre).	Up to 30% of GHG emissions from project VMT in the study area
T-4	Integrate Affordable and Below Market Rate Housing	Provide multi-family residential units that are permanently dedicated as affordable for lower income families.	Up to 28.6% of GHG emissions from project/ site multi-family residential VMT

CAPCOA Measure		Description	GHG Mitigation Potential
T-5	Implement Commute Trip Reduction (CTR) Program (Voluntary)	Employers implement a voluntary CTR program that includes employer-provided services, infrastructure, and incentives for alternative modes of transportation (e.g., ridesharing, discounted transit, bicycling, vanpool) and guaranteed ride home. Employers must provide information, coordination, and marketing for these services, infrastructure, and incentives.	Up to 4% of GHG emissions from project/site employee commute VMT
T-6	Implement Commute Trip Reduction (CTR) Program (Mandatory Implementation and Monitoring)	Employers implement a mandatory CTR program that includes the same components as the voluntary CTR Program (T-5); must include mandatory trip reduction requirements (including penalties for non-compliance) and regular monitoring and reporting to ensure compliance with the calculated VMT reduction.	Up to 26% of GHG emissions from project/site employee commute VMT
T-7	Implement Commute Trip Reduction (CTR) Marketing	Implement a marketing strategy to promote an employer's CRT program. Program could include onsite or online commuter information, employee transportation coordinators, onsite or online transit pass sales, and/or guaranteed ride home service.	Up to 4% of GHG emissions from project/site employee commute VMT
T-8	Provide Ridesharing Program	Implement a ridesharing program that includes a permanent transportation management association with funding requirements for employers.	Up to 8% of GHG emissions from project/site employee commute VMT
T-9	Implement Subsidized or Discounted Transit Program	Provide subsidized, discounted, or free transit passes for employees and/or residents.	Up to 5.5% of GHG emissions from employee/resident vehicles accessing the site
T-10	Provide End-of-Trip Bicycle Facilities	Install and maintain end-of-trip facilities for employee use (e.g., secure bike parking, bike lockers, showers, and personal lockers).	Up to 4.4% of GHG emissions from project/site employee commute VMT
T-11	Provide Employer-Sponsored Vanpool	Implement a vanpool program, a ridesharing option that provides a flexible form of public transportation for groups of 5 to 15 employees.	Up to 20.4% of GHG emissions from project/site employee commute VMT

CAPCOA Measure		Description	GHG Mitigation Potential
T-17	Improve Street Connectivity	Increase intersection density, with grid streets in subdivisions rather than cul-de-sacs or dead-end streets to facilitate shorter trips.	Up to 30% of GHG emissions from vehicle travel in the plan/community
T-18	Provide Pedestrian Network Improvement	Increase sidewalk coverage to improve pedestrian access to encourage people to walk.	Up to 6.4% of GHG emissions from vehicle travel in the plan/community
T-19-A	Construct or Improve Bike Facility	Construct or improve a single bicycle lane facility (only Class I, II, or IV) that connects to a larger existing bikeway network.	Up to 0.8% of GHG emissions from vehicles on roadways
T-19-B	Construct or Improve Bike Boulevard	Construct or improve a single bicycle boulevard that connects to a larger existing bikeway network.	Up to 0.2% of GHG emissions from vehicles on roadways
T-20	Expand Bikeway Network	Increase the length of a city bikeway network (an interconnected system of bike lanes, bike paths, bike routes, and cycle tracks.	Up to 0.5% of GHG emissions from vehicle travel in the plan/community

Source: CAPCOA, 2021.

As previously discussed, although the 2040 General Plan includes policies and implementation actions that would reduce VMT to the extent feasible, it is not possible to quantify VMT reductions without site- and project-specific information.

Although VMT under the 2040 General Plan would be ±0.3 percent less than what is expected to occur under the current General Plan, VMT would not be below the significance thresholds for GHG emission reductions (i.e., 15 percent below existing VMT for residential and office developments, and no net increase in total VMT for retail developments). Due to the programmatic nature of this Draft PEIR, it is not possible to identify project-specific mitigation measures at this time. Therefore, impacts associated with VMT are considered ***significant and unavoidable.***

Mitigation Measures

No feasible mitigation measures available.

Impact 4.17-3	**Implementation of the 2040 General Plan could increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).** ***Less-than-Significant Impact***

Implementation of the 2040 General Plan would increase the number of vehicles on roadways in the City and could increase traffic hazards, particularly in locations that have a history of recurring vehicle accidents. The following discussion focuses on roadway segments and intersections where traffic collisions have occurred in the past.

Roadway System Safety Issues

Local Road Safety Plan (LRSP). A LRSP was prepared for the City in January 2021 (GHD, 2021). The LRSP included a city-wide analysis of the roadway system to identify collision patterns and high-risk roadway characteristics. The LRSP addressed intersections, pedestrians, bicyclists, young drivers, and aging drivers. The purpose of the study was to identify and analyze local safety issues and recommend engineering safety improvements that may be eligible for future Caltrans Highway Safety Improvement Program (HSIP) funding. The LRSP states that a total of 119 collisions occurred on City streets and SR 151 (Caltrans jurisdiction) in the City between 2015 and 2019 as described below. The LRSP did not include collisions on I-5 mainline and on-/off-ramps (7 on mainline I-5 and 16 ramp collisions).

City Streets. As documented in the LRSP, there were 74 collisions on City streets between 2015 and 2019, including two fatal collisions and three severe injury collisions. The fatal collisions occurred in 2015 (vehicle collided with an object on Park Place at Rose Avenue, cited as unsafe speed and driving under the influence) and 2016 (vehicle collided with an object on Wonderland Boulevard at the road terminus, cited as unsafe speed and driving under the influence). Three severe injuries occurred on City streets during the reporting period: in 2016 (vehicle collided with an object on Rose Avenue at Lena Drive, cited as unsafe speed), 2017 (vehicle struck pedestrian on the road shoulder on Cascade Boulevard at 3rd Street, cited as a hit and run with alcohol involved), and 2019 (vehicle overturned on Cascade Boulevard at Washington Avenue, cited as due to unsafe turning).

Figure 4.17-3 shows City streets that had the highest density of vehicle collisions between 2015 and 2019 (GHD, 2021). The LRSP states that the intersection of Pine Grove Avenue and Ashby Road had the most collisions (six) between 2015 and 2019, five of which resulted in property damage only (PDO) and one that resulted in a minor injury (complaint of pain). The road segment with the highest number of collisions (eight) was Cascade Boulevard, primarily south of Pine Grove Avenue.

Caltrans Roadways. There were 45 collisions on SR 151 between 2015 and 2019, including three severe injuries: in 2016 (pedestrian struck by vehicle in crosswalk at Locust Street), 2017 (pedestrian struck by vehicle at Cascade Boulevard intersection crosswalk, and 2019 (vehicle collided with object ±650 feet east of SR 151 at Rouge Road). The two pedestrian accidents on SR 151 were due to vehicles failing to yield to the pedestrians. The third severe-injury collision on SR 151 was determined to be due to unsafe speed. There were no fatalities reported on SR 151.

Figure 4.17-4 shows areas along SR 151 that had the highest density of collisions between 2015 and 2019 (GHD, 2021). The intersection of SR 151 and Cascade Boulevard had the highest number of collisions (8). The area on SR 151 between Cascade Boulevard and I-5 had the highest density of collisions (48).

To provide updated collision data, Transportation Injury Mapping System (TIMS) and Statewide Integrated Traffic Records System (SWITRS) were reviewed and showed that between 2020 and 2021, there were a total of 40 vehicle collisions reported on City streets and SR 151, two of which resulted in severe injuries. No fatalities occurred. Both of the severe-injury accidents occurred in 2020 on SR 151, and both involved pedestrians: a pedestrian was struck by a vehicle on SR 151 at the Median Avenue crosswalk due to unsafe vehicle speed, and a westbound vehicle on SR 151 struck a pedestrian west of Hardenbrook Avenue due to a pedestrian violation.

There was only one intersection where more than one collision occurred between 2020 and 2021: Pine Grove Avenue and Ashby Road. In 2020, a northbound vehicle on Ashby Road collided with a fixed object, reportedly due to unsafe speed. In 2021, a northbound vehicle on Ashby Road

collided with a westbound vehicle on Pine Grove Avenue; both vehicles were proceeding straight. The incident was reported as a vehicle ROW violation; however, no fault was assigned. Both incidents were reported as minor-injury accidents.

The LRSP identifies systemic safety countermeasures for high-risk roadways in the City based on the evaluation of collision data described above. **Table 4.17-11** identifies potential improvements for roadways and uncontrolled school crosswalks in the City.

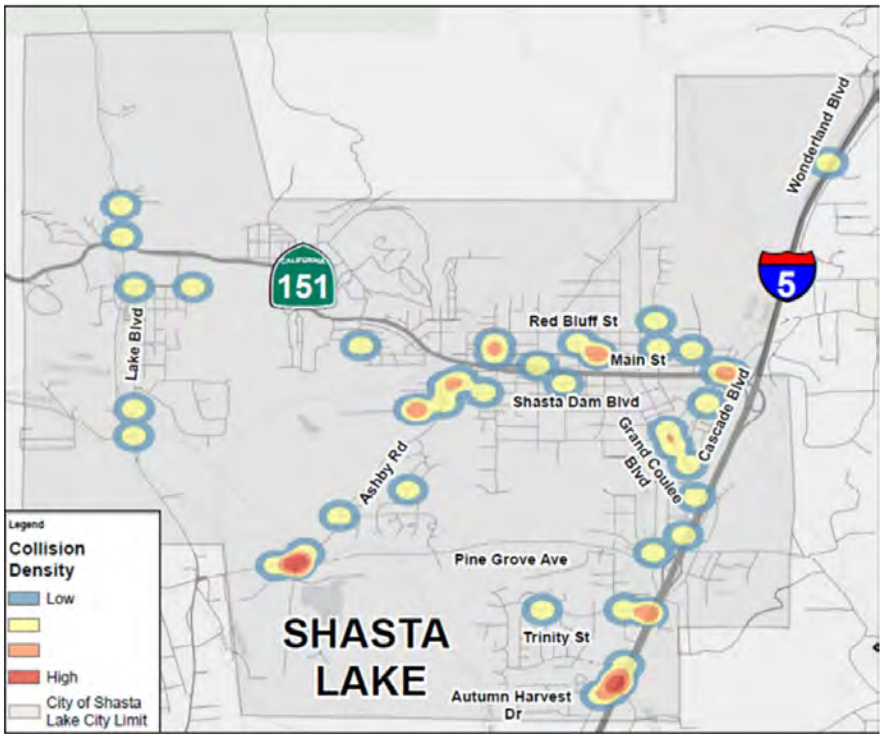


Figure 4.17-3
Collision Density of City Roadways

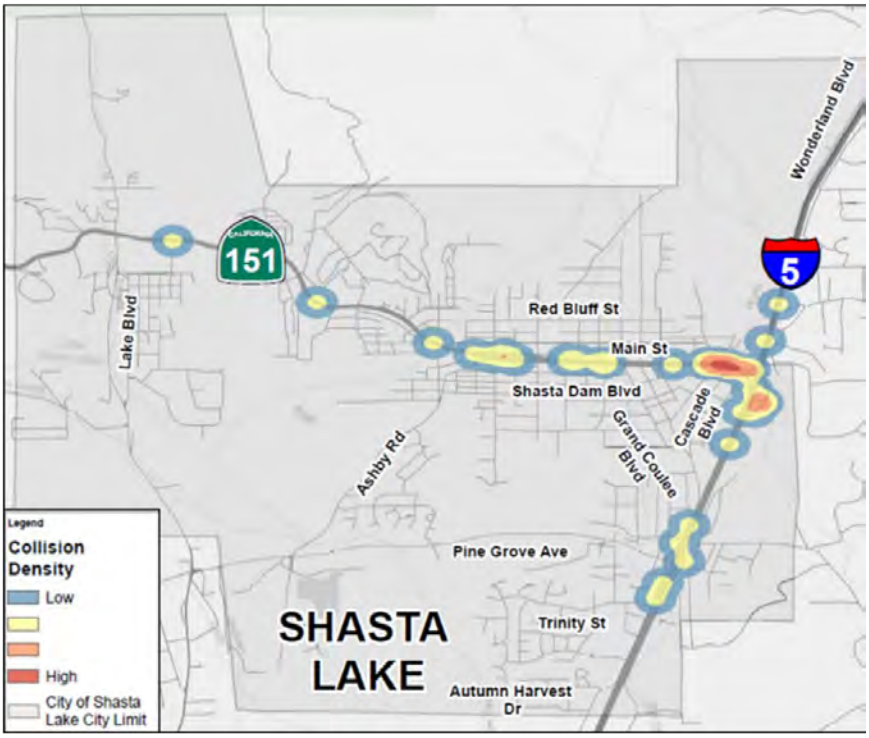


Figure 4.17-4
Collision Density of Caltrans Roadways

Table 4.17-11
Recommended Improvements Identified in the Local Road Safety Plan

Category	Improvement Location	Improvement Type
Roadway Segments	**Ashby Rd.** – between SR 151 and Pine Grove Ave. **Twin View Blvd.** – between Pine Grove Ave. and southern City limits. **Hill Blvd.** – on existing bridge and approach just north of Lake Blvd.	Install guardrails.
	Lake Blvd. – between SR 151 and Pine Grove Ave. **Ashby Rd.** – between SR 151 and Pine Grove Ave. **Cascade Blvd.** – between SR 151 and southern City limits. **Twin View Blvd.** – between Pine Grove Ave. and southern City limits.	Improve pavement friction (high-friction surface treatment) at intersection approaches with high speeds and approach to curves.
	Lake Blvd. – between SR 151 and Pine Grove Ave. **Ashby Rd.** – between SR 151 and Pine Grove Ave. **Cascade Blvd.** – between SR 151 and southern City limits.	Install/upgrade signs with new fluorescent sheeting (regulatory or warning).
	Lake Blvd. – between SR 151 and Pine Grove Ave. **Ashby Rd.** – between SR 151 and Pine Grove Ave. **Cascade Blvd.** – between SR 151 and Pine Grove Ave. **Twin View Blvd.** – between Pine Grove Ave. and southern City limits.	Install chevron signs on horizontal curves.
	Black Canyon Rd. – between Red Bluff St., and the northern City limits. **Lake Blvd.** – between SR 151 and Pine Grove Ave. **Ashby Rd.** – between SR 151 and Pine Grove Ave. **Cascade Blvd.** – between SR 151 and southern City limits. **Twin View Blvd.** – between Pine Grove Ave. and southern City limits.	Install curve advance warning signs.
	Cascade Blvd. – between SR 151 and Pine Grove Ave. **Twin View Blvd.** – between Pine Grove Ave. and the southern City limits.	Install curve advance warning signs (flashing beacon).
	Ashby Rd. – between SR 151 and Pine Grove Ave. **La Mesa Ave.** – between Ashby Rd. and Montana Ave. **Vallecito St.** - between Montana Ave. and Washington Ave. **Flanagan Rd.** – between Lake Blvd. and end of the road.	Install dynamic/ variable speed warning signs (where unsafe speeds are prevalent and/or in school zones).
	Red Bluff St. – between Montana Ave. and Mussel Shoals Ave. **Main St.** – between Mussel Shoals Ave. and Shasta Way **Mussel Shoals Ave.** – between SR 151 and Black Canyon Rd. **Montana Ave.** – between SR 151 and Red Bluff St. **Black Canyon Rd.** – between Red Bluff St. and the northern City limits. **Toyon Ave.** – between Lake Blvd. and Sacramento St. **Sacramento St.** – between Toyon Ave. and SR 151. **Montana Ave.** – between SR 151 and Vallecito St.	Install edgelines and centerlines.

Category	Improvement Location	Improvement Type
	Hardenbrook Ave. – between SR 151 and its southern terminus.	
	Lake Blvd. – between SR 151 and Pine Grove Ave. **Ashby Rd.** – between SR 151 and Pine Grove Ave. **Cascade Blvd.** – between SR 151 and southern City limits. **Pine Grove Ave.** – between the I-5 Interchange and Ashby Rd. **Twin View Blvd.** – between Pine Grove Ave. and southern City limits.	Install centerline and edgeline rumble strips/stripes.
	La Mesa Ave. – between Ashby Rd. and Montana Ave.	Install bike lanes.
	Red Bluff St. – between Montana Ave. and Mussel Shoals Ave. **Montana Ave.** – between SR 151 and Red Bluff St. **Hardenbrook Ave.** – between SR 151 and Black Canyon Road at Red Bluff St. **Ashby Rd.** - between SR 151 and Pine Grove Ave. **Montana Ave.** – between SR 151 and Vallecito St. **La Mesa Ave.** – between Ashby Road and Montana Ave. **Vallecito St.** - between Montana Ave. and Washington Ave.	Install sidewalk/ shared-use path (to avoid walking along roadway).
	Lake Blvd. – between SR 151 and Pine Grove Ave. **Montana Ave.** – between SR 151 and Vallecito St. **La Mesa Ave.** – between Ashby Rd. and Montana Ave. **Vallecito St.** – between Montana Ave. and Washington Ave.	Install/upgrade pedestrian crossing (with enhanced safety features).
	Lake Blvd. – between SR 151 and Pine Grove Ave. **Ashby Rd.** – between SR 151 and Pine Grove Ave. **Montana Ave.** – between SR 151 and Vallecito St. **La Mesa Ave.** – between Ashby Rd. and Montana Ave. **Vallecito St.** – between Montana Ave. and Washington Ave.	Install Rectangular Rapid Flashing Beacon (RRFB).
	Mussel Shoals Ave. – between SR 151 and Black Canyon Rd.	Install delineators, reflectors, and/or object markers.
Safety Enhancements-Uncontrolled School Crosswalks	Grand Ave. east of Main Street Vallecito St. west of Deer Creek Rd. SR 151 at Hardenbrook Ave. Ashby Rd., south of La Mesa Ave. La Mesa Ave. east of Lassen Ave. La Mesa Ave. west of San Gorgonio Ave.	Install RRFBs, improved signage, and pavement markings.

The LRSP states that options for improvements to signalized intersections on high-risk roadways could include improving signal hardware to include a reflective border on the back plates and installing new lenses, installing pedestrian countdown signals and accessible pedestrian signal push buttons, installing friction surface treatment for approaches (to mitigate risk of rear-end collisions), and implement leading pedestrian intervals to enhance the visibility of pedestrians in the intersection. Improvements to unsignalized intersections could include improving intersection signage (upsizing stop signs and adding warning signs), installing pavement markings, and installing intersection warning signs if stopping sight distance is not sufficiently provided. The LRSP also identifies improvements at various intersections in the City. The LRSP identifies the following intersections as having the most collisions between 2015 and 2019:

- Pine Grove Avenue/Ashby Road (6)

- Grand Coulee Boulevard/Cascade Boulevard (3)
- Trinity Street/Cascade Boulevard (3)
- Cascade Boulevard/Pine Grove Avenue (3)
- Main Street/Grand River Avenue (2)
- Riddle Road/Cascade Boulevard (2)

As indicated above, the intersection in the City that has experienced the most vehicle collisions between 2015 and 2021 is the intersection of Pine Grove Avenue and Ashby Road. To address safety issues at this intersection, the LRSP recommends the following. A complete list of projects is included in the LRSP (GHD, 2021).

- Converting the intersection from a two-way stop to a four-way stop, or installing a roundabout in lieu of stop controls;
- Installing/upgrading larger stop signs or other intersection warnings/regulatory signs;
- Adjusting pedestrian crossing on north leg to be more perpendicular;
- Enhancing pavement markings for bicycles to include green conflict paint and a sharrow (shared lane marking) on the westbound right-turn lane;
- Upgrading intersection pavement markings;
- Installing flashing beacons as advance warning.

There are no collision patterns or trends that indicate that any other intersection or roadway segment in the City presents a traffic hazard. The City will continue to seek funding to complete improvements that will minimize risks associated with traffic hazards. For example, to address potential hazards to pedestrians crossing SR 151, the City applied for and was awarded $250,000 in Highway Safety Improvement Program (HSIP) funds that will be used to complete pedestrian improvements at three locations on SR 151: the intersection of SR 151 and Median Avenue, SR 151 near Grand Coulee (mid-block), and the intersection of SR 151 and Shasta Way. Improvements include installation of solar-powered, pedestrian-activated rapid-flashing beacons and other associated crosswalk enhancements.

The LRSP includes additional non-engineering strategies to improve safety for drivers, pedestrians, and bicyclists through public education, school education programs, and social media campaigns. Emerging technologies strategies such as Intelligent Transportation Systems, web or mobile device applications, crash warning systems, and automated speed enforcement could also be considered. Therefore, impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.17-4	**Implementation of the 2040 General Plan would not result in inadequate emergency access.** ***No Impact***

Also see discussion in Section 4.9 (Hazards and Hazardous Materials). Lake Boulevard is the key north-south egress route for the western portion of the City and for recreational areas located around Shasta Dam north of the City. Cascade Boulevard is the key north-south egress route for the eastern areas of the City on the west side of I-5, and extends south to Oasis Road in the City of

Redding. Ashby Road is also a key north-south egress route in the central area of the City and extends between Shasta Dam Boulevard and Pine Grove Avenue.

Grand Coulee Boulevard between Shasta Dam Boulevard and Cascade Boulevard is also identified as an evacuation route. Shasta Dam Boulevard and Pine Grove Avenue are the two primary east-west evacuation routes that extend from I-5 to Lake Boulevard. On the east side of I-5, Virginia Avenue (between Akrich Street and Pine Grove Avenue) and Twin View Boulevard (from Pine Grove Avenue south to Oasis Road in the City of Redding) are the primary north-south egress routes. Akrich Street is the east-west egress route on the east side of I-5 and routes traffic east and then south to Oasis Road in the City of Redding. **Figure 4.17-5** shows these primary evacuation routes.

Some older, built-out subdivisions and residential areas in the City have only one point of ingress/egress. Some of these areas also have very narrow roads, which would hinder the movement of vehicles during an evacuation, especially if emergency vehicles were attempting to enter these areas at the same time.

New development under the 2040 General Plan would be constructed to current City and Fire Code standards, which requires that major developments have two points of ingress/egress, and that streets are constructed with turnouts and/or turn-arounds as necessary to facilitate the orderly evacuation of people in the event of an emergency and to allow emergency responders to access the area. As stated in Section 4.19.3 (Regulatory Framework), the City's 2021 LHMP includes the following two priority actions related to emergency evacuation:

- Assess emergency access routes for multiple egress options and adequate turn arounds and infrastructure, and to maintain and improve wildfire emergency access where needed.
- Implement pre-identified emergency evacuation zones, such as Zonehaven (an evacuation management platform), in coordination with Sheriff and County Office of Emergency Services (OES).

The 2040 General Plan also includes the following Policy and Implementation Actions specifically related to emergency evacuation:

POLICY

> H-3.3: Limit new development in high fire hazard zones to those projects which can meet established standards for adequate emergency and evacuation access and water supplies.

IMPLEMENTATION ACTIONS

> HS-1.2: Work to maintain an adequate emergency response time for all proposed urban development. Identify existing developed areas lacking adequate emergency service, especially focusing on neighborhoods in high wildfire hazard zones that do not have at least two emergency evacuation routes, both urban and rural.
>
> HS-1.4: Identify and create evacuation zones based on area-specific considerations.

All significant development projects in the City are reviewed by the SLFPD, and the SLFPD identifies specific requirements for fire access roads, turnarounds, turnouts, and other measures that ensure that adequate emergency access is provided and maintained. These measures must be implemented into building/site plans and verified by the City's Building Official prior to issuance of building permits. The SLFPD and Building Official verify that all required improvements are completed prior to issuance of a Certificate of Occupancy. Therefore, implementation of the 2040

General Plan would have ***no impact*** on an adopted emergency response plan or emergency evacuation plan.

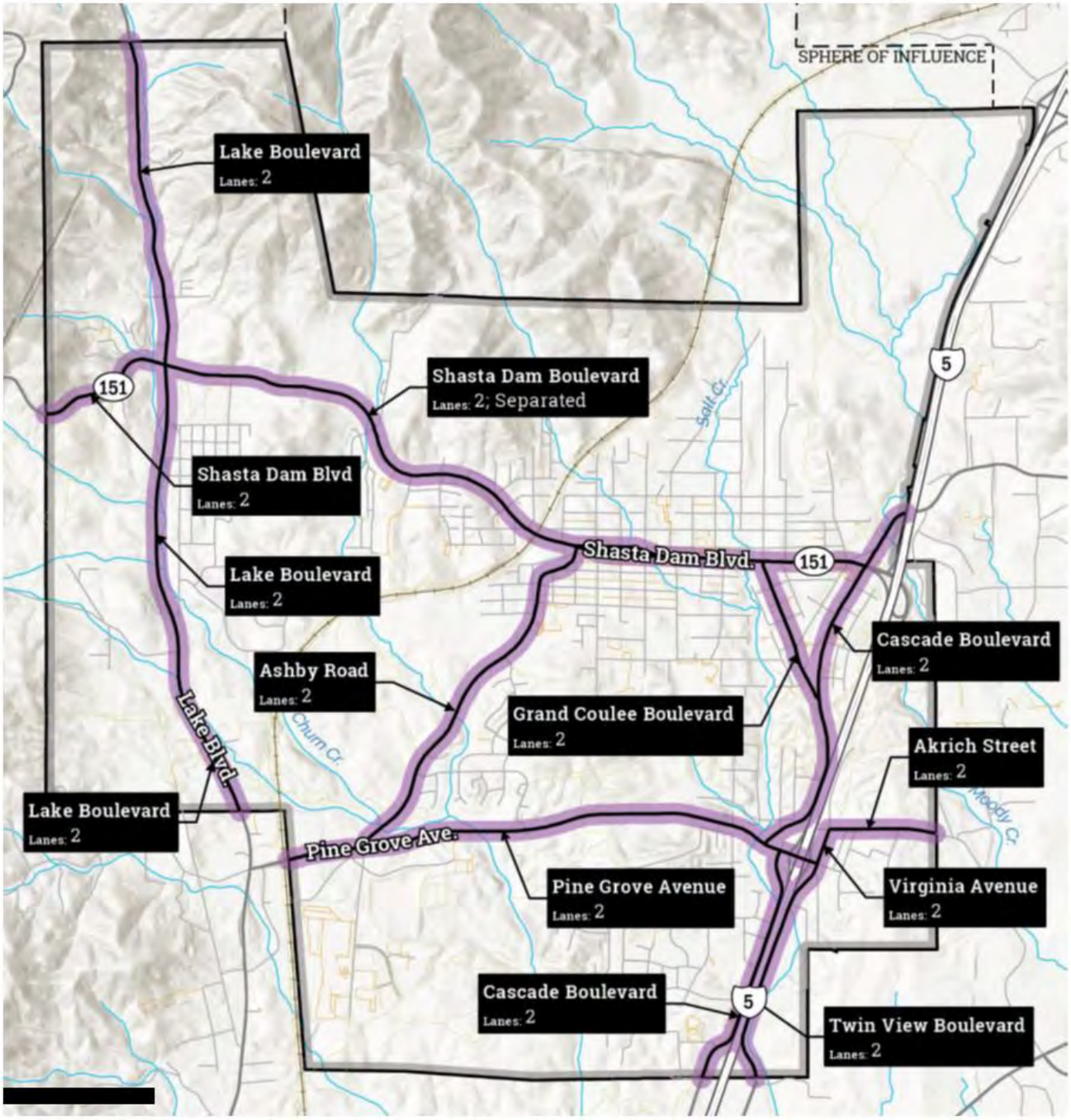


Figure 4.17-5
Evacuation Routes

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SECTION

4.18

Utilities and Service Systems

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4.18 Utilities and Service Systems

This section describes utilities and service systems in the City and evaluates whether implementation of the 2040 General Plan would require new or expanded utility infrastructure or additional water supplies, exceed the capacity of the City's sewer system, exceed the capacity of local solid waste landfills, impair the attainment of solid waste reduction goals, or conflict with applicable regulations related to solid waste.

4.18.1 Study Methods

The following evaluation of potential impacts is based on review of various studies and reports, including the following:

- City of Shasta Lake Water Management Plan, February 2022 Update (Carollo, 2022)
- City of Shasta Lake Urban Water Management Plan (Carollo, 2021a)
- City of Shasta Lake Water Shortage Contingency Plan (Carollo, 2021b)
- City of Shasta Lake Wastewater Master Plan (Akel, 2016)
- City of Shasta Lake Water Master Plan (Carollo, 2016)
- 2011-2020 Ten-Year Planning Guide, Shasta Lake Electric Utility (PowerPlus Engineering. 2011)

4.18.2 Environmental Setting

WATER TREATMENT AND DISTRIBUTION SYSTEM

The City's sole source of water supply is surface water from Lake Shasta. There are two diversion points on Shasta Dam, one at an elevation of 754 feet above sea level and one at 960 feet above sea level. Raw water from the lake is conveyed to the U.S. Bureau of Reclamation's (USBR) raw water pumping station located at the base of Shasta Dam and is then pumped to the City's Fisherman's Point Water Treatment Plant (WTP) located outside the City limits near Shasta Dam.

The City has two emergency interties to allow sharing of water supplies with the Bella Vista Water District and City of Redding during short-term emergencies or during planned shutdowns of primary supply sources. The intertie with the Bella Vista Water District is on Akrich Street at the eastern City limit. The intertie with the City of Redding is west of Ashby Road, south of Pine Grove Avenue, near the southwestern City limit.

Fisherman's Point Water Treatment Plant

The WTP, constructed in 1990, consists of three Micro-Floc Trident filters and a hypochlorite generation system for chlorine disinfection. The treatment process consists of coarse screening, chemical injection followed by coagulation, flocculation (in-line static mixer), clarification, and filtration.

The WTP has a maximum production capacity of ±9.72 million gallons per day (MGD). The WTP is currently rated to treat a maximum flow of up to 6.7 MGD; the firm capacity (with one filter offline) is ±6.5 MGD. In 2017, the City constructed a backwash waste dewatering system that completely recycles all filter backwash rather than discharging the backwash waste to Churn Creek as was done in the past.

Water Storage Facilities

The City's water system includes one 150,000-gallon raw-water storage tank, and eight active treated water tanks ranging in size from 200,000 gallons to 2.9 million gallons. The total storage capacity for treated water is 5.65 million gallons.

Water Distribution System

The City's water distribution system consists of approximately 82.3 miles of active water distribution system pipelines up to 24 inches in diameter, two intertie booster pump stations, and 15 pressure reducing valve (PRV) stations; these facilities serve nine pressure zones (Carollo, 2016). The distribution pipes consist of steel, cast iron, asbestos cement, and polyvinyl chloride (PVC) piping. Most of the steel piping is pre-1960 vintage with a large portion of smaller diameter mains (less than 5-inch in diameter) that were installed prior to 1950. Approximately eight miles of undersized steel pipe is over 50 years old and is in need of replacement (Carollo, 2022).

WATER SUPPLY AND DEMAND

The City's sole source of water is surface water that is diverted from Shasta Lake. The City has explored potential groundwater sources within the City; however, wells of record in the City have very low yields (less than ten gallons per minute), and some private wells in the City reportedly went dry a few years ago due to extended drought conditions. Due to the underlying geology of the City, groundwater yields would not be sufficient to supplement the City's water supply.

The City's main water supply is Central Valley Project water obtained through a long-term contract with the USBR. In addition to the USBR allocation, the City has entered into long-term water transfer agreements with the Anderson-Cottonwood Irrigation District (ACID) and MCM Properties, Inc. Both of these supplies are considered CVP water, and transfers of CVP water must be approved by USBR following environmental review. USBR's 2007-2008 environmental review process for these transfers included completion of a Temperature Impact Analysis utilizing output from the CalSim II model. CalSim II is a hydrologic planning model used to simulate operations of CVP and State Water Project reservoirs and water delivery systems under specified scenarios.

On February 28, 2008, USBR provided written correspondence to the City stating that the withdrawal of water from Shasta Lake at Shasta Dam could potentially impact the cold-water pool (CWP) and affect downstream river temperatures, thereby resulting in detrimental impacts to river fisheries. Because water under the ACID and MCM Properties agreements would be diverted to the City from Shasta Lake, USBR approved the transfer of only 140 acre-feet (AF) of the ACID water. The transfer of the MCM Properties water was not approved.

In 2017, the City completed follow-up hydraulic modeling involving the withdrawal of additional water from Shasta Dam to support the City's request for approval of the ACID and MCM Properties long-term transfer agreements. This modeling work proved, under every withdrawal scenario, that the City's withdrawal of water at the current intake locations within Shasta Dam would have no effect on the Shasta Lake CWP or Sacramento River temperatures and that USBR's 2007/2008 modeling effort was in error by orders of magnitude. On August 21, 2017, these results were sent to USBR, along with a request for full approval of the existing ACID and MCM Properties long-term water transfer agreements.

In July 2019, USBR prepared an Environmental Assessment (EA) to evaluate the transfer up to 2,000 AF of ACID water annually to the City for a five-year period, beginning in contract year 2019. The EA included an analysis of the potential for the ACID water transfer to affect flow rates in the Sacramento River. The analysis concluded that changes in flow rates related to the proposed

transfer would be insignificant. The EA also analyzed the potential for the water transfer to affect water temperatures in the Sacramento River below Keswick Dam. The analysis concluded that the change in downstream temperatures in the area of concern would be, on average, less than one hundredth of a degree Fahrenheit, which effectively represents immeasurable values in a riverine environment (USBR, 2019a). The EA concluded that the ACID water transfer would not have an adverse effect on the environment, and a Finding of No Significant Impact for transfer of the ACID water was adopted by USBR on August 20, 2019. The annual transfer is subject to review and subsequent approval by USBR (USBR, 2019b). To date, USBR has not approved the transfer of any of the MCM Properties water. The City's current available water supply is described below**.**

U.S. Bureau of Reclamation

The City entered into a long-term contract with the USBR in March 2005 that allows the City to divert up to 4,430 acre-feet (AF) per year. This includes the original contract amount of 4,400 AF, plus 30 AF that was reallocated from the Summit City Pressure Zone pursuant to an agreement with the City of Redding. In August 2021, the USBR approved the permanent allocation of 50 AF of water from the Shasta County Water Agency, bringing the City's total USBR allocation to 4,480 AF per year.

Pursuant to the Water Infrastructure Improvement for the Nation Act of 2016 (WIIN Act), an amendment to the City's long-term water contract was finalized in June 2020, and there is no longer an expiration date for the USBR allocation. During drought years, CVP allocations can be reduced based on the City's average water use over the prior three water years. The USBR water year is from March 1 through February of the following year. In 2016, 2017, 2018, and 2019, the USBR allocation was 100 percent (USBR, 2022). In 2020, the allocation was 75 percent, resulting in ±1,536 AF available to the City in the 2020 water year. In 2021, the City's USBR allocation was 55 percent at the beginning of the water year. The 2021 allocation was reduced to 25 percent at the end of May 2021, which calculated to 384 AF for the remainder of the 2021 water year.

In a worst-case scenario, CVP water allocations are reduced to minimum levels necessary to sustain public health and safety (PHS). The PHS allocation is calculated as shown below; however, depending on the severity of the water shortage, the USBR may further reduce the Commercial and Institutional (CI) and Industrial (I) percentages to ensure that adequate water for domestic use is available. PHS = D+CI+I+L, where:

Domestic use (D):	Current population X 55 gallons per day (GPD)
Commercial and Institutional (CI):	80% of the projected commercial demand
Industrial (I):	90% of the projected industrial demand
System (conveyance) losses (L):	10% of D + CI + I

Due to ongoing drought conditions and the fact that the first three months of 2022 were the driest in the State's recorded history, the USBR allocation for the 2022 water year has been reduced to PHS levels, resulting in 686 AF available to the City for the 2022 water year.

Anderson-Cottonwood Irrigation District Transfer Agreement

The City has a long-term transfer agreement with ACID for up to 2,000 AF of CVP water, of which 1,500 AF is "take or pay." The City must pay ACID an administrative fee for the 1,500 AF of water annually, whether transferred or not, unless ACID can sell it to another buyer. The agreement is effective through February 28, 2045. As noted above, USBR has approved the transfer of up to 2,000 AF of the ACID water per year for a five-year period, ending October 31, 2023. ACID sells and transfers the water under USBR contract 3346A-R-1. This transfer is

available to the City between April 1 and October 31. The City diverts this water at its diversion point on Shasta Dam. This supply is subject to USBR's CVP drought reductions discussed above. ACID also provides supplemental water to the City if available. For the 2022 water year, the City received 18 percent of the 2,000 AF of CVP water from ACID (360 AF). The City also purchased 800 AF of additional supplemental water from ACID for the 2022 water year.

MCM Properties, Inc.

MCM Properties, Inc., is a CVP water contractor in Sutter County. The City entered into a transfer agreement with MCM for 325 AF of CVP water, effective from March 1, 2006, to February 28, 2045. MCM sells and transfers the water under USBR contract 7827A. If supply is available, the City may request an additional 132 AF annually. The agreement states that the City has first right to this water if MCM determines water is available. The City would divert this water from Shasta Lake at its diversion point on Shasta Dam. To date, none of the MCM Properties water has been transferred to the City, and it is not known if this water will be available in the future.

McConnell Foundation

The McConnell Foundation has a USBR contract to receive 5,100 AF of CVP water each year. The McConnell Foundation is not subject to water allocation reductions in drought years. During previous drought years, the City has purchased water from the McConnell Foundation when needed to make up for the reduction in the City's USBR water allocation.

The City purchased 1,266 AF of supplemental water for the 2016 water year. In 2017 and 2019, the City did not purchase any water. In 2018, the City purchased 275 AF of supplemental water. The City purchased 500 AF of supplemental water for the 2020 water year. The City purchased 75 AF of McConnell water through the City of Redding to meet the City's water demand for the 2021 water year. For the 2022 water year, the City purchased 300 AF of water from the McConnell Foundation.

Centerville Community Services District (CCSD)

From 2002 to 2004, the City purchased 240 AF of CVP water annually from the CCSD. In February 2016, the City purchased 65 AF of supplemental water from the CCSD. The City did not purchase any water from CCSD for the 2017 through 2022 water years.

A summary of the City's current Water Supply Contracts/Agreements is shown in **Table 4.18-1**.

Table 4.18-1
City of Shasta Lake Current Water Supply Contracts/Agreements

Agency	Amount (Acre Feet)	Source	Contract No.	Contract Term
U.S. Bureau of Reclamation (USBR)	4,480[(1)]	CVP	4-07-20-W1134-P	Beginning July 1, 2020 (no expiration)
Anderson-Cottonwood Irrigation District	2,000	CVP	3346A-R-1	April 24, 2008, to February 28, 2045. Available annually between April 1 and October 31
Total	6,480			

Source: City of Shasta Lake Water Management Plan (Carollo, 2022)
(1) Includes 50 AF permanently transferred from the Shasta County Water Agency in August 2021.

WASTEWATER TREATMENT AND COLLECTION SYSTEM

Wastewater Treatment Plant.
The City's Wastewater Treatment Plant (WWTP) is regulated by the Central Valley Regional Water Quality Control Board (CVRWQCB) under Waste Discharge Requirements (WDR) Order R5-2020-0058 (National Pollution Discharge Elimination System [NPDES] Permit CA0079511).

According to the City's 2016-2026 Wastewater Master Plan (WWMP), the City's WWTP was initially constructed in 1977 and consisted of a 0.5 MGD extended aeration facility. In 1996, the WWTP was converted to an advanced tertiary treatment facility. The WWTP was designed to produce effluent treated to tertiary standards for reuse purposes per California Code of Regulations (CCR) Title 22, Division 4, Chapter 3, §60304 requirements (Use of Recycled Water for Irrigation).

WDR Order R5-2014-0052 (NPDES Permit CA0079511) issued by the CVRWQCB on March 28, 2014, set forth more stringent effluent limitations for ammonia, copper, dichlorobromomethane, nitrate + nitrate, pH, and zinc that required the City to upgrade the WWTP to improve the quality of the plant's treated effluent; the improvements allow treated effluent to be discharged to Churn Creek year-round under a direct discharge NPDES permit with no dilution requirements. The WWTP upgrades were completed in 2020.

The WWTP has a design peak dry weather flow of up to 1.3 MGD and a wet weather flow of 5.0 MGD. The treatment process consists of bar screening, biological treatment, including nitrification and dentrification, alkalinity adjustment, secondary sedimentation, cloth media filtration, and ultraviolet (UV) disinfection. A four-million-gallon emergency retention basin is available for storage of excess influent flow or partially treated wastewater.

Sludge processing consists of aerobic digestion and sludge storage basins. The sludge storage basins provide storage for stabilized solids during wet weather periods and serve as drying beds during the warm summer months. The facility produces approximately 158 dry metric tons of biosolids annually. Dried sludge is hauled to the West Central Landfill, operated by the City of Redding, for disposal. Treated municipal wastewater is discharged to Churn Creek, and may also be discharged to a small reclaimed water basin, which provides reclaimed water to the Knauf insulation facility for landscape irrigation; Sierra Pacific Industries lumber mill for soaking log decks for fire prevention; and California Department of Transportation for landscape irrigation.

Wastewater Collection System
The City currently maintains ±54.3 miles of gravity mains ranging in size from 6-inch diameter to 21-inch diameter, and ±4.1 miles of force mains ranging in size from 4-inch diameter to 18-inch diameter, for a total of ±58.4 miles of pipeline. When conveying flows by gravity is not possible due to topography, lift stations are used to pump flows. The City currently maintains six lift stations throughout the sewer service area.

ELECTRIC UTILITY

Electric service in the City is provided primarily by the Shasta Lake Electric Utility. Some residents in the western area of the City, west of Lake Boulevard, receive electric power from Pacific Gas and Electric (PG&E). The City has also historically provided electric service to residents in the area of Blackberry Lane, south of the City limits in unincorporated Shasta County. Electric demand in the City is influenced primarily by local weather conditions; peak demands are during the summer, especially in the evenings when more residents are at home. The City serves its residents from the Central Valley substation at the City's Corporation Yard on Vallecito Street. A dedicated substation for the Knauf Insulation facility is located adjacent to Ashby Road, near the Knauf facility.

In 1995, the City entered into an agreement with the Western Area Power Administration (WAPA) for the construction, operation, and maintenance of the Flanagan Substation, which provides a second point of interconnection between the City's electric system and the WAPA transmission grid. In 1996, the agreement was amended to add a shared fiber-optic communication system, referred to as the Shasta Area Communication System, to enhance the protection, reliability, and supervisory control and data acquisition (SCADA) capabilities of both the City and WAPA. The Keswick substation also has an interconnection with WAPA and is operated as a backup substation that can feed all of the City's customers.

PG&E has an electric substation within the City limits south of the Shasta Dam Boulevard/I-5 Interchange at the eastern terminus of 2nd Street. Two overhead PG&E powerlines extend from this substation: one in a southeasterly direction through undeveloped property to Akrich Street near the eastern city limits, then continuing southeast to PG&E's substation southeast of the Akrich Street/Oasis Road intersection; and one extending southwest through undeveloped property to the southwestern city limit, south of the Knauf Insulation facility, continuing southwest to the PG&E's substation in the community of Keswick.

NATURAL GAS

PG&E is the only natural gas provider in the City. PG&E's primary transmission main extends south from the community of Mountain Gate. In the City limits, the gas main generally parallels I-5 in the eastern area of the City. The gas main extends under I-5 to the eastern terminus of 2nd Street near the PG&E electric substation. From Akrich Street, the line extends west under I-5 to Cottage Avenue, continues west along Deer Creek Avenue, the south of Smith Avenue to Pine Grove Avenue. South of Akrich Street, the gas main extends south along Virginia Avenue to the southeastern city limits, and continues south. Gas distribution lines are extended from the transmission mains to provide natural gas within the City.

SOLID WASTE

The City contracts with Waste Management, Inc., to provide solid waste disposal services to businesses and residents in the City limits, including curb-side garbage, green waste, and recycling services. There are two landfills in the greater Redding area. The Anderson Landfill, located at 18703 Cambridge Road, southwest of Anderson, is operated by Waste Management. The West Central Landfill, located at 14095 Clear Creek Road in Igo, is owned by Shasta County and operated by the City of Redding Solid Waste Utility.

There is one transfer station in the City, the Buckeye Transfer Station on Lake Boulevard, generally north of Pine Grove Avenue. The facility is owned and operated by the Shasta County Public Works Department. The transfer station accepts general municipal waste only (no hazardous waste, liquid waste, or special wastes are allowed). The transfer station also accepts items for recycling (e.g., cardboard, newspaper, glass bottles and jars, tin cans, aluminum cans, and plastic bottles).

TELECOMMUNICATIONS AND BROADBAND

There are several telecommunications and broadband companies that provide service in the City of Shasta Lake. These include AT&T, Spectrum, T-Mobile, Viasat, HughesNet, DigitalPath, and Velocity. There are currently three cellular towers in the City with co-located facilities of more than one provider on a single tower. Towers are located adjacent to Twin View Boulevard in the southeastern area of the City, at the northern terminus of Shasta Way in the northeastern area of the City, and on Lake Boulevard, generally between Shasta Dam Boulevard and Rose Avenue north of the Shasta Lake Fire Protection District fire station. Landline telephone service in the area is provided by various communications companies. Telecommunications lines are either copper wire or fiber-optic and may be installed overhead on utility poles or underground.

4.18.3 Regulatory Framework

FEDERAL

Federal Clean Water Act

The Clean Water Act includes regulations to reduce the discharge of pollutants into waterways. The CWA regulates discharges from non-point source and point-source facilities, including municipal wastewater plants and industrial facilities. NPDES permits are required for the discharge of pollutants from a point source to surface waters (e.g., lakes, rivers, streams, wetlands, and storm sewers that are tributary to any surface water body.

Safe Drinking Water Act

Under the Safe Drinking Water Act, the Environmental Protection Agency (EPA) is required to set standards for drinking water quality and oversee all states, localities, and water suppliers that are required to implement the standards.

Federal Communications Commission (FCC)

On September 27, 2018, the FCC adopted an order that imposes restrictions on the ability of state and local government to regulate certain small wireless facilities. Under the order, cities are required to allow small wireless facilities on city-owned infrastructure (e.g., streetlights) located within the public right-of-way (ROW). Local jurisdictions retain the ability to impose reasonable design standards for such facilities.

STATE

WATER

California Water Plan

The California Water Plan is the State's strategic plan for sustainably managing and developing water resources for current and future generations. The plan is updated every five years and presents information on California water resources, including water supply evaluations and assessments of agricultural, urban, and environmental water uses.

Urban Water Management Planning Act of 1983

The Urban Water Management Planning Act of 1983 requires urban water suppliers that have more than 3,000 connections, or that supply more than 3,000 acre-feet (AF) of water annually, to prepare and adopt an Urban Water Management Plan (UWMP). The purpose of the UWMP is to maintain efficient use of urban water supplies, promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions (Carollo, 2021).

California Water Conservation Act of 2009

Enacted by Senate Bill (SB) X7-7 of 2009, the Water Conservation Act required that all water suppliers increase their water use efficiency. The Act required the State to reduce urban water consumption by 20 percent by the year 2020.

Senate Bills 610 and 221 (2001)

SB 610 and SB 221 of 2001 are companion bills that were enacted to improve the link between local government land use decisions and water supply availability. SB 610 requires completion of a water supply assessment for any proposed project that is both subject to CEQA and defined as a

project under California Water Code §10912. For public water systems with fewer than 5,000 service connections, which is the case in the City of Shasta Lake, "project" includes:

- A residential development of more than 500 dwelling units
- A shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor area
- A proposed hotel or motel having more than 500 rooms
- An industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area
- A mixed-use project that includes one or more of the projects specified above
- A project that requires an amount of water equivalent to, or greater than 500 dwelling units
- Any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of ten percent or more in the number of the public water system's existing service connections

The water supply assessment must include the following information:

- All existing water supply entitlements, water rights, or water service contracts and a description of the quantities of water received in prior years by the public water system under the existing water supply entitlements, water rights, or water service contracts.
- Identification of any groundwater supplies and detailed analysis of the groundwater basin and groundwater pumped;
- Water demands of the proposed project, the water provider's existing demands, and demands associated with planned future uses;
- Identification of whether water supplies during normal, single-dry, and multiple-dry years over the next 20-year period are sufficient to meet the projected water demand associated with the proposed project, in addition to existing and planned future uses.

If a WSA concludes that water supplies are not or will not be sufficient to serve the projected demand associated with the project in addition to existing and planned future uses, the water provider must also submit to the city or county its plans for acquiring additional water supplies needed to serve the project, setting forth measures being undertaken to acquire and develop those supplies. According to SB 610 of 2001, those plans may include the estimated total costs and the proposed method of financing the costs associated with acquiring the additional water supplies; all federal, State, and local permits, approvals or entitlements anticipated to be required to procure additional supplies; and the estimated timeframes within which the water provider expects to be able to acquire such additional supplies.

California Environmental Quality Act (CEQA)

§15155 of the CEQA Guidelines requires that a Water Supply Assessment be completed for "water-demand" projects. CEQA's definition of a water-demand project is the same as described in Water Code §10912(b). §15155(e) of the CEQA Guidelines states:

"The city or county lead agency shall include the water assessment, and any water acquisition plan in the EIR, negative declaration, or mitigated negative declaration, or any supplement thereto, prepared for the water-demand project, and may include an evaluation of the water assessment and water acquisition plan information within such environmental document. The city or county lead agency shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If a city or county lead agency determines that water supplies will not be sufficient, the city or county lead agency shall include that determination in its findings for the water-demand project."

Assembly Bill (AB) 1668 and Senate Bill (SB) 606 of 2018

Enacted on May 31, 2018, AB 1668 and SB 606 build on the State's ongoing efforts to make water conservation a way of life in California. The Bills require the State Water Resources Control Board (SWRCB) to establish long-term urban water use efficiency standards by June 30, 2022. Urban water providers throughout the State must set new permanent water use targets for their service areas by November 1, 2023, and update those targets annually based on water use conditions for the previous year.

The standard for indoor water use will be 55 gallons per person per day, dropping incrementally to the greater of 50 GPD or a standard recommended by the SWRCB beginning in 2030. In addition to the indoor standard, a standard for outdoor water use and a standard for water use due to leaks in water system pipes will be established.

These three standards will be calculated and added together to represent an overall water use target (in gallons) for the water provider. Water providers must set and monitor targets for their service area as a whole and will determine how to assist customers with water conservation efforts as necessary. Individual customers are not subject to fines or penalties; however, water providers that do not comply with the standards can be fined by the State Water Board up to $1,000 per day during non-drought years and $10,000 per day during drought emergencies.

California Green Building Standards Code (Water Efficient Landscape Requirements)

The California Green Building Code (CALGreen) Chapter 5 (Nonresidential Mandatory Measures), Division 5.3 (Water Efficiency and Conservation), Section 5.304 requires that nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.

The State's MWELO applies to the following landscape projects:

- New construction with an aggregate landscape of 500 square feet or greater requiring a building or landscape permit, plan check, or design review.
- Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review.

The MWELO includes specific requirements for existing landscapes that were installed prior to December 1, 2015, and are over one acre in size. For these landscapes, the local agency must provide programs, such as irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.

SOLID WASTE

California Integrated Waste Management Act

The California Integrated Waste Management Act (CIWMA) of 1989, as amended, was enacted to reduce, recycle, and reuse solid waste generated in the State. The CIWMA requires cities and counties to divert 50 percent of the total waste stream from landfill disposal. Under the CIWMA, cities and counties must prepare Solid Waste Management Plans and Source Reduction and Recycling Elements to implement CIWMA goals.

Assembly Bill 341 (2011)

AB 341, enacted in 2011, established a Statewide goal that 75 percent of solid waste be reduced, recycled, or composted by 2020. AB 341 established a Statewide mandatory commercial recycling program. A business or public entity that generates four cubic yards or more of commercial solid waste per week, or a multifamily residential dwelling of five units or more, must arrange for recycling services no later than July 1, 2012. Cities and counties are required to implement a commercial solid waste recycling program to meet this requirement.

Senate Bill 1383 (2016)

SB 1383 of 2016 (Short-Lived Climate Pollutant Reduction Strategy) established targets for reducing the level of the Statewide disposal of organic waste (food and other compostable materials) in landfills. The goal of SB 1383 is to reduce organic waste disposal from 2014 levels by 75 percent by 2025 and to recover at least 20 percent of currently disposed edible food by 2025.

Effective January 1, 2022, all businesses and residents are required to separate organic waste from trash and either subscribe to a required collection service or self-haul to an appropriate facility for diversion. Certain businesses, including supermarkets and grocery stores, must donate edible food to a food bank or other organization that helps feed community members. Beginning in 2024, restaurants that seat over 250 people, schools, and hotels with on-site food facilities and over 200 rooms are required to donate edible food.

The Shasta County Environmental Health Division is in the process of preparing plans and programs for implementation of SB 1383, which will include recycling organic waste collected from residents and businesses into compost for use throughout the County (Shasta County, 2022).

California Building Standards Code

The CALGreen Code, included as Part 11 of the CBSC, includes requirements for construction waste reduction, disposal, and recycling. The intent of this requirement is to reduce the amount of waste from new construction and demolition that would be sent to landfills, and to encourage reuse and recycling of construction waste products (e.g., carpet, wood, aggregate, shingles, wallboard, and other materials that have recyclable value). A minimum of 65 percent of nonhazardous construction and demolition waste must be recycled and/or salvaged for reuse.

The CALGreen Code requires that a Construction Waste Management Plan be submitted with the building permit application and approved by the Building Official prior to issuance of a building permit. The CALGreen Code also includes mandatory water conservation measures for both indoor and outdoor water use. Indoor measures require the use of water-conserving plumbing fixtures and fittings.

LOCAL

Shasta Lake Municipal Code, Public Utility Regulations

Shasta Lake Municipal Code (SLMC) Title 13 (Public Services) includes rules and regulations pertaining to the City's water, sewer, electricity, and stormdrain systems. SLMC Chapter 13.28 (Industrial Wastewater Pretreatment Standards) includes requirements for all users of the City's sewer collection and treatment system to ensure that the City complies with its NPDES permit. Industrial users must submit a wastewater discharge permit application to the City that describes the nature and characteristics of wastewater that will be discharged into the City's sewer system (SLMC Chapter 13.28, Article IV).

The City issues wastewater discharge permits as necessary with conditions of approval, which may include pre-treatment requirements, effluent limits, monitoring, sampling, reporting, and record-keeping requirements, and any other conditions deemed necessary to ensure compliance with the City's NPDES permit. SLMC Chapter 13.28, Article VII (Fats, Oils, and Grease Control) includes regulations for food service establishments to limit the introduction and accumulation of fats, oils, and grease into the City's sewer collection and treatment system in order to reduce the potential for sanitary sewer overflows.

City of Shasta Lake Water Efficient Landscape Ordinance

SLMC Chapter 15.10 (Water Efficient Landscaping) was adopted in 2010 to comply with the California Water Conservation Landscaping Act of 2006, codified as California Government Code §65591 *et seq.* The purpose of the Code is to ensure that certain new and rehabilitated landscaping is water efficient and does not exceed a maximum water demand. As stated above, projects must comply with the City's Water Efficient Landscape Ordinance or the State's MWELO, whichever is more stringent. As of May 1, 2022, the State's MWELO is more stringent than the City Ordinance. The City's Building Official ensures compliance with the applicable requirements through the building permit and/or design review process.

City of Shasta Lake Water Shortage Contingency Plan

The City adopted a Water Shortage Contingency Plan (WSCP) in June 2021 (Carollo, 2021b). The Plan details mandatory water conservation measures that must be implemented based on reductions to the City's water supply in drought years and/or during emergencies. **Table 4.18.2** identifies the six stages identified in the WSCP that are based on the City's available water supply.

Table 4.18-2
City of Shasta Lake Water Shortage Contingency Plan Water Shortage Stages

Stage	Percent Shortage	Water Shortage Condition
1	10 percent or less	Water Shortage Alert
2	11 to 20 percent	Moderate Water Shortage
3	21 to 30 percent	Emergency Water Shortage
4	31 to 40 percent	Severe Water Shortage
5	41 to 50 percent	Critical Water Shortage Emergency
6	Over 50 percent	Catastrophic Interruption of Water Supplies (1)
(1) A catastrophic interruption could occur as a result of flooding, major fire emergencies, earthquake, regional power outages, water contamination, and other emergencies.		

Table 4.18.3 identifies the drought stages and mandatory restrictions that go into effect for each stage.

Table 4.18-3
City of Shasta Lake Water Shortage Contingency Plan

Stage 1 - Water Shortage Alert: The City is able to meet most if not all water demands of the City's customers. The water conservation requirements in Stage 1 are State mandated regardless of drought stages in an effort to reduce water consumption.
Stage 1 Restrictions
Free-flowing hoses for any use shall be prohibited. Customers shall use automatic shutoff devices on any hose or filling apparatus.
Faulty sprinklers and/or breaks within the customer's plumbing system shall be repaired within twenty-four hours after the customer is notified or discovers the break.
All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, etc., shall develop a water conservation plan indicating a ten percent reduction in water usage and submit the plan to the City's Water Conservation Coordinator for approval within thirty (30) calendar days.
Use of landscape irrigation systems for all customers, including parks and school grounds, shall be limited to the hours between 9:00 p.m. and 9:00 a.m. to reduce evaporation.
Irrigated landscaped areas shall include efficient irrigation systems (e.g., drip irrigation systems, timed sprinklers, rain sensors, low-flow spray heads, etc.).
All new development shall be required to install low flow devices (i.e., toilets and shower heads) pursuant to California Building Code standards.
The use of potable water for dust control shall be reduced to the greatest extent possible.
Stage 2 – Moderate Water Shortage: There is a probability that the City will not be able to meet all water demands of the City's customers with the City's available water supply for the current water year. All measures from Stage 1 also apply in Stage 2.
Stage 2 Restrictions
Water use for ornamental ponds and fountains shall be prohibited.
All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, etc., shall develop or update their water conservation plans and submit the plan to the City's Water Conservation Coordinator for approval within thirty (30) calendar days.(1)
Parks and school grounds shall be watered at night only between the hours of 9:00 p.m. and 9:00 a.m., no more than three nights per week, and shall achieve a twenty (20) percent reduction in water use.(2)
Use of landscape irrigation systems for all other customers shall be limited between the hours of 9:00 p.m. and 9:00 a.m. no more than three nights per week.(3)
All City water customers who do not comply with the reduced consumption amount shall be required to install retrofit kits.(4)
The City will implement excessive water use penalties or tier water rates to discourage excessive water use and shall penalize water customers who fail to meet the reduced consumption amount.
(1) The plan shall address all rationing stages as follows: Stage 2: Demonstrate a twenty (20) percent reduction in water usage; Stage 3: Demonstrate a thirty (30) percent reduction in water usage; Stage 4: Demonstrate a forty (40) percent reduction in water usage; Stage 5: Demonstrate a fifty (50) percent reduction in water usage. *(2) The reduction shall be measured based on the amount of water used in the previous calendar month compared to the same calendar month in the previous year.* *(3) The limitation for times does not apply to: (a) Drip, bubbler, or soaker irrigation hardware or emitters; (b) Use of an irrigation system for the express purposes of repairing or completing routine maintenance; (c) Watering by use of a handheld bucket or similar container or a hand-held hose equipped with shut-off nozzle;*

and (d) Watering by use of a hose-end sprinkler with a radius of not more than ten feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter. *(4) Retrofit kits are water saving devices that can assist customers to save water, including, but not limited to, low-flow showerheads, faucet aerators, spray hose nozzles, and hose timers.*
Stage 3 – Emergency Water Shortage: There is a probability that the City will not be able to meet all water demands of City customers with the City's available water supply for the current water year. All measures in Stage 1 and 2 also apply in Stage 3.
Stage 3 Restrictions
Parks and school grounds shall be watered at night only between the hours of 9:00 p.m. and 9:00 a.m., no more than two nights per week, and shall achieve a thirty (30) percent reduction in water use.
Use of landscape irrigation systems for all other customers shall be limited between the hours of 9:00 p.m. and 9:00 a.m. no more than two nights per week for a maximum total run time of fifteen (15) minutes per station per night.(1)
Installation of irrigated landscaping for all new development shall be deferred pursuant to a written Agreement with the City.
No new landscape irrigation systems shall be installed on developed parcels. This restriction shall not apply to the replacement of inefficient irrigation systems with systems that incorporate water-savings technologies, such as the installation of high efficiency sprinkler heads, weather-based irrigation controllers, and/or drip irrigation systems.
Hotels, motels, and bed & breakfast establishments must offer and clearly notify guests of a "limited linen/towel exchange" program.
Reduction of water use by any means is encouraged. Compliance with mandatory demand reduction measures is required for outdoor water uses including landscape irrigation, swimming pools, and vehicle washing.
(1) The limitation for times does not apply to: (a) Drip, bubbler, or soaker irrigation hardware or emitters; (b) Use of an irrigation system for the express purposes of repairing or completing routine maintenance; (c) Watering by use of a handheld bucket or similar container or a hand-held hose equipped with shut-off nozzle; and (d) Watering by use of a hose-end sprinkler with a radius of not more than ten feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.
Stage 4 – Severe Water Shortage: The City will not be able to meet all demands of City customers with the City's available water supply for the current water year. All measures in Stages 1, 2, and 3 also apply in Stage 4.
Stage 4 Restrictions
Water use shall be restricted so as to meet the minimum requirements for personal health and safety. Priority shall be given to supplying adequate water to ensure public/community health and safety (i.e., fire suppression, medical, veterinarian, and educational institutions).
Swimming pools that have been filled prior to Stage 4 shall not be emptied and refilled.
Filling of new swimming pools is prohibited as of the effective date of the Stage 4 declaration.
Flushing of sewers and fire hydrants shall be prohibited except in cases of emergency.
No potable water from the City system shall be used for construction purposes, such as dust control, compaction, or trench jetting.
Hotels, motels, and bed and breakfast establishments must limit linen/towel changes to once every two (2) nights or for the entire stay, whichever is shorter, except for health and safety.

Stage 5 – Critical Water Shortage Emergency: The City will not be able to meet all demands of City customers with the City's available water supply for the current water year. In Stage 5, the City is experiencing a major failure of supply, storage, or distribution facilities. The City is not able to meet all customer water requirements with Stage 4 measures. All measures in Stages 1-4 also apply in Stage 5.
Stage 5 Restrictions
No new residential development shall be permitted unless the developer has submitted a complete building permit application to the City prior to the Stage 5 declaration. (1)
Use of landscape irrigation systems for lawns for all customers shall be prohibited. To the extent possible, the City will water all public parks and sports fields as needed for public use. Watering, including trees and shrubs, by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle is allowed.
Hotels, motels, and bed and breakfast establishments must limit linen/towel changes to once every three (3) nights or for the entire stay, whichever is shorter, except for health and safety.
Non-commercial washing of vehicles and mobile equipment is prohibited. Only commercial facilities with water recycling systems may be used.
(1) Building permit applications may proceed with a deferral of landscape installation until the water shortage level has been lifted. Issuance of a Temporary Certificate of Occupancy will be allowed in the interim.
Stage 6 – Catastrophic Interruption of Water Supplies: The City will not be able to meet all demands of City customers with the City's available water supply for the current water year. In Stage 6, the City is experiencing a catastrophic interruption of water supplies due to flooding, major fire emergencies, earthquake, regional power outages, water contamination, or other emergencies. All measures in Stages 1-5 also apply in Stage 6.
Stage 6 Restrictions
City may establish mandatory water use budgets, if needed.
Water use is restricted to essential water uses only. The term "essential water use" is defined to mean water necessary for human consumption, sanitation, and fire protection. All other uses of water that are not specifically required to meet these needs shall be considered non-essential.
Wash only full loads of laundry and/or dishes.
Shorten showers and turn off faucets while brushing teeth or shaving.
No new landscape shall be installed until the appropriate water shortage level has been lifted. Exceptions are replacing landscaping with drought tolerant landscape material.
All pools and tubs shall be covered when not in use to reduce evaporation.
Fleet managers are encouraged to only wash those vehicles as is necessary for health and safety.

The Stages are implemented based on the City's available water supply, including water allocated under the contracts/agreements identified in **Table 4.18-1**, and supplemental water purchased from other water purveyors, including but not limited to the McConnell Foundation, Centerville CSD, and ACID, and/or water obtained through an emergency intertie. The WSCP includes mandatory requirements that the City must follow to notify the City's customers when the City Manager declares a water shortage (Stages 1 through 5). According to the WSCP, the City shall:

- Mail or electronically mail information to every customer and reasonably available potential water user explaining the importance of significant water use reductions
- Provide technical information to customers on ways to improve water use efficiency
- Conduct a media campaign to remind customers of the need to save water
- Enforce the permanent water conservation restrictions

4.18.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following goals, policies, and implementation actions related to utilities and service systems.

GOAL CIR-4	**Maintain economic health and viability while making improvements to public facilities, utilities infrastructure, and transportation infrastructure, consistent with the General Plan.**	
POLICIES	CIR-4.1	Continue to ensure that new development pays its fair share of the costs of transportation and public facilities improvements. Transportation improvements should be based on traffic generated and impacts on service levels and vehicle miles traveled. Ensure adequate public services and facilities are available at the time of project occupancy and that a funding mechanism is in place to ensure long-term maintenance of required public facilities.
	CIR-4.5	Promote efficient expansion of broadband infrastructure to provide high-speed broadband internet service.
IMPLEMENTATION ACTION	CIR-4.3	Generate a database of upcoming public infrastructure projects (i.e., water, sewer, roads, paving, etc.) in public rights-of-way, including location, routes, and estimated timelines, and coordinate infrastructure improvement whenever possible.
GOAL CON-1	**Protect and conserve water resources and improve and maintain water quality.**	
POLICIES	CON-1.5	Integrate stormwater management techniques and low impact development best practices to minimize runoff. Encourage water conservation efforts by residents, businesses, and industry.
	CON-1.6	Require new development annexed to the City be connected to the City's wastewater collection system whenever possible.
IMPLEMENTATION ACTIONS	CON-1.3	Continue to educate the community about water conservation.
	CON-1.4	Design and monitor irrigation systems in medians and other common areas to maximize efficiency and reduce runoff.
	CON-1.5	Upgrade aging infrastructure to reduce leakage and eliminate pollutant sources from degraded pipelines and evaluate the costs and benefits of upgrading existing capacities.
GOAL CON-2	**Continue regional relationships that ensure a flexible and sustainable water supply.**	
POLICY	CON-2.2	Coordinate with regional water authorities to ensure that applicable requirements are included in new development projects and City ordinances.
GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICIES	CON-4.1	Explore alternatives to stormwater collection methods, including the use of detention or retention basins to implement the "no net runoff" concept.
	CON-4.2	Recognize that conservation goals and development practices may, on occasion, conflict and will need to be resolved according to policies specified in the General Plan.

	CON-4.3	Promote cost-effective water and energy consumption in the City as much as possible; continue and build upon existing programs to reduce water and energy consumptions in the City.
IMPLEMENTATION ACTIONS	CON-4.2	Encourage the highest feasible water conservation possible when reviewing landscaping plans for new projects and ensure the landscape watering ordinance contains best practices for water conservation.
	CON-4.3	Work with the largest users of water and energy in the City to establish incentives, offer recommendations, and explore other programs and policies for lowering consumption.
	CON-4.4	Continue to implement policies, programs, and projects to reduce greenhouse gas emissions and meet target energy consumption reductions, as identified in the City's Climate Action Plan.

4.18.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact on utilities and service systems if:

1. There is insufficient capacity in the water treatment and distribution system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.

2. There is insufficient capacity in the wastewater collection and treatment system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.

3. There is insufficient capacity in the electric utility system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.

4. The relocation or construction of new or expanded utility infrastructure (e.g., waterlines, sewer lines, electric, natural gas, stormwater drainage, or telecommunications facilities), would cause significant environmental effects.

5. There are insufficient water supplies available to serve development under the 2040 General Plan and reasonably foreseeable future development during normal, dry, and multiple dry years.

6. Generation of solid waste is in excess of State or local standards, or in excess of the capacity of local infrastructure, impair the attainment of solid waste reduction goals, or result in non-compliance with federal, State, and local management and reduction statutes and regulations related to solid waste.

4.18.6 Issues Not Discussed Further

All issues identified in Section 4.18.5 are addressed below.

4.18.7 Impact Analysis and Mitigation Measure

Impact 4.18-1	**There could be insufficient capacity in the water treatment and distribution system to serve development under the 2040 General Plan.** ***Less-than-Significant Impact***

The City's 2016-2026 Water Master Plan (WMP) (Carollo, 2016) evaluated the City's water system, identified capacity deficiencies, developed feasible alternatives to correct those deficiencies, and identified infrastructure improvements that would be needed to accommodate future development in the City. The capacity evaluation assumed an annual population growth of 1 percent, with a total population of 12,349 by 2036.

Average daily demand (ADD), which represents the daily average demand for the entire year, is calculated by dividing the total water produced in any given year by 365. ADD in the City was estimated at 2.35 million gallons per day (MGD) in 2015. The WTP must be capable of treating the maximum daily demand (MDD), which is the highest production in one day in a given year and usually occurs in the summer. In 2015, the MDD was estimated at 5.12 MGD (conservatively estimated at 2.18 x ADD). MDD is used for purposes of evaluating system supply, water storage capacity, and pump station capacity.

The WMP recommends that the City maintain a firm water capacity equal to the MDD; demands in excess of the MDD would be handled through storage. The WMP estimated future water demands at 235 gallons per capita per day (gpcd). Based on a projected population of 12,349, ADD in year 2036 was estimated at 2.9 MGD. The proposed 2040 General Plan estimates that population will increase by 2,083 through 2040, for a total population of 12,706. Because the population projections in the WMP are only slightly less than what is expected under the 2040 General Plan, and gpcd will be less than 235 gallons as required by State and local water conservation laws, the WMP provides an accurate projection of water system improvements that may be needed to accommodate development under the 2040 General Plan.

Raw Water Pump Station (RWPS). The capacity of the USBR's RWPS at the base of Shasta Dam is significantly lower during drought conditions when the lake has been drawn down considerably. As shown in **Table 4.18-4,** the firm capacity of the RWPS (with pumps 1-5 only) ranges from 3.02 MGD to 8.35 MGD, depending on the water level in Shasta Lake. Under year 2015 and future MDD conditions, the WMP stated that the RWPS does not have sufficient firm capacity under the low lake level condition (830 feet or less).

Table 4.18-4
Raw Water Pump Station Firm Capacity Evaluation

Planning Year	MDD (MGD)	2015 Firm Capacity (MGD)			Capacity Surplus/(Deficit) (MGD)		
		High lake Level (1,069')	Int. Lake Level (993')	Low Lake Level (830')	High lake Level (1,069')	Int. Lake Level (993')	Low Lake Level (830')
2015	5.12	8.35	7.49	3.02	3.23	2.37	(2.10)
2036	6.32	8.35	7.49	3.02	2.03	1.17	(3.30)
Full Build-Out	15.86	8.35	7.49	3.02	(7.51)	(8.37)	(12.84)

Source: City of Shasta Lake 2016-2025 Water Master Plan (Carollo, 2016).

In January 2017, PACE Engineering completed plans and bid documents to add a sixth pump to the RWPS to increase capacity. As requested by USBR, additional options for increasing capacity and reliability of the RWPS were analyzed (PACE, 2017). In addition to installation of a sixth pump, potential options included adding variable speed to existing pumps or rehabilitating pump 4.

It was determined that installation of a sixth pump with an estimated capacity of 2,500 gallons per minute (GPM) at 500 feet of head would increase the firm capacity of the RWPS under low lake level conditions to 6.3 MGD, which would accommodate future growth through 2036. The City will continue to monitor the RWPS to determine the timing of additional improvements that will be needed to accommodate growth under the 2040 General Plan.

Fisherman's Point Water Treatment Plant. As shown in **Table 4.18-5**, the WTP has sufficient capacity to meet the projected 2040 MDD of 6.64 MGD. Due to new State legislation aimed to reduce per-capita water use, including new building code and water conservation requirements, it is likely that the future MDD will be less than shown in **Table 4.18-5.** The City will continue to monitor capacity in the WTP to determine the timing of additional improvements to the WTP that will be needed to accommodate future development.

Table 4.18-5
Shasta Lake Water Treatment Plant Capacity

Year	Population	MDD (mgd)	Treatment Capacity (mgd)	Capacity Surplus/(Deficit) (mgd)
2015	10,020	5.12	6.70	1.58
2020	10,626	5.45	6.70	1.25
2040	12,706	6.50	6.70	0.20
2045	13,226	6.77	6.70	(0.07)
Full Build-Out	-	15.86	6.70	(9.16)

Sources: City of Shasta Lake 2016-2025 Water Master Plan (Carollo, 2016). Shasta Lake 2040 General Plan population projections.

Treated Water Pump Station Capacity Evaluation. The treated water pump station (TWPS) pumps treated water from the WTP to the City's water distribution system. The rated capacity of the TWPS is 11.52 MGD. The estimated firm capacity, with one of three pumps not operating, is 8.64 MGD. As shown in **Table 4.18.6,** the TWPS has sufficient capacity to accommodate growth through year 2036 and beyond; however, upgrades to the TWPS will be needed to accommodate build-out of the 2040 General Plan.

Table 4.18-6
Treated Water Pump Station Capacity Evaluation

Year	MDD (MGD)	Existing Firm Capacity (MGD)		Capacity Surplus/(Deficit) (MGD)	
		Rated Capacity	Estimated Firm Capacity	Rated Capacity	Estimated Firm Capacity
2015	5.12	11.52	8.64	6.40	3.52
2036	6.32	11.52	8.64	5.20	2.32
Full Build-Out	15.86	11.52	8.64	(4.34)	(7.22)

Sources: City of Shasta Lake 2016-2025 Water Master Plan (Carollo, 2016).

Storage Capacity. The water system storage evaluation included in the WMP was based on pressure zones in the City and the ADD and MDD for each zone that would be required to meet State standards for storage. The standards require operational storage (25 percent of MDD), required fire flows (3,000 GPM for a duration of three hours), and emergency storage (100 percent of MDD).

The WMP identified storage deficiencies and concluded that with construction of a new 2.45 MG treated water storage reservoir near the Centimudi Boat Ramp, the City should be able to provide required storage volume through about year 2036. Storage will need to be added after that time to accommodate additional growth. The City has applied for funding from two different sources for design and construction of the Centimudi Water Tank (Community Development Block Grant program and State Department of Water Resources). It is anticipated that funding for the Centimudi tank will be secured by fiscal year 2023-2024.

Distribution System Improvements. The WMP included a system pressure analysis, fire flow analysis, and pipeline velocity analysis for the City's water distribution system. The system pressure analysis was performed using the hydraulic model for ADD and peak hour demand (PHD) conditions. The City's maximum desirable pressure is 120 pounds per square inch (psi). Under PHD conditions, the minimum pressure criterion is 40 psi. Recommended improvements to resolve existing issues with the distribution system included pressure regulating valve improvements and replacement of undersized pipes.

Many improvements to the City's water system have been completed since the WMP was prepared, including replacement of waterlines throughout the City, rehabilitation of three potable water storage tanks, installation/replacement of pressure regulating valves, rehabilitation of a treatment unit at the WTP, and the addition of an on-site hypochlorite generation system at the WTP. Upcoming projects include installing a second backwash separation tank at the WTP. installing the new 2.45 MG Centimudi Water Tank, upgrading the raw water pump station, replacing the raw water line, installing a 1.6 MG raw water storage tank, and completing additional waterline replacements.

The WMP identifies water system improvements that the City would need to complete to accommodate future growth, and developer-specific improvements that would be required in specific areas of the City. Individual projects under the 2040 General Plan will be reviewed on a case-by-case basis to identify whether additional water system improvements are needed. CEQA documentation for individual projects will include analysis of any off-site infrastructure

improvements that may be required, and mitigation measures will be implemented as necessary. Projects involving the WTP and related improvements are also subject to USBR review under the National Environmental Policy Act.

Therefore, with completion of the necessary improvements identified above, there should be sufficient capacity in the City's water system to accommodate growth during the 20-year planning period for the 2040 General Plan. The City will continue to monitor the water system to ensure that adequate capacity is maintained as development in the City progresses. Potential impacts related to capacity in the City's water system would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.18-2	**There could be insufficient capacity in the wastewater collection and treatment system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.** ***Less-than-Significant Impact***

The City's 2016-2026 Wastewater Master Plan (WWMP) (Akel, 2016) included an evaluation of the capacity of the wastewater treatment plant (WWTP) as well as the wastewater collection system to determine improvements that would be needed to handle future peak dry weather flows (PDWF) and peak wet weather flows (PWWF).

Wastewater Treatment Plant (WWTP).

According to the WWMP, the WWTP is designed to treat a dry weather flow of 1.3 MGD and can accommodate a design peak wet weather flow of up to 5.0 MGD (Akel, 2016). Wastewater flows at the WWTP vary significantly. Dry weather flows are influenced by customer uses, whereas wet weather flows are influenced by the severity of storm events. Non-residential uses generally return the majority of water used to the wastewater collection system. Unit factors vary from 40 percent for special users that also utilize recycled water (i.e., Knauf Insulation and Sierra Pacific Industries), to 90 percent for mixed-use, commercial, and industrial land uses. Multi-family residential uses were estimated to return 55 percent of water used to the collection system. Single-family residential uses were estimated to have a 45 percent return of water to the collection system. In drought years when water use declines, there is a corresponding reduction in flows to the WWTP.

The WWMP estimated future annual wastewater flows based on water demands by land use type, as recorded in water billing records and verified using existing land use records. It was determined that a unit flow factor of 67 gallons per capita per day (gpcd) would be used to estimate future flows. The WWMP estimated that in 2020, the population would be 9,883 and the ADWF would be 0.66 MGD. The actual population in 2020 was 10,626 and the annual wastewater flow into the WWTP was ±836 AF (±0.75 MGD) (Carollo, 2021); the wastewater gpcd was 70, slightly higher than the 67 gpcd projected for 2020 in the WWMP. Based on current building codes and water conservation requirements, it is anticipated that wastewater flows associated with new development will be less than existing developments.

The 2040 General Plan estimates that population in year 2040 would be ±12,706. Based on a unit flow factor of 67 gpcd, ADWF is estimated to reach ±0.85 MGD by year 2040. Based on an ADWF capacity of 1.3 MGD, the WWTP is expected to reach capacity with a population of

±19,400. Based on an average growth rate of 1 percent, this is not expected to occur within the next 50 years. However, estimated future flows will also be influenced by the type and intensity of future commercial and industrial development. The City will continue to monitor flows into the WWTP and review individual development projects on a case-by-case basis to identify any needed improvements to the WWTP.

Wastewater Collection System

The capacity of the wastewater collection system was analyzed using hydraulic modeling software. The model evaluated all components of the collection system, including gravity mains, force mains, manholes, and lift stations. Capacity in the collection system is based on several factors, including the size and hydraulic grade of the pipe, the severity of infiltration and inflow (I&I) into the system, and the condition of the lift stations. **Table 4.18-7** identifies capacity in the collection system in 2015 when the WWMP was prepared, and estimated future flows for 2025 and 2035.

Table 4.18-7
Wastewater Collection System Capacity

Year	Peak Dry Weather Flow (MGD)	Peak Wet Weather Flow (MGD)
2015	2.1	4.8
2025	2.3	5.1
2035	3.0	6.8

Sources: 2016-2026 Wastewater Master Plan (Akel, 2016).

The WWMP identifies collection system capacity improvements that are needed to resolve existing deficiencies and accommodate future growth, including new pipelines, replacement pipelines, improvements to one lift station, and installation of a new lift station. For certain pipeline segments, the WWMP identifies how many additional single-family household equivalent connections could be accommodated before the pipe would need to be replaced. The majority of the collection system capacity improvements are associated with the Mountain Gate at Shasta mixed-use development in the northeastern area of the City. Potential impacts of infrastructure improvements associated with this project were analyzed in the EIR for the project, and mitigation measures were included to minimize/avoid potential environmental impacts that could occur.

The City is in the process of completing force main improvements that are identified in the WWMP: the sewer force main between Lift Station 3 near the intersection of Cascade Boulevard and Autumn Harvest Way and the WWTP, and a segment of the force main for Lift Station 5 near the intersection of Pine Grove Avenue and Cascade Boulevard to the WWTP will be replaced. The improvements will provide additional capacity for future development. Potential impacts of the force main improvements were analyzed in the CEQA Initial Study for the project, and mitigation measure were included to minimize/avoid potential environmental impacts that could occur. In addition, the City is currently conducting a City-wide I&I evaluation and preparing an I&I Reduction Project Report that identifies improvements that would reduce I&I, thereby increasing capacity in the collection system.

The City will continue to monitor wastewater flows and review individual development projects on a case-by-case basis to identify any needed improvements to the City's sewer system. Implementation of capacity improvements identified in the 2016-2026 WWMP will ensure that there is sufficient capacity in the sewer system to accommodate development during the 20-year planning period for the 2040 General Plan. Therefore, potential impacts associated with capacity in the wastewater collection and treatment system are ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.18-3	**There could be insufficient capacity in the electric utility system to serve development under the 2040 General Plan, in addition to the provider's existing commitments.** ***Less-than-Significant Impact***

A Ten-Year Planning Guide for the Shasta Lake Electric Utility was prepared in July 2011 by PowerPlus Engineering. The Guide provides recommendations for needed improvements to the electric distribution system that would be needed to accommodate load growth and improve reliability in the system through year 2020. The analysis was based on providing electric service to approximately 5,000 customers, with a total system peak load of approximately 38 MW that was estimated to occur by 2020 using the City's electric distribution system. The study did not assess impacts of electric demands for the Knauf Fiberglass facility because that facility has a dedicated substation (PowerPlus Engineering, 2011).

According to the City's Electricity Resource Planning Form completed on August 13, 2019, the actual peak load for both 2017 and 2018 was 35 MW, with a projected load of 37 MW by year 2030. The projected total energy demand for year 2030 is 216 GWh (California Energy Commission, 2019).

Table **4.18-8** identifies actual electricity consumption in the City by customer class between 2015 and 2020.

Table 4.18-8
City of Shasta Lake Electricity Consumption
2015-2020 (GWh)

Year	Commercial Building	Industry	Residential	Streetlight	Total
2015	11.15	140.20	38.23	-	189.58
2016	11.10	148.34	38.83	-	198.27
2017	11.13	138.68	40.92	0.14	190.87
2018	10.75	147.94	37.69	0.27	196.65
2019	10.02	145.30	38.70	0.27	194.29
2020	11.55	155.32	41.68	0.27	208.82

Source: California Energy Commission, Electricity Consumption by Entity, 2020.

The Ten-Year Planning Guide included recommended improvements to the electric system, some of which have been completed over the past ten years.

The City's fiscal year (FY) 2020-2021 budget included $3,716,000 for improvements to the City's electric system, including upgrading the Central Valley Substation, reconductoring of the transmission line between the Knauf and Keswick Substations to accommodate future development, installing relays in the Central Valley and Knauf Substations, completing distribution system modernization, completing improvements at the Flanagan Substation, and completing fuse replacements for wildfire prevention. Following adoption of an Ordinance allowing cannabis cultivation and manufacturing operations within the Shasta Gateway Industrial Park (SGIP) and surrounding industrial areas, the City received requests for electric service from project developers with higher energy demands than traditional industrial uses within the City. The City determined that these anticipated energy demands would exceed the operating limit of existing 12-kV circuits that service this area of the City from the Central Valley Substation.

The FY 2020-2021 budget included partial funding for a new SGIP Substation, which would include looping in to the 115-kV circuit between the Central Valley and Knauf Substations, or between the Knauf and Keswick Substations. The budget request was intended to fund the City's contributions toward construction of the SGIP Substation, with the balance of costs coming from the project developer(s) per long-standing City code. The FY 2021-22 budget includes $1,586,000 for Flanagan Substation control system improvements, distribution system replacements, improvements at the Twin Lakes Mobile Home Park, updates to capacitor bank controls, and additional fuse replacements for wildfire prevention.

The City is in the process of completing an updated Electric Utility Plan that will include growth projections and improvements that will be necessary to accommodate future growth. Projects are reviewed on a case-by-case basis to identify specific electric infrastructure improvements that would be required for specific projects. For example, during review of the Mountain Gate at Shasta project, the City's Electric Utility identified the requirement for a new substation in the western area of the development. Potential adverse impacts were identified, and mitigation measures were included to minimize/avoid potential environmental impacts that could occur.

Future projects under the 2040 General Plan will be reviewed by the City's Electric Utility Department on a case-by-case basis to determine capacity improvements that would be required to accommodate the project. Completion of these projects ensures that the City has capacity to accommodate future development under the 2040 General Plan. Potential impacts associated with capacity in the City's electric utility system would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.18-4	**Implementation of the 2040 General Plan would require construction of new or expanded utility infrastructure, and possibly the relocation of existing utility infrastructure (e.g., waterlines, sewer lines, water or wastewater treatment facilities, electric, natural gas, stormwater drainage, or telecommunications facilities), the construction of which could cause significant environmental effects.** ***Less-than-Significant Impact***

Development of new residential and non-residential projects would require the extension and/or upsizing of utility infrastructure, and possibly the relocation of such utilities. Improvements would include those identified above for the water, wastewater, and electric utility systems.

The City does not have a specific master plan that identifies future improvements to the City's storm drain system because such improvements would depend on the location, type and size of future development and would be based on a hydrology/drainage study prepared by a qualified professional engineer. The City does not have master plans for telecommunications or natural gas facilities because these facilities are under the jurisdiction of other entities. Proposed projects in the City are routed to PG&E and other companies that provide utility services in the City with a request to provide detailed information on infrastructure that would need to be installed to accommodate a specific project.

SLMC Chapter 13.24 (Plan Submittal and Review Procedures) states that no utility improvements shall be constructed within the City until improvement plans have been submitted and approved for construction, and all associated requirements have been met. This would include CEQA review for improvements that have a potential to cause significant environmental effects.

SLMC §16.16.020 states that improvement plans must show details for all road work, drainage channels and embankments, including sedimentation and erosion controls; the location of underground utilities that may control the location and elevation of storm drains and culverts; the location of fire hydrants and street monuments; curbs, gutters, sidewalks, fences, gates and driveways, if constructed in conjunction with subdivision improvements; grading for streets, lots, and improvements; and any other improvements or work that may be required. All applicable utility companies and the Shasta Lake Fire Protection District must approve the improvement plans prior to constructing/installing utility infrastructure.

The City will review future development proposals on a case-by-case basis to determine specific utility infrastructure that would be needed to accommodate the development. CEQA review would address both on-site and off-site utility improvements, and mitigation measures would be implemented as necessary. Therefore, impacts associated with the construction/installation and relocation of utility infrastructure to serve future development would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.18-5	**There could be insufficient water supplies available to serve development under the 2040 General Plan during dry and multiple dry years.** ***Less-than-Significant Impact with Mitigation***

During the 20-year planning period for the 2040 General Plan, it is anticipated that 837 residential dwelling units and 380,757 square feet of commercial/industrial uses will be developed. On an annual basis, an average of 42 dwelling units and 19,039 square feet of commercial/industrial uses will be constructed, with an annual population growth of 104 people. As the population increases and commercial/industrial development occurs, there will be an increased demand for water supply.

WATER SUPPLY

As discussed in Section 4.18.2 (Environmental Setting) and shown in **Table 4.18-1,** the City has long-term water contracts/agreements with USBR and ACID. In 2019, USBR approved the five-year transfer of 2,000 AF per year of the ACID water. These water sources are CVP water and are subject to USBR allocation reductions in drought years, based on the average water produced over the prior three unconstrained years where no reductions to the City's water allocation occurred.

For purposes of the following supply and demand evaluation, a total of 6,480 AF per year is identified as the City's long-term water supply through year 2045. This includes the USBR allocation (4,480 AF) and the ACID agreement amount (2,000 AF).

In drought years when the City's water allocation is reduced, the City has been able to purchase water from the McConnell Foundation and Centerville Community Services District. In 2022, ACID had additional water that the City was able to purchase. **Table 4.18-9** identifies water that the City has acquired in the past to supplement its water supply in drought years.

Table 4.18-9
Prior Supplemental Water Purchases

Water Year	Amount Purchased (AF)	Water Purveyor
2002	240	Centerville CSD
2003	240	Centerville CSD
2004	240	Centerville CSD
2016	1,266	McConnell Foundation
	65	Centerville CSD
2018	275	McConnell Foundation
2020	500	McConnell Foundation
2021	75	McConnell Foundation
2022	300	McConnell Foundation
	800	ACID

WATER DEMANDS

Water use in the City is influenced by many factors, including drought conditions, customer decisions, and the type and intensity of commercial and industrial development. Projected water demands are only general estimates of projected use and may vary significantly based on future development and water conservation measures taken by each customer sector.

Table 4.18-10 identifies water supplied by the City between 2015 and 2021.

Table 4.18-10
Water Supplied Annually by City of Shasta Lake (2015-2021)

Year	Population	Total Water Supplied All Sources (AF)	Gallons Per Capita Per Day (GPCD)
2015	10,293	1,679	146
2016	10,255	1,827	159
2017	10,287	2,035	177
2018	10,414	2,183	187
2019	10,575	2,054	173

2020	10,626	2,220	187
2021	10,318	2,116	183

Sources: Department of Finance Demographic Unit Population Estimates;
Water Use Reported to the California Water Resources Control Board, 2022 by the City of Shasta Lake.

Table 4.18-11 identifies year 2021 water use by customer sector. As indicated, residential users accounted for the majority of total water use in 2021.

Table 4.18-11
Year 2021 Water Use by Customer Sector

Customer Sector	2021 Actual Water Use (AF)
Single-Family	1,344
Multi-Family	72
Commercial and Institutional	192
Industrial	295
Landscape	53
Other (Unbilled Metered)	31
Water Losses	129
Totals:	**2,116**

Source: City of Shasta Lake 2020 Urban Water Management Plan (Carollo, 2021).

Future water demands were estimated based on 181 gpcd, which is the City's average gpcd over the past five years (2017-2021) (refer to **Table 4.18-10**). Future gpcd may be less than 181 based on recent State legislation.

The demand estimates shown in **Tables 4.18-12 through 4.18-15** are based on an estimated population of 10,237 as of January 1, 2022 (Department of Finance, 2022), and an increase of 104 people per year as projected in the City's 2040 General Plan.

The supply projections in drought years shown in **Tables 4.18-13 through 4.18-15** are based on the projected prior three-year average water use, assuming no reductions in allocation during the prior three-year period (e.g., the projected historical average for year 2025 is based on average water use in 2022, 2023, and 2024; the projected historical average for year 2030 is based on average water use in 2027, 2028, and 2029, etc.).

As indicated in **Table 4.18-12,** the City has adequate water supply during non-drought years through year 2045 and beyond.

Table 4.18-12
Normal Year Supply and Demand Projections (Acre-Feet)

	2025	2030	2035	2040	2045
Supply	6,480	6,480	6,480	6,480	6,480
Demand	2,139	2,244	2,350	2,455	2,560

Surplus	**4,341**	**4,236**	**4,130**	**4,025**	**3,920**

Table 4.18-13 shows available water supply based on an allocation of 75 percent of the projected prior three-year average water use.

Table 4.18-13
Single-Dry Year Supply and Demand Projections (Acre-Feet)
Based on 75 Percent of Projected Prior Three-Year Historical Average Use

	2025	2030	2035	2040	2045
Supply	1,572	1,652	1,731	1,810	1,889
Demand	2,139	2,244	2,350	2,455	2,560
Balance	**-524**	**-593**	**-619**	**-645**	**-672**

Table 4.18-14 shows available water supply based on an allocation of 50 percent of the projected prior three-year average water use.

Table 4.18-14
Multiple-Dry Year Supply and Demand Projections (Acre-Feet)
Based on 50 Percent of Projected Prior Three-Year Historical Average Use

	2025	2030	2035	2040	2045
Supply	1,048	1,101	1,154	1,206	1,259
Demand	2,139	2,244	2,350	2,455	2,560
Balance	**-1,090**	**-1,143**	**-1,196**	**-1,249**	**-1,301**

Table 4.18-15 shows available water supply based on a PHS allocation of 55 gpcd. Although at the PHS level, the reduced allocation for commercial and institutional uses typically would be 80 percent of anticipated demand, and the allocation for industrial uses typically would be 90 percent of the anticipated demand; these amounts may be reduced by the USBR to ensure that there is adequate water for domestic use. The amounts in **Table 4.18-15** assume that there would be no allocation for commercial/industrial use, and that the City would not receive water from any other sources. **Table 4.18-15** also identifies the adjusted water demand that is expected to occur with implementation of Stage 6 of the WSCP. Water use would need to be reduced by 70 percent, which is possible with the water use restrictions that would be in place in Stage 6.

Table 4.18-15
Multiple-Dry Year Supply and Demand Projections (Acre-Feet)
Based on Public Health and Safety – Domestic Use Only (55 GPCD)

	2025	2030	2035	2040	2045
Supply	650	682	714	746	778
Demand	2,139	2,244	2,350	2,455	2,560
Balance	**-1,489**	**-1,562**	**-1,636**	**-1,709**	**-1,782**
Adjusted Demand Stage 6 (70% reduced water use)	**642**	**673**	**705**	**737**	**768**
Adjusted Balance Stage 6 (70% reduced water use)	**8**	**9**	**9**	**10**	**10**

As indicated in **Table 4.18-12**, the City has sufficient water under existing entitlements to provide adequate water in non-drought years when allocations have not been reduced. As shown in **Tables 4.18-13, 4.18-14,** and **4.18-15**, the City does not have adequate water supply under existing entitlements during drought years when the allocation is reduced based on average water use over the prior three unconstrained years, or when water supply is reduced to PHS levels.

As shown in **Table 4.18-9**, in drought years when the water allocation is reduced, the City has been able to purchase supplemental water from the McConnell Foundation, Centerville Community Services District, and ACID. The City may also declare a water shortage emergency and impose mandatory water use restrictions in accordance with the City's WSCP to reduce City-wide water use (see Section 4.18.3, Regulatory Framework).

For example, for water year 2022, the City's USBR allocation was reduced to PHS levels, resulting in an allocation of 686 AF. The ACID allocation was reduced to 360 AF (18 percent of the 2,000 AF). With a total allocation of 1,046 AF for the 2022 water year, and an estimated demand of ±2,116 AF (the same demand as for 2021), the City's water shortfall was over 50 percent, and the City purchased supplemental water in order to meet water demands (300 AF from the McConnell Foundation and 800 AF from ACID), bringing the total water supply for 2022 to 2,146 AF. The City also implemented Stage 2 of the WSCP.

As discussed in **Section 4.18-3** (Regulatory Context) and described in **Table 4.18-3**, the City's WSCP details mandatory water conservation measures that must be implemented based on reductions to the City's water supply. For example, in Stage 2 of the WSCP, the City's available water supply is up to 20 percent less than anticipated demand; the measures in Stage 2 are intended to reduce City-wide water use by 20 percent.

In all stages, all high-demand water users, such as industrial uses, schools, supermarkets, civic/government buildings, etc., must develop or update their water conservation plans and submit the plan to the City's Water Conservation Coordinator for approval. The purpose of the water conservation plan is to demonstrate that the facility reduces water use in accordance with the water use restrictions for the applicable WSCP Stage.

In Stage 5, all mandatory restrictions from Stages 1 through 4 apply, and additional restrictions go into effect. In Stage 5, no new residential development is permitted unless the developer has submitted a complete building permit application to the City prior to the Stage 5 declaration. In addition, use of landscape irrigation systems for lawns for all customers is prohibited. The mandatory restrictions in Stage 5 are anticipated to reduce City-wide water use by at least 50 percent.

As shown in **Table 4.18-15**, City-wide water use would need to be reduced by 70 percent to meet water demands under the PHS scenario. In Stage 6, water use is restricted to essential uses only (i.e., water necessary for human consumption, sanitation, and fire protection). Although this is not an ideal situation, the mandatory restrictions in the WSCP are intended to adequately reduce the gap between supply and demand and ensure that water supply is sufficient to meet the needs of existing customers.

New development under the 2040 General Plan would increase water demand in the City; however, because growth is largely market-driven, growth in the City over the next 20 years is anticipated to be the same under the proposed 2040 General Plan as it would be under the current General Plan. Because there is a potential for new developments with high water demands to have a significant adverse impact on the City's water supply, **Mitigation Measure 4.18-1** is included to add a policy and two implementation actions to the General Plan Conservation Element.

With proposed General Plan Policy CON-4.8, future developments that would significantly increase water demand must demonstrate that existing water supplies are adequate to accommodate the project's water demand prior to approval of the project. Proposed Implementation Action CON-4.9 would require new large-scale developments to mitigate impacts of the project's water demand. This could include installing drought-tolerant landscaping in-lieu of lawns, installing low-flow plumbing fixtures and water-efficient appliances, and/or installing a greywater system to redirect used household water from sinks, showers, and bathtubs for outdoor irrigation use. New projects could potentially reduce water use with plumbing retrofits and turf replacement. Proposed Implementation Action CON-4.10 would require the City to explore opportunities to develop mechanisms and infrastructure to deliver reclaimed water to City water users from the City's Wastewater Treatment System and other sources.

As stated in the WSCP, the City will monitor water use to ensure the effectiveness of the shortage response actions and the extent to which such actions reduce the gap between supply and demand. If necessary, the City would impose additional water use restrictions or take other actions to ensure a sufficient water supply for its customers. The WSCP also has a detailed enforcement program that includes penalties for violations of mandatory water use restrictions. Further, the City's Building Official will ensure compliance with State and local water efficiency regulations through the plan review and inspection process. Therefore, impacts associated with an adequate water supply would be ***less than significant with implementation of Mitigation Measure 4.18-1.***

Mitigation Measures

MM 4.18-1 In order to minimize potential impacts during dry and multiple dry years, the City shall implement the following:

a. Add the following Policy CON 4.8 to the General Plan Conservation Element:

Prior to the approval of major new development, Specific Plans, major infrastructure improvements, or other projects that would result in significant increased demand on existing water supplies, require that projects demonstrate proof of availability of adequate water supply (e.g., that existing supplies are adequate to accommodate the increased project demand, or that improvements to the capacity of the system to meet the increased demand will be made prior to project implementation), and that potential impacts to water supplies will be addressed.

b. Add the following Implementation Action CON-4.9 to the General Plan Conservation Element:

As part of the development review process require new large-scale development to mitigate the potential project demand on the community's available water supply.

c. Add the following Implementation Action CON-4.10 to the General Plan Conservation Element:

Explore opportunities to develop mechanisms and infrastructure to deliver reclaimed water to city water users from the City's Wastewater Treatment System and other sources.

Impact 4.18-6	**Implementation of the 2040 General Plan could generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, impair the attainment of solid waste reduction goals, and/or result in non-compliance with federal, State, and local management and reduction statutes and regulations related to solid waste.** ***Less-than-Significant Impact***

The City contracts with Waste Management, Inc., to provide solid waste disposal services to businesses and residents in the City limits, including curb-side garbage, green waste, and recycling services. Waste Management owns and operates the Anderson Landfill, located at 18703 Cambridge Road, southwest of Anderson, California. The Shasta County Environmental Health Division is the local enforcement agency for the landfill.

According to the California Integrated Waste Management Board (IWMB) Five-Year Permit Review Report prepared for the Anderson Landfill on September 12, 2018, the total permitted area of the landfill is 246 acres, and the permitted waste disposal area is 130 acres. The total disposal capacity is 16,353,000 cubic yards. The remaining capacity as of July 31, 2017, was 11,014,860 cubic yards, and the estimated closure date is February 1, 2093. The Five-Year Report states that the landfill has remained below the maximum daily limit of 1,850 tons per day. On-site facilities at the Anderson Landfill include: an active landfill gas extraction system, a landfill gas flare, scales and scalehouse, public drop-off and recycling sorting area, administrative/maintenance building, diesel fuel shed, and hazardous materials storage area. The Discharger has obtained approval from Shasta County Planning Division to implement a recycling operation at the Anderson Landfill.

The Anderson Landfill is a Class III landfill and is authorized to accept mixed municipal waste, wood waste, tires, sludge (biosolids), construction/demolition waste, ash, asbestos, and agricultural waste. The landfill is subject to Waste Discharge Requirements (WDR) issued by the Central Valley Regional Water Quality Control Board (CVRWQCB) (Order No. R5-2016-0053). The Order includes a monitoring and reporting program to ensure compliance with California Water Code §13267 and California Code of Regulations (CCR), Title 27, §20005, *et seq.* Monthly inspections are conducted by the Shasta County Environmental Health Division (EHD) to ensure that the facility complies with applicable State and local regulations pertinent to landfill operations.

The West Central Landfill, located at 14095 Clear Creek Road in Igo, is owned by Shasta County and operated by the City of Redding Solid Waste Utility. According to the IWMB Five-Year Permit Review Report prepared for the West Central Landfill on September 1, 2020, the landfill comprises 1,250 acres and includes two waste management units, one of which closed in 1992. The currently operating unit has a design capacity of 13,115,844 cubic yards and a remaining capacity of 5,194,678 cubic yards as of September 2018. The estimated closure date is 2036. The maximum daily tonnage is 700 tons per day. On-site facilities include a gas collection and control system with flare, a clean wood diversion area, an inert material diversion area, two scales, a scale house, a public drop-off and recycling area, a shop building, four contact water impoundments, six storm water detention ponds, and two storm water retention ponds (CVRWQCB, 2018).

The landfill accepts municipal solid waste, commercial solid waste, agricultural waste, non-hazardous industrial waste, construction and demolition waste, dewatered sewage and water treatment sludge, non-hazardous incinerator ash, non-friable asbestos, treated medical waste, animal carcasses, and treated wood waste. The landfill is subject to WDRs issued by the CVRWQCB (Order No. R5-2015-0089-01, as amended by Order R5-2018-0054). The Order includes a monitoring and reporting program to ensure compliance with California Water Code §13267 and

CCR Title 27, §20005, *et seq.* (CVRWQCB, 2018). Monthly inspections are conducted by the Shasta County EHD to ensure that the facility complies with applicable State and local regulations pertinent to landfill operations.

There is one transfer station in the City of Shasta Lake, the Buckeye Transfer Station on Lake Boulevard, generally north of Pine Grove Avenue. The facility is owned and operated by the Shasta County Public Works Department. The maximum permitted throughput is 25 tons per day, and the maximum permit capacity is 100 cubic yards. The transfer station accepts general municipal waste only (no hazardous waste, liquid waste, or special wastes are allowed). The transfer station also accepts items for recycling (e.g., cardboard, newspaper, glass bottles and jars, tin cans, aluminum cans, and plastic bottles). The facility is subject to quarterly inspections by Shasta County EHD.

Construction Waste

Development under the 2040 General Plan would result in the generation of demolition and construction waste. As discussed in Section 4.18.3 (Regulatory Framework), CALGreen requires that newly constructed buildings and demolition projects recycle and/or salvage for reuse a minimum of 65 percent of nonhazardous construction and demolition waste generated at the project site. Additions and alterations to non-residential projects, and additions to residential buildings that increase the structure's conditioned area, volume, or size also must meet the minimum 65 percent waste diversion requirements.

A Construction Waste Management Plan must be submitted with the building permit application for approval by the City's Building Official prior to issuance of a building permit. Alternatively, the contractor may use a waste management company that can provide documentation that it meets the 65 percent waste diversion requirement. The Building Official may also approve a waste stream reduction alternative when a project generates a minimal amount of construction or demolition waste that is disposed of in landfills. Because the City's Building Official would ensure compliance with regulations to divert materials from landfills, potential impacts related to construction waste would be less than significant.

Operational Solid Waste

Waste generation rates for residential and commercial activities can be used to estimate the impact of new developments on the local waste stream. Because the City contracts for waste disposal services, specific waste generation rates for the City are not available. It is expected that solid waste generation in the City of Shasta Lake is similar to solid waste generation in the City of Redding; therefore, Redding's average waste generation rates were used to estimate the increase in solid waste generation that could occur as a result of implementation of the 2040 General Plan.

Implementation of the 2040 General Plan would increase the population by about 2,083 over the 20-year planning period. Non-residential development is estimated to add about 706 jobs. Based on an average residential waste generation rate of 6.5 pounds per person per day, the addition of 2,083 residents would result in an increase in solid waste generation of ±7 tons per day. Based on a rate of 11.7 pounds per employee per day, the addition of 706 employees would increase solid waste generation by ±4 tons per day, for a total increase in solid waste generation of ±11 tons per day over the 20-year planning period for the 2040 General Plan.

As noted above, the remaining capacity of the Anderson Landfill as of July 31, 2017, was 11,014,860 cubic yards, and the estimated closure date is February 1, 2093. The Five-Year Report states that the landfill has remained below the maximum daily limit of 1,850 tons per day. The West Central Landfill has a design capacity of 13,115,844 cubic yards and a remaining

capacity of 5,194,678 as of September 2018. The estimated closure date is 2036, and the maximum daily tonnage is 700 tons per day. The estimated increase in solid waste over the 2040 General Plan planning period would contribute a small percentage of solid waste that would be diverted to the landfills.

Pursuant to CCR Titles 14 and 27, the IRWM sets minimum standards for the operation of all disposal sites in the State. The Shasta County EHD is responsible for conducting monthly inspections of the landfills to ensure proper operation of the facilities, including the proper storage and transportation of solid wastes, and identifying any issues associated with capacity of the landfills. Future development may have operational characteristics that result in higher or lower generation rates than estimated above for non-residential uses, although recent State legislation (see Section 4.18.3, Regulatory Framework) will further reduce the amount of solid waste diverted to landfills (e.g., SB 1383 of 2016). Future projects under the 2040 General Plan will be reviewed on a case-by-case basis to ensure that future developments do not generate solid waste in excess of applicable standards or impair the attainment of solid waste reduction goals.

As described above and in Section 4.18.3 (Regulatory Framework), there are many regulations associated with solid waste that would apply to future development under the 2040 General Plan. Through the planning review and building plan check/permitting processes, the City will ensure that projects comply with applicable federal, State, and local regulations related to solid waste during construction and operations. This review process ensures that projects will comply with management and reduction statutes and that impacts are ***less than significant.***

Mitigation Measures

No mitigation measures required.

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SECTION

4.19

Wildfire

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4.19 Wildfire

This section describes applicable regulations related to wildfire hazards, the City's vulnerability to wildfires, and potential effects related to wildfire and wildfire-related risks that could occur due to implementation of the 2040 General Plan.

4.19.1 Study Methods

The following evaluation of potential impacts is based on review of reports, maps, and regulations from the California Department of Forestry and Fire Protection (CAL FIRE), the Shasta Lake Fire Protection District (SLFPD), and the City of Shasta Lake (COSL), including the City's Wildfire Mitigation Plan (COSL, 2022), and Local Hazard Mitigation Plan (COSL, 2021).

4.19.2 Environmental Setting

The planning area is highly susceptible to wildland fires. Wildland fires have occurred both within the City, and in areas surrounding the City over the past decade. This trend is expected to continue with potentially greater frequency and severity in the future. The hilly and mountainous terrain on the north and west sides of the City strongly influences both wildland fire behavior and fire suppression capabilities. Unique wildfire hazards specific to these areas include the proximity of homes and structures to vegetative fuels, increased ignition frequency, and delayed response time of firefighting resources due to accessibility limitations. The land north and west of the City is under the jurisdiction of the U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM), and U.S. Bureau of Reclamation (USBR), and it can be challenging for these agencies to coordinate wildfire mitigation.

The spread of larger wildland fires into the built environment poses a great risk of urban conflagration – a large disastrous fire that spreads from building to building and threatens human life, health, and property. Such a fire occurred with the 2018 Carr Fire west of the City of Redding.

The most recent fire that encompassed areas within the City limits was the Flanagan Fire that started on March 4, 2022, near Flanagan Road and N. Beltline Road. The fire grew to ±88 acres and resulted in mandatory evacuation orders for areas south of the City limits along Walker Mine Road. The Oak Fire, which started on June 3, 2022, near Old Oregon Trail and the Tierra Oaks Golf Course, grew to ±32 acres and was less than one mile east of the City's eastern City limits.

Another larger fire within the City limits occurred in September 2016 and started after a vehicle crashed in the area of Lake and Hill Boulevards. The fire grew to ±80 acres and destroyed at least three homes in the City and threatened several more. The largest fire within the current City limits occurred in August 1963 and grew to ±725.5 acres, generally south of Pine Grove Avenue between the I-5/Cascade Boulevard Interchange and Ashby Road. The fire encompassed what is now the northern area of the Windsor Estates Subdivision, the City's Wastewater Treatment Plant, the northern area of the Shasta Gateway Industrial Park, and a portion of the Knauf Insulation property.

Recent large fires in the vicinity have affected the City due to diminished air quality, including the Carr Fire west of the City (started July 22, 2018), the Hirtz Fire north of the City (started August 8, 2018), the Delta Fire north of the City (started September 4, 2018), the Salt Fire north of the City (started June 30, 2021), and the Fawn Fire east and northeast of the City (started September 22, 2021). In addition to air quality effects, the Carr Fire destroyed an electric transformer tower and overhead transmission lines near Keswick, causing the City to lose electric service for ±24 hours.

Both the Carr Fire and Fawn Fire resulted in mandatory evacuation orders in some areas of the City of Shasta Lake.

Recent wildfires in Shasta County have been primarily human-caused (e.g., vehicles that ignited fires along roadways' fires caused by equipment operating in dry vegetation, etc.). Arson has been attributed as the cause of a number of wildfire ignitions in the area, especially in recent years (COSL, 2021). Some recent wildfires outside of the City limits have been linked to faulty electric transmission equipment, trees falling into powerlines in high wind events, and even from animals coming into contact with electric equipment.

According to the City's 2021 Local Hazard Mitigation Plan (LHMP), depending on the location, elevation, and weather patterns, the declared fire season in the City of Shasta Lake has historically been from early June to mid or late October; however, due to climate change and extended drought conditions, wildfires are becoming more frequent throughout the year.

Fire Responsibility Areas
There are three specific land classifications that identify the agency with financial responsibility for preventing and suppressing wildfires in the State. These areas are identified in **Figure 4.19-1** and described below.

Federal Responsibility Areas (FRAs): FRAs are fire-prone wildland areas that are owned or managed by a federal agency such as the USFS, BLM, National Park Service, U.S. Fish and Wildlife Service, or U.S. Department of Defense. In many instances, FRAs are interspersed with private land ownership or leases.

State Responsibility Areas (SRAs): SRAs are lands where CAL FIRE has legal and financial responsibility for wildfire protection. CAL FIRE classifies all lands in SRAs based on cover, beneficial use of water from watersheds, probable damage from erosion, and fire risks and hazards in order to determine the intensity of protection to be given for each land classification.

Local Responsibility Areas (LRAs): LRAs include land in cities, cultivated agriculture lands, some unincorporated non-flammable areas, and lands that do not meet the criteria for SRA or FRA. LRA fire protection is typically provided by city or county fire departments, fire protection districts, or by CAL FIRE under contract with local governments.

Fire Hazard Severity Zones
CAL FIRE is responsible for establishing Fire Hazard Severity Zones (FHSZ) in SRAs and LRAs. FHSZs are mapped areas that designate zones with varying degrees of fire hazard (moderate, high, and very high) based on factors such as fire fuels, slope, and fire weather. FHSZ maps evaluate wildfire hazards, which are physical conditions that create a likelihood that an area will burn over a 30- to 50-year period. The FHSZs are used to designate areas where California's Wildland Urban Interface (WUI) building codes apply, and assist with planning, prevention, and mitigation activities in areas that are more prone to wildfire risks.

The City has a significant amount of fire fuels and steep slopes that could facilitate the spread of wildfire. Critical fire weather conditions occur frequently in the planning area during periods of low relative humidity, high heat, and high winds. As shown in **Figure 4.19-1**, the majority of land in the City limits is designated Very High FHSZ. **Figure 4.19-2** identifies proposed land use designations under the 2040 General Plan in relation to areas designated Very High FHSZ.

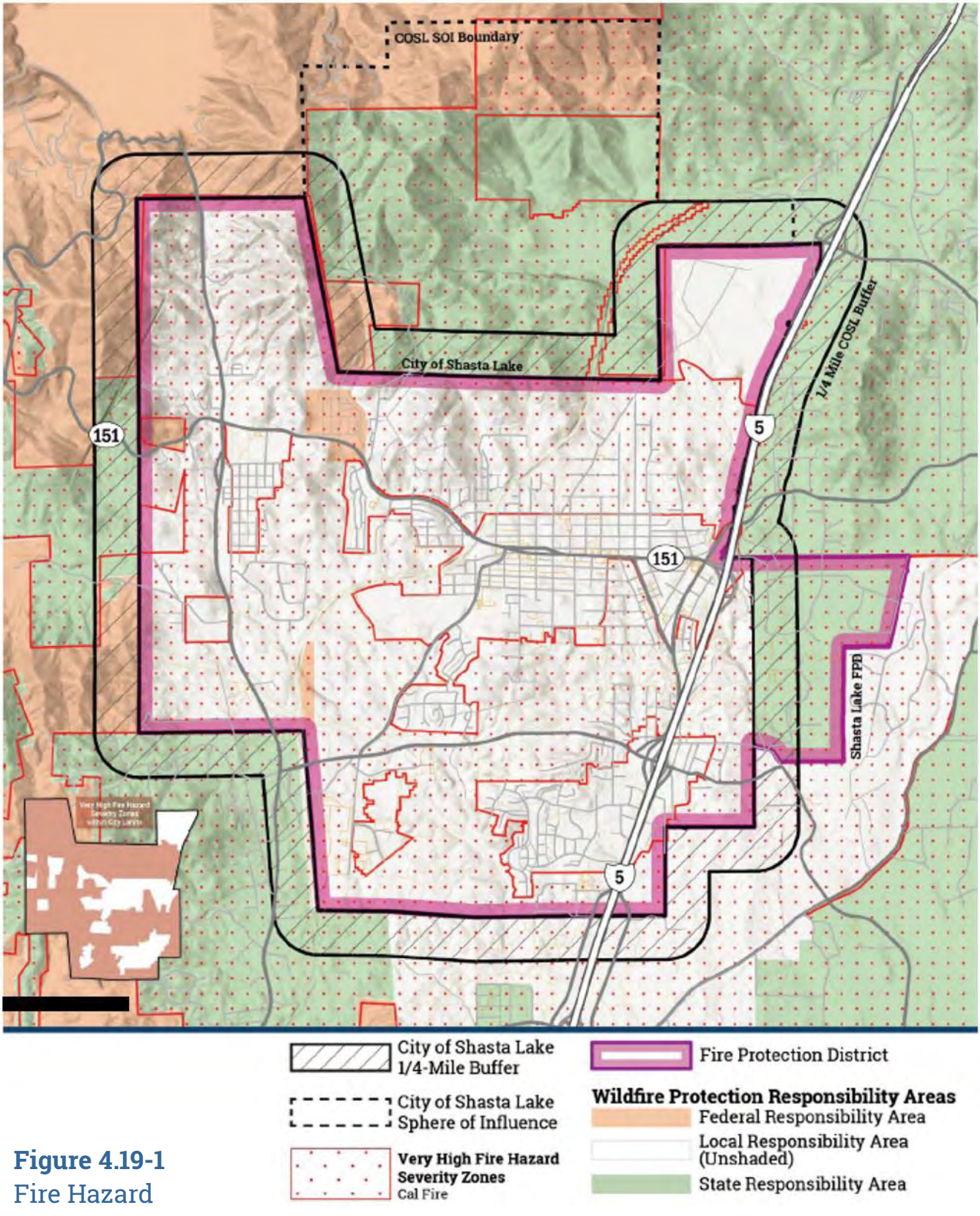


Figure 4.19-1
Fire Hazard Severity Zones

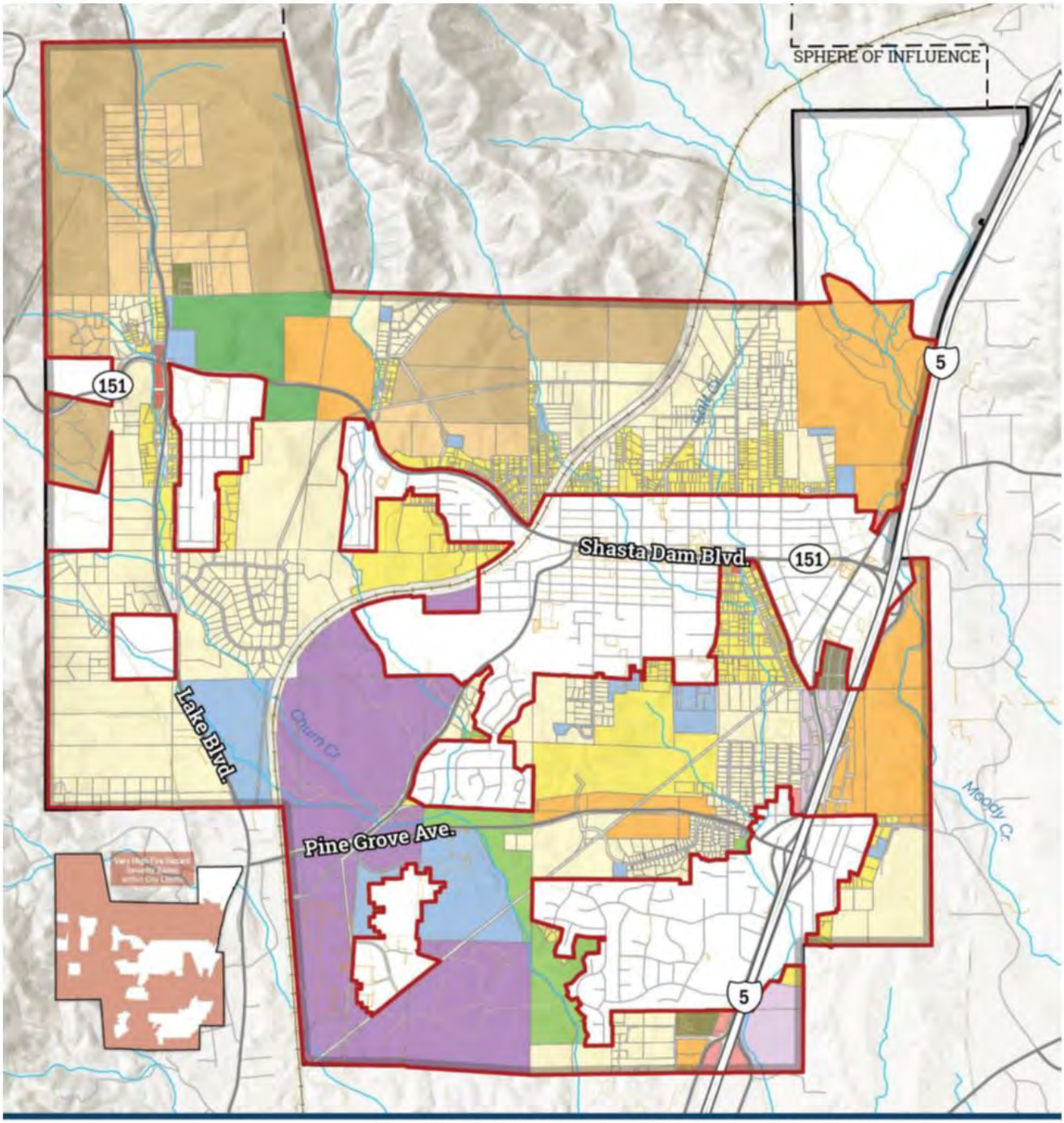


Figure 4.19-2
Proposed Land Use Designations in Very High FHSZ

Shasta Lake Fire Protection District

Because the City is located within a LRA, the responsibility for fire protection and fire prevention services falls under the Shasta Lake Fire Protection District (SLFPD) (also see discussion in Section 4.15, Public Services). The SLFPD provides services within the City limits as well as one square mile east of the City in unincorporated Shasta County. The current service area for SLFPD is ±8,320 acres (±13 square miles). The SLFPD's sphere of influence (SOI) includes an additional ±6,875 acres (±10.74 square miles) of land west and north of the City limits.

The SLFPD maintains a mutual aid agreement with the Shasta County Fire Department. In June 2020, the City entered into a Cooperative Agreement with CAL FIRE and the SLFPD for the purpose of administering a Wildland Fire Protection Agreement (WFPA). Under the WFPA, CAL FIRE will provide supplemental fire protection services in certain areas of the City. The coverage area under the WFPA is ±3,708 acres and includes areas of elevated risk of wildfire[1] where City electric utility infrastructure is located. Under the Agreement, an Operating Plan must be prepared prior to April 1 of each year. The Operating Plan requires implementation of a year-round, aggressive fire prevention program by the City.

4.19.3 Regulatory Framework

FEDERAL

Healthy Forest Initiative (2002) and Healthy Forest Restoration Act (2003)

The Healthy Forest Initiative was implemented to reduce risks associated with severe wildfires that threaten communities, people, and the environment. The Healthy Forests Restoration Act was adopted in 2003 to further implement the Healthy Forest Initiative by authorizing expedited environmental review for projects that reduce fire fuels on federal land. Under the Act, federal agencies are tasked with working with local communities in developing fire fuel reduction projects based on projects identified in local community wildfire protection plans. Funding is appropriated in five main subcategories of the National Fire Plan: preparedness, suppression, reduction of hazardous fuels, burned-area rehabilitation, and State and local assistance to firefighters.

STATE

California's Wildfire and Forest Resilience Action Plan

The California Forest Management Task Force (CFMTF) was established in 2018 to develop a framework for establishing healthy and resilient forests that can withstand and adapt to wildfire, drought, and a changing climate. California's Wildfire and Forest Resilience Action Plan (WFRAP), prepared by the CFMTF in January 2021, states that California is facing an increasing forest and wildfire crisis, and the 2020 fire season broke several records.

Five of the State's six largest fires in modern history burned at the same time and destroyed thousands of buildings and forced the evacuation of hundreds of thousands of people. Over four million acres burned across the State, double the previous record. Millions of people were exposed to dangerously unhealthy air (CFMTF, 2021). The goals of the WFRAP are to restore the health and resilience of the State's forests, grasslands, and natural places; improve fire safety of our communities; and sustain the economic vitality of rural forested areas. Implementation programs are included in the WFRAP to achieve these goals.

[1] Areas of elevated risk are "Tier 2" areas identified by a CAL FIRE and California Public Utilities Commission threat assessment.

California Vegetation Treatment Program (CalVTP)

CalVTP was developed by the California Board of Forestry and Fire Protection as part of the State's strategy to address increasing wildfire hazards. CalVTP focuses on treating vegetation that could become fire fuels using three treatment types: wildland-urban interface (WUI) fuel reduction, fuel breaks, and ecological restoration. The vegetation treatment activities proposed to implement the treatment types are prescribed burning, manual treatment, mechanical treatment, prescribed herbivory, and targeted ground application of herbicides.

The CalVTP Programmatic Environmental Impact Report (Programmatic EIR) provides a powerful tool for local communities to use in expediting the implementation of vegetation treatments to reduce wildfire risk while conserving natural resources (California Board of Forestry and Fire Protection, 2019).

California Department of Forestry and Fire Protection (CAL FIRE)

The Bates Bill (AB 337), enacted in 1992, required CAL FIRE to work with local governments to identify high fire hazard severity zones throughout each county in the State. CAL FIRE adopted FHSZ Maps for State Responsibility Areas (SRAs) in November 2007. Pursuant to CGC §51175-51189, CAL FIRE also recommended FHSZs for Local Responsibility Areas (LRAs). Over the years, CAL FIRE has updated the maps and provided new recommendations to local governments based on fire hazard modeling.

The fire hazard model considers wildland fuels (natural vegetation that burns during the wildfire); topography (fires burn faster as they burn up-slope); weather (fires burns faster and with more intensity when air temperature is high, relative humidity is low, and winds are strong); and ember production and movement (how far embers move and how receptive the landing site is to new fires). The model recognizes that some areas of California have more frequent and severe wildfires than other areas.

California Government Code §65302.5

California Government Code §65302.5 requires local jurisdictions to submit draft Safety Elements to the State Board of Forestry and Fire Protection and to every local agency that provides fire protection to territory in the city or county at least 90 days prior to the adoption or amendment of the Safety Element. This requirement applies to counties that contain SRAs, and cities and counties that contain a Very High FHSZ. The Board of Forestry and Fire Protection and local fire agencies may recommend changes to the Safety Element regarding both of the following:

- Uses of land and policies in SRAs and Very High FHSZs that will protect life, property, and natural resources from unreasonable risks associated with wildland fires.

- Methods and strategies for wildland fire risk reduction and prevention within SRAs and Very High FHSZs. These methods and strategies shall reflect accepted best practices in the most recent guidance document entitled "Fire Hazard Planning, General Plan Technical Advice Series" (California Governor's Office of Planning and Research, 2020).

Evacuation Route Requirements

Senate Bill (SB) 99 and Assembly Bill (AB) 747 were enacted in 2019 to require disclosure of residential developments without at least two points of ingress and egress, and to require that General Plan Safety Elements address the presence and adequacy of evacuation routes. These requirements apply to all types of hazards and are not unique to fire.

Assembly Bill 3017 (2020) – Defensible Space Zones

Under current law, CAL FIRE established defensible space zones to create a buffer between a building/structure on a person's property and the vegetation, or any wildland areas that surround it. The buffer is needed to slow or stop the spread of a wildfire, and it helps protect structures from fires and provides firefighters a safe area to work to defend a structure. There are currently two identified defensible space zones: Zone 1 extends 30 feet from buildings/structures on a property, or to the property line, whichever is closest; Zone 2 extends between 30 and 100 feet from buildings/structures, or to the property lines, whichever is closer.

AB 3017, enacted in 2020, requires that the California Board of Forestry and Fire Protection develop regulations for a new third zone for defensible space: Zone 0 would extend five feet from buildings/structures and would have the most stringent wildfire fuel reduction requirements. The intent of Zone 0 is the keep fire or embers from igniting materials that can spread to buildings/ structures. The new Zone 0 requirements must be established by January 1, 2023 (CAL FIRE, n.d.).

California Fire Code (CFC)

Chapter 33 of the CFC includes minimum safeguards that must be implemented during construction, alteration, and demolition activities to protect life and property from fire. Requirements are provided for cutting and welding activities, storage of flammable and combustible materials, blasting operations, and other construction-related activities. Vehicle access to the construction site for fire department personnel must be provided by either temporary or permanent roads capable of supporting vehicle loading under all weather conditions.

Chapter 49 of the CFC includes standards for new construction in Wildfire Urban Interface (WUI) Fire Areas. A WUI area is defined as a geographic area identified by the State as a FHSZ or other areas designated by the local enforcing agency to be at a significant risk from wildfires. The purpose of Chapter 49 is to reduce conditions that can facilitate the spread of fires.

CFC §4906.3 states that hazardous vegetation and fuels around all applicable buildings and structures shall be maintained in accordance with applicable State laws and regulations (e.g., PRC §4291; CCR, Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299; California Government Code §51182; and/or CCR Title 19, Division 1, Chapter 7, Subchapter 1, §3.07)

California Building Code

California Building Code Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure) includes standards for new construction in FHSZs within SRA areas, or within WUI Fire Areas. The Chapter addresses building materials and assemblies that must be used in the exterior design and construction of new buildings to increase the ability of a building to resist the intrusion of flames or burning embers projected by a vegetation fire.

California Residential Code

California Residential Code (CRC) Section R337 requires incorporation of fire-resistant building materials in new residential dwellings to increase the ability of a building located in any WUI Fire Area to resist the intrusion of flames or burning embers projected by a vegetation fire. As of 2011, the CRC requires that automatic fire sprinkler systems be installed in all new single-family residences to protect all areas of a dwelling unit in the event of a fire.

Senate Bill 901 (2018)

SB 901 of 2018 (California Public Utilities Code [PUC] §8387) requires all electric utilities to adopt a Wildfire Mitigation Plan (WFMP) by December 31, 2019. The purpose of the Plan is to minimize the risk of catastrophic wildfire caused by overhead electric lines and related electrical equipment.

LOCAL

City of Shasta Lake Wildfire Mitigation Plan

Pursuant to SB 901 (2018), the City adopted its first Wildfire Mitigation Plan (WFMP) on November 5, 2019. The City's most recent WFMP was adopted by the Shasta Lake City Council by Resolution CC-2022-08, and went into effect on March 1, 2022 (COSL, 2022). The WFMP describes a detailed range of programs, policies, and procedures that the City's Electric Utility is implementing to mitigate the threat of powerline-ignited wildfires.

The City's Electric Utility staff directly participated in development of the California Public Utility Commission's (PUC) Fire-Threat Map[2], which designates High-Fire Threat Districts. During development of the map, the City consulted with local fire officials to identify areas in the City that are at an elevated risk or extreme risk of powerline-ignited wildfire. The Electric Utility has incorporated the maps into its construction, inspection, maintenance, repair, and clearance practices. The WFMP also incorporates the Electric Utility's Vegetation Management Plan and Asset Inspection Plan.

The City's electric distribution system and substations are subject to field inspection by the PUC to identify any violations of applicable State regulations, including violations that would present an increased risk of wildfire. The PUC notifies the City of any violations, which must be resolved by the City in a timely manner.

Shasta Lake Local Hazard Mitigation Plan

The City's Local Hazard Mitigation Plan (LHMP) identifies potential hazards in the City, describes how hazards may impact the community, and identifies a mitigation strategy to reduce potential risks of identified hazards. The 2021 LHMP identifies the following high-priority actions related to wildfire hazards:

- Assess emergency access routes for multiple egress options and adequate turn arounds and infrastructure; maintain and improve wildfire emergency access where needed.
- Ensure addresses and locations are easily visible and accessible during emergencies, especially in the WUI.
- Partner with the Shasta Lake Fire Protection District (SLFPD) to plan and implement retrofits to main fire station for hazard resiliency.
- Implement pre-identified emergency evacuation zones, such as Zonehaven (an evacuation management platform), in coordination with Sheriff and County Office of Emergency Services (OES).
- Improve removal of dead or downed trees or those with dead canopies to be more resilient to wildfire, high winds, and extreme rain or snow storms.

[2] Adopted by CPUC Decision 17-12-024.

- Develop a city-wide implementation plan, in collaboration with SLFPD, for defensible space code administration and enforcement.
- Complete additional fuel break projects focused on north and northeast portions of the City as identified by the CWPP (also see Electric Department Wildfire Mitigation Plan for additional fuel reduction projects).
- Construct and upgrade city water supply for fire suppression in WUI areas.
- Develop and maintain a Wildfire Preparedness Guide to provide residents with education and information on defensible space maintenance.
- Ensure properties are cleared in accordance with weed abatement ordinance for Seniors, disabled and low-income populations.
- Join and collaborate with local Fire Safe Council to protect homes, the community, and environment from wildfires. (Shasta County Fire Safe Council reestablished 2021).
- Continue to implement projects in City Electric Department Wildfire Vulnerability Plan, County CWPP, and Cal Fire Shasta-Trinity Unit Plan.
- Seek funding to develop a cost share program for residential defensible space and fuel reduction mitigation and fireproofing retrofits.

Shasta Lake Municipal Code

The Shasta Lake Municipal Code (SLMC) includes the following sections that address wildfire and wildfire hazards.

SLMC Chapter 12.36 (Tree Conservation)
SLMC §12.36.062 requires a pre-development review for major projects that encompass an area greater than 20,000 square feet. SLMC §12.36.062(A)(3)(g) requires that fire safety standards, including requirements of CGC §51182 *et seq.* be considered in the design of all projects (i.e., setbacks from proposed main and accessory structures, creation of defensible space, clearance from the canopy of other trees or vegetation on the property or on adjacent properties, etc.).

SLMC Chapter 15.10 (Water Efficient Landscaping)
SLMC §15.10.050(D)(e) requires that landscape design plans for projects in fire-prone areas must address fire safety and prevention. Fire-prone plant materials and highly flammable mulches must be avoided.

Shasta County Community Wildfire Protection Plan

Shasta County and Western Shasta Resource Conservation District (WSRCD) updated the Shasta County Communities Wildfire Protection Plan (CWPP) in 2016. The purpose of the CWPP is to identify high-risk WUIs where wildland vegetation and communities, rural homes, and critical infrastructure intermix, and identify projects and priorities for reducing fire hazards. An update to the 2016 plan is underway.

Pacific Gas and Electric (PG&E) Wildfire Mitigation Plan

In addition to the City's Electric Utility, PG&E has overhead electrical lines and related equipment within the City limits. On February 25, 2022, PG&E submitted its 2022 WFMP to the California Office of Energy Infrastructure Safety (PG&E, 2022). Once the Office of Energy Infrastructure approves the WFMP, the PUC will consider ratifying the approval.

The goals of PG&E's 2022 WFMP are to reduce wildfire potential by reducing ignitions through various programs including, but not limited to, vegetation management work, inspections and repairs of electric facilities, system hardening, and system automation.

4.19.4 Proposed General Plan Goals, Policies, and Implementation Actions

The 2040 General Plan includes the following Goals, Policies, and Implementation Actions related to wildfire hazards:

GOAL LU-3	**Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.**	
POLICY	LU-3.15	Encourage sustainable, resilient development that conserves water and energy resources and incorporates best practices for avoiding and minimizing damage from flood, earthquake, wildfire, and other hazards. Explore incentives and other methods for addressing conservation and resiliency in existing development.
GOAL HS-1	**Create and maintain a safe environment.**	
POLICIES	HS-1.1	Coordinate with state, county, and other local agencies to build mutual aid capacity for emergency events, especially through disaster preparedness training.
	HS-1.2	Expand emergency training and local expertise for hazard event response and recovery, including through volunteer roles.
	HS-1.4	Establish levels of service thresholds for fire protection and law enforcement services.
	HS-1.5	All land divisions and development applications that have the potential for life-safety impacts shall be forwarded to the Shasta Lake Fire Protection District (SLFPD) for review.
	HS-1.6	Known fire hazard information should be analyzed as part of every general plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to environmental assessment.
	HS-1.8	New and non-conforming development located in hazard areas requiring additional levels of law enforcement and fire services shall participate in offsetting costs for the additional services.
	HS-1.9	The Local Hazard Mitigation Plan (LHMP) for the City of Shasta Lake planning area was developed in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and followed FEMA's 2011 Local Hazard Mitigation Plan guidance. The LHMP incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short and long-term strategies, involves planning, policy changes, programs, projects, and other activities.
IMPLEMENTATION ACTIONS	HS-1.1	Ensure developed properties are easily identifiable by emergency responders from the street.

	HS-1.2	Work to maintain an adequate emergency response time for all proposed urban development. Identify existing developed areas lacking adequate emergency service, especially focusing on neighborhoods in high wildfire hazard zones that do not have at least two emergency evacuation routes, both urban and rural.
	HS-1.3	Maintain mutual aid agreements with other agencies in Shasta County.
	HS-1.4	Identify and create evacuation zones based on area-specific considerations.
GOAL HS-2	**Minimize the risk to life and property from natural disasters.**	
POLICIES	HS-2.1	Implement the City of Shasta Lake Hazard Mitigation Plan.
	HS-2.2	Educate the public about natural hazard risks, mitigation, and hazard preparedness.
	HS-2.3	Participate in region-wide emergency preparedness plans to protect the public from hazards.
	HS-2.4	Locate, to the extent feasible, new essential public facilities (e.g., schools, health care facilities, emergency shelters, emergency response centers) outside of hazard areas, such as high severity fire zones and the 100-year floodplain, considering future climate change projected increase in hazard areas.
IMPLEMENTATION ACTIONS	HS-2.1	Update the HMP regularly and as required to stay in compliance with relevant FEMA and state requirements.
	HS-2.2	Prioritize and apply for funding through the FEMA Hazard Mitigation Assistance grant program and through CALFIRE for mitigation actions identified in the HMP.
GOAL HS-3	**Minimize the risk to life and property from wildfire.**	
POLICIES	HS-3.1	Identify the areas of highest fire risk in the community and prioritize areas for treatment, modification, or abatement when appropriate.
	HS-3.2	Ensure emergency responders have adequate water supplies around the city, particularly in developed areas with limited access in high fire hazard zones.
	HS-3.3	Limit new development in high fire hazard zones to those projects which can meet established standards for adequate emergency and evacuation access and water supplies.
	HS-3.4	Collaborate with local, state, tribal, and federal entities to address wildfire risk on lands surrounding the city.
	HS-3.5	Enforce weed abatement regulations, especially on vacant land, and assist residents in weed abatement and debris clearing. Prioritize assistance to senior, disabled, and low-income persons living in high wildfire hazard areas.
	HS-3.6	Protect development from wildland and non-wildland fires by requiring development to incorporate design measures responsive to the risk from this hazard.
	HS-3.7	Encourage wildfire-resilient options for redevelopment should a wildfire occur, such as alternate location, construction material, topography, or vegetation.

IMPLEMENTATION ACTIONS	HS-3.1	Strengthen site access, emergency water supply, vegetative fuel modification, and defensible space standards for new development, including for the long-term maintenance of such infrastructure. Develop fire protection and hazardous fuel reduction plans for new subdivisions in high fire hazard areas. Ongoing implementation of the plans should be required and funded by new development.
	HS-3.2	Identify residential areas within high fire hazard zones that do not have at least two routes for emergency egress, lack adequate emergency water supply, or need vegetative fuel modification to reduce risk. Work with affected residents and the SLFPD to identify potential area-specific solutions to ensure risk reduction.
	HS-3.3	To the degree possible, align the goals, policies, and implementation actions for wildfire hazard mitigation across all plans that address fire protection, and update plans as necessary.
	HS-3.4	In collaboration with local, state, tribal, and federal entities, identify strategic areas near the city boundaries to employ greenbelts as defensible space buffers for developed areas. Evaluate the feasibility of creating and maintaining greenbelts for fire protection purposes.
	HS-3.5	Conduct regular wildfire response training with fire personnel and volunteers, and ensure they are properly trained to conduct controlled burns in and around the city.
	HS-3.6	Conduct a public awareness and education campaign about wildfire preparedness with a focus on at-risk populations and renters.
	HS-3.7	Enforce standards to protect structures and roadways in wildland fire areas and include standards in a Best Practices Manual or similar implementing program that meets the SRA Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulations. These standards will include, for example, use of fire-resistant building and roofing materials, installation of fire-resistant landscaping, maximum road gradients, and clearance of vegetation proximate to structures and roadways (both public and private).
GOAL HS-9	**Protect the community from poor air quality.**	
POLICIES	HS-9.15	Recognize the health impacts on local and regional air quality resulting from climate change and wildfire. Support efforts to mitigate these impacts through the application of appropriate vegetation management in the wildland-urban interface areas, and on public lands abutting the City's planning area.
	HS-9.16	Increase community awareness of wildfire smoke risks and health hazards and provide guidance to individuals, businesses, and institutions on how to reduce risks during a wildfire event affecting local air quality.
IMPLEMENTATION ACTIONS	HS-9.5	Encourage and promote public education regarding the link between air quality, transportation alternatives, and wood burning. Emphasize health hazards resulting from wildfire smoke and wood burning.
	HS-9.6	In collaboration with SCHHSA, provide guidance to the public on ways to reduce health risks during a wildfire event affecting local air quality.
	HS-9.7	Encourage community and agency efforts that will reduce the potential for uncontrolled wildland fires which can negatively impact air quality. Consider modifying city policies or ordinances which make this more difficult.

GOAL CON-4	**Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.**	
POLICIES	CON-4.4	Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally-sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.

4.19.5 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City concludes that implementation of the 2040 General Plan would have a significant impact related to wildfire if it would:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan.
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, thereby exposing people to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
3. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.
4. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
5. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

4.19.6 Issues Not Discussed Further

All issues identified in Section 4.19.5 are addressed below.

4.19.7 Impact Analysis and Mitigation Measures

Impact 4.19-1	**Implementation of the 2040 General Plan would not substantially impair an adopted emergency response plan or emergency evacuation plan.** ***No Impact***

Also see discussion in Section 4.9 (Hazards and Hazardous Materials).

As described in Section 4.19.2 (Environmental Setting), the largest fires in proximity to the City limits occurred within the past four years. Although not within the City limits, a mass evacuation order that encompassed the majority of the City was issued during the 2018 Carr Fire, and the evacuation order for the 2021 Fawn Fire encompassed areas on the east side of Interstate 5 (I-5). The threat of wildfire in the City is of great concern, as evidenced by the historic wildfires that have occurred in and around the City in recent years. Due to climate change and on-going drought conditions, it is expected that wildfires will become more frequent and severe.

Evacuation Zones

Shasta County Office of Emergency Services (OES) utilizes pre-identified evacuation zones for unincorporated Shasta County, including areas around the City of Shasta Lake. Zones are identified based on area-specific characteristics and constraints, which may consider the location and density of development, number and condition of available egress routes, emergency resource access and availability, and vulnerability of those populations within the area, among other factors.

The City's adopted Local Hazard Mitigation Plan sets forth measures that include identifying evacuation zones and routes to aid in emergency coordination and response efforts. These zones help emergency management staff to effectively coordinate evacuation efforts on a neighborhood scale and to communicate evacuation warnings and orders to residents and businesses, most commonly due to wildfire.

Evacuation Routes

Lake Boulevard is the key north-south egress route for the western portion of the City and for recreational areas located around Shasta Dam north of the City. Cascade Boulevard is the key north-south egress route for the eastern areas of the City on the west side of I-5, and extends south to Oasis Road in the City of Redding. Ashby Road is also a key north-south egress route in the central area of the City and extends between Shasta Dam Boulevard and Pine Grove Avenue. Grand Coulee Boulevard between Shasta Dam Boulevard and Cascade Boulevard is also identified as an evacuation route.

Shasta Dam Boulevard and Pine Grove Avenue are the two primary east-west evacuation routes that extend from I-5 to Lake Boulevard. On the east side of I-5, Virginia Avenue (between Akrich Street and Pine Grove Avenue) and Twin View Boulevard (from Pine Grove Avenue south to Oasis Road in the City of Redding) are the primary north-south egress routes. Akrich Street is the east-west egress route on the east side of I-5 and routes traffic east and then south to Oasis Road in the City of Redding. **Figure 4.19-3** shows these primary evacuation routes.

Some older, built-out subdivisions and residential areas in the City have only one point of ingress/egress. Some of these areas also have very narrow roads, which would hinder the movement of vehicles during an evacuation, especially if emergency vehicles were attempting to enter these areas at the same time.

New development under the 2040 General Plan would be constructed to current City and Fire Code standards, which requires that major developments have two points of ingress/egress, and that streets are constructed with turnouts and/or turn-arounds as necessary to facilitate the orderly evacuation of people in the event of an emergency and to allow emergency responders to access the area.

As stated in Section 4.19.3 (Regulatory Framework), the City's 2021 LHMP includes two priority actions related to emergency evacuation:

- Assess emergency access routes for multiple egress options and adequate turn arounds and infrastructure, and to maintain and improve wildfire emergency access where needed.
- Implement pre-identified emergency evacuation zones, such as Zonehaven (an evacuation management platform), in coordination with Sheriff and County Office of Emergency Services (OES).

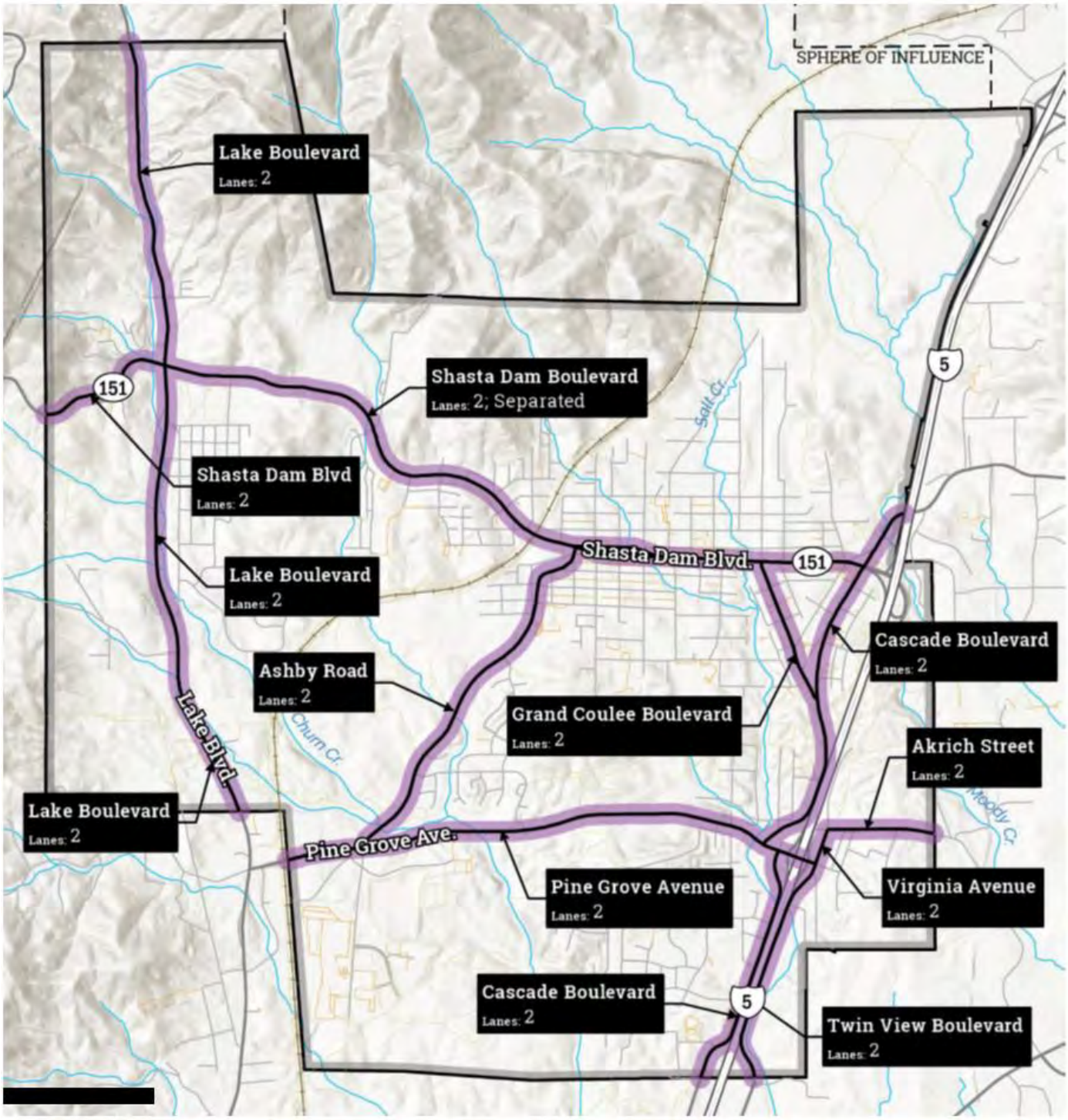


Figure 4.19-3
Evacuation Routes

The 2040 General Plan also includes the following Policy and Implementation Actions specifically related to emergency evacuation:

Policy

H-3.3: Limit new development in high fire hazard zones to those projects which can meet established standards for adequate emergency and evacuation access and water supplies.

Implementation Actions

HS-1.2: Work to maintain an adequate emergency response time for all proposed urban development. Identify existing developed areas lacking adequate emergency service, especially focusing on neighborhoods in high wildfire hazard zones that do not have at least two emergency evacuation routes, both urban and rural.

HS-1.4: Identify and create evacuation zones based on area-specific considerations.

All development projects in the City are reviewed by the SLFPD, and the SLFPD identifies specific requirements for fire access roads, turnarounds, turnouts, and other measures that ensure that adequate emergency access is provided and maintained. These measures must be implemented into building/site plans and verified by the City's Building Official prior to issuance of building permits. The SLFPD and Building Official verify that all required improvements are completed prior to issuance of a Certificate of Occupancy. Therefore, implementation of the 2040 General Plan would have ***no impact*** on an adopted emergency response plan or emergency evacuation plan.

Mitigation Measures

No mitigation measures required.

Impact 4.19-2	**Implementation of the 2040 General Plan could, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, thereby exposing people to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.** ***Less-than-Significant Impact***

As stated in Section 4.19.2 (Environmental Setting), due to steep slopes, seasonally strong winds, and heavily vegetated areas in and around the City that create dangerous fire fuel conditions, the City is extremely vulnerable to wildfire risks. Climate change will intensify wildfire risks due to more frequent wind events, increased lightning-caused fires, drier vegetation, hotter temperatures, and longer fire seasons.

The rate of spread of a wildfire, fuel consumed, smoke produced, and duration are all influenced by the type of fire fuel. Fires in grass fuels are more likely to spread quickly but burn out quickly and are brought under control within hours to days. Fires in brush fuel types (e.g., chaparral, ceanothus, etc.) can burn hot and spread fast, and are very difficult to control, especially when the brush is on slopes or in dense clusters. Fires in different forest fuel types can range from mild to severe in intensity and can spread slowly or rapidly, depending on weather and fuel conditions. Fires in forests can last for weeks or months. The amount and type of fire fuel and its moisture content affect smoke production; fires in forest fuels typically produce the most serious and prolonged smoke impacts (Stone, 2019).

Wind is also a significant factor in the spread of smoke and fire, as fires spread faster, and burning embers and smoke are carried with the wind to surrounding areas (COSL, 2021). If new

development is proposed in areas with dense fire fuels, there is a higher potential that the development could exacerbate wildfire risks, thereby exposing people to high pollutant concentrations from wildfire and/or the uncontrolled spread of wildfire.

As stated in Section 4.19.3 (Regulatory Framework), development in Very High FHSZs is subject to the provisions of Chapter 7A of the CBC and Chapter 49 of the CFC. Residential dwellings are also subject to Chapter R337 of the CRC. These regulations require incorporation of fire-resistant building materials in new buildings to increase the ability of the building to resist the intrusion of flames or burning embers projected by a vegetation fire. In addition, the CRC requires that automatic fire sprinkler systems be installed in all new single-family residences to protect all areas of a dwelling unit in the event of a fire. These regulations also require that a minimum of 100 feet of defensible space must be maintained around each side of an occupied structure so a wildfire burning under average weather conditions would be unlikely to ignite the structure.

Chapter 33 of the CFC includes minimum safeguards that must be implemented during construction, alteration, and demolition activities to protect life and property from fire. Requirements are provided for cutting and welding activities, storage of flammable and combustible materials, blasting operations, and other construction-related activities. Vehicle access to the construction site for fire department personnel must be provided by either temporary or permanent roads capable of supporting vehicle loading under all weather conditions.

The City's Building Official and SLFPD's Fire Marshal review all improvement and construction plans in the City prior to issuance of a grading permit or building permit to ensure compliance with applicable State building and fire code requirements. In addition, the City's Building Official and SLFPD's Fire Marshal conduct a final inspection prior to issuance of a Certificate of Occupancy to ensure that the structure(s) complies with applicable fire codes and standards. Compliance with the State and local regulations noted above minimizes the potential for project occupants to be exposed to pollutant concentrations from a wildfire and minimizes the potential for uncontrolled spread of a wildfire. Compliance with existing CFC, CBC, CRC, and defensible space requirements ensures that impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.19-3	**Implementation of the 2040 General Plan could expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires** ***Less-than-Significant Impact***

See discussion under Impact 4.19.2.

Although development under the 2040 General Plan would bring people into the area, all development is subject to State and local fire and building codes and defensible space requirements, including but not limited to regulations identified in Section 4.19.3 (Regulatory Framework).

The City has been proactive with wildfire prevention efforts by completing fire fuel reduction projects in fire-prone areas. Most recently, the City was awarded $1,45 million in funding from CAL FIRE for a large hazardous fire fuel reduction project. The project consists of approximately ±272 acres of hazardous fuel clearing in the northern and western parts of the City and its surrounding

areas. The project area borders hundreds of acres of federal lands, dense with brush and trees. The rugged terrain skirting the City, paired with increasingly dry conditions has made it a critical threat to the community.

The project will treat ±260 acres of dense brush and trees, using hand clearing methods and chipping, spreading the wood parts within the project area, as well as removal and trimming of hazardous trees along ±12 acres of easement bordering an egress/ingress route. The project will reduce the risk of wildfires while providing safer evacuation and emergency responder access in these areas of the City. Upon successful completion, the project area will be added to the City's vegetation management list for continued maintenance.

The City's Building Official and SLFPD's Fire Marshal conduct a final inspection of construction projects in the City prior to issuance of a Certificate of Occupancy to ensure that the structure(s) complies with applicable fire codes and standards, including requirements for defensible space.

Compliance with existing codes and regulations adopted to minimize wildfire risks, continued completion of priority actions identified in the City's LHMP, and the General Plan Policies and Implementation Actions identified in Section 4.19.4 ensures that development under the 2040 General Plan would not result in a significant risk of loss, injury, or death involving wildland fires. The potential for adverse impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.19-4	**Implementation of the 2040 General Plan would require the installation and maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.** ***Less-than-Significant Impact***

Development under the 2040 General Plan would require the installation and maintenance of infrastructure (i.e., streets, waterlines, sewer lines, storm drain improvements, electrical lines, natural gas lines, and telecommunications facilities), the construction of which may exacerbate fire risks and result in temporary and ongoing impacts to the environment.

As stated under Impact 4.19-2, CFC Chapter 33 includes minimum safeguards that must be implemented during construction, alteration, and demolition activities to protect life and property from fire, and access for emergency vehicles must be maintained throughout construction. New development in the City is served with underground electric utility service, thereby minimizing long-term fire risks. In addition, the City's Electric Utility is responsible for implementing its WFMP (COSL, 2022), which includes actions that the City will take to mitigate the threat of powerline-ignited wildfires. The City's WFMP also includes design and construction standards for the City's electric facilities. PG&E also has a WFMP that applies to PG&E electrical lines and related equipment within the City limits (PG&E, 2022); it is not anticipated that PG&E will expand its electric facilities within the City limits.

The City's LHMP also includes high-priority mitigation actions that will reduce potential wildfire risks associated with infrastructure and development, through implementation of updated infrastructure designs, hardening of critical facilities, and upgrades to existing facilities:

Compliance with State and local fire and building codes and regulations, including but not limited to those identified in Section 4.19.3 (Regulatory Framework), implementation of the LHMP priority actions, and implementation of the 2040 General Plan Goals, Policies, and Implementation Actions identified in Section 4.19.4 ensures that potential wildfire risks associated with the installation and maintenance of infrastructure improvements would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

Impact 4.19-5	**Implementation of the 2040 General Plan could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes** ***Less-than-Significant Impact***

The severity of post-fire impacts is based, in part, on the intensity of the fire, the slope of the burned area, the stability of the slope, physical properties of the soils, and the intensity of post-fire rain events.

Large-scale wildfires leave the ground charred and unable to absorb water, increasing runoff and the potential for post-fire flooding. Flood risk remains high until vegetation is restored, which may take up to five years after a fire in some areas. Downed woody vegetation along watercourses after a fire may also obstruct flood flows. In addition to flooding, during intensive rain in a burn area, soils on moderate to steep slopes can become unstable and form a debris flow (FEMA, 2017).

According to the California Department of Conservation (DOC), large, slow-moving landslides composed of rock and soil can cause extensive property damage but usually do not result in loss of life. It generally takes weeks or months for precipitation to percolate through the soil and result in detectible movement of a landslide. Debris flows are fast-moving and are triggered by short, intense periods of rainfall and can cause both property damage and loss of life (DOC, n.d.). Properties below/ downstream of burn areas are at an increased risk for post-fire flooding, landslides, and debris flows due to increased runoff.

It is anticipated that the majority of development over the 20-year planning period for the 2040 General Plan will be infill development or occur along existing streets with gently sloping land and little potential for post-fire erosion, landslides, or other slope instability. Areas in and adjacent to the City with heavily vegetated steep slopes are primarily in the northern and western areas of the City. Due to development constraints in these areas, no significant development that could be exposed to post-fire risks is anticipated.

Policy HS-3.4 in the 2040 General Plan calls on the City to collaborate with local, State, and federal entities to address wildfire risks on lands surrounding the City. The City will also continue to establish fuel breaks in fire-prone areas as funding becomes available. Minimizing the potential for wildfires will in turn minimize the potential for post-fire hazards. In the event of a wildfire, measures that could be taken by local, State, and/or federal entities to minimize post-fire flooding and debris flows could include restoring burned areas by planting native vegetation cover or encouraging regeneration of native species; implementing slope stabilization measures to minimize the effects of landslides; repairing damage to storm drain facilities; removing dead, woody vegetation along watercourses after a fire to prevent the obstruction of flood flows; and other measures that would protect people and properties from post-fire hazards.

The City's Building Official and SLFPD's Fire Marshal review all improvement and construction plans in the City to ensure compliance with applicable State building and fire code requirements. Any potential risks related to post-fire hazards would be identified prior to issuance of a grading or building permit, and measures would be implemented as necessary to ensure that the potential for post-fire impacts would be ***less than significant.***

Mitigation Measures

No mitigation measures required.

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SECTION

5.0

Cumulative Impacts

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5.0 Cumulative Impacts

The section addresses cumulative impacts that could occur as a result of implementation of the proposed 2040 General Plan. §15130 of the CEQA Guidelines states that an Environmental Impact Report (EIR) must discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. Where a lead agency is examining a project with an incremental effect that is not cumulatively considerable, a lead agency need not consider that effect significant, but shall briefly describe the basis for concluding that the incremental effect is not cumulatively considerable.

A cumulative impact is defined in §15355 of the CEQA Guidelines as an impact that is created as a result of the combination of a proposed project together with other closely related past, present, and reasonably foreseeable future projects that cause related impacts.

Cumulative Setting

Due to the programmatic nature of this Draft PEIR, the analysis included in Section 4.0 (Environmental Impact Analysis) for each resource category largely addresses cumulative impacts that could occur through the end of the 20-year planning period for the 2040 General Plan. As described below, depending on the environmental topic, the cumulative setting extends beyond the boundaries of the Planning Area,

Cumulative Projects/Plans

The analysis of cumulative impacts for each environmental topic can be based on a list of past, present, and probable future projects producing related or cumulative impacts, or a summary of projections contained in an adopted plan, or in a certified EIR that describes or evaluates regional or area-wide conditions contributing to cumulative impacts.

The proposed 2040 General Plan is in itself a cumulative project because it addresses development that could occur in the Planning Area over the 20-year planning period for the General Plan. Where the cumulative setting extends beyond the Planning Area, the cumulative impacts analysis considers development that could occur in accordance with the following plans:

City of Redding

The majority of properties in the City of Redding that abut the City of Shasta Lake's southern City limits are within the boundaries of the Oasis Road Specific Plan[1]. The purpose of the Specific Plan is to accommodate commercial and residential growth and provide for public recreation. A Master Environmental Impact Report for the Specific Plan was certified by the City of Redding and includes mitigation measures to minimize potential impacts of development proposed within the boundaries of the Specific Plan.

The Specific Plan includes design criteria that sets forth provisions for the design of commercial, office, and residential development, including building architecture, landscape, walls, fences, and signs. Land use regulations and development standards are included to limit building size and height, and to establish minimum setbacks. Other standards are included to minimize glare from outdoor lighting, and to provide requirements for architectural elements on buildings. Future development would be designed and constructed in accordance with the Oasis Road Specific Plan. The City of Redding would consult with the City of Shasta Lake as necessary at the time an

[1] *City of Redding Oasis Road Specific Plan, 2006.*
https://www.cityofredding.org/home/showpublisheddocument/5527/635791272229630000

application for development is proposed. Additional contributions to cumulative impacts include growth that would occur in accordance with the City of Redding General Plan.

Unincorporated Shasta County

Contributions to cumulative impacts include growth that would occur in accordance with the Shasta County General Plan. Development of properties east and west of the City in unincorporated Shasta County is constrained by steep slopes and access issues. Land that abuts the southwestern area of the City is designated by the County as Suburban Residential (3 units per acre). Land that abuts the eastern Shasta Lake City limits is designated Rural Residential (1 unit per acre). Much of the land west of the City is designated as Public Land [2]. Therefore, development of land within unincorporated Shasta County adjacent to the City is expected to be minimal.

5.1 Cumulative Impacts: Aesthetics/Visual Resources

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to aesthetics and visual resources.

The cumulative setting for aesthetics and visual resources is primarily limited to the Planning Area and lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake.

Impacts 4.1-1, 4.1-2, 4.1-3, and 4.1-4

A cumulative impact to scenic vistas and resources would occur if cumulative projects resulted in the substantial degradation of scenic resources, including the introduction of new sources of light and glare into an area. As documented in Section 4.1 of this Draft PEIR, the incremental changes that would occur with development within the Planning Area are not expected to significantly change the existing visual character of the community or surrounding areas.

The primary concern with cumulative development outside of the City of Shasta Lake would be increased light and glare. As described in Section 4.1 of this Draft PEIR, all new development projects in the State are required to comply with California Green Building Code (CALGreen) mandatory light pollution reduction measures and California Energy Code (CEC) requirements that minimize the intensity of outdoor lighting and reduce the intensity of cumulative impacts.

In addition, the majority of future development adjacent to the City is anticipated to occur within the boundaries of the Oasis Road Specific Plan. Development in this area would be subject to the development and design standards included in the Specific Plan that were adopted to minimize impacts associated with visual impacts, including light and glare.

Future development under the 2040 General Plan would be required to comply with the regulations identified in Section 4.1.3 and the General Plan policies and implementation actions identified in Section 4.1.4 of this Draft PEIR. If necessary, project-specific mitigation would be implemented. Compliance with the regulations identified in Section 4.1.3, implementation of the General Plan policies and implementation actions included in Section 4.1.4, and implementation of project-specific mitigation measures ensures that the proposed 2040 General Plan's contribution to visual impacts would be ***less than cumulatively considerable***.

[2] *Shasta County General Plan (GIS Data).* https://maps.co.shasta.ca.us/ShastaCountyMap/

5.2 Cumulative Impacts: Agricultural and Forestry Resources

Implementation of the 2040 General Plan could contribute to cumulative impacts on forestry resources.

The cumulative setting for agricultural and forestry resources is primarily limited to the Planning Area and lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake.

Impacts 4.2-1 and 4.2-2

Conversion of Designated Farmland or Conflicts with Zoning for Agricultural Use

The 2040 General Plan does not include any goals, policies, or implementation actions that would result in the conversion of farmland to non-agricultural use or that would conflict with zoning for agricultural use. Therefore, implementation of the 2040 General Plan would not contribute to cumulative impacts on farmland. ***Not Cumulatively Considerable.***

Impact 4.2-3

Loss of Forest Land or Conversion of Forest Land to Non-Forest Use

As stated in Section 4.2 of this Draft PEIR, many of the undeveloped areas in the City meet the definition of forest land pursuant to Public Resources Code §12220(g) in that they include 10-percent native tree cover and allow for management of aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Future development under the 2040 General Plan may result in the loss of forest land and/or the conversion of forest land to non-forest use. Cumulative projects in the City of Redding and unincorporated Shasta County surrounding the City could also result in the conversion of forest land to non-forest uses.

As stated in Section 4.2.3 of this Draft PEIR, Shasta Lake Municipal Code (SLMC) Chapter 12.36 (Tree Conservation) was enacted to promote the conservation of a healthy tree population and to maintain and enhance tree canopy throughout the community. Tree conservation must be considered early in the planning process to reduce potential impacts, including impacts in areas that meet the definition of forest land pursuant to PRC §12220(g). In addition, the California Department of Forestry and Fire Protection (CAL FIRE) has oversight responsibility for private forest and timberland in the State. In accordance with California Forest Practice Rules, CAL FIRE will not approve a timber harvest plan unless feasible mitigation measures are implemented to substantially lessen or avoid potentially significant adverse impacts on the environment.

Therefore, compliance with the State and City regulations identified in Section 4.2.3 and the General Plan policies and implementation actions identified in Section 4.2.4 of this Draft DEIR, ensures that the proposed 2040 General Plan's contribution to cumulative impacts on forest land, as defined by PRC §12220(g), is ***less than cumulatively considerable***.

5.3 Cumulative Impacts: Air Quality

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to air quality.

The cumulative setting for air quality includes the Planning Area and the Northern Sacramento Valley Air Basin (NSVAB).

Impact 4.3-1

Northern Sacramento Valley Planning Area (NSVPA) 2021 Air Quality Attainment Plan (AQAP)

As discussed in Section 4.3 (Air Quality) of this Draft PEIR, under Impact 4.3-1, Shasta County is currently designated a non-attainment-transitional area for State ozone standards, which indicates that pollution concentrations violate the State standard, but air quality is nearing attainment; the County is designated as an attainment or unclassified area for all other federal and State ambient air quality standards.

The Planning Area is located within the NSVPA and is subject to the NSVPA AQAP, most recently updated in 2021. The 2021 AQAP proposes strategies and regulations for the three-year planning cycle for the 2021 AQAP (2022 through 2024). Continued attention is given to reducing ROG and NO_X emissions from transportation and areawide emission sources with implementation of regulations and planning requirements from earlier AQAP planning cycles.

The 2021 AQAP includes ROG and NO_X emission projections for area, mobile, and stationary sources in the NSVPA through year 2025. A project's consistency with the AQAP is determined based on projections in the AQAP.

The policies and implementation actions included throughout the proposed General Plan cover a full range of air quality issues. These policies and implementation actions are also identified in Section 4.3.4 of this Draft PEIR. The proposed General Plan does not include any components that would cause the disruption, delay, or otherwise hinder implementation of the AQAP. All future development and infrastructure projects within the Planning Area would be subject to the referenced General Plan policies, and implementation actions, which will reduce emissions and air quality impacts.

Although emissions that would occur with implementation of the 2040 General Plan comprise a very small percentage of projected emissions in the NSVPA, and mitigation measures would be implemented as necessary, it is possible that future projects may exceed adopted thresholds or conflict with plans that were adopted to achieve and maintain the State Ambient Air Quality Standard for ozone. Due to the programmatic nature of this Draft PEIR, it is not possible at this time to identify quantifiable mitigation measures that would reduce project-specific emissions below the Shasta County Air Quality Management District's (SCAQMD) thresholds. Therefore, the potential for development under the 2040 General Plan to conflict with the NSVPA AQAP is possible, and therefore considered ***cumulatively considerable.***

Impact 4.3-2

Net Increase of Criteria Pollutants for which the Project Region is in Non-Attainment (State Ozone Standard)

As documented in Section 4.3 (Air Quality) of this Draft PEIR, development under the 2040 General Plan would be analyzed on a case-by-case basis when detailed information regarding construction and operational activities is known. Future projects would be subject to applicable General Plan policies and implementation actions, as well as SCAQMD and State rules and regulations, including, but not limited to those identified in Section 4.3.3 (Regulatory Framework) of this Draft PEIR.

The Planning Area is surrounded by a mix of existing urbanized areas, and is bisected by the most heavily traveled highway corridor in the Northern Sacramento Valley (Interstate 5). The City of Shasta Lake lacks the regulatory authority necessary to limit cumulative impacts in the broader

region. The proposed 2040 General Plan emphasizes a compact, mixed-use development pattern that seeks to encourage alternative transportation access and multi-modal connectivity throughout the Planning Area and into the surrounding areas.

Standard Mitigation Measures (SMMs) would be implemented, and the City would consult with the SCAQMD as necessary to identify project-specific mitigation measures that could be implemented to achieve compliance with established thresholds. However, due to the programmatic nature of this Draft PEIR, it is not possible at this time to identify quantifiable mitigation measures that would reduce project-specific emissions below the SCAQMD thresholds. Therefore, the potential for development under the 2040 General Plan to result in a net increase of a criteria pollutant for which the project area is in non-attainment is considered ***cumulatively considerable.***

Impacts 4.3-3 and 4.3-4

Pollutant Concentrations and Other Emissions

As documented in Section 4.3 of this Draft PEIR, development under the 2040 General Plan could expose sensitive receptors to substantial concentrations of criteria pollutants, TACs, and other emissions.

New development would result in an increase in traffic and associated mobile source emissions, and sensitive receptors residing near heavily traveled roadways such as State Route 151, Pine Grove Avenue, Ashby Road, Lake Boulevard, and Cascade Boulevard could be exposed to high concentrations of vehicle exhaust if vehicle congestion were to occur. Future projects also have the potential to emit odors and other stationary source emissions during construction and operation.

Future development proposals will be reviewed on a case-by-case basis to identify potential operational impacts associated with pollutant concentrations and odorous emissions. When necessary, mitigation measures would be implemented to minimize impacts. Therefore, the proposed 2040 General Plan's contribution to cumulative impacts related to pollutant concentrations and other emissions would be ***less than cumulatively considerable.***

5.4 Cumulative Impacts: Biological Resources

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts on biological resources.

The cumulative setting for biological resources includes the Planning Area, lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City, and streams downstream of the Planning Area.

Impact 4.4-1

Special-Status Species and their Habitats

As documented in Section 4.4 (Biological Resources), future development under the 2040 General Plan would include earth disturbance, vegetation removal, and other construction activities that could directly impact special-status plant and wildlife species. Indirect impacts could include loss of habitat and degradation of surface waters in the area and downstream. Cumulative projects also have a potential to impact special-status species and their habitats.

Although species may have some ability to adapt to modifications to their environment by relocating, less mobile species may be locally extirpated. With continued conversion of natural habitat to human use, the availability and accessibility of remaining foraging and natural habitats would be reduced and remaining natural areas may not be able to support additional plant or animal populations. The conversion of plant and wildlife habitat on a regional level as a result of cumulative development would potentially result in a regionally significant cumulative impact on special-status species and their habitats.

Approval of the 2040 General Plan would not directly approve or entitle any development or infrastructure projects. However, implementation of the General Plan would allow and facilitate future development in the City of Shasta Lake, which could result in adverse impacts to special-status plant and wildlife species, as well as sensitive natural habitats and/or wildlife movement corridors.

Projects would be subject to compliance with federal and State regulations adopted for the protection of special-status species and their habitats, including those identified in Section 4.4.3 (Regulatory Framework) of this DEIR. Projects would also be subject to applicable local regulations of the jurisdiction in which the project is located.

Future development under the 2040 General Plan would be reviewed on a case-by-case basis, and project-specific mitigation would be implemented as necessary to minimize impacts, However, it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level. Therefore, the 2040 General Plan's contribution to cumulative impacts on special-status species and their habitats is considered ***cumulatively considerable.***

Impacts 4.4-2 and 4.4-3

Wetlands and other Waters of the U.S. and State, Riparian Habitat, and Sensitive Natural Communities

Development under the 2040 General Plan would involve earth disturbance and other construction activities that could affect State or federally protected wetlands, other waters of the U.S. and State, riparian habitat, and/or other sensitive natural communities.

Approval of the General Plan would not directly approve or entitle any development or infrastructure projects. However, implementation of the General Plan would allow and could facilitate future development in the City of Shasta Lake, which could result in adverse impacts to wetlands and other Waters of the U.S. and State, riparian habitat, and sensitive natural communities.

As documented in in Section 4.4.3 of this Draft DEIR, the U.S. Army Corps of Engineers (USACE) jointly with the U.S. Environmental Protection Agency (USEPA) regulates the discharge of dredged and fill material into wetlands and other waters of the U.S. The USACE requires that a permit be obtained prior to the placement of structures within, over, or under navigable waters as well as prior to discharging dredged or fill material into waters of the U.S. Mitigation for the loss of waters is typically required as a condition of permit approval.

The State Water Resources Control Board's (SWRCB) Wetland Riparian Area Protection Policy and Water Quality Certification Program regulate the removal or placement of materials in wetlands and waterways in the State. The Program protects all waters, but has special responsibility for wetlands, riparian areas, and headwaters because these waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. The Program

implements the State's no net loss policy for wetlands to ensure no overall net loss and long-term gain in the quantity, quality, and permanence of wetland acreage and values. Mitigation for the loss of wetlands could include creating new wetlands and/or preserving/restoring existing wetlands and enhancing their functionality.

In addition, California Fish and Game Code §1600 *et seq.*, requires that project proponents enter into a Lake or Streambed Alteration Agreement (LSAA) with the California Department of Fish and Wildlife (CDFW) prior to any work that would divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; and/or deposit or dispose of material into any river, stream, or lake.

All development projects are subject to federal and State regulations related to the protection of wetlands, other waters of the U.S. and State, and riparian habitat, and must comply with the State's no net loss policy for wetlands. In addition, future projects under the 2040 General Plan would be reviewed on a case-by-case basis, and mitigation would be included as necessary to minimize impacts. Compliance with federal and State permit requirements and project-specific mitigation measures ensures that the 2040 General Plan's contribution to cumulative impacts on wetlands, other waters, riparian habitat, and sensitive natural communities is ***less than cumulatively considerable.***

Impact 4.4-4

Interference with Migratory Fish and/or Wildlife Species or with Migratory Wildlife Corridors or Native Wildlife Nursery Sites.

CDFW does not identify critical summer ranges, critical winter ranges, fall holding areas, or fawning grounds for deer in the Planning Area.

Future development could result in wildlife corridor fragmentation and could interfere with the movement of fish and/or other wildlife species.

As shown in Section 4.4 (Biological Resources) in **Figure 4.4-2**, the City's Natural Resources Overlay Zone map identifies areas in the City that provide significant wildlife habitat resources, including riparian areas and stream corridors. General Plan Policy OS-1.1 promotes the protection of riparian habitat along significant creek corridors by regulating vegetation removal, the siting of structures, and establishing development set-backs. Implementation Action OS-2.4 requires that the City evaluate and implement, where feasible, the linking of natural habitat areas with interconnecting open space corridors, particularly those that provide wildlife with access to drinking water and enhance biological diversity of the area.

Future projects will be reviewed on a case-by-case to identify any potential for a project to adversely affect wildlife corridors and the movement of wildlife species, and the City will impose mitigation measures as necessary to avoid/minimize impacts. Therefore, the 2040 General Plan's contribution to cumulative impacts related to migratory species and wildlife corridors is ***less than cumulatively considerable.***

Impact 4.4-5

Local Policies and Ordinances Protecting Biological Resources

The City's primary regulations that address direct and indirect impacts on biological resources include SLMC Chapter 12.36 (Tree Conservation), SLMC Chapter 13.36 (Storm Water Quality Management), and SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development). The

2040 General Plan does not include any goals, policies, or implementation actions that would conflict with any local regulations related to the protection of biological resources.

Future projects would be reviewed on a case-by-case basis to ensure that projects comply with local regulations that are in place at the time a project application is submitted to the City. When necessary, mitigation measures would be implemented to ensure compliance with applicable local codes. Therefore, the 2040 General Plan's contribution to cumulative impacts would be ***less than cumulatively considerable.***

5.5 Cumulative Impacts: Cultural Resources

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts on cultural resources.

The cumulative setting for cultural resources is limited to the Planning Area.

Impacts 4.5-1, 4.5-2, and 4.5-3

While the 2040 General Plan does not directly propose any adverse changes to any cultural, historical or archaeological resources, future development allowed under the General Plan could affect known historical and archaeological resources or historical and archaeological resources that have not yet been identified. As documented in Section 4.5 (Cultural Resources) of this Draft PEIR, future projects will be reviewed on a case-by-case basis to determine compliance with applicable federal, State, and local regulations enacted for the protection of cultural resources, including the General Plan policies and implementation actions described in Section 4.5.4 of this Draft PEIR. Mitigation measures would be implemented as necessary to avoid/minimize adverse effects. Additionally, the City's standard conditions of approval/construction measures address the inadvertent discovery of cultural resources and human remains. Therefore, the proposed 2040 General Plan's contribution to cumulative impacts on cultural resources would be ***less than cumulatively considerable***.

5.6 Cumulative Impacts: Tribal Cultural Resources

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts on tribal cultural resources.

The cumulative setting for tribal cultural resources is limited to the Planning Area.

Impacts 4.6-1 and 4.6-2

While the 2040 General Plan does not propose any adverse changes to any tribal cultural resources, future development allowed under the General Plan could affect known tribal resources or tribal resources that have not yet been identified. As documented in Section 4.6 (Tribal Cultural Resources) of this Draft PEIR, the City conducts consultation with the Native American Heritage Commission and local Native American tribes regarding potential tribal cultural resources that could be impacted by proposed development projects in accordance with federal and State requirements. Mitigation measures are identified through the consultation process (e.g., pre-construction training for construction crews, Native American monitoring of earth-disturbing activities, and/or other measures recommended by the tribes). Therefore, the proposed 2040 General Plan's contribution to cumulative impacts on tribal cultural resources would be ***less than cumulatively considerable***.

5.7 Cumulative Impacts: Greenhouse Gas Emissions, Climate Change, and Energy

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to greenhouse gas emissions, climate change, and energy.

The cumulative setting for greenhouse gas emissions and climate change is global; the cumulative setting for energy is primarily limited to lands within the service area of the City of Shasta Lake Electric Utility. If a project conflicts with a State plan for renewable energy or energy efficiency, the cumulative setting would be statewide.

Impacts 4.7-1 and 4.7-2

Energy

As documented in Section 4.7 of this Draft PEIR, implementation of the General Plan would not result in significant environmental impacts related to consumption of energy resources and would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. All projects in the State are subject to applicable regulations that minimize the potential for impacts related to energy resources and require implementation of solar photovoltaic systems in new development These regulations include the California Energy Code (Energy Efficiency Standards), the California Green Building Standards Code, California Air Resources Board In-Use Off Road Diesel-Fueled Fleets Regulation, and additional regulations included in Section 4.7.3 of this Draft PEIR. Compliance with existing regulations ensures that the proposed 2040 General Plan's contribution to cumulative impacts related to energy would be ***less than cumulatively considerable.***

Impacts 4.7-3 and 4.7-4

Greenhouse Gas Emissions and Climate Change

Greenhouse gas (GHG) emissions and climate change are, by nature cumulative impacts. Unlike criteria pollutants which are pollutants of regional and local concerns, GHGs are global pollutants and are not limited to the area in which they are generated.

Future projects under the 2040 General Plan would generate GHG emissions during construction and operation. Adoption of the 2040 General Plan does not directly approve or otherwise entitle any new development projects or infrastructure improvement projects. Individual development projects would be required to comply with the General Plan and adopted federal, State, and local regulations for the reduction of GHG emissions.

The City of Shasta Lake has prepared the 2040 General Plan to include policies and implementation actions intended to reduce GHG emissions associated with future development projects. These policies and implementation actions are included in Section 4.7.4 of this Draft PEIR.

As described in Section 4.7.3 of this Draft PEIR, the State has adopted numerous regulations to minimize statewide GHG emissions. In addition, State policies that call for the development of additional State regulations will further minimize/reduce statewide GHG emissions.

Future development under the 2040 General Plan would be reviewed on a case-by-case basis to determine project-specific impacts related to GHG emissions. Projects would be reviewed to ensure consistency with the 2040 General Plan policies and implementation actions, and mitigation measures would be implemented as necessary to minimize/reduce GHG emissions to a less-than-significant level where possible. As documented in Section 4.7 of this Draft DEIR, due to the

programmatic nature of this Draft PEIR, it is not possible to identify quantifiable mitigation measures at this time that would effectively reduce project-specific GHG emissions. Therefore, the proposed 2040 General Plan's contribution to cumulative impacts related to GHGs and climate change are considered ***cumulatively considerable.***

5.8 Cumulative Impacts: Geology and Soils

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to geology and soils.

The cumulative setting for geology and soils is primarily limited to the Planning Area, although projects adjacent to the Planning Area could contribute to impacts associated with seismic hazards, soil erosion, and geologic hazards such as landslides, erosion, and expansive soils.

Impacts 4.8-1, 4.8-2, and 4.8-4

Seismic-Related Hazards, Erosion, and Unstable Soils

As documented in Section 4.8 of this Draft PEIR, development under the 2040 General Plan and cumulative projects adjacent to the Planning Area, would be subject to federal and State regulations that were adopted to minimize potential impacts associated with seismic hazards and unstable soils.

New construction projects in the State are subject to California Building Code requirements for completion of a geotechnical report that identifies potential issues related to slope instability, liquefaction, ground settlement, expansive soils, and surface displacement due to seismically-induced lateral spreading or lateral flow. The geotechnical report must include recommendations necessary to minimize potential impacts associated with seismic-related ground failure and unstable soils. Projects are also required to implement best management practices (BMPs) for erosion and sediment control, in accordance with State and local requirements.

Compliance with State and local requirements ensures that the 2040 General Plan's contribution to cumulative impacts would be ***less than cumulatively considerable.***

Impact 4.8-3

Land Subsidence

As documented in Section 4.8 of this Draft PEIR, implementation of the 2040 General Plan would have no impact related to land subsidence; therefore, implementation of the 2040 General Plan would not contribute to cumulative impacts related to land subsidence. ***Not Cumulatively Considerable.***

Impact 4.8-5

Alternative Wastewater Disposal Systems

There are soils in the City that may not be capable of adequately supporting the use of septic tanks or on-site wastewater treatment systems (OWTS). Most development under the 2040 General Plan would connect to the City's public sewer system; however, properties in the western areas of the City are not currently connected to the public sewer system. Future development that involves the use of an alternative wastewater disposal system would be subject to Shasta County Environmental Health Division (EHD) OWTS regulations. These regulations require completion of soil testing, percolation testing, groundwater monitoring, and/or other information deemed

necessary by Shasta County EHD. A permit is issued by EHD following confirmation that the OWTS is expected to function properly. Compliance with State and local requirements ensures that the 2040 General Plan's contribution to cumulative impacts related to alternative wastewater disposal systems would be ***less than cumulatively considerable.***

Impact 4.8-6

Paleontological Resources and Unique Geologic Features

There are rock formations in the City that have a potential to contain paleontological resources, and such resources could be discovered during earth-disturbing activities. All development in the State is subject to State regulations adopted for the protection of paleontological resources (Public Resources Code Section 5097.5). Future projects will be reviewed to determine the potential for paleontological resources to be present, and mitigation measures would be implemented as necessary. Therefore, the 2040 General Plan's contribution to cumulative impacts would be ***less than cumulatively considerable.***

5.9 Cumulative Impacts: Hazards and Hazardous Materials

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to hazards and hazardous materials.

The cumulative setting for hazards and hazardous materials is primarily limited to the Planning Area and lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake.

Impacts 4.9-1, 4.9-2, and 4.9-3

Development under the 2040 General Plan would involve the transport, use, storage, and/or disposal of hazardous materials, both during construction and operation, and there is a potential for the public or environment to be adversely affected if hazardous materials or emissions are released into the environment. Future projects also could emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter mile of a school.

It is also possible that future development could be located on a site that is identified by the Department of Toxic Substances Control (DTSC), Central Valley Regional Water Quality Control Board (CVRWQCB), or other regulatory agency as a hazardous waste clean-up site.

As discussed in Section 4.9 of this Draft PEIR, development projects in the City are subject to stringent federal, State, and local regulations and requirements that apply to all development that involves hazardous materials, including, but not limited to, the regulations identified in Section 4.9.3 of this Draft PEIR. Compliance with existing regulations ensures that the 2040 General Plan's contribution to cumulative impacts related to hazards and hazardous materials is ***less than cumulatively considerable.***

Impact 4.9-4

Adopted Emergency Response Plans/Emergency Evacuation Plans

As documented in Section 4.9 of this Draft PEIR, implementation of the 2040 General Plan would have no impact on an emergency response plan or emergency evacuation plan; therefore, the 2040 General Plan would not contribute to adverse cumulative impacts on such plans. ***Not Cumulatively Considerable.***

5.10 Cumulative Impacts: Hydrology and Water Quality

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to hydrology and water quality.

The cumulative setting for hydrology and water quality includes the Planning Area, areas downstream of the Planning Area, and other lands within the Stillwater-Churn Creek Watershed.

Impacts 4.10-1 and 4.10-2

Water Quality Standards/Waste Discharge Requirements, Water Quality Control Plan

Development under the 2040 General Plan has the potential to temporarily degrade water quality due to increased runoff and erosion during construction. Post-construction conditions could also cause or contribute to direct and indirect impacts from stormwater runoff upstream or downstream.

As documented in Section 4.10 of this Draft PEIR, all development projects in the State are subject to applicable regulations that were enacted to minimize impacts to water quality, including, but not limited to, the regulations identified in Section 4.10.3 of this Draft PEIR. For example, projects that result in the disturbance of one acre or more of total land area are required to obtain coverage under the State Water Resources Control Board Statewide NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2009-009-DWQ/NPDES CAS000002). The permit also applies to construction activity that results in less than one acre of land disturbance if the construction activity is part of a larger common plan of development that in total disturbs one or more acres.

The permitting process requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that includes BMPs to reduce pollutants and any more stringent controls necessary to meet water quality standards. Dischargers must also comply with water quality objectives identified in the applicable Basin Plan. If Basin Plan objectives are exceeded, corrective measures are required.

The City of Shasta Lake is a Regulated Small Municipal Separate Storm Sewer System (Phase II MS4) and must comply with requirements of the Phase II MS4 General Order that were established to minimize adverse impacts associated with stormwater runoff. Jurisdictions in the State that are not covered under a MS4 permit or a Standard Urban Storm Water Management Plan are subject to the post-construction requirements included in the State Construction General Permit. These requirements are intended to ensure that the post-construction conditions at the project site do not cause or contribute to direct or indirect water quality impacts upstream or downstream.

The applicable Water Quality Control Plan for the Planning Area is the Sacramento River and San Joaquin River Basin Plan. Future development proposals would be reviewed on a case-by-case basis to ensure consistency with regulations that were enacted to ensure compliance with the Basin Plan, including but not limited to, the regulations identified in Section 4.10.3 of this Draft PEIR. If necessary, project-specific mitigation measures would be implemented. Compliance with existing regulations ensures that the proposed 2040 General Plan's contribution to cumulative impacts related to water quality and waste discharge requirements is ***less than cumulatively considerable.***

Impact 4.10-3

Groundwater/Sustainable Groundwater Management Plan

As documented in Section 4.10 (Hydrology and Water Quality) of this Draft PEIR under Impact 4.10-3, future projects in the City would connect to the City's public water system, and development under the 2040 General Plan would not result in an increase in groundwater pumping. Groundwater recharge in the City is mostly by infiltration of stream flows within floodplains. Because development in the floodplain is limited, these areas would remain available for recharge. The City is not located within a State-designated groundwater basin and is not subject to a sustainable groundwater management plan. Therefore, the proposed 2040 General Plan's contribution to cumulative impacts related to groundwater and groundwater recharge would be ***less than cumulatively considerable***.

Impact 4.10-4

Drainage and Flooding

As documented in Section 4.10 (Hydrology and Water Quality) of this Draft PEIR under Impact 4.10-4, improvement plans for future development must include a grading plan prepared by a civil engineer or other authorized licensed professional. The grading plan must include original ground surface elevations, as-graded ground surface elevations, lot drainage patterns and locations and elevations of all surface and subsurface drainage facilities. Drainage calculations would be reviewed by the City Engineer to ensure that post-construction runoff from a project does not increase the pre-development peak flows for the 10-, 25-, and 100-year design storm events at any location downstream.

SLMC Section 15.04.140 (Duties and Responsibilities of the Floodplain Administrator) requires that documentation be submitted to the City to verify that a proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined. "Adversely affect" means that the cumulative effect of the proposed development when, combined with all other existing and anticipated development, would increase the water surface elevation of the base flood more than one foot at any point. Compliance with the City's floodplain regulations ensures that the proposed 2040 General Plan's contribution to cumulative impacts related to drainage and flooding is ***less than cumulatively considerable.***

Impact 4.10-5

Release of Pollutants in Flood Hazard Areas

As documented in Section 4.10 of this Draft PEIR, SLMC Chapter 15.04 (Floodplain Management) includes requirements for new development and for substantial rehabilitation within FEMA-designated flood hazard areas. As stated in Section 4.10.3 of this Draft PEIR, SLMC Chapter 15.04 includes methods and provisions to restrict or prohibit uses in the floodplain that are dangerous to health, safety, and property due to water or erosion hazards, or that result in damaging increases in erosion or flood height or velocities.

Future development under the 2040 General Plan would be subject to the standards included in SLMC Chapter 15.04, which would minimize the potential for project inundation in a flood hazard zone. Compliance with applicable requirements would be confirmed by the City's Floodplain Administrator, City Engineer, and/or Building Official; therefore, the proposed 2040 General Plan's contribution to cumulative impacts related to the release of pollutants due to project inundation is ***less than cumulatively considerable.***

5.11 Cumulative Impacts: Land Use and Planning

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to land use and planning.

The cumulative setting for land use and planning is primarily limited to the Planning Area.

Impact 4.11-1

Physically Divide an Established Community

As documented in Section 4.11 of this Draft PEIR, implementation of the 2040 General Plan would have no impact related to physically dividing an established community; therefore, the 2040 General Plan would not contribute to cumulative impacts. ***Not Cumulatively Considerable.***

Impact 4.11-2

Conflict with a Plan, Policy, or Regulation Adopted to Avoid or Mitigate an Environmental Effect

As documented in Section 4.11 of this Draft PEIR, compliance with existing regulations, and compliance with the policies and implementation actions included in the 2040 General Plan would reduce most of the potential environmental effects of future projects to a less-than-significant level; however, the following impacts were determined to be significant and unavoidable:

Air Quality

Impact 4.3-1: Implementation of the 2040 General Plan could conflict with or obstruct implementation of the Northern Sacramento Valley Triennial Air Quality Attainment Plan.

Impact 4.3-2: Implementation of the 2040 General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.

Biological Resources

Impact 4.4-1: Implementation of the 2040 General Plan could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

Greenhouse Gas Emissions

Impact 4.7-3: Implementation of the 2040 General Plan could generate greenhouse gas emissions, directly and indirectly, resulting in a significant impact on the environment.

Impact 4.7-4: Implementation of the 2040 General Plan could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.

Transportation

Impact 4.17-2: Implementation of the 2040 General Plan could conflict with criteria for analyzing transportation impacts based on vehicle miles traveled (VMT) pursuant to CEQA Guidelines §15064.3(b).

Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level, resulting in a conflict with plans, policies and/or regulations that were adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, the proposed 2040 General Plan's contribution to cumulative impacts related to conflicts with land use plans, policies, and/or regulations adopted to avoid or mitigate an environmental effect is considered ***cumulatively considerable.***

5.12 Cumulative Impacts: Mineral Resources

Implementation of the Shasta Lake 2040 General Plan could not contribute to cumulative impacts related to mineral resources.

The cumulative setting for mineral resources is primarily limited to the Planning Area and lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake.

Impacts 4.12-1 and 4.12-2

Loss of a Known Mineral Resource or Mineral Resource Recovery Site

As documented in Section 4.12 of this Draft PEIR, implementation of the 2040 General Plan would have no impact on mineral resources; therefore, the 2040 General Plan would not contribute to adverse cumulative impacts on mineral resources. ***Not Cumulatively Considerable.***

5.13 Cumulative Impacts: Noise

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to noise.

The cumulative setting for noise is primarily limited to the Planning Area and lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake.

Impacts 4.13-1, 4.13-2, and 4.13-3

Substantially Increase Ambient Noise Levels, Cause Excessive Groundborne Vibration, or Expose People to Excessive Noise from a Private Airstrip

Development under the 2040 General Plan would result in temporary increases in noise during construction as well as long-term operational noise. Development also may require use of equipment with high vibration levels, both during construction and operation of future projects.

As documented in Section 4.13, noise in the City of Shasta Lake is primarily caused by mobile sources including automobiles, trucks, and trains, as well as machinery and equipment used in industry and construction.

As required by General Plan Policy HS-8.4, the noise compatibility guidelines shown in Section 4.13, Figure 4.13-6 of this Draft PEIR will be taken into consideration when reviewing new development proposals, circulation system improvements, and future general plan amendments and specific plans. General Plan Policy HS-8.3 requires that new development use appropriate site planning and building design to reduce undesirable noise impacts in accordance with standards established in the City's Noise Ordinance, which will be prepared following adoption of the 2040 General Plan. Implementation Action HS-8.6 requires that site-specific noise studies be prepared for noise sensitive development projects anticipated to be affected by elevated noise exposure levels.

Future development will be reviewed on a case-by-case basis to identify mitigation measures that may be needed to ensure compliance with the City's noise sensitivity standards. Mitigation measures for residential projects could include specific requirements for noise-rated windows, wall assemblies, and/or insulation in the residences, or use of berms/barriers to minimize noise at the sensitive receptor. Mitigation measures for non-residential development could include limiting hours of operation, limiting outdoor activities, and/or implementing noise attenuation for outdoor generators and mechanical equipment. Development also would be reviewed to identify project-specific impacts related to groundborne vibration that could cause structural damage and human annoyance. Mitigation would be implemented as necessary to ensure that future developments do not result in adverse effects related to vibration.

Compliance with existing regulations, including those identified in Section 4.13.3 of this Draft PEIR, ensures that the 2040 General Plan's contribution to noise and vibration is ***less than cumulatively considerable***.

5.14 Cumulative Impacts: Population and Housing

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to population and housing.

The cumulative setting for population and housing is limited to the Planning Area.

Impacts 4.14-1 and 4.14-2

Induce Substantial Unplanned Population Growth or Displace People or Housing

As documented in Section 4.14 of this Draft PEIR, the 2040 General Plan increases residential densities and floor area ratios (FARs) for commercial and industrial uses in some areas in the City. Growth projections are estimated at 42 housing units per year, and the annual population growth is estimated at 104 during the 20-year planning period for the 2040 General Plan.

Because growth is market driven, it is not expected that growth under the 2040 General Plan would significantly differ from growth under the existing General Plan over the next 20 years. Future development would be reviewed on a case-by-case basis to ensure that increases in population do not have adverse impacts; mitigation measures would be implemented as necessary. Impacts of implementation of the 2040 General Plan on population and housing are considered ***less than cumulatively considerable.***

5.15 Cumulative Impacts: Public Services

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to construction of new and/or expanded public services facilities.

The cumulative setting for public services is primarily limited to the Planning Area, but also includes areas in unincorporated areas of Shasta County that are included in the service area boundary of the Shasta Lake Fire Protection District.

Impact 4.15-1 through 4.15-4

As documented in Section 4.15 of this Draft PEIR, growth under the 2040 General Plan would increase demands for public services, including fire and police protection, schools, public health, and other public services. Future projects will be reviewed on a case-by-case basis to determine whether new or expanded public facilities are required. Potential environmental effects of such facilities would be analyzed at that time, and mitigation measures would be imposed as necessary. Therefore, the proposed 2040 General Plan's contribution to cumulative impacts related to public services is ***less than cumulatively considerable.***

5.16 Cumulative Impacts: Recreation

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to recreational facilities.

The cumulative setting for recreation is limited to the Planning Area.

Impacts 4.16-1 and 4.16-2

As documented in Section 4.16 of this Draft PEIR, future development would increase the use of existing parks and other recreational facilities in the City, and would result in the construction and/or expansion of recreational facilities. Future projects would be reviewed on a case-by-case basis to determine project-specific impacts related to maintenance of existing facilities, and the provision of new and/or expanded facilities. When necessary, formation of a maintenance district or establishment of an alternative funding mechanism is required for new residential development to provide funds for long-term maintenance of potentially impacted recreational facilities.

Therefore, the 2040 General Plan's contribution to cumulative impacts related to parks and recreational facilities is ***less than cumulatively considerable.***

5.17 Cumulative Impacts: Transportation

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to transportation.

The cumulative setting for transportation includes the Planning Area and existing and planned roadways and alternative transportation facilities in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake. The cumulative setting related to vehicle miles traveled (VMT) and associated GHG emissions is statewide.

Impact 4.17-1

Conflicts with a Program, Plan, Ordinance, or Policy Addressing the Circulation System

As documented in Section 4.17 of this Draft PEIR, implementation of the 2040 General Plan would not conflict with a program, plan, ordinance, or policy addressing the circulation system; therefore, the 2040 General Plan would not contribute to cumulative impacts. ***Not Cumulatively Considerable.***

Impact 4.17-2

Conflict with Criteria for Analyzing Vehicle Miles Traveled

The Vehicle Miles Traveled (VMT) analysis included in Section 4.17 of this Draft PEIR states that although VMT under the 2040 General Plan is estimated to be ±0.3 percent less than what is expected to occur under the current General Plan, VMT would not be below the significance thresholds for GHG emission reductions (i.e., 15 percent below existing VMT for residential and office developments, and no net increase in total VMT for retail developments).

Due to the programmatic nature of this Draft PEIR, it is not possible to identify project-specific mitigation measures at this time. Therefore, the 2040 General Plan's contribution to cumulative impacts related to VMT is considered ***cumulatively considerable.***

Impact 4.17-3

Increase Hazards Due to a Geometric Design Feature

Implementation of the 2040 General Plan would increase the number of vehicles on roadways and could increase traffic hazards. Projects will be reviewed on a case-by-case basis to determine the potential for a project to result in increased traffic hazards due to project design features, dangerous intersections, or incompatible uses. If necessary, safety improvements, including those identified in the City's Local Road Safety Plan (refer to Table 4.17-11 in Section 4.17 of this Draft PEIR), would be implemented.

Therefore, the 2040 General Plan's contribution to cumulative impacts related to traffic hazards would be ***less than cumulatively considerable.***

Impact 4.17-4

Emergency Access

As documented in Section 4.17 of this Draft PEIR, implementation of the 2040 General Plan would have no impact related to emergency access; therefore, the 2040 General Plan would not contribute to adverse cumulative impacts. ***Not Cumulatively Considerable.***

5.18 Cumulative Impacts: Utilities and Service Systems

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to utilities and service systems, including water supply.

The cumulative setting for utilities and service systems is limited to the Planning Area.

Impacts 4.18-1, 4.18-2, and 4.18-3

Capacity in the City's Water, Wastewater, and Electric Utility Systems

As documented in Section 4.18 of this Draft PEIR, implementation of the 2040 General Plan would have less-than-significant impacts related to capacity in the water treatment and distribution system, the wastewater collection and treatment system, and the electric utility system. Future developments would be reviewed on a case-by-case basis to identify project-specific impacts and any needed capacity improvements to the City's water, wastewater, and electric utility systems. Therefore, the 2040 General Plan's contribution to cumulative impacts related to capacity in the City's water, wastewater, and electric capacity is ***less than cumulatively considerable.***

Impact 4.18-4

New or Expanded Utility Infrastructure

Development of new residential and non-residential projects would require the extension and/or upsizing of utility infrastructure, and possibly the relocation of such utilities. Shasta Lake Municipal Code Chapter 13.24 (Plan Submittal and Review Procedures) states that no utility improvements shall be constructed within the City until improvement plans have been submitted and approved for construction, and all associated requirements have been met. This would include CEQA review for improvements that have a potential to cause significant environmental effects.

The City will review future development proposals on a case-by-case basis to determine specific utility infrastructure that would be needed to accommodate the development. CEQA review would address both on-site and off-site utility improvements, and mitigation measures would be implemented as necessary. Compliance with existing regulations ensures that the 2040 General Plan's contribution to cumulative impacts related to new or expanded utility infrastructure is ***less than cumulatively considerable.***

Impact 4.18-5

Water Supply

As documented in Section 4.18 of this Draft PEIR, during drought years when the City's water allocation is reduced and the City is unable to purchase supplemental water, the City is required to implement the applicable stage of its Water Shortage Contingency Plan to reduce the gap between supply and demand. Mitigation Measure 4.18-1 is included to minimize potential impacts to the City's water supply. This measure requires that one new policy and two new implementation actions be added to the 2040 General Plan Conservation Element.

New Policy CON-4.8 states that prior to the approval of major new development, Specific Plans, major infrastructure improvements, or other projects that would result in significant increased demand on existing water supplies, require that projects demonstrate proof of availability of adequate water supply (e.g., that existing supplies are adequate to accommodate the increased project demand, or that improvements to the capacity of the system to meet the increased demand will be made prior to project implementation), and that potential impacts to water supplies will be addressed.

New Implementation Action CON-4.9 requires new large-scale development to mitigate the potential project demand on the community's available water supply. New Implementation Action CON-4.10 requires that the City explore opportunities to develop mechanisms and infrastructure to deliver reclaimed water to city water users from the City's Wastewater Treatment System and other sources.

Compliance with the City's WSCP and implementation of Mitigation Measure 4.18-1 ensures that the 2040 General Plan's impacts on water supply are ***less than cumulatively considerable.***

Impact 4.18-6

Solid Waste

As documented in Section 4.18 of this Draft PEIR, development under the 2040 General Plan would result in the generation of demolition and construction waste. Future development would also generate solid waste from operational activities.

As documented in Section 4.18 of this Draft PEIR, the City contracts with Waste Management, Inc., to provide solid waste disposal services to businesses and residents in the City limits, including curb-side garbage, green waste, and recycling services. Waste Management owns and operates the Anderson Landfill, located at 18703 Cambridge Road, southwest of Anderson, California. The Shasta County Environmental Health Division is the local enforcement agency for the landfill. The estimated increase in solid waste over the 2040 General Plan planning period would contribute a small percentage of solid waste that would be diverted to the landfills. Therefore, the 2040 General Plan's contribution to cumulative impacts related to solid waste would be ***less than cumulatively considerable.***

5.19 Cumulative Impacts: Wildfire

Implementation of the Shasta Lake 2040 General Plan could contribute to cumulative impacts related to wildfire.

The cumulative setting for wildfire includes the Planning Area and lands in the Redding city limits and unincorporated Shasta County that are adjacent to the City of Shasta Lake.

Impact 4.19-1

Emergency Response Plan/Emergency Evacuation Plan

As documented in Section 4.19 of this Draft PEIR, implementation of the 2040 General Plan would have no impact on an emergency response plan or emergency evacuation plan; therefore, the 2040 General Plan would not contribute to adverse cumulative impacts on such plans. ***Not Cumulatively Considerable.***

Impacts 4.19-2 and 4.19-3

Wildfire Risks

As documented in Section 4.19 of this Draft PEIR, the City has a significant amount of fire fuels and steep slopes that could facilitate the spread of wildfire. Critical fire weather conditions occur frequently in the Planning Area during periods of low relative humidity, high heat, and high winds. As shown in Figure 4.19-1, the majority of land in the City limits and lands surrounding the City is designated as a Very High Fire Hazard Severity Zone (FHSZ).

As described in Section 4.19 of this Draft DEIR, new construction projects in Wildland Urban Interface (WUI) areas (i.e., State-designated FHSZs and other areas designated by the local enforcing agency to be at a significant risk from wildfires) are subject to California Fire Code (CFC) requirements for maintaining defensible space around buildings and structures, and California Building Code (CBC) requirements for new construction in WUIs and FHSZs. Residential dwellings are also subject to Chapter R337 of the California Residential Code (CRC).

These regulations require incorporation of fire-resistant building materials in new buildings to increase the ability of the building to resist the intrusion of flames or burning embers projected by a vegetation fire. In addition, the CRC requires that automatic fire sprinkler systems be installed in all new single-family residences to protect all areas of a dwelling unit in the event of a fire. These regulations also require that a minimum of 100 feet of defensible space must be maintained around each side of an occupied structure so a wildfire burning under average weather conditions would be unlikely to ignite the structure.

Chapter 33 of the CFC includes minimum safeguards that must be implemented during construction, alteration, and demolition activities to protect life and property from fire. Requirements are provided for cutting and welding activities, storage of flammable and combustible materials, blasting operations, and other construction-related activities. Vehicle access to the construction site for fire department personnel must be provided by either temporary or permanent roads capable of supporting vehicle loading under all weather conditions.

The City's Building Official and SLFPD's Fire Marshal review all improvement and construction plans in the City prior to issuance of a grading permit or building permit to ensure compliance with applicable State building and fire code requirements. In addition, the City's Building Official and SLFPD's Fire Marshal conduct a final inspection prior to issuance of a Certificate of Occupancy to ensure that the structure(s) complies with applicable fire codes and standards. Compliance with the State and local regulations noted above minimizes the potential for project occupants to be exposed to pollutant concentrations from a wildfire and minimizes the potential for uncontrolled spread of a wildfire. Compliance with existing CFC, CBC, CRC, and defensible space requirements ensures that the 2040 General Plan's contribution to cumulative impacts related to wildfire is ***less than cumulatively considerable.***

Impact 4.19-4

Fire Risks Associated with Installation and Maintenance of Infrastructure

Development under the 2040 General Plan would require the installation and maintenance of infrastructure (i.e., streets, waterlines, sewer lines, storm drain improvements, electrical lines, natural gas lines, and telecommunications facilities), the construction of which may exacerbate fire risks and result in temporary and ongoing impacts to the environment.

As stated above, Chapter 33 of the CFC includes minimum safeguards that must be implemented during construction, alteration, and demolition activities to protect life and property from fire.

In addition, the City's Electric Utility is responsible for implementing its WFMP (COSL, 2022), which includes actions that the City will take to mitigate the threat of powerline-ignited wildfires. PG&E also has a WFMP that applies to PG&E electrical lines and related equipment within the City limits. The City's Local Hazard Mitigation Plan (LHMP) also includes high-priority mitigation actions that will reduce potential wildfire risks associated with infrastructure and development through implementation of updated infrastructure designs, hardening of critical facilities, and upgrades to existing facilities:

Compliance with State and local fire and building codes and regulations, including but not limited to those identified in Section 4.19.3 of this Draft PEIR, implementation of the LHMP priority actions, and implementation of the 2040 General Plan goals, policies, and implementation actions identified in Section 4.19.4 ensures that the 2040 General Plan's contribution to wildfire risks associated with the installation and maintenance of infrastructure improvements is ***less than cumulatively considerable.***

Impact 4.19-5

Post-Wildfire Risks

As documented in Section 4.19 of this Draft PEIR, it is anticipated that the majority of development over the 20-year planning period for the 2040 General Plan will be infill development or occur along existing streets with gently sloping land and little potential for post-fire erosion, landslides, or other slope instability. Areas in and adjacent to the City with heavily vegetated steep slopes are

primarily in the northern and western areas of the City. Due to development constraints and related City regulations in these areas, no significant development that could be exposed to post-fire risks is anticipated.

Future projects would be review by the City and SLFPD to identify any potential risks related to post-fire hazards, and measures would be implemented as necessary to ensure that the 2040 General Plan's contribution to post-fire risks is ***less than cumulatively considerable.***

SECTION

6.0

Alternatives Analysis

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6.0 Alternatives Analysis

In accordance with §15126.6 of the CEQA Guidelines, an EIR must describe a range of reasonable alternatives to the project, that would feasibly attain most, but not all, of the project's objectives and would avoid or substantially lessen any of the significant effects of the proposed project. Alternatives typically involve changes to the location, scope, design, extent, intensity, or method of construction or operation of the proposed project. The lead agency is required to evaluate and compare the environmental impacts of alternatives in an EIR, though not at the same level of detail as the proposed project.

Factors that may be taken into account when addressing the feasibility of alternatives include economic viability, availability of infrastructure, consistency with plans, and regulatory limitations. CEQA Guidelines §15126.6(f)(1) states that the range of alternatives to be analyzed is governed by a "rule of reason," which allows only those alternatives necessary to permit a reasoned choice to be examined. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

CEQA requires that EIRs identify the environmentally superior alternative, and discuss the facts that support that selection (see PRC §21081.5 and CEQA Guidelines §15091 and §15126.6(e)(2)). If the environmentally superior alternative is the "no project" alternative, the EIR must also identify an environmentally superior alternative among the other alternatives. The lead agency is not, however, obligated to select the environmentally superior alternative for implementation if it would not accomplish the basic project objectives and/or is infeasible (CEQA Guidelines §15126.6(a), (c), and (f)).

The following discussion identifies alternatives to the 2040 General Plan and evaluates the comparable merits of the alternatives. For reference, as described in Section 3.0 (Project Description), the objectives of the 2040 General Plan are as follows:

a. Provide a diverse and affordable housing stock attracting professionals, families, and seniors.

b. Establish a balanced and connected network of multiple transportation methods allowing safe and efficient movement by users of all ages, abilities, and modes.

c. Provide a business-friendly economy that encourages economic development, prosperity, and community enrichment while allowing the City to receive a reliable tax base.

d. Establish a community that fosters health and well-being, where citizens feel safe and connected to their community.

e. Establish a healthy community with access to fresh food, recreation opportunities, social engagement, clean water and air, and multi-modal transportation options.

f. Provide sufficient land designated for industrial uses that provide a variety of desirable and stable jobs.

g. Provide a walkable downtown containing shopping, dining, entertainment, offices, and residences surrounded by revitalized neighborhoods, connected to all parts of the community.

h. Preserve riparian corridors, parks, and open spaces and protect these areas from development for the public good.

i. Support emergency service professionals committed to public safety and prepared to adapt and serve the needs of a changing community.

6.1 Alternatives Considered but Eliminated from Consideration

Pursuant to §15126.6 of the CEQA Guidelines, the EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: failure to meet most of the basic project objectives, infeasibility, and inability to avoid significant environmental impacts. The following alternative was considered but eliminated from further consideration:

Off-Site Alternative

CEQA Guidelines §15126.6(f)(2) requires that an alternative location that would lessen or avoid significant impacts of a project be considered. Because the 2040 General Plan covers all land within the City limits and the City's sphere of influence, an alternative site is not feasible and was rejected from further consideration.

6.2 Description of Alternatives

In addition to the proposed 2040 General Plan, the following alternatives were considered:

6.2.1 Alternative 1. No Project Alternative (Existing General Plan)

CEQA Guidelines §15126.6(e) requires that a specific alternative of "no project" be evaluated in an EIR in order to allow decision makers to compare the impacts of approving a proposed project with the impacts of not approving that project.

CEQA Guidelines §15126.6(e)(3) states that when a project is the revision of an existing land use plan, regulatory plan, or policy, the "no project" alternative is the continuation of the existing plan, policy, or operation into the future. Under Alternative 1, the proposed 2040 General Plan update would not be adopted, and future development would be guided by the existing goals, policies, implementation programs, and land use designations in the 1999 General Plan, as amended. No changes to allowable residential densities or floor area ratios (FARs) for commercial and industrial uses would be made.

6.2.2 Alternative 2. Residential-Focused Alternative

Under Alternative 2, the Residential-Focused Alternative, the proposed modifications to the General Plan goals, policies, and implementation actions, and changes in residential land use designations would occur as proposed. Allowable residential densities would increase as proposed, but no increases in FARs for commercial and industrial development would occur, and no increases in the amount of land available for commercial and industrial development would occur.

6.2.3 Alternative 3. Commercial/Industrial-Intensive Alternative

Under Alternative 3, the Commercial/Industrial-Intensive Alternative, the proposed modifications to the General Plan goals, policies, and implementation actions, and changes in land use designations would occur as proposed. Allowable residential densities would increase as proposed. The increase in FARs for commercial and industrial uses would be 25 percent greater than proposed in the 2040 General Plan

as follows: 2.5 FAR for Commercial; 1.25 FAR for Industrial, Industrial Light, and Mixed-Use Commercial; and 3.75 for Village Mixed-Use.

The proposed 2040 General Plan forecasts maximum build-out of the City, which is the point at which the City is fully developed with the land uses identified in the Land Use Element. Because there are many factors that influence the density and timing of development (e.g., cost of installing utility infrastructure; cost of completing roadway improvements, regulatory controls, economic conditions, property owner decisions, and other market forces), it is highly unlikely that full build-out will occur by 2040; therefore, the General Plan also forecasts what is likely to occur during the 20-year planning period.

Because development is largely market driven, it is not expected that growth in the City will vary significantly over the 20-year planning period under any of the alternatives. Therefore, to allow a comprehensible comparison of the alternatives, the growth projections in **Table 6.0-1** reflect conditions at full build-out of the General Plan. **Table 6.0-1** provides projected population growth, nonresidential growth, and jobs growth for the 2040 General Plan and each of the alternatives. A detailed comparative analysis of the alternatives is included in Section 6.3 below.

Table 6.0-1
Comparison of Alternatives at Full Build-Out of the General Plan

Category	Proposed Project (2040 General Plan)	Alternative 1 No Project (Current General Plan)	Alternative 2 Residential-Focused	Alternative 3 Commercial/ Industrial Intensive
Population	52,056	32,619	52,056	52,056
Housing Units	20,906	13,100	20,906	20,906
Single-Family Residential	8,815	6,562	8,815	8,815
Multi-Family Residential	1,055	745	1,055	1,055
Mixed-Use Residential	11,036	5,793	11,036	11,036
Non-Residential (Square Feet)	40,998,478	18,328,242	18,328,242	51,651,012
Commercial	6,007,280	595,197	595,197	7,583,469
Industrial	22,234,353	7,830,963	7,830,963	28,075,387
Mixed-Use Commercial	12,756,845	9,902,082	9,902,082	15,992,157
Jobs	75,918	36,490	36,490	95,564
Commercial	14,652	1,448	1,448	18,496
Industrial	29,646	10,441	10,441	37,434
Mixed-Use Commercial	31,620	24,601	24,601	39,634

6.3 Comparative Analysis of Alternatives

This section compares the proposed 2040 General Plan to the alternatives identified below.

6.3.1 Alternative 1. No Project Alternative (Existing General Plan)

Potential impacts associated with Alternative 1 are described below.

Under Alternative 1, there would be fewer housing units, less population growth, less square footage of commercial and industrial development, and fewer jobs than under the proposed 2040 General Plan.

Aesthetics. Potential aesthetic impacts under the No Project alternative would be less than what would occur under the 2040 General Plan because there would be less potential for obstruction of scenic views and introduction of additional sources of light and glare. Impacts would remain ***less than significant***.

Agriculture and Forestry Resources. Implementation of the No Project Alternative would allow for less development than under the 2040 General Plan because there would be no increase in FARs for commercial and industrial uses and no increase in densities for residential uses. Neither the No Project Alternative nor the 2040 General Plan would result in the conversion of agricultural lands. Development under the No Project Alternative would likely have less of an impact on forestry resources (as defined in Public Resources Code (PRC) §12220(g)), depending on the specific project design and development footprint.

Potential impacts on forestry resources under the No Project Alternative would be less than those under the 2040 General Plan. Impacts would remain ***less than significant.***

Air Quality. The No Project Alternative would result in less overall development and associated population growth and job creation than the 2040 General Plan. Under the existing General Plan, the current development pattern would not include the same opportunities for mixed-use development as proposed in the 2040 General Plan. Combined with a reduction in opportunities for local job creation, it is anticipated that vehicle miles traveled (VMT) and associated mobile source emissions would be greater with the No Project Alternative than with the 2040 General Plan.

Further, the 2040 General Plan includes new policies and implementation actions that are not included in the existing General Plan that support alternative transportation modes (i.e., transit, pedestrian, and bicycle facilities), and strategies that ensure good air quality, reduce greenhouse gas emissions, and reduce VMT.

In terms of operational emissions, implementation of the existing General Plan would result in less commercial and industrial development than the proposed 2040 General Plan and emissions would be less under the No Project Alternative. Construction emissions and potential exposure of sensitive receptors to pollutant concentrations would also be less under the current General Plan.

Development is subject to the Northern Sacramento Valley Planning Area (NSVPA) Air Quality Attainment Plan (AQAP), which focuses on achieving and maintaining the State ambient air quality standard (AAQS) for ozone. The AQAP includes ROG and NO_X emission projections for area, mobile, and stationary sources. A project's consistency with the AQAP is determined based on projections in the AQAP. The Shasta County Air Quality

Management District (SCAQMD) has adopted rules to ensure that new and modified stationary sources of air pollution do not interfere with the attainment or maintenance of AAQS. These rules are intended, in part, to ensure that projects do not conflict with or obstruct implementation of the NSVPA AQAP.

As is the case with the proposed 2040 General Plan, it is possible that future projects may exceed adopted air quality thresholds or conflict with the NSVPA AQAP. At the programmatic level, it is not possible to estimate project-specific emissions or identify quantifiable mitigation measures that would reduce project-specific emissions. Therefore, impacts would remain ***significant and unavoidable.***

Biological Resources. Implementation of the No Project Alternative would involve less overall development than would occur under the 2040 General Plan and would likely have less of an impact on biological resources, depending on the specific project design and development footprint.

As is the case with the 2040 General Plan, development may result in the direct, indirect, and cumulative loss of special-status species and their habitats. Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level. Therefore, impacts would remain ***significant and unavoidable.***

Cultural and Tribal Cultural Resources. Implementation of the No Project Alternative would involve less development because there would be no increase in FARs for commercial and industrial uses and no increase in densities for residential uses, and the potential to encounter cultural and tribal cultural resources would be less than with the 2040 General Plan. Impacts would remain ***less than significant.***

Greenhouse Gas Emissions, Climate Change, and Energy. Greenhouse Gas Emissions (GHGs) and energy demands associated with the No Project Alternative would be less than under the 2040 General Plan due to decreased residential and non-residential development. Mobile source emissions, however, are expected to be higher under the No Project Alternative because the new policies and implementation actions that support alternative transportation modes, address climate change impacts, and promote mixed-use development would not be implemented.

In terms of operational GHG emissions, implementation of the existing General Plan would result in less commercial and industrial development than the proposed 2040 General Plan because there would be no increase in FARs. Construction-related emissions are also projected to be less under the existing General Plan.

Overall, the No Project Alternative would have reduced impacts related to GHG emissions, climate change, and energy; mobile source emissions may be higher due to increased VMT.

As is the case with the proposed 2040 General Plan, it is not possible to identify quantifiable mitigation measures at the programmatic level that would effectively reduce project-specific GHG emissions. Therefore, impacts would remain ***significant and unavoidable.***

Geology and Soils. The No Project Alternative is expected to result in less earth disturbance than the 2040 General Plan, and would have a lower potential for impacts associated with soil erosion, loss of topsoil, landslides, and other geologic risks that may be exacerbated by earth-disturbing activities. All projects in the City are subject to compliance

with the same State and local regulations pertaining to seismic design, erosion control, unstable soils, and grading requirements. Impacts would remain ***less than significant.***

Hazards and Hazardous Materials. The No Project Alternative would result in less commercial and industrial development; therefore, it is anticipated that there would be smaller amounts of hazardous materials transported, stored, and used within the City, thereby reducing the potential for the release of hazardous materials; however, this would depend on operational characteristics of future projects. Future projects would be reviewed on a case-by-case basis to determine any required project-specific mitigation. Impacts would remain ***less than significant.***

Hydrology and Water Quality. The No Project Alternative would result in less residential, commercial, and industrial development; therefore, it is anticipated that there would be a reduced potential overall for impacts associated with erosion, siltation, increased runoff, and/or discharges that could violate water quality standards or waste discharge requirements. Impacts would remain ***less than significant.***

Land Use and Planning. Neither the No Project Alternative nor the proposed 2040 General Plan would physically divide an established community.

Compliance with existing federal, State, and local regulations would reduce most of the potential environmental effects to a less-than-significant level; however, as is the case with the proposed 2040 General Plan, it is not possible to identify project-specific mitigation that would ensure compliance with plans, policies, and regulations that were adopted for the purpose of avoiding or mitigation environmental effects associated with air quality, biological resources, GHGs, and vehicle miles traveled (VMT). Impacts would remain ***significant and unavoidable.***

Mineral Resources. Neither the No Project Alternative nor the proposed 2040 General Plan would result in the loss of a known mineral resource. There would be ***no impact.***

Noise. The No Project Alternative would result in less residential, commercial, and industrial development and would have a lower overall potential for increases in ambient noise levels, depending on the operational characteristics of future projects. Future projects would be reviewed on a case-by-case basis to determine project-specific mitigation requirements. Impacts would remain ***less than significant.***

Population and Housing. The No Project Alternative would result in fewer residential dwelling units and a lower population as compared to the 2040 General Plan. Therefore, there is a lower potential for growth-inducing impacts. Impacts would remain ***less than significant.***

Public Services and Recreation. Because the No Project Alternative would result in lower population and employment growth, there would be a reduced demand for additional public services and recreational facilities. Impacts would remain ***less than significant.***

Transportation. The No Project Alternative would not include the same opportunities for mixed-use development as proposed in the 2040 General Plan. Combined with a reduction in opportunities for local job creation, it is anticipated that VMT and associated mobile source emissions would be greater with the No Project Alternative than with the 2040 General Plan. Further, the 2040 General Plan includes new policies and implementation actions that are not included in the existing General Plan that support alternative

transportation modes (i.e., transit, pedestrian, and bicycle facilities), and strategies that reduce VMT.

As stated in Section 4.17 (Transportation), implementation of the proposed 2040 General Plan would have significant and unavoidable impacts associated with VMT because it is not possible at this time to identify feasible quantitative project-specific mitigation measures that would reduce VMT. VMT under the No Project Alternative is anticipated to be slightly greater as compared to the 2040 General Plan; therefore, impacts of the No Project Alternative would remain ***significant and unavoidable***.

Utilities and Services Systems. Because the No Project Alternative would result in less residential and nonresidential development, there would be a reduced demand for new or expanded utility infrastructure.

Under the No Project Alternative, Mitigation Measure 4.18-1, which addresses water supply, would not be implemented; however, because growth is largely market-driven, it is expected that growth over the next 20 years will be the same under the No Project Alternative as it is under the proposed 2040 General Plan.

In dry and multiple-dry years when the City's water allocation is reduced, the City would implement its Water Shortage Contingency Plan (WSCP) to reduce the gap between supply and demand. Therefore, potential impacts associated with water supply in drought years would remain ***less than significant.***

Wildfire. The No Project Alternative would result in less overall development than what would occur under the proposed 2040 General Plan; therefore, fewer people would be exposed to wildfires in the City, and there would be a lower potential for people and structures to be exposed to post-fire effects. Impacts would remain ***less than significant.***

6.3.2 ALTERNATIVE 2. RESIDENTIAL-FOCUSED

Potential impacts associated with Alternative 2 are described below.

Under Alternative 2 the number of housing units and population growth would be the same as what would occur under the proposed 2040 General Plan. There would be less square footage of commercial and industrial development, and fewer jobs than under the proposed 2040 General Plan.

Aesthetics. Potential aesthetic impacts for Alternative 2 would be less than what would occur under the 2040 General Plan because there would be less potential for obstruction of scenic views and introduction of additional sources of light and glare from commercial and industrial developments. Potential impacts would remain ***less than significant.***

Agriculture and Forestry Resources. Alternative 2 would allow for less development than under the 2040 General Plan because there would be no increase in FARs for commercial and industrial uses.

Neither the No Project Alternative nor the 2040 General Plan would result in the conversion of agricultural lands. Development under Alternative 2 would likely have less of an impact on forestry resources (as defined in PRC §12220(g)), depending on the specific project design and development footprint. Potential impacts on forestry resources under Alternative 2 would be less than for the 2040 General Plan. Impacts would remain ***less than significant.***

Air Quality. Alternative 2 would result in less commercial and industrial development and associated job creation than the 2040 General Plan.

There would be reduced emissions from commercial and industrial sources, and a decrease in mobile source emissions from employee vehicle trips. Construction emissions and potential exposure of sensitive receptors to pollutant concentrations would also be less under the current General Plan. A reduction in potential local job creation could increase residential VMT due to residents travelling outside of the City for work. Overall, emissions resulting from implementation of Alternative 2 are expected to be less than the proposed 2040 General Plan.

As is the case with the proposed 2040 General Plan, it is possible that future projects may exceed adopted air quality thresholds or conflict with the NSVPA AQAP. At the programmatic level, it is not possible to estimate project-specific emissions or identify quantifiable mitigation measures that would reduce project-specific emissions. Therefore, impacts would remain ***significant and unavoidable.***

Biological Resources. Implementation of Alternative 2 would allow less overall commercial and industrial development and would likely have less of an impact on biological resources, depending on the specific project design and development footprint.

As is the case with the 2040 General Plan, development may result in the direct, indirect, and cumulative loss of special-status species and their habitats. Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level. Therefore, impacts would remain ***significant and unavoidable.***

Cultural and Tribal Cultural Resources. Implementation of Alternative 2 would involve less development because there would be no increase in FARs for commercial and industrial uses, and the potential to encounter cultural and tribal cultural resources would be less than with the 2040 General Plan. Impacts would remain ***less than significant.***

Greenhouse Gas Emissions, Climate Change, and Energy. GHG emissions and energy demands associated with Alternative 2 are expected to be less than under the 2040 General Plan because there would be less commercial and industrial development. There would be reduced GHG emissions from commercial and industrial sources, and a decrease in mobile source emissions from employee vehicle trips. A reduction in potential local job creation could increase residential VMT due to residents travelling outside of the City for work. Overall, emissions resulting from implementation of Alternative 2 are expected to be less than the proposed 2040 General Plan.

As is the case with the proposed 2040 General Plan, it is not possible to identify quantifiable mitigation measures at the programmatic level that would effectively reduce project-specific GHG emissions. Therefore, impacts would remain ***significant and unavoidable.***

Geology and Soils. Alternative 2 is expected to result in less earth disturbance than the 2040 General Plan, and would have a lower potential for impacts associated with soil erosion, loss of topsoil, landslides, and other geologic risks that may be exacerbated by earth-disturbing activities. Impacts would remain ***less than significant.***

Hazards and Hazardous Materials. Alternative 2 would result in less commercial and industrial development; therefore, it is anticipated that there would be smaller amounts of

hazardous materials transported, stored, and used in the City, thereby reducing the potential for the release of hazardous materials. Impacts would remain ***less than significant.***

Hydrology and Water Quality. Alternative 2 would result in less commercial and industrial development than the proposed 2040 General Plan; therefore, it is anticipated that there would be a reduced potential overall for impacts associated with erosion, siltation, increased runoff, and/or discharges that could violate water quality standards or waste discharge requirements. Impacts would remain ***less than significant.***

Land Use and Planning. Neither Alternative 2 nor the proposed 2040 General Plan would physically divide an established community.

Compliance with existing federal, State, and local regulations would reduce most of the potential environmental effects to a less-than-significant level; however, as is the case with the proposed 2040 General Plan, it is not possible to identify project-specific mitigation that would ensure compliance with plans, policies, and regulations that were adopted for the purpose of avoiding or mitigation environmental effects associated with air quality, biological resources, GHGs, and VMT. Impacts would remain ***significant and unavoidable.***

Mineral Resources. Neither Alternative 2 nor the proposed 2040 General Plan would result in the loss of a known mineral resource. There would be ***no impact.***

Noise. Alternative 2 would result in less commercial and industrial development than the proposed 2040 General Plan and would have a lower overall potential for increases in ambient noise levels, depending on the operational characteristics of a proposed development. Future projects would be reviewed on a case-by-case basis to determine project-specific mitigation requirements. Impacts would remain ***less than significant.***

Population and Housing. Alternative 2 would result in the same number of residential dwelling units and the same population as what would occur under the proposed 2040 General Plan. Impacts would remain ***less than significant.***

Public Services and Recreation. Alternative 2 would result in the same population growth but reduced commercial and industrial development as compared to the 2040 General Plan. Therefore, the demand for additional public services and recreational facilities under Alternative 2 would be less than demands under the 2040 General Plan. Impacts would remain ***less than significant.***

Transportation. Alternative 2 would result in the same number of residential dwelling units and the same population as what would occur under the proposed 2040 General Plan. There would be reduced VMT from commercial and industrial sources related to employee vehicle trips. A reduction in potential local job creation could potentially increase residential VMT due to residents travelling outside of the City for work. Overall, transportation impacts under Alternative 2 are expected to be less than what is expected under the proposed 2040 General Plan.

As stated in Section 4.17 (Transportation), implementation of the proposed 2040 General Plan would have significant and unavoidable impacts associated with VMT because it is not possible at this time to identify feasible quantitative project-specific mitigation measures that would reduce VMT. VMT under Alternative 2 is anticipated to be slightly less as

compared to the 2040 General Plan, but would still exceed the referenced VMT threshold; therefore, impacts of Alternative 2 remain ***significant and unavoidable***.

Utilities and Services Systems. Alternative 2 would result in the same number of dwelling units and population as the proposed 2040 General Plan, but less nonresidential development, and the need for utility infrastructure would be less than under the proposed 2040 General Plan. In dry and multiple-dry years when the City's water allocation is reduced, the City would implement its WSCP to reduce the gap between supply and demand. With implementation of Mitigation Measure 4.18-1 as described in Section 4.18 of this Draft PEIR, potential impacts associated with water supply in drought years would remain ***less than significant.***

Wildfire. Alternative 2 would result in the same amount of residential development, and the threat of wildfire and post-fire effects would be similar than for the 2040 General Plan. As is the case with the 2040 General Plan, compliance with existing California Fire Code (CFC), California Building Code (CBC), California Residential Code (CRC), and defensible space requirements ensures that impacts would remain ***less than significant.***

6.3.3 ALTERNATIVE 3. COMMERCIAL/INDUSTRIAL-INTENSIVE

Potential impacts associated with Alternative 3 are described below.

Under Alternative 3, the number of housing units and population growth would be the same as what would occur under the proposed 2040 General Plan. The amount of commercial and industrial development and job growth would be greater than what could occur under the proposed 2040 General Plan.

Aesthetics. Potential impacts associated with aesthetic impacts for Alternative 3 would be greater than what would occur under the 2040 General Plan because FARs for commercial and industrial uses would increase, thereby having more potential for structures to obstruct scenic views and for commercial and industrial developments to introduce additional sources of light and glare.

Development under Alternative 3 would be subject to compliance with the City's design and development standards that are included in Chapters 17.10 through 17.60 and Chapter 17.84 of the Shasta Lake Municipal Code (SLMC), as well as the design criteria included in SLMC Chapter 15.08 (Grading Erosion Control, and Hillside Development). Impacts would remain ***less than significant***.

Agriculture and Forestry Resources. Alternative 3 would allow more commercial and industrial development than under the 2040 General Plan because FARs would increase. Neither Alternative 3 nor the 2040 General Plan would result in the conversion of agricultural lands. Development of vacant land under the Alternative 3 is expected to have a greater impact on forestry resources (as defined in PRC §12220(g)), than for the 2040 General Plan, depending on the specific project design and development footprint.

Development projects in the City are subject to requirements of SLMC Chapter 12.36 (Tree Conservation), which promotes the conservation of a healthy tree population. Mitigation for removal of trees is required (e.g., tree replacement, conservation easements, and/or other measures found to be consistent with the intent of the Tree Conservation Code). As is the case with the 2040 General Plan, future projects would be reviewed on a case-by-case

basis, and project-specific mitigation measures would be implemented as necessary. Impacts would remain ***less than significant.***

Air Quality. Alternative 3 would result in an increased potential for emissions from commercial and industrial sources, and an increase in mobile source emissions from employee vehicle trips. Increased potential for job creation in the City could reduce residential VMT due to residents travelling within the City for work; however, under Alternative 3 job growth would significantly exceed population growth, and people residing outside of the City would be travelling to the City for work.

All future development in the City would be subject to implementation of Standard Mitigation Measures (SMMs) as well as Shasta County Air Quality Management District (SCAQMD) rules, and State requirements. As is the case with the proposed 2040 General Plan, it is possible that future projects may exceed adopted air quality thresholds or conflict with the NSVPA AQAP. At the programmatic level, it is not possible to estimate project-specific emissions or identify quantifiable mitigation measures that would reduce project-specific emissions. Therefore, impacts would remain ***significant and unavoidable.***

Biological Resources. Implementation of Alternative 3 would allow more commercial and industrial development and could have a greater impact on biological resources, depending on the specific project design and development footprint. As is the case with the 2040 General Plan, development may result in the direct, indirect, and cumulative loss of special-status species and their habitats. Project-specific mitigation would be implemented as necessary to minimize impacts, but it is possible that in some cases, mitigation measures would not effectively reduce impacts to a less-than-significant level. Therefore, impacts would remain ***significant and unavoidable.***

Cultural and Tribal Cultural Resources. Implementation of Alternative 3 would involve more development than under the 2040 General Plan, and the potential to encounter cultural and tribal cultural resources would be greater than with the 2040 General Plan. Given the existing legal protections afforded to cultural and tribal cultural resources, impacts would remain ***less than significant***.

Greenhouse Gas Emissions, Climate Change, and Energy. Greenhouse gas emissions (GHGs) and energy demands associated with Alternative 3 are expected to be greater than what would occur under the 2040 General Plan due to the increase in FARs for commercial and industrial development, depending on the operational characteristics of future projects. There would also be an increase in mobile source emissions from employee vehicle trips.

As is the case with the proposed 2040 General Plan, it is not possible to identify quantifiable mitigation measures at the programmatic level that would effectively reduce project-specific GHG emissions. Therefore, impacts would remain ***significant and unavoidable.***

Geology and Soils. Implementation of Alternative 3 would result in more earth disturbance than the 2040 General Plan, and would have a higher potential for impacts associated with soil erosion, loss of topsoil, landslides, and other geologic risks that may be exacerbated by earth-disturbing activities. All projects in the City, however, are subject to compliance with the same State and local regulations pertaining to seismic design, erosion control, unstable soils, and grading requirements. Impacts would remain ***less than significant.***

Hazards and Hazardous Materials. Alternative 3 would result in more commercial and industrial development; therefore, it is anticipated that there would be an increased

potential for hazardous materials to be transported, stored, and used in the City. Although Alternative 3 could have a greater potential to result in impacts associated with hazards and hazardous materials, all development projects in the City are required to comply with applicable federal, State, and local regulations pertaining to hazards and hazardous materials. As is the case with the 2040 General Plan, future projects would be reviewed on a case-by-case basis, and project-specific mitigation measures would be implemented as necessary. Impacts would remain ***less than significant.***

Hydrology and Water Quality. Alternative 3 could potentially result in more commercial and industrial development than the proposed 2040 General Plan; therefore, it is anticipated that there would be a greater potential for impacts associated with erosion, siltation, increased runoff, and/or discharges that could violate water quality standards or waste discharge requirements. However, all development projects in the City are required to comply with applicable federal, State, and local regulations adopted to ensure compliance with water quality standards. As is the case with the 2040 General Plan, future projects would be reviewed on a case-by-case basis, and project-specific mitigation measures would be implemented as necessary. Impacts would remain ***less than significant.***

Land Use and Planning. Neither Alternative 3 nor the proposed 2040 General Plan would physically divide an established community.

Compliance with existing federal, State, and local regulations would reduce most of the potential environmental effects to a less-than-significant level; however, as is the case with the proposed 2040 General Plan, it is not possible to identify project-specific mitigation that would ensure compliance with plans, policies, and regulations that were adopted for the purpose of avoiding or mitigation environmental effects associated with air quality, biological resources, GHGs, and VMT. Impacts would remain ***significant and unavoidable.***

Mineral Resources. Neither Alternative 3 nor the proposed 2040 General Plan would result in the loss of a known mineral resource. There would be ***no impact.***

Noise. Alternative 3 would result in more commercial and industrial development than the proposed 2040 General Plan and would have a higher potential for increases in ambient noise levels, depending on the increase in traffic associated with individual projects and the operational characteristics of future development. As is the case with the 2040 General Plan, future projects would be reviewed on a case-by-case basis, and project-specific mitigation measures would be implemented as necessary. Impacts would remain ***less than significant.***

Population and Housing. Alternative 3 would result in the same number of residential dwelling units and the same population growth as the proposed 2040 General Plan. Impacts would remain ***less than significant.***

Public Services and Recreation. Alternative 3 would result in the same population growth but increased commercial and industrial development as compared to the proposed 2040 General Plan. Therefore, there would be an increased demand for additional public services. The need for new recreational facilities would be the same as under the 2040 General Plan. Future projects would be reviewed on a case-by-case basis to determine any required project-specific mitigation. Impacts would remain ***less than significant.***

Transportation. Under Alternative 3, FARs for nonresidential uses would increase and there would be a corresponding increase in vehicular traffic and VMT from commercial and

industrial sources. Local job creation could decrease residential VMT due to residents travelling within the City for work; however, under Alternative 3 job growth would significantly exceed population growth, and people residing outside of the City would be travelling to the City for work.

As stated in Section 4.17 (Transportation), implementation of the proposed 2040 General Plan would have significant and unavoidable impacts associated with VMT because it is not possible at this time to identify feasible quantitative project-specific mitigation measures. Alternative 3 would result in greater transportation impacts that what is expected under the proposed 2040 General Plan. Therefore, impacts of Alternative 3 remain ***significant and unavoidable***.

Utilities and Services Systems. Alternative 3 would result in the same number of dwelling units and population growth as the proposed 2040 General Plan, but more nonresidential development. It is expected that the need for utility infrastructure would be greater than under the proposed 2040 General Plan.

Because population growth under Alternative 3 would be the same as under the 2040 General Plan, and there would be increased commercial and industrial development, the demand for water supply would be greater. In dry and multiple-dry years when the City's water allocation is reduced, the City would implement its WSCP to reduce the gap between supply and demand. With implementation of Mitigation Measure 4.18-1 as described in Section 4.18 of this Draft PEIR, potential impacts associated with water supply in drought years would remain ***less than significant.***

Wildfire. Alternative 3 would result in the same amount of residential development and more commercial and industrial development as the proposed 2040 General Plan; therefore, more people would be exposed to wildfires in the City, and there would be a greater potential for people and structures to be exposed to post-fire effects.

As is the case with the 2040 General Plan, compliance with existing California Fire Code (CFC), California Building Code (CBC), California Residential Code (CRC), and defensible space requirements ensures that impacts would remain ***less than significant.***

Table 6.0-2 shows a comparison between the proposed 2040 General Plan and the alternatives relative to resource impact area and identifies whether the Alternative has less impact, a similar impact, or a greater impact than the proposed 2040 General Plan.

Table 6.0-2
Comparison of Impacts of Proposed 2040 General Plan Relative to the Alternatives

Impact Area	2040 General Plan (Proposed Project)	Alternative 1 No Project (Existing General Plan)	Alternative 2 Residential-Focused	Alternative 3 Commercial/ Industrial Intensive
Aesthetics	LTS	Less/LTS	Less/LTS	Greater/LTS
Agriculture and Forestry Resource	LTS	Less/LTS	Less/LTS	Greater/LTS
Air Quality	SU	Less/SU	Less/SU	Greater/SU
Biological Resources	SU	Less/SU	Less/SU	Greater/SU
Cultural Resources	LTS	Less/LTS	Less/LTS	Greater/LTS
Tribal Cultural Resources	LTS	Less/LTS	Less/LTS	Greater/LTS
Greenhouse Gas Emissions, Energy, and Climate Change	SU	Less/SU	Similar/SU	Greater/SU
Geology and Soils	LTS	Less/LTS	Less/LTS	Greater/LTS
Hazards and Hazardous Materials	LTS	Less/LTS	Less/LTS	Greater/LTS
Hydrology and Water Quality	LTS	Less/LTS	Less/LTS	Greater/LTS
Land Use and Planning	SU	Similar/SU	Similar/SU	Similar/SU
Mineral Resources	NI	Similar/NI	Similar/NI	Similar/NI
Noise	LTS	Less/LTS	Less/LTS	Greater/LTS
Population and Housing	LTS	Less/LTS	Similar/LTS	Similar/LTS
Public Services/ Recreation	LTS	Less/LTS	Less/LTS	Greater/LTS
Transportation	SU (VMT)	Greater/SU (VMT)	Less/SU (VMT)	Greater/SU (VMT)
Utilities and Service Systems	LTS	Less/LTS (Water Supply)	Less/LTS (Water Supply)	Greater/LTS (Water Supply)
Wildfire	LTS	Less/LTS	Similar/LTS	Greater/LTS
NI = No Impact	LTS = Less Than Significant		SU = Significant and Unavoidable	

6.4 Environmentally Superior Alternative

As shown in **Table 6.0-2** and discussed below, Alternative 1, the No Project Alternative, is the environmentally superior alternative because it reduces potential impacts to the greatest degree; however, it does not change any of the significance determinations. As required by §15126.6(e)(2) of the CEQA Guidelines, Alternative 2, the Residential-Focused Alternative, is identified as the environmentally superior alternative among the other alternatives; as is the case with the No Project Alternative, Alternative 2 does not change any of the significance determinations.

Alternative 1. No Project Alternative

Based on the above analysis, Alternative 1 (No Project Alternative) is the environmentally superior alternative because it reduces potential impacts in most of the resource categories; however, this alternative does not change the impact determinations, and impacts associated with air quality, biological resources, GHGs, land use and planning, and VMT would remain significant and unavoidable. The No Project Alternative would not include the same opportunities for mixed-use development as proposed in the 2040 General Plan, and would result in less potential job creation.

Further, the new policies that support alternative transportation modes (i.e., transit, pedestrian, and bicycle facilities), and strategies that ensure good air quality, reduce greenhouse gas emissions, and reduce VMT would not be implemented. The No Project Alternative does not support the following objectives of the 2040 General Plan:

- Provide a diverse and affordable housing stock attracting professionals, families, and seniors.
- Establish a balanced and connected network of multiple transportation methods allowing safe and efficient movement by users of all ages, abilities, and modes.
- Provide a business-friendly economy that encourages economic development, prosperity, and community enrichment while allowing the City to receive a reliable tax base.
- Establish a community that fosters health and well-being, where citizens feel safe and connected to their community.
- Establish a healthy community with access to fresh food, recreation opportunities, social engagement, clean water and air, and multi-modal transportation options.
- Provide sufficient land designated for industrial uses that provide a variety of desirable and stable jobs.
- Provide a walkable downtown containing shopping, dining, entertainment, offices, and residences surrounded by revitalized neighborhoods, connected to all parts of the community.

Alternative 2. Residential-Focused

Excluding the No Project Alternative, Alternative 2 (Residential Focused) is the environmentally superior alternative because it also reduces the severity of potential impacts in several resource categories; however, this alternative does not change the significance determinations. Further, Alternative 2 does not support the following objectives of the 2040 General Plan:

- Provide a business-friendly economy that encourages economic development, prosperity, and community enrichment while allowing the City to receive a reliable tax base.
- Provide sufficient land designated for industrial uses that provide a variety of desirable and stable jobs.

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SECTION

7.0

Other CEQA Considerations

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7.0 Other CEQA Considerations

Pursuant to §15126 of the CEQA Guidelines, this Section addresses potential growth-inducing impacts, significant environmental impacts that cannot be avoided, and significant irreversible environmental changes that could occur due to implementation of the 2040 General Plan.

7.1 Growth-Inducing Impacts

CEQA Guidelines §15126.2(e) requires that an EIR address potential direct and indirect growth-inducing impacts of a project. A project may induce growth directly by constructing new housing units, or indirectly by removing obstacles to development. For example, if a project was required to install off-site utilities and/or access roads, it may make development of properties in the area more economical. An increase in local job opportunities may foster the need for additional housing. In the case of a general plan or zoning code amendment, growth could be induced by removing regulatory constraints, such as development/design standards.

Population and housing projections that are anticipated to occur under the proposed 2040 General Plan are shown in **Table 7.1-1.** Projections for commercial and industrial development and anticipated job growth are shown in **Table 7.1-2.**

Table 7.1-1
Residential Growth Projections (Population and Housing)

Housing Type	Existing Units	Additional Units at Buildout	Total Number of Units at Buildout	20-Year Projections		Annual Projections	
				Unit Growth	Population Growth	Unit Growth	Population Growth
Single-Family	3,645	8,815	12,460	542	1,349	27	67
Multi-Family	542	1,055	1,597	142	354	7	18
Mixed-Use	38	11,036	11,074	152	379	8	19
Total	**4,225**	**20,906**	**25,131**	**836**	**2,082**	**42**	**104**

Source: Dynamic Planning + Science, Shasta Lake 2040 General Plan Projections.

Table 7.1-2
Commercial, Industrial, and Mixed-Use Commercial Growth Projections (Square Footage and Jobs)

Category	Existing Square Footage	Additional SF at Buildout	Total SF at Buildout	20-Year Projections		Annual Projections	
				SF Growth	Job Growth	SF Growth	Job Growth
Commercial	316,096	6,007,280	6,323,376	60,073	147	3,004	7
Industrial	1,122,544	20,499,867	21,622,411	184,499	246	9,225	12
Light Industrial	7,240	1,734,486	1,741,726	20,814	28	1,041	1
Mixed-Use	8,671	12,196,853	12,205,524	109,772	272	5,489	14
Village Mixed-Use	228,948	559,992	788,940	5,600	13	280	1
Total	**1,683,499**	**40,998,478**	**42,681,977**	**380,758**	**706**	**19,039**	**35**

Source: Dynamic Planning + Science, Shasta Lake 2040 General Plan Projections.

Growth inducement is not considered an environmental effect; however, unplanned increases in population could tax existing public services facilities, utility infrastructure systems, and other facilities, and require the construction of new or expanded facilities.

Sections 4.15 (Public Services), 4.16 (Recreation), and Section 4.17 (Transportation) of this PEIR address future improvements that would be needed in order to accommodate growth under the 2040 General Plan. Future development will be reviewed on a case-by-case basis to determine the need for new or expanded public facilities and/or infrastructure and to ensure that such improvements are completed in accordance with the goals, policies, and implementation actions identified in the 2040 General Plan; mitigation measures would be implemented as necessary to avoid/minimize potential effects on the environment.

7.2 Significant and Unavoidable Impacts

CEQA Guidelines §15126.2(c) requires identification of significant environmental effects that cannot be avoided if a project is implemented, including impacts that cannot be reduced to a level of insignificance.

Section 4.0 (Environmental Impact Analysis) of this Draft PEIR identifies significance thresholds for each resource category and identifies whether implementation of the 2040 General Plan would result in significant adverse impacts. Compliance with existing federal, State, and local regulations, and compliance with the policies and implementation actions included in the 2040 General Plan would reduce most of the potential environmental effects to a less-than-significant level; however, due to the programmatic nature of this Draft PEIR, it is not possible to identify feasible mitigation measures to reduce the following impacts to a less-than-significant level, and these impacts are considered significant and unavoidable.

Impact 4.3-1: Implementation of the 2040 General Plan could conflict with or obstruct implementation of the applicable air quality plan (Northern Sacramento Valley Triennial Air Quality Attainment Plan).

Impact 4.3-2: Implementation of the 2040 General Plan could result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.

Impact 4.4-1: Implementation of the 2040 General Plan could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

Impact 4.7-3: Implementation of the 2040 General Plan could generate greenhouse gas emissions, directly and indirectly, resulting in a significant impact on the environment.

Impact 4.7-4: Implementation of the 2040 General Plan could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.

Impact 4.11-2 Implementation of the 2040 General Plan could result in an environmental impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Impact 4.17-2: Implementation of the 2040 General Plan could conflict with criteria for analyzing transportation impacts based on vehicle miles traveled (VMT) pursuant to CEQA Guidelines §15064.3(b).

As stated in §15093 of the CEQA Guidelines, CEQA requires the lead agency to balance the economic, legal, social, technological, or other benefits of a project, including region-wide or statewide environmental benefits, against its unavoidable adverse environmental effects when determining whether to approve a project. If the specific benefits outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable." For example, increased housing opportunities, economic growth, increased tax revenues, and/or the provision of needed public facilities may be reasons to support a project despite its adverse environmental effects.

The decision-making body of a lead agency may approve a project even though the project will cause a significant effect on the environment if the agency first adopts a Statement of Overriding Considerations pursuant to §15093 of the CEQA Guidelines. The Statement of Overriding Consideration must document the specific reasons to support the lead agency's action, based on the Final EIR and/or other information in the record.

7.3 Significant Irreversible Environmental Changes

CEQA Guidelines §15126.2(d) requires that environmental impact reports that involve the adoption, amendment, or enactment of plans, policies, or ordinances of a public agency address significant effects on the environment that would be irreversible if a project is implemented; §15126.2(d) states:

> *"Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."*

Development that would occur under the 2040 General Plan would result in the irreversible commitment of nonrenewable resources, which would limit the availability of these resources for future generations.

Construction activities would require consumption of resources that are not renewable or that may renew at such a slow pace as to be considered nonrenewable. These nonrenewable resources may include aggregate (e.g., sand, gravel, and stone); metals (e.g., copper and steel), water, and fossil fuels (e.g., gasoline and oil). Operational commitments include the use of water for residential and non-residential uses, and consumption of fossil fuels for energy and transportation.

Development also would result in the irreversible conversion of undeveloped land to urban/suburban use, resulting in loss of habitat, visual impacts, increased air emissions, increased energy use, generation of greenhouse gas emissions (GHGs), and increased noise levels. Development under the 2040 General Plan would result in the transport, use, and disposal of hazardous materials during construction and operation of future projects, and there is a potential for environmental accidents to occur.

All future projects must comply with mandatory California Energy Code and California Green Building Standards Code requirements related to energy efficiency, water efficiency/conservation,

material conservation, resource efficiency, and environmental quality, which reduces the potential for significant irreversible environmental changes related to nonrenewable resources.

In addition, as discussed in Section 4.7 (Greenhouse Gas Emissions, Climate Change, and Energy), Senate Bill (SB) 100 (2018) amended the State's Renewable Portfolio Standard and established a mandatory renewable energy target of 60 percent by 2030. Interim targets call for 44 percent renewable energy by 2024 and 52 percent renewable energy by 2027. SB 100 (2018) also established a State policy that all retail sales of electricity in the State be 100 percent carbon-free by 2045.

As documented in Section 4.9 (Hazards and Hazardous Materials), there are stringent federal, State, and local regulations and requirements that apply to uses that involve hazardous materials, including, but not limited to, those identified in Section 4.9.3 (regulatory framework for hazards and hazardous materials). Compliance with these regulations avoids/minimizes the potential for irreversible environmental damage due to accidents.

Potential environmental impacts associated with implementation of the 2040 General Plan are addressed under each resource topic identified in Section 4.0 (Environmental Impact Analysis) of this Draft PEIR. Future development under the 2040 General Plan would be reviewed on a case-by-case basis to identify project-specific features that could result in significant irreversible environmental changes. Mitigation measures would be implemented as necessary to minimize potential impacts.

SECTION

8.0

Preparers and Agencies Consulted

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8.0 Preparers and Agencies Consulted

This section identifies individuals involved in preparation of the Draft PEIR, and agencies and individuals who were requested to provide comments during preparation of the Draft PEIR.

8.1 Preparers

CITY OF SHASTA LAKE STAFF

Jessaca Lugo ..... City Manager
Jim Hamilton ..... Annuitant Planner
Peter Bird, AICP ..... Senior Planner
James Takehara ..... Electric Utility Director
Tony Thomasy ..... Water Utility Specialist
Jeff Tedder, P.E. ..... Former City Engineer
Will Bond ..... City Engineer/Public Works Director
Shelby Millingar ..... Associate City Engineer
Tom Chism ..... Wastewater Treatment Superintendent

ENPLAN, ENVIRONMENTAL CONSULTING TEAM

Don Burk ..... Environmental Services Manager
Carla Thompson, AICP ..... Senior Environmental Planner
Kiara Cuerpo-Hadsall ..... Environmental Planner
Allison Loveless ..... Environmental Scientist

DYNAMIC PLANNING + SCIENCE, GENERAL PLAN CONSULTING TEAM

Ethan Mobley, AICP ..... Owner
Brian Greer ..... Data Visualization Manager
Torie Jarvis, JD ..... Former Planning Manager
Raini Ott, AICP ..... Planning Associate
Alex Krebs ..... GIS Associate

8.2 Agencies Consulted

State Agencies - Office of Planning and Research State Clearinghouse Distribution

The following State agencies received a copy of the Notice of Preparation of the Draft PEIR through the Office of Planning and Research State Clearinghouse and were asked to provide comments related to potential environmental impacts of the 2040 General Plan update and issues to be addressed in the Draft PEIR. Comment letters were received from the California Department of Fish and Wildlife and the California Native American Heritage Commission; these letters are included in Appendix A of this Draft PEIR.

California Air Resources Board (ARB)
California Department of Conversation (DOC)
California Department of Housing and Community Development (HCD)
California Department of Parks and Recreation
California Department of Water Resources (DWR)
California Governor's Office of Emergency Services (OES)
California Highway Patrol (CHP)
California Native American Heritage Commission (NAHC)
California Natural Resources Agency
California Public Utilities Commission (CPUC)
California State Lands Commission (SLC)
Central Valley Flood Protection Board
Department of Toxic Substances Control
Office of Historic Preservation
State Water Resources Control Board, Division of Drinking Water
State Water Resources Control Board, Division of Water Quality
State Water Resources Control Board, Division of Water Rights

State and Other Agencies – Direct Mail/Email from the City of Shasta Lake

The following agencies received a copy of the NOP by email and/or direct mail from the City and were asked to provide comments related to potential environmental impacts of the 2040 General Plan update and issues to be addressed in the Draft PEIR.

California Department of Forestry and Fire Protection (CAL FIRE), Shane Vargas
California Department of Fish and Wildlife, Region 1, Adam McKannay
California Department of Transportation, District 2, Marcelino Gonzalez
Central Valley Regional Water Quality Control Board, Lynn Coster
City of Anderson Planning Division
City of Redding Planning Division, Zachary Bonnin
Gateway Unified School District, Jim Harrell
Shasta County Planning Division, Lio Salazar
Shasta Lake Fire Protection District
U.S. Army Corps of Engineers, Matthew J. Roberts
U.S. Postal Service, City of Shasta Lake Post Office, Kim E. Smith

Native American Tribal Consultation

All correspondence related to tribal consultation is included in Appendix C of this Draft PEIR and is discussed in Section 4.6 (Tribal Cultural Resources).

Appendix A.

Notice of Preparation and Comment Letters

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Northern Region
601 Locust Street
Redding, CA 96001
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 10, 2021

Peter Bird, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
PBird@cityofshastalake.org

SUBJECT: REVIEW OF NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE CITY OF SHASTA LAKE 2040 GENERAL PLAN UPDATE, STATE CLEARINGHOUSE NUMBER 2021070574, CITY OF SHASTA LAKE, SHASTA COUNTY

Dear Peter Bird:

The California Department of Fish and Wildlife (Department) has reviewed the Notice of Preparation dated July 28, 2021, for the above-referenced project (Project). As a trustee for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and their habitat. As a responsible agency, the Department administers the California Endangered Species Act and other provisions of the Fish and Game Code that conserve the State's fish and wildlife public trust resources. The Department offers the following comments and recommendations on this Project in our role as a trustee and responsible agency pursuant to the California Environmental Quality Act, California Public Resources Code §21000 et seq.

Project Description

The Project as proposed is as follows: "California State law requires each city and county to adopt a general plan *"for the physical development of the county or city and any land outside its boundaries that in the planning agency's judgment bears relation to its planning"* (Cal. Gov. Code § 65300) [*sic*]". The Shasta Lake General Plan establishes a community vision that expresses the community's development goals and includes public policy relative to the distribution of future public and private land uses. The 2040 General Plan will include updates to Land Use, Circulation, Conservation, Open Space, and Health and Safety Elements with minor revisions to the general plan land use designations.

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Comments and Recommendations

Conservation Element

In Section 5.2.1, one of the paragraphs starts with "*Efforts to preserve this waterway and its ecosystem are underway by the California Department of Fish and Wildlife's Ecosystem Restoration Program*…" The Department recommends revising this paragraph to better articulate that (1) a project is already in progress (name the project) or (2) the City has goals and policies to preserve the Stillwater-Churn Creek Watershed. Currently, it sounds as if the Department has a project in the Stillwater-Churn Creek Watershed; however, this grant funding program has likely exhausted its funding.

Section 5.3 discusses the Wildland Urban Interface (WUI) and the importance of balancing conservation policies with vegetation management policies within the community. The Department agrees and recommends discussing the fuel management strategies commonly used within and adjacent to the WUI and the impacts they have on botanical, wildlife, and the natural communities that support them in the forthcoming Draft Environmental Impact Report (DEIR).

Section 5.5 of this document states the planning area is regionally important for wildlife and further states, "*Wildlife conservation efforts within the City help preserve important wildlife corridors and linkages to these public lands*." The Department concurs and recommends conserving these corridors and linkages with a resources overlay. The Department's website may have additional information on wildlife connectivity linkages (https://wildlife.ca.gov/Conservation/Planning/Connectivity) as well as overall biological diversity (https://wildlife.ca.gov/Data/Analysis/Ace) for use in the DEIR.

The Department has reviewed the goals and policies within Section 5.9 of the Conservation Element and recommends the City work with the Department to develop policies prior to release of the public review DEIR. For example, Policy-LU-3.2 states, "*Design or condition new development to avoid significant adverse impacts on rare, threatened, or endangered plant or animal species, as officially designated by federal and state resource agencies. Work with California Department of Fish and Wildlife to ensure the preservation of resident and anadromous fish*." The Department recommends adding "sensitive vegetation communities" to the first sentence so that it reads, "*Design or condition new development to avoid significant adverse impacts on rare, threatened, or endangered plant or animal species* **or sensitive natural communities**, *as officially designated by federal and***/or** *state resource agencies*." In addition, the Department recommends separating this policy into two separate policies.

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The second sentence focuses on the preservation of resident and anadromous fish, but there are other sensitive resources that deserve protection as well. A second policy for sensitive aquatic species that are recognized by the Department and/or federal agencies would be more appropriate. Another example is Policy-LU-3.3, which describes the use of riparian and wetland buffers during the environmental review process. The Department concurs with this policy, but other sensitive biological resources may need consideration as well beyond only riparian and wetland vegetation communities. The Department recommends including a policy for other important habitats such as oak woodlands, grasslands, etc., in addition to riparian and wetland communities.

Open Space Element

The Open Space Element contains goals, policies, and implementation measures but it lacks a detailed assessment that determines the biodiversity and connectivity values of parcels within the City. The Department recommends basic biological surveys across undeveloped land within the City limits are conducted to determine how to best provide resource protection while balancing public access.

If you have any questions, please contact Amy Henderson, Senior Environmental Scientist, at (530) 598-7194, or by email at Amy.Henderson@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Donna L. Cobb
1AFB1E1AEF314DD...

Curt Babcock
Habitat Conservation Program Manager

ec: State Clearinghouse
State.Clearinghouse@opr.ca.gov

Amy Henderson
California Department of Fish and Wildlife
Amy.Henderson@wildlife.ca.gov

Habitat Conservation Planning Branch
CEQACommentLetters@wildlife.ca.gov

STATE OF CALIFORNIA Gavin Newsom, Governor

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nahc@nahc.ca.gov
NAHC.ca.gov

August 4, 2021

Peter Bird, AICP
City of Shasta Lake
4477 Main St.
Shasta Lake, CA 96019

Re: 2021070574, City of Shasta Lake 2040 General Plan Update Project, Shasta County

Dear Mr. Bird:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Katy.Sanchez@nahc.ca.gov.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Environmental Planner

cc: State Clearinghouse

Notice of Preparation *(Revised)*

Date: **July 28, 2021**
Revised August 13, 2021, to correct maps and extend public review period

To: **Office of Planning and Research, State Clearinghouse**
Responsible, Trustee, and Interested Agencies

Subject: **Notice of Preparation of a Draft Environmental Impact Report for the City of Shasta Lake 2040 General Plan Update**

Project Location: City of Shasta Lake Planning Area (citywide, sphere of influence), see **Figure 1.**

Lead Agency: **City of Shasta Lake**

Lead Agency Contact:
Peter Bird, AICP
4477 Main Street
Shasta Lake, CA 96019
530.275.7416
pbird@cityofshastalake.org

Deadline for Submitting Comments: **September 10, 2021, 4:00 PM**

INTRODUCTION:
The City of Shasta Lake (City), as Lead Agency, will prepare a Program Environmental Impact Report (PEIR) in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code §21000-§21189) for the City's proposed 2040 General Plan update (2040 General Plan) described in **Attachment A**. Pursuant to Section 15063 of the CEQA Guidelines, because the City determined that an EIR is required, an Initial Study was not prepared. This Notice of Preparation (NOP) has been issued to provide responsible, trustee, and interested agencies an opportunity to submit comments on the scope and content of the EIR. Agencies should comment on issues related to their statutory responsibilities related to the project.

POTENTIAL ENVIRONMENTAL EFFECTS:
The City expects that the PEIR will include an analysis of the following resource topics that have a potential for significant impacts as a result of implementation of the 2040 General Plan: aesthetics, forestry resources, air quality, biological resources, cultural and tribal cultural resources, energy, geology/soils, greenhouse gas emissions, hazards/hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, transportation, utilities and service systems, and wildfire.

AVAILABILITY OF PROJECT-RELATED DOCUMENTS:
Project-related documents associated with the 2040 General Plan update can be viewed on the **Plan Shasta Lake** website: **https://planshastalake.com/.** Documents may also be viewed at the Shasta Lake Planning Division, 4477 Main Street, Shasta Lake, California. Due to potential COVID-19 restrictions, please contact the City at **530.275.7400** to determine hours that the Planning Division is open to the public.

PUBLIC COMMENT PERIOD:

The City of Shasta Lake will consider all written comments submitted during the public review period that relate to potential environmental impacts of the project and issues to be addressed in the DEIR. Please include your name and contact information with your comments.

The public review period starts on July 30, 2021, and ends on September 10, 2021, at 4:00 PM. Comments should be directed to:

Mail: **Peter Bird, AICP**
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019

Email: pbird@cityofshastalake.org

SCOPING MEETING:

The City of Shasta Lake held an in-person scoping meeting on August 9, 2021, to provide information on the 2040 General Plan and to obtain comments regarding environmental issues that should be addressed in the PEIR.

In addition, a virtual option for the scoping meeting was provided via Zoom. A recording of the meeting may be viewed at: **https://planshastalake.com/**



Date Revised: August 13, 2021

Jessaca Lugo
City Manager

For additional information, contact Peter Bird, AICP, Senior Planner:

Telephone: **530.275.7416** **E-mail:** **pbird@cityofshastalake.org**

PROJECT SUMMARY:

California State law requires each city and county to adopt a general plan *"for the physical development of the county or city and any land outside its boundaries that in the planning agency's judgment bears relation to its planning"* (Cal. Gov. Code § 65300). The Shasta Lake General Plan establishes a community vision that expresses the community's development goals and includes public policy relative to the distribution of future public and private land uses. General plans provide a basis for local government decision-making and benefit communities by promoting streamlined processes, integrated planning, and improved access and use of available resources.

The Shasta Lake General Plan was originally adopted in 1999, and individual elements have been updated periodically since that time (primarily the Housing Element as required by state law). The 2040 General Plan includes updates to the goals, policies, and implementation actions in the Land Use, Circulation, Conservation, Open Space, and Health & Safety (including Noise and Air Quality) Elements[1] and minor revisions to the general plan land use designations. The update also addresses changes in state law that have occurred in the past few years.

Figure 1 depicts the planning area for the General Plan, which includes the existing city limits and the City's Sphere of Influence (SOI). The SOI shows the potential future physical boundaries and service area of the City as determined by the Shasta County Local Agency Formation Commission. The General Plan Land Use Diagram illustrates the general location and distribution of various land uses within the City. **Figure 2** is the City's current General Plan Land Use Diagram. **Figure 3** shows the proposed 2040 Land Use Diagram.

Based on community input, the 2040 Land Use Diagram focuses on promoting more compact growth and creating livable places through infill and redevelopment, especially in areas supported (currently or in the future) by public transit and utilities. Many of the amendments will not change the type or density of development currently allowed under the existing General Plan. For example, the designations for parcels within developed subdivisions (e.g., Windsor Estates, Hazelwood/Oakridge, Coeur D'Alene, Hardenbrook Estates, etc.) would change from Suburban Residential to Urban Residential to reflect the size of existing parcels in those areas; however, because these parcels are already developed, no change in allowable land uses would occur. In addition, some of the current land use designations for developed parcels would be consolidated/redefined but would not result in a change in development patterns (e.g., the City Center Commercial designation would be eliminated and would change to either Village Mixed Use or Urban Residential, depending on the existing land use).

The General Plan forecasts build-out of the City as part of the Land Use Element which will assist City planners with analyzing potential impacts from such development. Buildout is the point at which the City is fully developed with the land uses identified in the Land Use Element. For purposes of this General Plan, the planning window is a 20-year planning period; year 2020 through 2040. Build-out is based on the remaining acreage available for development within both vacant and underutilized parcels. Because it is unlikely that full build-out will occur by 2040, the General Plan focuses on what is likely to occur during the 20-year planning period.

Table 1 below identifies residential development that is anticipated to occur over the 20-year planning period as well as annual projections for housing units. **Table 2** identifies commercial/industrial development anticipated during the 20-year planning period as well as annual projections for commercial/ industrial development. The projections are based on vacant and underutilized land, excluding areas with development constraints (floodplains, wetlands, and slopes over 20 percent). A 20% reduction on non-residential parcels was assumed for development of parking and other vehicular circulation on vacant parcels.

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[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

Table 1
20-Year Residential Growth Projections

Land Use	20-year Growth Projections (Dwelling Units)	Annual Projections (Dwelling Units)
Single-Family Residential	623	31
Multi-Family Residential	154	8
Mixed-Use Residential	143	7
Village Mixed-Use Residential	31	2
Total Residential Dwelling Units	**951**	**48**
Anticipated Population Growth[2]	**2,425**	**121**

Table 2
20-Year Commercial/Industrial Growth Projections

Land Use	20-year Growth Projections (Building Square Footage)	Annual Projections (Building Square Footage)
Commercial	73,289	3,664
Industrial	232,573	11,629
Light Industrial	22,548	1,127
Mixed-Use Commercial	123,448	6,172
Village Mixed-Use Commercial	4,734	237
Total Commercial/Industrial Building Square Footage	**456,592**	**22,829**
Anticipated Employment Growth (Jobs)[3]	**836**	**42**

Project-related documents associated with the 2040 General Plan update can be viewed on the **Plan Shasta Lake** website: **https://planshastalake.com/.**

[2] *Based on estimated 2.55 persons per household, California Department of Finance, 2021. https://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/*

[3] *Estimates based on U.S. Energy Information Administration median square feet per employee: 410 SF for Commercial, 750 SF for Industrial, 750 SF for Light Industrial, 403 SF for Mixed-Use, and 425 SF for Village Mixed-Use. https://www.eia.gov/consumption/commercial/data/2012/bc/cfm/b2.php*

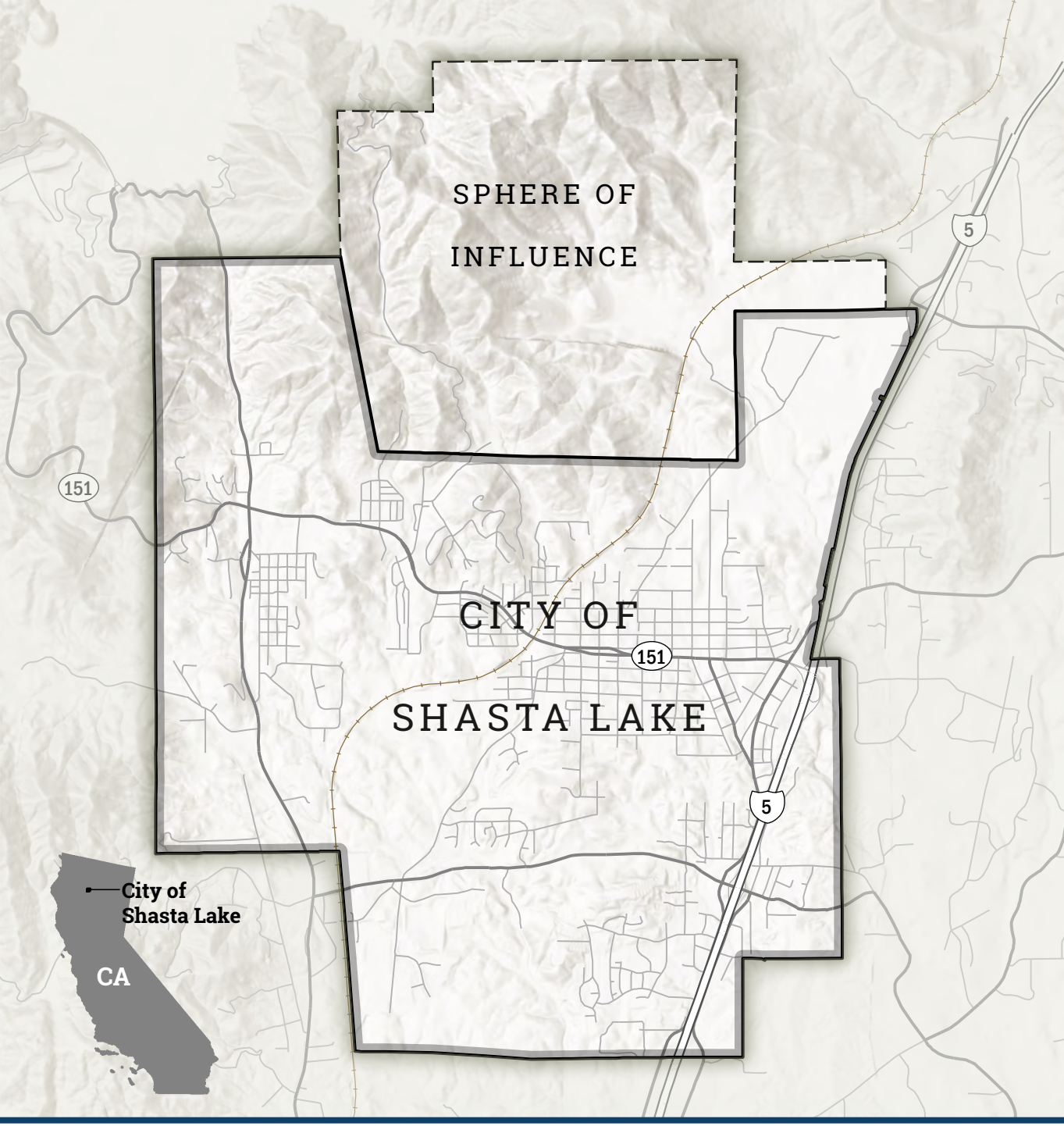


Figure 1
General Plan Planning Area

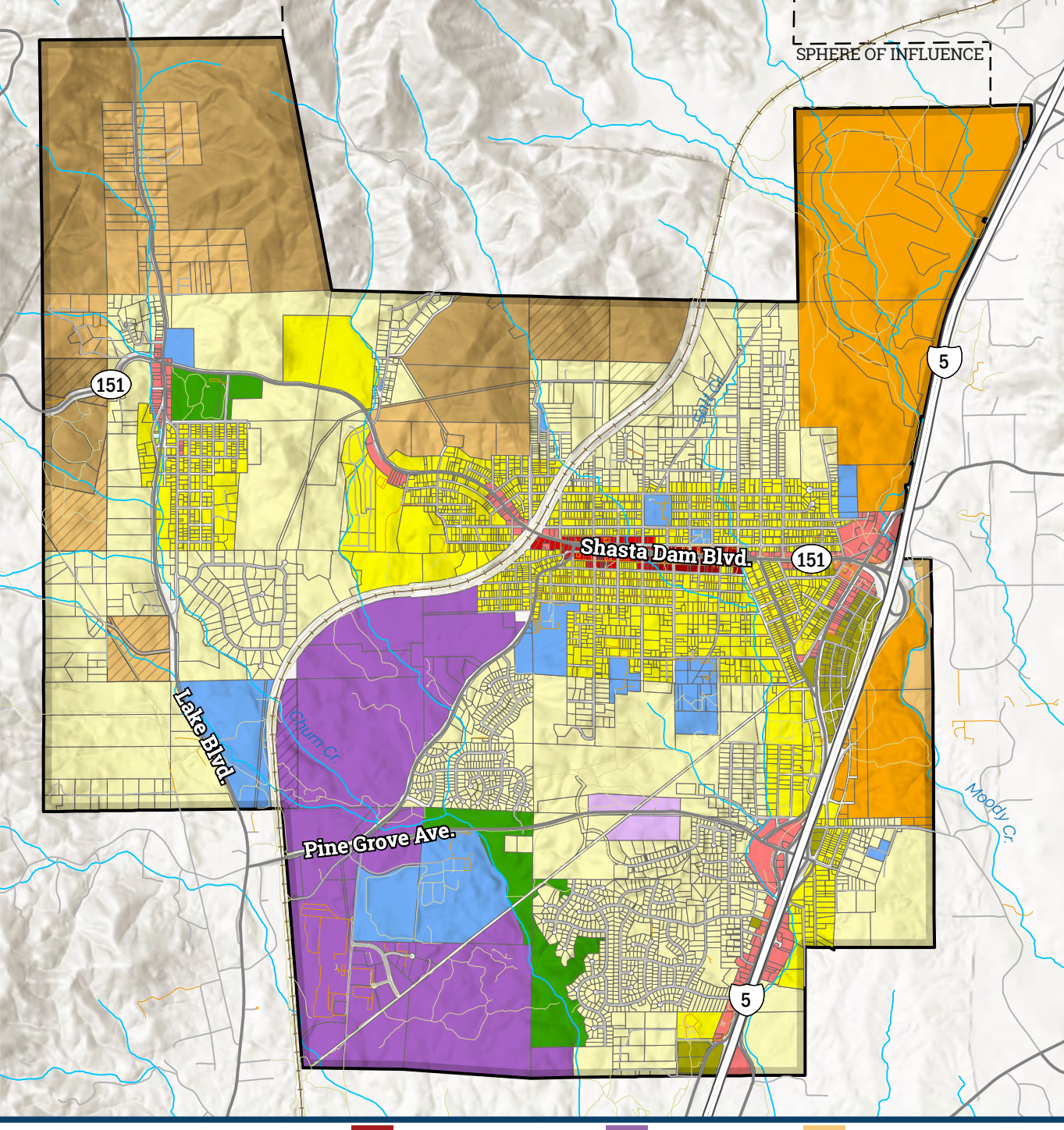


Figure 2
Current General Plan Land Use Diagram

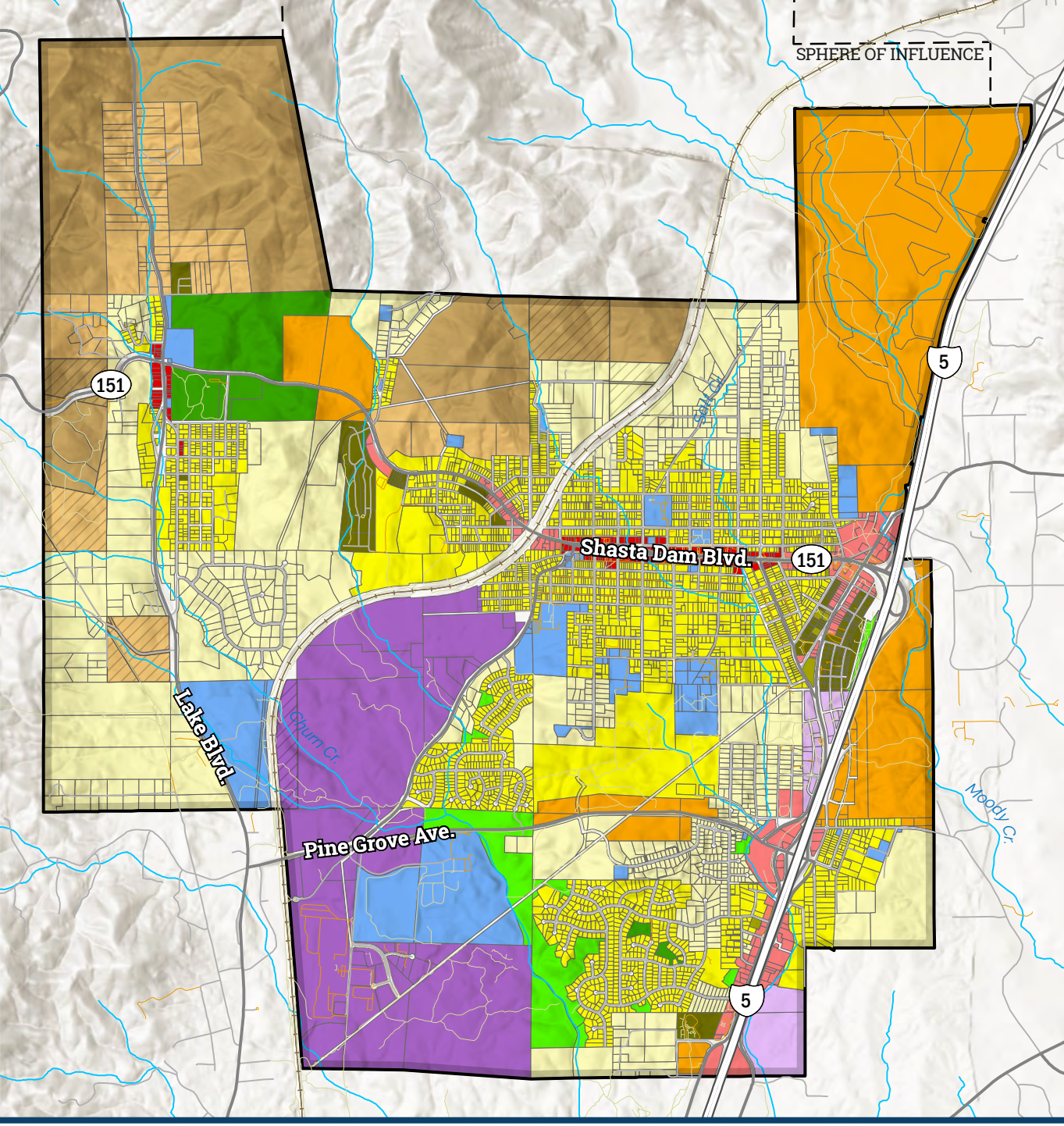


Figure 3
Proposed 2040 General Plan Land Use Diagram

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Digital hyperlink:

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Shasta Lake 2040 General Plan Update - 20-Year Planning Period
Lead Agency	—
Land Use Scale	Plan/community
Analysis Level for Defaults	Air District
Windspeed (m/s)	2.70
Precipitation (days)	25.2
Location	40.68063830156839, -122.36230814983116
County	Shasta
City	Shasta Lake
Air District	Shasta County AQMD
Air Basin	Sacramento Valley
TAZ	150
EDFZ	15
Electric Utility	City of Shasta Lake
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	542	Dwelling Unit	176	1,056,900	813,000	—	1,339	—
Apartments Low Rise	294	Dwelling Unit	18.4	311,640	42,000	—	726	—

General Office Building	87.7	1000sqft	2.01	87,722	27,413	—	—	—
Free-Standing Discount store	87.7	1000sqft	2.01	87,722	23,497	—	—	—
General Light Industry	50.0	1000sqft	1.15	50,000	5,938	—	—	—
Manufacturing	155	1000sqft	3.57	155,313	18,443	—	—	—
Parking Lot	1,085	Space	9.76	0.00	0.00	—	—	—
Other Asphalt Surfaces	104	1000sqft	2.39	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Water	W-3	Use Locally Sourced Water Supply
Water	W-5	Design Water-Efficient Landscapes
Water	W-7	Adopt a Water Conservation Strategy
Waste	S-1/S-2	Implement Waste Reduction Plan

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1,129	1,155	51.2	1,606	3.00	186	18.2	204	185	3.23	188	20,705	78,489	99,194	93.3	4.40	83.5	102,920
Mit.	1,129	1,155	51.2	1,606	3.00	186	18.2	204	185	3.23	188	20,705	78,489	99,194	93.3	4.40	83.5	102,920

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1,118	1,145	53.7	1,521	2.95	186	18.2	204	185	3.23	188	20,705	74,022	94,727	93.6	4.59	64.4	98,498
Mit.	1,118	1,145	53.7	1,521	2.95	186	18.2	204	185	3.23	188	20,705	74,022	94,727	93.6	4.59	64.4	98,498
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	276	319	33.4	487	0.99	42.4	16.0	58.5	42.2	2.84	45.0	5,178	63,953	69,131	76.6	3.10	71.3	72,041
Mit.	276	319	33.4	487	0.99	42.4	16.0	58.5	42.2	2.84	45.0	5,178	63,953	69,131	76.6	3.10	71.3	72,041
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	50.4	58.3	6.10	88.9	0.18	7.74	2.93	10.7	7.70	0.52	8.22	857	10,588	11,445	12.7	0.51	11.8	11,927
Mit.	50.4	58.3	6.10	88.9	0.18	7.74	2.93	10.7	7.70	0.52	8.22	857	10,588	11,445	12.7	0.51	11.8	11,927
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	25.0	25.0	—	—	—	—	25.0	—	—	—	—	—	—	—	—	—	—
Unmit.	—	Yes	No	—	—	—	—	No	—	—	—	—	—	—	—	—	—	—
Mit.	—	Yes	No	—	—	—	—	No	—	—	—	—	—	—	—	—	—	—

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	35.0	33.5	21.9	195	0.47	0.27	18.2	18.5	0.26	3.23	3.49	—	47,915	47,915	1.71	2.44	19.6	48,703
Area	1,093	1,121	21.3	1,406	2.48	185	—	185	184	—	184	20,026	7,518	27,544	21.4	1.38	—	28,491
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	1,129	1,155	51.2	1,606	3.00	186	18.2	204	185	3.23	188	20,705	78,489	99,194	93.3	4.40	83.5	102,920
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.6	30.0	25.1	175	0.43	0.27	18.2	18.5	0.26	3.23	3.49	—	43,643	43,643	2.04	2.62	0.51	44,476
Area	1,086	1,114	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	1,118	1,145	53.7	1,521	2.95	186	18.2	204	185	3.23	188	20,705	74,022	94,727	93.6	4.59	64.4	98,498
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	27.6	26.2	20.5	149	0.38	0.24	16.0	16.3	0.23	2.84	3.07	—	39,156	39,156	1.64	2.21	7.44	39,862
Area	247	293	4.93	333	0.56	41.6	—	41.6	41.4	—	41.4	4,499	1,741	6,240	4.81	0.31	—	6,453
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9

Total	276	319	33.4	487	0.99	42.4	16.0	58.5	42.2	2.84	45.0	5,178	63,953	69,131	76.6	3.10	71.3	72,041
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.04	4.78	3.75	27.1	0.07	0.04	2.93	2.97	0.04	0.52	0.56	—	6,483	6,483	0.27	0.37	1.23	6,600
Area	45.2	53.4	0.90	60.8	0.10	7.59	—	7.59	7.55	—	7.55	745	288	1,033	0.80	0.05	—	1,068
Energy	0.16	0.08	1.45	0.96	0.01	0.11	—	0.11	0.11	—	0.11	—	3,817	3,817	0.30	0.02	—	3,831
Water	—	—	—	—	—	—	—	—	—	—	—	30.3	0.00	30.3	3.11	0.07	—	130
Waste	—	—	—	—	—	—	—	—	—	—	—	82.1	0.00	82.1	8.21	0.00	—	287
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	10.6
Total	50.4	58.3	6.10	88.9	0.18	7.74	2.93	10.7	7.70	0.52	8.22	857	10,588	11,445	12.7	0.51	11.8	11,927

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	35.0	33.5	21.9	195	0.47	0.27	18.2	18.5	0.26	3.23	3.49	—	47,915	47,915	1.71	2.44	19.6	48,703
Area	1,093	1,121	21.3	1,406	2.48	185	—	185	184	—	184	20,026	7,518	27,544	21.4	1.38	—	28,491
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	1,129	1,155	51.2	1,606	3.00	186	18.2	204	185	3.23	188	20,705	78,489	99,194	93.3	4.40	83.5	102,920
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.6	30.0	25.1	175	0.43	0.27	18.2	18.5	0.26	3.23	3.49	—	43,643	43,643	2.04	2.62	0.51	44,476
Area	1,086	1,114	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142

Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	1,118	1,145	53.7	1,521	2.95	186	18.2	204	185	3.23	188	20,705	74,022	94,727	93.6	4.59	64.4	98,498
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	27.6	26.2	20.5	149	0.38	0.24	16.0	16.3	0.23	2.84	3.07	—	39,156	39,156	1.64	2.21	7.44	39,862
Area	247	293	4.93	333	0.56	41.6	—	41.6	41.4	—	41.4	4,499	1,741	6,240	4.81	0.31	—	6,453
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	276	319	33.4	487	0.99	42.4	16.0	58.5	42.2	2.84	45.0	5,178	63,953	69,131	76.6	3.10	71.3	72,041
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.04	4.78	3.75	27.1	0.07	0.04	2.93	2.97	0.04	0.52	0.56	—	6,483	6,483	0.27	0.37	1.23	6,600
Area	45.2	53.4	0.90	60.8	0.10	7.59	—	7.59	7.55	—	7.55	745	288	1,033	0.80	0.05	—	1,068
Energy	0.16	0.08	1.45	0.96	0.01	0.11	—	0.11	0.11	—	0.11	—	3,817	3,817	0.30	0.02	—	3,831
Water	—	—	—	—	—	—	—	—	—	—	—	30.3	0.00	30.3	3.11	0.07	—	130
Waste	—	—	—	—	—	—	—	—	—	—	—	82.1	0.00	82.1	8.21	0.00	—	287
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	10.6
Total	50.4	58.3	6.10	88.9	0.18	7.74	2.93	10.7	7.70	0.52	8.22	857	10,588	11,445	12.7	0.51	11.8	11,927

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	8.64	8.26	5.46	48.8	0.12	0.07	0.75	0.82	0.06	0.23	0.30	—	12,049	12,049	0.43	0.61	4.93	12,246
Apartments Low Rise	4.69	4.48	2.96	26.5	0.06	0.04	0.41	0.45	0.03	0.13	0.16	—	6,536	6,536	0.23	0.33	2.67	6,643
General Office Building	2.39	2.26	1.71	16.5	0.04	0.02	0.28	0.30	0.02	0.08	0.11	—	4,357	4,357	0.13	0.20	1.81	4,422
Free-Standing Discount store	15.8	15.2	9.30	79.1	0.18	0.11	1.15	1.26	0.10	0.35	0.45	—	18,613	18,613	0.74	1.00	7.53	18,937
General Light Industry	0.70	0.66	0.50	4.84	0.01	0.01	0.08	0.09	0.01	0.02	0.03	—	1,275	1,275	0.04	0.06	0.53	1,294
Manufacturing	2.78	2.63	2.00	19.3	0.05	0.03	0.32	0.35	0.03	0.10	0.13	—	5,085	5,085	0.15	0.24	2.11	5,161
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	35.0	33.5	21.9	195	0.47	0.27	2.99	3.26	0.26	0.92	1.18	—	47,915	47,915	1.71	2.44	19.6	48,703
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	7.81	7.40	6.24	43.5	0.11	0.07	0.75	0.82	0.06	0.23	0.30	—	10,973	10,973	0.51	0.66	0.13	11,181

Apartments	4.24	4.01	3.39	23.6	0.06	0.04	0.41	0.45	0.03	0.13	0.16	—	5,952	5,952	0.27	0.36	0.07	6,065
General Office Building	2.17	2.03	1.96	14.0	0.04	0.02	0.28	0.30	0.02	0.08	0.11	—	3,961	3,961	0.15	0.22	0.05	4,029
Free-Standing Discount store	14.2	13.6	10.6	73.0	0.17	0.11	1.15	1.26	0.10	0.35	0.45	—	16,975	16,975	0.89	1.08	0.20	17,319
General Light Industry	0.63	0.59	0.57	4.10	0.01	0.01	0.08	0.09	0.01	0.02	0.03	—	1,159	1,159	0.04	0.06	0.01	1,179
Manufacturing	2.53	2.37	2.29	16.3	0.05	0.03	0.32	0.35	0.03	0.10	0.13	—	4,622	4,622	0.18	0.25	0.05	4,702
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	31.6	30.0	25.1	175	0.43	0.27	2.99	3.26	0.26	0.92	1.18	—	43,643	43,643	2.04	2.62	0.51	44,476
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	1.43	1.36	1.07	7.74	0.02	0.01	0.14	0.15	0.01	0.04	0.05	—	1,854	1,854	0.08	0.10	0.35	1,888
Apartments Low Rise	0.78	0.74	0.58	4.20	0.01	0.01	0.07	0.08	0.01	0.02	0.03	—	1,006	1,006	0.04	0.06	0.19	1,024
General Office Building	0.30	0.28	0.25	1.92	0.01	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	507	507	0.02	0.03	0.10	515
Free-Standing Discount store	2.10	2.00	1.48	10.5	0.03	0.02	0.18	0.19	0.02	0.05	0.07	—	2,395	2,395	0.11	0.14	0.45	2,441

General Light Industry	0.11	0.10	0.09	0.68	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	—	178	178	0.01	0.01	0.03	181
Manufacturing	0.32	0.30	0.27	2.06	0.01	< 0.005	0.04	0.04	< 0.005	0.01	0.02	—	542	542	0.02	0.03	0.10	551
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.04	4.78	3.75	27.1	0.07	0.04	0.48	0.52	0.04	0.15	0.19	—	6,483	6,483	0.27	0.37	1.23	6,600

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	8.64	8.26	5.46	48.8	0.12	0.07	0.75	0.82	0.06	0.23	0.30	—	12,049	12,049	0.43	0.61	4.93	12,246
Apartments Low Rise	4.69	4.48	2.96	26.5	0.06	0.04	0.41	0.45	0.03	0.13	0.16	—	6,536	6,536	0.23	0.33	2.67	6,643
General Office Building	2.39	2.26	1.71	16.5	0.04	0.02	0.28	0.30	0.02	0.08	0.11	—	4,357	4,357	0.13	0.20	1.81	4,422
Free-Standing Discount store	15.8	15.2	9.30	79.1	0.18	0.11	1.15	1.26	0.10	0.35	0.45	—	18,613	18,613	0.74	1.00	7.53	18,937
General Light Industry	0.70	0.66	0.50	4.84	0.01	0.01	0.08	0.09	0.01	0.02	0.03	—	1,275	1,275	0.04	0.06	0.53	1,294

Manufact	2.78	2.63	2.00	19.3	0.05	0.03	0.32	0.35	0.03	0.10	0.13	—	5,085	5,085	0.15	0.24	2.11	5,161
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	35.0	33.5	21.9	195	0.47	0.27	2.99	3.26	0.26	0.92	1.18	—	47,915	47,915	1.71	2.44	19.6	48,703
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	7.81	7.40	6.24	43.5	0.11	0.07	0.75	0.82	0.06	0.23	0.30	—	10,973	10,973	0.51	0.66	0.13	11,181
Apartments Low Rise	4.24	4.01	3.39	23.6	0.06	0.04	0.41	0.45	0.03	0.13	0.16	—	5,952	5,952	0.27	0.36	0.07	6,065
General Office Building	2.17	2.03	1.96	14.0	0.04	0.02	0.28	0.30	0.02	0.08	0.11	—	3,961	3,961	0.15	0.22	0.05	4,029
Free-Standing Discount store	14.2	13.6	10.6	73.0	0.17	0.11	1.15	1.26	0.10	0.35	0.45	—	16,975	16,975	0.89	1.08	0.20	17,319
General Light Industry	0.63	0.59	0.57	4.10	0.01	0.01	0.08	0.09	0.01	0.02	0.03	—	1,159	1,159	0.04	0.06	0.01	1,179
Manufacturing	2.53	2.37	2.29	16.3	0.05	0.03	0.32	0.35	0.03	0.10	0.13	—	4,622	4,622	0.18	0.25	0.05	4,702
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	31.6	30.0	25.1	175	0.43	0.27	2.99	3.26	0.26	0.92	1.18	—	43,643	43,643	2.04	2.62	0.51	44,476
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	1.43	1.36	1.07	7.74	0.02	0.01	0.14	0.15	0.01	0.04	0.05	—	1,854	1,854	0.08	0.10	0.35	1,888
Apartments Low Rise	0.78	0.74	0.58	4.20	0.01	0.01	0.07	0.08	0.01	0.02	0.03	—	1,006	1,006	0.04	0.06	0.19	1,024
General Office Building	0.30	0.28	0.25	1.92	0.01	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	507	507	0.02	0.03	0.10	515
Free-Standing Discount store	2.10	2.00	1.48	10.5	0.03	0.02	0.18	0.19	0.02	0.05	0.07	—	2,395	2,395	0.11	0.14	0.45	2,441
General Light Industry	0.11	0.10	0.09	0.68	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	—	178	178	0.01	0.01	0.03	181
Manufacturing	0.32	0.30	0.27	2.06	0.01	< 0.005	0.04	0.04	< 0.005	0.01	0.02	—	542	542	0.02	0.03	0.10	551
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.04	4.78	3.75	27.1	0.07	0.04	0.48	0.52	0.04	0.15	0.19	—	6,483	6,483	0.27	0.37	1.23	6,600

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5,905	5,905	0.43	0.05	—	5,931
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,663	1,663	0.12	0.01	—	1,670
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,220	2,220	0.16	0.02	—	2,230
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	975	975	0.07	0.01	—	979
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	614	614	0.04	0.01	—	617
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	1,907	1,907	0.14	0.02	—	1,915
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	13,284	13,284	0.97	0.12	—	13,343
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5,905	5,905	0.43	0.05	—	5,931
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,663	1,663	0.12	0.01	—	1,670
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,220	2,220	0.16	0.02	—	2,230

Free-Sta Discount store	—	—	—	—	—	—	—	—	—	—	—	—	975	975	0.07	0.01	—	979
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	614	614	0.04	0.01	—	617
Manufact uring	—	—	—	—	—	—	—	—	—	—	—	—	1,907	1,907	0.14	0.02	—	1,915
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	13,284	13,284	0.97	0.12	—	13,343
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	978	978	0.07	0.01	—	982
Apartme nts Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	275	275	0.02	< 0.005	—	277
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	368	368	0.03	< 0.005	—	369
Free-Sta nding Discount store	—	—	—	—	—	—	—	—	—	—	—	—	161	161	0.01	< 0.005	—	162
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	102	102	0.01	< 0.005	—	102
Manufact uring	—	—	—	—	—	—	—	—	—	—	—	—	316	316	0.02	< 0.005	—	317
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,199	2,199	0.16	0.02	—	2,209

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5,905	5,905	0.43	0.05	—	5,931
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,663	1,663	0.12	0.01	—	1,670
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,220	2,220	0.16	0.02	—	2,230
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	975	975	0.07	0.01	—	979
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	614	614	0.04	0.01	—	617
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	1,907	1,907	0.14	0.02	—	1,915
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	—	13,284	13,284	0.97	0.12	—	13,343
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5,905	5,905	0.43	0.05	—	5,931
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,663	1,663	0.12	0.01	—	1,670
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,220	2,220	0.16	0.02	—	2,230
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	975	975	0.07	0.01	—	979
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	614	614	0.04	0.01	—	617
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	1,907	1,907	0.14	0.02	—	1,915
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	13,284	13,284	0.97	0.12	—	13,343
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	978	978	0.07	0.01	—	982
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	275	275	0.02	< 0.005	—	277

General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	368	368	0.03	< 0.005	—	369
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	161	161	0.01	< 0.005	—	162
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	102	102	0.01	< 0.005	—	102
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	316	316	0.02	< 0.005	—	317
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,199	2,199	0.16	0.02	—	2,209

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.27	0.14	2.31	0.98	0.01	0.19	—	0.19	0.19	—	0.19	—	2,936	2,936	0.26	0.01	—	2,944
Apartments Low Rise	0.14	0.07	1.17	0.50	0.01	0.09	—	0.09	0.09	—	0.09	—	1,483	1,483	0.13	< 0.005	—	1,487
General Office Building	0.05	0.03	0.47	0.40	< 0.005	0.04	—	0.04	0.04	—	0.04	—	565	565	0.05	< 0.005	—	566

Free-Sta Discount store	0.01	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	138	138	0.01	< 0.005	—	139
General Light Industry	0.10	0.05	0.95	0.80	0.01	0.07	—	0.07	0.07	—	0.07	—	1,132	1,132	0.10	< 0.005	—	1,136
Manufact uring	0.32	0.16	2.95	2.48	0.02	0.22	—	0.22	0.22	—	0.22	—	3,518	3,518	0.31	0.01	—	3,528
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	9,772	9,772	0.86	0.02	—	9,799
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.27	0.14	2.31	0.98	0.01	0.19	—	0.19	0.19	—	0.19	—	2,936	2,936	0.26	0.01	—	2,944
Apartme nts Low Rise	0.14	0.07	1.17	0.50	0.01	0.09	—	0.09	0.09	—	0.09	—	1,483	1,483	0.13	< 0.005	—	1,487
General Office Building	0.05	0.03	0.47	0.40	< 0.005	0.04	—	0.04	0.04	—	0.04	—	565	565	0.05	< 0.005	—	566
Free-Sta nding Discount store	0.01	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	138	138	0.01	< 0.005	—	139
General Light Industry	0.10	0.05	0.95	0.80	0.01	0.07	—	0.07	0.07	—	0.07	—	1,132	1,132	0.10	< 0.005	—	1,136
Manufact uring	0.32	0.16	2.95	2.48	0.02	0.22	—	0.22	0.22	—	0.22	—	3,518	3,518	0.31	0.01	—	3,528

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	9,772	9,772	0.86	0.02	—	9,799
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.05	0.02	0.42	0.18	< 0.005	0.03	—	0.03	0.03	—	0.03	—	486	486	0.04	< 0.005	—	487
Apartments Low Rise	0.02	0.01	0.21	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	245	245	0.02	< 0.005	—	246
General Office Building	0.01	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.5	93.5	0.01	< 0.005	—	93.8
Free-Standing Discount store	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.9	22.9	< 0.005	< 0.005	—	23.0
General Light Industry	0.02	0.01	0.17	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	187	187	0.02	< 0.005	—	188
Manufacturing	0.06	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	582	582	0.05	< 0.005	—	584
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.16	0.08	1.45	0.96	0.01	0.11	—	0.11	0.11	—	0.11	—	1,618	1,618	0.14	< 0.005	—	1,622

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.27	0.14	2.31	0.98	0.01	0.19	—	0.19	0.19	—	0.19	—	2,936	2,936	0.26	0.01	—	2,944
Apartments Low Rise	0.14	0.07	1.17	0.50	0.01	0.09	—	0.09	0.09	—	0.09	—	1,483	1,483	0.13	< 0.005	—	1,487
General Office Building	0.05	0.03	0.47	0.40	< 0.005	0.04	—	0.04	0.04	—	0.04	—	565	565	0.05	< 0.005	—	566
Free-Standing Discount store	0.01	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	138	138	0.01	< 0.005	—	139
General Light Industry	0.10	0.05	0.95	0.80	0.01	0.07	—	0.07	0.07	—	0.07	—	1,132	1,132	0.10	< 0.005	—	1,136
Manufacturing	0.32	0.16	2.95	2.48	0.02	0.22	—	0.22	0.22	—	0.22	—	3,518	3,518	0.31	0.01	—	3,528
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	9,772	9,772	0.86	0.02	—	9,799
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.27	0.14	2.31	0.98	0.01	0.19	—	0.19	0.19	—	0.19	—	2,936	2,936	0.26	0.01	—	2,944

Apartments	0.14	0.07	1.17	0.50	0.01	0.09	—	0.09	0.09	—	0.09	—	1,483	1,483	0.13	< 0.005	—	1,487
General Office Building	0.05	0.03	0.47	0.40	< 0.005	0.04	—	0.04	0.04	—	0.04	—	565	565	0.05	< 0.005	—	566
Free-Standing Discount store	0.01	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	138	138	0.01	< 0.005	—	139
General Light Industry	0.10	0.05	0.95	0.80	0.01	0.07	—	0.07	0.07	—	0.07	—	1,132	1,132	0.10	< 0.005	—	1,136
Manufacturing	0.32	0.16	2.95	2.48	0.02	0.22	—	0.22	0.22	—	0.22	—	3,518	3,518	0.31	0.01	—	3,528
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	9,772	9,772	0.86	0.02	—	9,799
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.05	0.02	0.42	0.18	< 0.005	0.03	—	0.03	0.03	—	0.03	—	486	486	0.04	< 0.005	—	487
Apartments Low Rise	0.02	0.01	0.21	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	245	245	0.02	< 0.005	—	246
General Office Building	0.01	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.5	93.5	0.01	< 0.005	—	93.8
Free-Standing Discount store	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.9	22.9	< 0.005	< 0.005	—	23.0

General Light Industry	0.02	0.01	0.17	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	187	187	0.02	< 0.005	—	188
Manufacturing	0.06	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	582	582	0.05	< 0.005	—	584
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.16	0.08	1.45	0.96	0.01	0.11	—	0.11	0.11	—	0.11	—	1,618	1,618	0.14	< 0.005	—	1,622

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1,086	1,064	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Consumer Products	—	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	7.30	6.84	0.58	64.2	< 0.005	0.04	—	0.04	0.05	—	0.05	—	195	195	0.01	< 0.005	—	196
Total	1,093	1,121	21.3	1,406	2.48	185	—	185	184	—	184	20,026	7,518	27,544	21.4	1.38	—	28,491

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1,086	1,064	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Consumer Products	—	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1,086	1,114	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	44.5	43.6	0.85	55.0	0.10	7.58	—	7.58	7.54	—	7.54	745	272	1,017	0.80	0.05	—	1,052
Consumer Products	—	6.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	2.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.66	0.62	0.05	5.78	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Total	45.2	53.4	0.90	60.8	0.10	7.59	—	7.59	7.55	—	7.55	745	288	1,033	0.80	0.05	—	1,068

4.3.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1,086	1,064	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295

Consumer	—	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	7.30	6.84	0.58	64.2	< 0.005	0.04	—	0.04	0.05	—	0.05	—	195	195	0.01	< 0.005	—	196
Total	1,093	1,121	21.3	1,406	2.48	185	—	185	184	—	184	20,026	7,518	27,544	21.4	1.38	—	28,491
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1,086	1,064	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Consumer Products	—	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1,086	1,114	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	44.5	43.6	0.85	55.0	0.10	7.58	—	7.58	7.54	—	7.54	745	272	1,017	0.80	0.05	—	1,052
Consumer Products	—	6.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	2.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.66	0.62	0.05	5.78	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Total	45.2	53.4	0.90	60.8	0.10	7.59	—	7.59	7.55	—	7.55	745	288	1,033	0.80	0.05	—	1,068

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	32.3	0.00	32.3	3.31	0.08	—	139
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	17.5	0.00	17.5	1.80	0.04	—	75.2
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	0.00	29.9	3.06	0.07	—	128
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	12.5	0.00	12.5	1.28	0.03	—	53.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.2	0.00	22.2	2.27	0.05	—	95.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	68.8	0.00	68.8	7.06	0.17	—	295
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	32.3	0.00	32.3	3.31	0.08	—	139
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	17.5	0.00	17.5	1.80	0.04	—	75.2
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	0.00	29.9	3.06	0.07	—	128
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	12.5	0.00	12.5	1.28	0.03	—	53.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.2	0.00	22.2	2.27	0.05	—	95.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	68.8	0.00	68.8	7.06	0.17	—	295
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	5.35	0.00	5.35	0.55	0.01	—	22.9
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.90	0.00	2.90	0.30	0.01	—	12.4

General Office Building	—	—	—	—	—	—	—	—	—	—	—	4.95	0.00	4.95	0.51	0.01	—	21.2
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	2.06	0.00	2.06	0.21	0.01	—	8.84
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	3.67	0.00	3.67	0.38	0.01	—	15.7
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	11.4	0.00	11.4	1.17	0.03	—	48.9
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	30.3	0.00	30.3	3.11	0.07	—	130

4.4.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	32.3	0.00	32.3	3.31	0.08	—	139
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	17.5	0.00	17.5	1.80	0.04	—	75.2
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	0.00	29.9	3.06	0.07	—	128

Free-Sta Discount store	—	—	—	—	—	—	—	—	—	—	—	12.5	0.00	12.5	1.28	0.03	—	53.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.2	0.00	22.2	2.27	0.05	—	95.0
Manufact uring	—	—	—	—	—	—	—	—	—	—	—	68.8	0.00	68.8	7.06	0.17	—	295
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	32.3	0.00	32.3	3.31	0.08	—	139
Apartme nts Low Rise	—	—	—	—	—	—	—	—	—	—	—	17.5	0.00	17.5	1.80	0.04	—	75.2
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	0.00	29.9	3.06	0.07	—	128
Free-Sta nding Discount store	—	—	—	—	—	—	—	—	—	—	—	12.5	0.00	12.5	1.28	0.03	—	53.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.2	0.00	22.2	2.27	0.05	—	95.0
Manufact uring	—	—	—	—	—	—	—	—	—	—	—	68.8	0.00	68.8	7.06	0.17	—	295

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	5.35	0.00	5.35	0.55	0.01	—	22.9
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.90	0.00	2.90	0.30	0.01	—	12.4
General Office Building	—	—	—	—	—	—	—	—	—	—	—	4.95	0.00	4.95	0.51	0.01	—	21.2
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	2.06	0.00	2.06	0.21	0.01	—	8.84
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	3.67	0.00	3.67	0.38	0.01	—	15.7
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	11.4	0.00	11.4	1.17	0.03	—	48.9
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	30.3	0.00	30.3	3.11	0.07	—	130

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	72.2	0.00	72.2	7.22	0.00	—	253
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	39.2	0.00	39.2	3.91	0.00	—	137
General Office Building	—	—	—	—	—	—	—	—	—	—	—	44.0	0.00	44.0	4.39	0.00	—	154
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	203	0.00	203	20.3	0.00	—	711
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	33.4	0.00	33.4	3.34	0.00	—	117
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	104	0.00	104	10.4	0.00	—	363
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	72.2	0.00	72.2	7.22	0.00	—	253
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	39.2	0.00	39.2	3.91	0.00	—	137
General Office Building	—	—	—	—	—	—	—	—	—	—	—	44.0	0.00	44.0	4.39	0.00	—	154
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	203	0.00	203	20.3	0.00	—	711
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	33.4	0.00	33.4	3.34	0.00	—	117
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	104	0.00	104	10.4	0.00	—	363
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	12.0	0.00	12.0	1.19	0.00	—	41.8
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	6.49	0.00	6.49	0.65	0.00	—	22.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.28	0.00	7.28	0.73	0.00	—	25.5

Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	33.7	0.00	33.7	3.36	0.00	—	118
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	5.53	0.00	5.53	0.55	0.00	—	19.4
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	17.2	0.00	17.2	1.72	0.00	—	60.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	82.1	0.00	82.1	8.21	0.00	—	287

4.5.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	72.2	0.00	72.2	7.22	0.00	—	253
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	39.2	0.00	39.2	3.91	0.00	—	137
General Office Building	—	—	—	—	—	—	—	—	—	—	—	44.0	0.00	44.0	4.39	0.00	—	154

Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	203	0.00	203	20.3	0.00	—	711
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	33.4	0.00	33.4	3.34	0.00	—	117
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	104	0.00	104	10.4	0.00	—	363
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	72.2	0.00	72.2	7.22	0.00	—	253
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	39.2	0.00	39.2	3.91	0.00	—	137
General Office Building	—	—	—	—	—	—	—	—	—	—	—	44.0	0.00	44.0	4.39	0.00	—	154
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	203	0.00	203	20.3	0.00	—	711
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	33.4	0.00	33.4	3.34	0.00	—	117
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	104	0.00	104	10.4	0.00	—	363

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	12.0	0.00	12.0	1.19	0.00	—	41.8
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	6.49	0.00	6.49	0.65	0.00	—	22.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.28	0.00	7.28	0.73	0.00	—	25.5
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	33.7	0.00	33.7	3.36	0.00	—	118
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	5.53	0.00	5.53	0.55	0.00	—	19.4
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	17.2	0.00	17.2	1.72	0.00	—	60.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	82.1	0.00	82.1	8.21	0.00	—	287

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.57	7.57
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.23	2.23
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.42	0.42
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.0	13.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.4	40.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.57	7.57
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.23	2.23

General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.42	0.42
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.0	13.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.4	40.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37	0.37
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.15	2.15
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.69	6.69
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	10.6

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.57	7.57
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.23	2.23
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.42	0.42
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.0	13.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.4	40.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.57	7.57
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.23	2.23

General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.42	0.42
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.0	13.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.4	40.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37	0.37
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.15	2.15
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.69	6.69
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	10.6

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	3,295	3,295	3,295	1,202,806	16,566	16,566	16,566	6,046,417
Apartments Low Rise	1,788	1,788	1,788	652,445	8,986	8,986	8,986	3,279,791
General Office Building	854	194	61.4	236,068	6,075	1,378	437	1,678,523
Free-Standing Discount store	4,660	6,207	5,282	1,813,941	20,312	25,309	21,536	7,738,207
General Light Industry	248	99.5	250	82,881	1,763	707	1,778	589,312
Manufacturing	610	997	791	252,348	4,340	7,090	5,621	1,794,280
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	3,295	3,295	3,295	1,202,806	16,566	16,566	16,566	6,046,417
Apartments Low Rise	1,788	1,788	1,788	652,445	8,986	8,986	8,986	3,279,791
General Office Building	854	194	61.4	236,068	6,075	1,378	437	1,678,523
Free-Standing Discount store	4,660	6,207	5,282	1,813,941	20,312	25,309	21,536	7,738,207
General Light Industry	248	99.5	250	82,881	1,763	707	1,778	589,312
Manufacturing	610	997	791	252,348	4,340	7,090	5,621	1,794,280

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	190
Gas Fireplaces	298
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	54
Conventional Wood Stoves	0
Catalytic Wood Stoves	27
Non-Catalytic Wood Stoves	27
Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	53
Gas Fireplaces	50
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	191
Conventional Wood Stoves	0
Catalytic Wood Stoves	15

Non-Catalytic Wood Stoves	15
Pellet Wood Stoves	0

5.10.1.2. Mitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	190
Gas Fireplaces	298
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	54
Conventional Wood Stoves	0
Catalytic Wood Stoves	27
Non-Catalytic Wood Stoves	27
Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	53
Gas Fireplaces	50
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	191
Conventional Wood Stoves	0
Catalytic Wood Stoves	15
Non-Catalytic Wood Stoves	15
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
2771293.5	923,765	594,961	198,320	31,768

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	4,755,720	453	0.0330	0.0040	9,160,347
Apartments Low Rise	1,339,268	453	0.0330	0.0040	4,626,293
General Office Building	1,788,300	453	0.0330	0.0040	1,762,498
Free-Standing Discount store	785,026	453	0.0330	0.0040	431,956
General Light Industry	494,383	453	0.0330	0.0040	1,766,825
Manufacturing	1,535,681	453	0.0330	0.0040	5,488,218
Parking Lot	0.00	453	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	453	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	4,755,720	453	0.0330	0.0040	9,160,347
Apartments Low Rise	1,339,268	453	0.0330	0.0040	4,626,293
General Office Building	1,788,300	453	0.0330	0.0040	1,762,498
Free-Standing Discount store	785,026	453	0.0330	0.0040	431,956
General Light Industry	494,383	453	0.0330	0.0040	1,766,825
Manufacturing	1,535,681	453	0.0330	0.0040	5,488,218
Parking Lot	0.00	453	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	453	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	16,858,083	9,825,857
Apartments Low Rise	9,144,422	507,609
General Office Building	15,591,160	271,073
Free-Standing Discount store	6,497,790	232,350
General Light Industry	11,562,500	58,718
Manufacturing	35,916,131	182,373
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	16,858,083	9,825,857
Apartments Low Rise	9,144,422	507,609
General Office Building	15,591,160	271,073
Free-Standing Discount store	6,497,790	232,350
General Light Industry	11,562,500	58,718
Manufacturing	35,916,131	182,373
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	134	0.00
Apartments Low Rise	72.7	0.00
General Office Building	81.6	0.00
Free-Standing Discount store	377	0.00
General Light Industry	62.0	0.00
Manufacturing	193	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	134	0.00
Apartments Low Rise	72.7	0.00

General Office Building	81.6	0.00
Free-Standing Discount store	377	0.00
General Light Industry	62.0	0.00
Manufacturing	193	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Free-Standing Discount store	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Free-Standing Discount store	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

Manufacturing	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Free-Standing Discount store	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Free-Standing Discount store	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0
Manufacturing	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	24.9	annual days of extreme heat
Extreme Precipitation	18.8	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.99	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	4	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3
Extreme Precipitation	4	1	1	4

Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack	N/A	N/A	N/A	N/A
Air Quality	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	58.2
AQ-PM	16.9
AQ-DPM	45.2
Drinking Water	4.56
Lead Risk Housing	61.5
Pesticides	0.00
Toxic Releases	5.53
Traffic	22.6
Effect Indicators	—

CleanUp Sites	42.6
Groundwater	43.8
Haz Waste Facilities/Generators	22.0
Impaired Water Bodies	0.00
Solid Waste	75.7
Sensitive Population	—
Asthma	71.8
Cardio-vascular	90.5
Low Birth Weights	20.7
Socioeconomic Factor Indicators	—
Education	34.4
Housing	62.4
Linguistic	0.00
Poverty	76.4
Unemployment	57.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	31.06634159
Employed	19.33786732
Education	—
Bachelor's or higher	14.23071988
High school enrollment	100
Preschool enrollment	10.59925574
Transportation	—

Auto Access	39.77928911
Active commuting	62.6331323
Social	—
2-parent households	84.88387014
Voting	53.04760683
Neighborhood	—
Alcohol availability	45.25856538
Park access	27.25522905
Retail density	12.57538817
Supermarket access	45.29706147
Tree canopy	96.7406647
Housing	—
Homeownership	61.5167458
Housing habitability	27.51186963
Low-inc homeowner severe housing cost burden	39.89477736
Low-inc renter severe housing cost burden	1.026562299
Uncrowded housing	42.30719877
Health Outcomes	—
Insured adults	15.50109072
Arthritis	0.0
Asthma ER Admissions	24.7
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0

Life Expectancy at Birth	8.4
Cognitively Disabled	11.9
Physically Disabled	6.2
Heart Attack ER Admissions	4.1
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	97.5
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	50.6
SLR Inundation Area	0.0
Children	24.2
Elderly	25.1
English Speaking	87.2
Foreign-born	10.8
Outdoor Workers	29.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	90.6
Traffic Density	12.5
Traffic Access	0.0
Other Indices	—

Hardship	62.7
Other Decision Support	—
2016 Voting	52.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	39.0
Healthy Places Index Score for Project Location (b)	34.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health and Equity Evaluation Scorecard not completed.

8. User Changes to Default Data

Screen	Justification
Characteristics: Project Details	Data inputs based on City characteristics.
Land Use	Landscaping for parking areas included under Land Use Type.
Operations: Vehicle Data	Weekday Trip Rate for residential uses per Shasta Regional Transportation Agency Data.
Operations: Hearths	Based on historical trends.

Shasta Lake 2040 General Plan Update - 20-Year Planning Period Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Shasta Lake 2040 General Plan Update - 20-Year Planning Period
Lead Agency	—
Land Use Scale	Plan/community
Analysis Level for Defaults	Air District
Windspeed (m/s)	2.70
Precipitation (days)	25.2
Location	40.68063830156839, -122.36230814983116
County	Shasta
City	Shasta Lake
Air District	Shasta County AQMD
Air Basin	Sacramento Valley
TAZ	150
EDFZ	15
Electric Utility	City of Shasta Lake
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	542	Dwelling Unit	176	1,056,900	813,000	—	1,339	—
Apartments Low Rise	294	Dwelling Unit	18.4	311,640	42,000	—	726	—

General Office Building	87.7	1000sqft	2.01	87,722	27,413	—	—	—
Free-Standing Discount store	87.7	1000sqft	2.01	87,722	23,497	—	—	—
General Light Industry	50.0	1000sqft	1.15	50,000	5,938	—	—	—
Manufacturing	155	1000sqft	3.57	155,313	18,443	—	—	—
Parking Lot	1,085	Space	9.76	0.00	0.00	—	—	—
Other Asphalt Surfaces	104	1000sqft	2.39	0.00	0.00	—	—	—

2. Emissions Summary

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	35.0	33.5	21.9	195	0.47	0.27	18.2	18.5	0.26	3.23	3.49	—	47,915	47,915	1.71	2.44	19.6	48,703
Area	1,093	1,121	21.3	1,406	2.48	185	—	185	184	—	184	20,026	7,518	27,544	21.4	1.38	—	28,491
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	1,129	1,155	51.2	1,606	3.00	186	18.2	204	185	3.23	188	20,705	78,489	99,194	93.3	4.40	83.5	102,920
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.6	30.0	25.1	175	0.43	0.27	18.2	18.5	0.26	3.23	3.49	—	43,643	43,643	2.04	2.62	0.51	44,476

Area	1,086	1,114	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	1,118	1,145	53.7	1,521	2.95	186	18.2	204	185	3.23	188	20,705	74,022	94,727	93.6	4.59	64.4	98,498
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	27.6	26.2	20.5	149	0.38	0.24	16.0	16.3	0.23	2.84	3.07	—	39,156	39,156	1.64	2.21	7.44	39,862
Area	247	293	4.93	333	0.56	41.6	—	41.6	41.4	—	41.4	4,499	1,741	6,240	4.81	0.31	—	6,453
Energy	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	23,056	23,056	1.83	0.14	—	23,142
Water	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Waste	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Total	276	319	33.4	487	0.99	42.4	16.0	58.5	42.2	2.84	45.0	5,178	63,953	69,131	76.6	3.10	71.3	72,041
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.04	4.78	3.75	27.1	0.07	0.04	2.93	2.97	0.04	0.52	0.56	—	6,483	6,483	0.27	0.37	1.23	6,600
Area	45.2	53.4	0.90	60.8	0.10	7.59	—	7.59	7.55	—	7.55	745	288	1,033	0.80	0.05	—	1,068
Energy	0.16	0.08	1.45	0.96	0.01	0.11	—	0.11	0.11	—	0.11	—	3,817	3,817	0.30	0.02	—	3,831
Water	—	—	—	—	—	—	—	—	—	—	—	30.3	0.00	30.3	3.11	0.07	—	130
Waste	—	—	—	—	—	—	—	—	—	—	—	82.1	0.00	82.1	8.21	0.00	—	287
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	10.6
Total	50.4	58.3	6.10	88.9	0.18	7.74	2.93	10.7	7.70	0.52	8.22	857	10,588	11,445	12.7	0.51	11.8	11,927

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	8.64	8.26	5.46	48.8	0.12	0.07	0.75	0.82	0.06	0.23	0.30	—	12,049	12,049	0.43	0.61	4.93	12,246
Apartments Low Rise	4.69	4.48	2.96	26.5	0.06	0.04	0.41	0.45	0.03	0.13	0.16	—	6,536	6,536	0.23	0.33	2.67	6,643
General Office Building	2.39	2.26	1.71	16.5	0.04	0.02	0.28	0.30	0.02	0.08	0.11	—	4,357	4,357	0.13	0.20	1.81	4,422
Free-Standing Discount store	15.8	15.2	9.30	79.1	0.18	0.11	1.15	1.26	0.10	0.35	0.45	—	18,613	18,613	0.74	1.00	7.53	18,937
General Light Industry	0.70	0.66	0.50	4.84	0.01	0.01	0.08	0.09	0.01	0.02	0.03	—	1,275	1,275	0.04	0.06	0.53	1,294
Manufacturing	2.78	2.63	2.00	19.3	0.05	0.03	0.32	0.35	0.03	0.10	0.13	—	5,085	5,085	0.15	0.24	2.11	5,161
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	35.0	33.5	21.9	195	0.47	0.27	2.99	3.26	0.26	0.92	1.18	—	47,915	47,915	1.71	2.44	19.6	48,703
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	7.81	7.40	6.24	43.5	0.11	0.07	0.75	0.82	0.06	0.23	0.30	—	10,973	10,973	0.51	0.66	0.13	11,181
Apartments Low Rise	4.24	4.01	3.39	23.6	0.06	0.04	0.41	0.45	0.03	0.13	0.16	—	5,952	5,952	0.27	0.36	0.07	6,065
General Office Building	2.17	2.03	1.96	14.0	0.04	0.02	0.28	0.30	0.02	0.08	0.11	—	3,961	3,961	0.15	0.22	0.05	4,029
Free-Standing Discount store	14.2	13.6	10.6	73.0	0.17	0.11	1.15	1.26	0.10	0.35	0.45	—	16,975	16,975	0.89	1.08	0.20	17,319
General Light Industry	0.63	0.59	0.57	4.10	0.01	0.01	0.08	0.09	0.01	0.02	0.03	—	1,159	1,159	0.04	0.06	0.01	1,179
Manufacturing	2.53	2.37	2.29	16.3	0.05	0.03	0.32	0.35	0.03	0.10	0.13	—	4,622	4,622	0.18	0.25	0.05	4,702
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	31.6	30.0	25.1	175	0.43	0.27	2.99	3.26	0.26	0.92	1.18	—	43,643	43,643	2.04	2.62	0.51	44,476
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	1.43	1.36	1.07	7.74	0.02	0.01	0.14	0.15	0.01	0.04	0.05	—	1,854	1,854	0.08	0.10	0.35	1,888
Apartments Low Rise	0.78	0.74	0.58	4.20	0.01	0.01	0.07	0.08	0.01	0.02	0.03	—	1,006	1,006	0.04	0.06	0.19	1,024
General Office Building	0.30	0.28	0.25	1.92	0.01	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	507	507	0.02	0.03	0.10	515

Free-Standing Discount store	2.10	2.00	1.48	10.5	0.03	0.02	0.18	0.19	0.02	0.05	0.07	—	2,395	2,395	0.11	0.14	0.45	2,441
General Light Industry	0.11	0.10	0.09	0.68	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	—	178	178	0.01	0.01	0.03	181
Manufacturing	0.32	0.30	0.27	2.06	0.01	< 0.005	0.04	0.04	< 0.005	0.01	0.02	—	542	542	0.02	0.03	0.10	551
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.04	4.78	3.75	27.1	0.07	0.04	0.48	0.52	0.04	0.15	0.19	—	6,483	6,483	0.27	0.37	1.23	6,600

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5,905	5,905	0.43	0.05	—	5,931
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,663	1,663	0.12	0.01	—	1,670
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,220	2,220	0.16	0.02	—	2,230

Free-Sta Discount store	—	—	—	—	—	—	—	—	—	—	—	—	975	975	0.07	0.01	—	979
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	614	614	0.04	0.01	—	617
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	1,907	1,907	0.14	0.02	—	1,915
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	13,284	13,284	0.97	0.12	—	13,343
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5,905	5,905	0.43	0.05	—	5,931
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,663	1,663	0.12	0.01	—	1,670
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,220	2,220	0.16	0.02	—	2,230
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	975	975	0.07	0.01	—	979
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	614	614	0.04	0.01	—	617
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	1,907	1,907	0.14	0.02	—	1,915

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	13,284	13,284	0.97	0.12	—	13,343
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	978	978	0.07	0.01	—	982
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	275	275	0.02	< 0.005	—	277
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	368	368	0.03	< 0.005	—	369
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	161	161	0.01	< 0.005	—	162
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	102	102	0.01	< 0.005	—	102
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	316	316	0.02	< 0.005	—	317
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,199	2,199	0.16	0.02	—	2,209

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.27	0.14	2.31	0.98	0.01	0.19	—	0.19	0.19	—	0.19	—	2,936	2,936	0.26	0.01	—	2,944
Apartments Low Rise	0.14	0.07	1.17	0.50	0.01	0.09	—	0.09	0.09	—	0.09	—	1,483	1,483	0.13	< 0.005	—	1,487
General Office Building	0.05	0.03	0.47	0.40	< 0.005	0.04	—	0.04	0.04	—	0.04	—	565	565	0.05	< 0.005	—	566
Free-Standing Discount store	0.01	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	138	138	0.01	< 0.005	—	139
General Light Industry	0.10	0.05	0.95	0.80	0.01	0.07	—	0.07	0.07	—	0.07	—	1,132	1,132	0.10	< 0.005	—	1,136
Manufacturing	0.32	0.16	2.95	2.48	0.02	0.22	—	0.22	0.22	—	0.22	—	3,518	3,518	0.31	0.01	—	3,528
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	9,772	9,772	0.86	0.02	—	9,799
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.27	0.14	2.31	0.98	0.01	0.19	—	0.19	0.19	—	0.19	—	2,936	2,936	0.26	0.01	—	2,944

Apartments	0.14	0.07	1.17	0.50	0.01	0.09	—	0.09	0.09	—	0.09	—	1,483	1,483	0.13	< 0.005	—	1,487
General Office Building	0.05	0.03	0.47	0.40	< 0.005	0.04	—	0.04	0.04	—	0.04	—	565	565	0.05	< 0.005	—	566
Free-Standing Discount store	0.01	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	138	138	0.01	< 0.005	—	139
General Light Industry	0.10	0.05	0.95	0.80	0.01	0.07	—	0.07	0.07	—	0.07	—	1,132	1,132	0.10	< 0.005	—	1,136
Manufacturing	0.32	0.16	2.95	2.48	0.02	0.22	—	0.22	0.22	—	0.22	—	3,518	3,518	0.31	0.01	—	3,528
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.90	0.45	7.97	5.25	0.05	0.62	—	0.62	0.62	—	0.62	—	9,772	9,772	0.86	0.02	—	9,799
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.05	0.02	0.42	0.18	< 0.005	0.03	—	0.03	0.03	—	0.03	—	486	486	0.04	< 0.005	—	487
Apartments Low Rise	0.02	0.01	0.21	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	245	245	0.02	< 0.005	—	246
General Office Building	0.01	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.5	93.5	0.01	< 0.005	—	93.8
Free-Standing Discount store	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.9	22.9	< 0.005	< 0.005	—	23.0

General Light Industry	0.02	0.01	0.17	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	187	187	0.02	< 0.005	—	188
Manufacturing	0.06	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	582	582	0.05	< 0.005	—	584
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.16	0.08	1.45	0.96	0.01	0.11	—	0.11	0.11	—	0.11	—	1,618	1,618	0.14	< 0.005	—	1,622

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1,086	1,064	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Consumer Products	—	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	7.30	6.84	0.58	64.2	< 0.005	0.04	—	0.04	0.05	—	0.05	—	195	195	0.01	< 0.005	—	196
Total	1,093	1,121	21.3	1,406	2.48	185	—	185	184	—	184	20,026	7,518	27,544	21.4	1.38	—	28,491

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1,086	1,064	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Consumer Products	—	37.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1,086	1,114	20.7	1,341	2.47	185	—	185	184	—	184	20,026	7,323	27,349	21.4	1.38	—	28,295
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	44.5	43.6	0.85	55.0	0.10	7.58	—	7.58	7.54	—	7.54	745	272	1,017	0.80	0.05	—	1,052
Consumer Products	—	6.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	2.35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.66	0.62	0.05	5.78	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Total	45.2	53.4	0.90	60.8	0.10	7.59	—	7.59	7.55	—	7.55	745	288	1,033	0.80	0.05	—	1,068

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	32.3	0.00	32.3	3.31	0.08	—	139
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	17.5	0.00	17.5	1.80	0.04	—	75.2
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	0.00	29.9	3.06	0.07	—	128
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	12.5	0.00	12.5	1.28	0.03	—	53.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.2	0.00	22.2	2.27	0.05	—	95.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	68.8	0.00	68.8	7.06	0.17	—	295
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	32.3	0.00	32.3	3.31	0.08	—	139
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	17.5	0.00	17.5	1.80	0.04	—	75.2

General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	0.00	29.9	3.06	0.07	—	128
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	12.5	0.00	12.5	1.28	0.03	—	53.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	22.2	0.00	22.2	2.27	0.05	—	95.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	68.8	0.00	68.8	7.06	0.17	—	295
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	183	0.00	183	18.8	0.45	—	786
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	5.35	0.00	5.35	0.55	0.01	—	22.9
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.90	0.00	2.90	0.30	0.01	—	12.4
General Office Building	—	—	—	—	—	—	—	—	—	—	—	4.95	0.00	4.95	0.51	0.01	—	21.2
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	2.06	0.00	2.06	0.21	0.01	—	8.84
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	3.67	0.00	3.67	0.38	0.01	—	15.7

Manufacturing	—	—	—	—	—	—	—	—	—	—	—	11.4	0.00	11.4	1.17	0.03	—	48.9
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	30.3	0.00	30.3	3.11	0.07	—	130

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	72.2	0.00	72.2	7.22	0.00	—	253
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	39.2	0.00	39.2	3.91	0.00	—	137
General Office Building	—	—	—	—	—	—	—	—	—	—	—	44.0	0.00	44.0	4.39	0.00	—	154
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	203	0.00	203	20.3	0.00	—	711
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	33.4	0.00	33.4	3.34	0.00	—	117

Manufact	—	—	—	—	—	—	—	—	—	—	—	104	0.00	104	10.4	0.00	—	363
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	72.2	0.00	72.2	7.22	0.00	—	253
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	39.2	0.00	39.2	3.91	0.00	—	137
General Office Building	—	—	—	—	—	—	—	—	—	—	—	44.0	0.00	44.0	4.39	0.00	—	154
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	203	0.00	203	20.3	0.00	—	711
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	33.4	0.00	33.4	3.34	0.00	—	117
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	104	0.00	104	10.4	0.00	—	363
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	496	0.00	496	49.6	0.00	—	1,735
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	12.0	0.00	12.0	1.19	0.00	—	41.8
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	6.49	0.00	6.49	0.65	0.00	—	22.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.28	0.00	7.28	0.73	0.00	—	25.5
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	33.7	0.00	33.7	3.36	0.00	—	118
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	5.53	0.00	5.53	0.55	0.00	—	19.4
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	17.2	0.00	17.2	1.72	0.00	—	60.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	82.1	0.00	82.1	8.21	0.00	—	287

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.57	7.57
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.23	2.23
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.42	0.42
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.0	13.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.4	40.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.57	7.57
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.23	2.23
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.42	0.42

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.0	13.0
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.4	40.4
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.9	63.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37	0.37
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Free-Standing Discount store	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.15	2.15
Manufacturing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.69	6.69
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	10.6

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	3,295	3,295	3,295	1,202,806	16,566	16,566	16,566	6,046,417
Apartments Low Rise	1,788	1,788	1,788	652,445	8,986	8,986	8,986	3,279,791
General Office Building	854	194	61.4	236,068	6,075	1,378	437	1,678,523
Free-Standing Discount store	4,660	6,207	5,282	1,813,941	20,312	25,309	21,536	7,738,207
General Light Industry	248	99.5	250	82,881	1,763	707	1,778	589,312
Manufacturing	610	997	791	252,348	4,340	7,090	5,621	1,794,280
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	190
Gas Fireplaces	298
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	54
Conventional Wood Stoves	0
Catalytic Wood Stoves	27
Non-Catalytic Wood Stoves	27
Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	53
Gas Fireplaces	50
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	191
Conventional Wood Stoves	0
Catalytic Wood Stoves	15
Non-Catalytic Wood Stoves	15
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
2771293.5	923,765	594,961	198,320	31,768

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	4,755,720	453	0.0330	0.0040	9,160,347
Apartments Low Rise	1,339,268	453	0.0330	0.0040	4,626,293
General Office Building	1,788,300	453	0.0330	0.0040	1,762,498
Free-Standing Discount store	785,026	453	0.0330	0.0040	431,956
General Light Industry	494,383	453	0.0330	0.0040	1,766,825
Manufacturing	1,535,681	453	0.0330	0.0040	5,488,218
Parking Lot	0.00	453	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	453	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)

Single Family Housing	16,858,083	9,825,857
Apartments Low Rise	9,144,422	507,609
General Office Building	15,591,160	271,073
Free-Standing Discount store	6,497,790	232,350
General Light Industry	11,562,500	58,718
Manufacturing	35,916,131	182,373
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	134	0.00
Apartments Low Rise	72.7	0.00
General Office Building	81.6	0.00
Free-Standing Discount store	377	0.00
General Light Industry	62.0	0.00
Manufacturing	193	0.00
Parking Lot	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Free-Standing Discount store	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Free-Standing Discount store	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0
Manufacturing	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

Appendix C.

Native American Heritage Commission and Tribal Consultation Documentation

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CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

July 29, 2021

Kelli Hayward, Cultural Resources Director
Wintu Tribe of Northern California & Toyon-Wintu Center
P.O. Box 995
Shasta Lake, CA 96019

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Tribal Cultural Resources Consultation (AB 52)

Dear Kelli:

Pursuant to Public Resources Code (PRC) Section 21080.3.1 (Assembly Bill 52 of 2014), the Wintu Tribe of Northern California requested in writing to be notified of proposed projects in the City of Shasta Lake. Pursuant to PRC Section 21080.3.1(b), this letter serves as formal notification of the City's 2040 General Plan update.

The 2040 General Plan includes updates to the goals, policies, and implementation actions in the Land Use, Circulation, Conservation, Open Space, and Health and Safety (including Noise and Air Quality) Elements[1] and minor revisions to the General Plan land use designations. The update also addresses changes in state law that have occurred in the past few years. Additional information on the General Plan update is included in Attachment A and on the *Plan Shasta Lake* website: https://planshastalake.com/. Information on proposed changes to existing land use designations, including an interactive land use map that identifies both current and proposed land use designations can be viewed at: https://planshastalake.com/land-use/

If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed project may have on tribal cultural resources, you must respond in writing within 30 days of receipt of this letter to the following address:

Peter Bird, AICP, Senior Planner
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org

The City will begin the consultation process within 30 days of receiving the tribe's written request for consultation. If we have not received a response from the tribe at the close of the 30-day period, we will assume you do not wish to engage in formal consultation regarding this project. If you have any questions, please feel free to contact me at **530.275.7416.**

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
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Paiute/White Mountain Apache

COMMISSIONER
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Chumash

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

August 26, 2021

Peter Bird
City of Shasta Lake

Via Email to: pbird@cityofshastalake.org;cthompson@enplan.com

Re: Native American Consultation, Pursuant to Senate Bill 18, Government Code §65352.3 and §65352.4, City of Shasta Lake 2040 General Plan Update, Shasta County

Dear Mr. Bird:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties.

Government Code §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

The law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

The NAHC also believes that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources that have already been recorded or are adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code §6254.10.

3. The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we are able to assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Katy.Sanchez@nahc.ca.gov.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Environmental Planner

Attachment

Native American Heritage Commission
Native American Contacts List
August 26, 2021

Greenville Rancheria
Kyle Self, Chairperson
P.O. Box 279 Maidu
Greenville ,CA 95947
kself@greenvillerancheria.com
(530) 284-7990
(530) 284-6612 Fax

Mooretown Rancheria of Maidu Indians
Benjamin Clark, Chairperson
#1 Alverda Drive Maidu
Oroville ,CA 95966 KonKow / Concow
(530) 533-3625
(530) 533-3680 Fax

Mooretown Rancheria of Maidu Indians
Guy Taylor, Cultural Resources
#1 Alverda Drive Maidu
Oroville ,CA 95966 KonKow/Concow
(530) 533-3625
(530) 533-3680 Fax

Nor-Rel-Muk Nation
John Hayward, Chairperson
P.O. Box 1967 Wintu
Weaverville ,CA 96093
nrmwintu@gmail.com
(530) 410-1125

Nor-Rel-Muk Nation
Tracy Foster-Olstad, Cultural Resources Officer
P.O. Box 1967 Wintu
Weaverville ,CA 96093
(530) 410-1125

Quartz Valley Indian Community
Frieda Bennett, Chairwoman
13601 Quartz Valley Road Karuk
Fort Jones ,CA 96032 Shasta
frieda.bennett@qvir-nsn.gov Upper Klamath
(530) 468-5907
(530) 468-5908 Fax

Redding Rancheria
Jack Potter, Jr., Chairperson
2000 Redding Rancheria Road Wintu
Redding ,CA 96001 Pit River
melodieh@redding-rancheria.com Yana
(530) 225-8979
(530) 241-1879 Fax

Redding Rancheria
James Hayward Sr., Cultural Resources Program Manage
2000 Redding Rancheria Road Wintu
Redding ,CA 96001 Pit River
jamesh@redding-rancheria.com Yana
(530) 242-4543
(530) 241-1879 Fax

Shasta Indian Nation
Janice Crowe, Chairwoman
19349 Kinene Court Shasta
Redding ,CA 96003
twocrowes63@att.net
(530) 244-2742

Shasta Nation
Roy V. Hall, Jr, Chairperson
10808 Quartz Valley Road Shasta
Fort Jones ,CA 96032
(530) 468-2314

Native American Heritage Commission
Native American Contacts List
August 26, 2021

Winnemem Wintu Tribe
Caleen Sisk, Chief
14840 Bear Mountain Road Wintu
Redding ,CA 96003
(530) 229-4096
caleenwintu@gmail.com

Winnemem Wintu Tribe
Mark Miyoshi, THPO
P. O. Box 774 Wintu
Mount Shasta ,CA 06067
(530) 229-4096
markmwinnemem@gmail.com

Wintu Tribe of Northern California
Wade McMaster, Chairperson
P.O. Box 995 Wintu
Shasta Lake ,CA 96019
wintu.tribe@gmail.com
(530) 605-1726

CITY OF SHASTA LAKE California

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Shasta Lake, CA 96019
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August 27, 2021

Kyle Self
Greenville Rancheria
PO Box 279
Greenville, CA 95947

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Self:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

The proposed 2040 General Plan includes updates to the goals, policies, and implementation actions in the Land Use, Circulation, Conservation, Open Space, and Health and Safety (including Noise and Air Quality) Elements[1] and minor revisions to the General Plan land use designations. The proposed updates also address changes in state law that have occurred in the past few years. Additional information on the General Plan update is included in Attachment A and on the *Plan Shasta Lake* website: https://planshastalake.com/. Information on proposed changes to existing land use designations, including an interactive land use map that identifies both current and proposed land use designations, can be viewed at: https://planshastalake.com/land-use/.

If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed 2040 General Plan update may have on Native American cultural resources and/or sacred sites, please contact me as indicated below. Although Government Code §65352.3(a)(2) states that a tribe has 90 days from the date of notification of a project in which to request consultation (unless a shorter timeframe has been agreed to by a tribe), a response by October 1, 2021, would be appreciated.

Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

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August 27, 2021

Benjamin Clark
Mooretown Rancheria of Maidu Indians
#1 Alverda Dr.
Oroville, CA 95966

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Clark:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

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August 27, 2021

Guy Taylor
Mooretown Rancheria of Maidu Indians
#1 Alverda Dr.
Oroville, CA 95966

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Taylor:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed 2040 General Plan update may have on Native American cultural resources and/or sacred sites, please contact me as indicated below. Although Government Code §65352.3(a)(2) states that a tribe has 90 days from the date of notification of a project in which to request consultation (unless a shorter timeframe has been agreed to by a tribe), a response by October 1, 2021, would be appreciated.

Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
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August 27, 2021

John Hayward
Nor-Rel-Muk Nation
PO Box 1967
Weaverville, CA 96093

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Hayward:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed 2040 General Plan update may have on Native American cultural resources and/or sacred sites, please contact me as indicated below. Although Government Code §65352.3(a)(2) states that a tribe has 90 days from the date of notification of a project in which to request consultation (unless a shorter timeframe has been agreed to by a tribe), a response by October 1, 2021, would be appreciated.

Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
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August 27, 2021

Tracy Foster-Olstad
Nor-Rel-Muk Nation
PO Box 1967
Weaverville, CA 96093

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Ms. Foster-Olstad:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

The proposed 2040 General Plan includes updates to the goals, policies, and implementation actions in the Land Use, Circulation, Conservation, Open Space, and Health and Safety (including Noise and Air Quality) Elements[1] and minor revisions to the General Plan land use designations. The proposed updates also address changes in state law that have occurred in the past few years. Additional information on the General Plan update is included in Attachment A and on the *Plan Shasta Lake* website: https://planshastalake.com/. Information on proposed changes to existing land use designations, including an interactive land use map that identifies both current and proposed land use designations, can be viewed at: https://planshastalake.com/land-use/.

If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed 2040 General Plan update may have on Native American cultural resources and/or sacred sites, please contact me as indicated below. Although Government Code §65352.3(a)(2) states that a tribe has 90 days from the date of notification of a project in which to request consultation (unless a shorter timeframe has been agreed to by a tribe), a response by October 1, 2021, would be appreciated.

Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

August 27, 2021

Frieda Bennett
Quartz Valley Indian Community
13601 Quartz Valley Rd.
Fort Jones, CA 96032

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Ms. Bennett:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

The proposed 2040 General Plan includes updates to the goals, policies, and implementation actions in the Land Use, Circulation, Conservation, Open Space, and Health and Safety (including Noise and Air Quality) Elements[1] and minor revisions to the General Plan land use designations. The proposed updates also address changes in state law that have occurred in the past few years. Additional information on the General Plan update is included in Attachment A and on the *Plan Shasta Lake* website: https://planshastalake.com/. Information on proposed changes to existing land use designations, including an interactive land use map that identifies both current and proposed land use designations, can be viewed at: https://planshastalake.com/land-use/.

If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed 2040 General Plan update may have on Native American cultural resources and/or sacred sites, please contact me as indicated below. Although Government Code §65352.3(a)(2) states that a tribe has 90 days from the date of notification of a project in which to request consultation (unless a shorter timeframe has been agreed to by a tribe), a response by October 1, 2021, would be appreciated.

Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

August 27, 2021

Jack Potter, Jr.
Redding Rancheria
2000 Redding Rancheria Rd.
Redding, CA 96001

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Potter, Jr.:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
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(530) 275-7400

www.cityofshastalake.org

August 27, 2021

James Hayward, Sr.
Redding Rancheria
2000 Redding Rancheria Rd.
Redding, CA 96001

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Hayward, Sr.:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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If you would like to engage in formal consultation with the City regarding possible significant effects that the proposed 2040 General Plan update may have on Native American cultural resources and/or sacred sites, please contact me as indicated below. Although Government Code §65352.3(a)(2) states that a tribe has 90 days from the date of notification of a project in which to request consultation (unless a shorter timeframe has been agreed to by a tribe), a response by October 1, 2021, would be appreciated.

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City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

August 27, 2021

Janice Crowe
Shasta Indian Nation
19349 Kinene Ct.
Redding, CA 96003

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Ms. Crowe:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

[1] *The updated General Plan Housing Element for the planning period from April 15, 2020, through April 15, 2028, was adopted by the Shasta Lake City Council on August 4, 2020.*

CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

August 27, 2021

Roy V. Hall, Jr.
Shasta Nation
10808 Quartz Valley Rd.
Fort Jones, CA 96032

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Hall, Jr.:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

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CITY OF SHASTA LAKE California

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Shasta Lake, CA 96019
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www.cityofshastalake.org

August 27, 2021

Caleen Sisk
Winnemem Wintu Tribe
14840 Bear Mountain Rd.
Redding, CA 96003

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Ms. Sisk:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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Peter Bird, AICP, Senior Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

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CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

August 27, 2021

Mark Miyoshi
Winnemem Wintu Tribe
PO Box 774
Mt. Shasta, CA 96067

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. Miyoshi:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

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CITY OF SHASTA LAKE California

PO BOX 777 | 4477 Main Street
Shasta Lake, CA 96019
(530) 275-7400

www.cityofshastalake.org

August 27, 2021

Wade McMaster
Wintu Tribe of Northern California
PO Box 995
Shasta Lake, CA 96019

RE: City of Shasta Lake 2040 General Plan Update
Formal Notification Initiating Native American Consultation (SB 18, 2004)

Dear Mr. McMaster:

Senate Bill (SB) 18 of 2004 (California Government Code §65352.3) requires local governments to contact tribal organizations identified by the Native American Heritage Commission (NAHC) prior to adopting or amending a general plan or specific plan, and prior to designating open space. The intent of SB 18 is to provide Native American tribes an opportunity to participate in land use decisions for the purpose of protecting or mitigating impacts to Native American cultural resources and sacred sites.

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City of Shasta Lake
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Shasta Lake, CA 96019
pbird@cityofshastalake.org
530.275.7416

Sincerely,

Peter Bird, AICP
Senior Planner

Enclosure: Attachment A – Project Summary

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Mooretown Rancheria
#1 Alverda Drive
Oroville, CA 95966
(530) 533-3625 Office
(530) 533-3680 Fax

September 10, 2021

Mr. Peter Bird
AICP, City Planner
City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019

Re: Proposed (2040 General Plan Updates) – Shasta Lake City, Shasta Co, CA

Dear Mr. Bird:

Thank you for your letter dated, September 3, 2021, seeking information regarding the proposed general plan Updates. Mooretown Rancheria has no comment.

THPO
Contact information

Thank you for providing us with this notice and opportunity to comment.

Sincerely,

Matthew Hatcher
Tribal Historic Preservation Officer

Appendix D.

Noise Impact Analysis

Digital hyperlink:

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Existing Noise Contours

1	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	1870
I-5 NB Off-On Ramp	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
Shasta Damn Boulevard East of to Cascade Boulevard	:Segment	Automobiles	75.54	14.02	10.43	93.40	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.20	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	3.40	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	109.95	2.39	2.54	81.63	0.40	0.42	20.25	3.32	3.53
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	14.09	-2.54	-2.27	12.79	-10.32	-10.05	6.74	-1.11	-0.85
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	51.83	44.16	49.27	50.53	36.37	41.48	44.48	45.58	50.69
	DAY LEQ	54.20		EVENING LEQ	51.19		NIGHT LEQ	52.59	

CNEL	59.36	Day hour	89.00
DAY LEQ	54.20	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

CNEL Contours	100 FT	75	70	65	60	55
I-5 NB Off-On Ramp	59	9	20	42	91	195
Shasta Damn Boulevard East of to Cascade Boulevard						

Existing Noise Contours

2	:Id
Red Bluff Street	:Road
Montana Avenue to Locust Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	103
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	6.32	0.08	0.03	4.67	0.01	0.01	1.17	0.10	0.04
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	3.72	-15.41	-19.51	2.41	-22.91	-22.91	-3.60	-14.16	-18.26
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	33.54	26.06	28.11	32.23	18.56	24.71	26.21	27.31	29.36
	DAY LEQ	35.20		EVENING LEQ	33.09		NIGHT LEQ	32.60	

CNEL	39.68	Day hour	90.00
DAY LEQ	35.20	Absorptive?	yes
		Use hour?	no
		GRADE dB	1.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

CNEL Contours	100 FT	75	70	65	60	55
Red Bluff Street	40	0	1	2	4	10
Montana Avenue to Locust Avenue						

Existing Noise Contours

3	:Id	Vehicle Distribution (Light Truck Mix)				ADT	315
Red Bluff Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
Grand River Avenue to Washington Avenue	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	19.32	0.24	0.09	14.28	0.04	0.04	3.58	0.32	0.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.57	-10.55	-14.65	7.26	-18.05	-18.05	1.25	-9.30	-13.40
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.39	30.92	32.97	37.08	23.41	29.57	31.07	32.16	34.22
	DAY LEQ	40.05		EVENING LEQ	37.95		NIGHT LEQ	37.45	

CNEL	44.53	Day hour	91.00
DAY LEQ	40.05	Absorptive?	yes
		Use hour?	no
		GRADE dB	2.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

CNEL Contours	100 FT	75	70	65	60	55
Red Bluff Street	45	1	2	4	9	20
Grand River Avenue to Washington Avenue						

Existing Noise Contours

4	:Id
Main Street	:Road
Montana Avenue to Locust Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	166
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	10.18	0.12	0.05	7.53	0.02	0.02	1.89	0.17	0.06
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	5.79	-13.33	-17.44	4.48	-20.83	-20.83	-1.53	-12.08	-16.19
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	35.61	28.13	30.18	34.30	20.63	26.79	28.29	29.38	31.43
	DAY LEQ	37.27		EVENING LEQ	35.16		NIGHT LEQ	34.67	

CNEL	41.75	
DAY LEQ	37.27	

Day hour	92.00
Absorptive?	yes
Use hour?	no
GRADE dB	3.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

CNEL Contours	100 FT	75	70	65	60	55
Main Street	42	1	1	3	6	13
Montana Avenue to Locust Avenue						

Existing Noise Contours

5	:Id
Main Street	:Road
Grand River Avenue to Washington Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	215
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	13.19	0.16	0.06	9.75	0.03	0.03	2.44	0.22	0.08
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	6.92	-12.21	-16.31	5.60	-19.71	-19.71	-0.41	-10.96	-15.06
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	36.74	29.26	31.31	35.42	21.76	27.91	29.41	30.51	32.56
	DAY LEQ	38.39		EVENING LEQ	36.29		NIGHT LEQ	35.80	

CNEL	42.87
DAY LEQ	38.39

Day hour	93.00
Absorptive?	yes
Use hour?	no
GRADE dB	4.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Main Street	43	1	2	3	7	16
Grand River Avenue to Washington Avenue						

Existing Noise Contours

6	:Id	Vehicle Distribution (Light Truck Mix)				ADT	695
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
La Mesa Avenue	:Road					Speed	25
Lassen Avenue to San Gorgonio Avenue	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance 100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle -90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	42.63	0.52	0.20	31.51	0.09	0.09	7.89	0.70	0.27
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.01	-7.11	-11.22	10.70	-14.62	-14.62	4.69	-5.87	-9.97
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	41.83	34.35	36.40	40.52	26.85	33.00	34.51	35.60	37.65
	DAY LEQ	43.49		EVENING LEQ	41.38		NIGHT LEQ	40.89	

CNEL	47.97	Day hour	94.00
DAY LEQ	43.49	Absorptive?	yes
		Use hour?	no
		GRADE dB	5.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
La Mesa Avenue	48	2	3	7	16	34
Lassen Avenue to San Gorgonio Avenue						

Existing Noise Contours

7	:Id	Vehicle Distribution (Light Truck Mix)				ADT	599
Vallecito Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
Montana Avenue to Hardenbrook Avenue	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	36.74	0.45	0.17	27.15	0.08	0.08	6.80	0.60	0.23
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	11.37	-7.76	-11.86	10.05	-15.26	-15.26	4.04	-6.51	-10.61
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	41.19	33.71	35.76	39.87	26.21	32.36	33.86	34.96	37.01
	DAY LEQ	42.84		EVENING LEQ	40.74		NIGHT LEQ	40.25	

CNEL	47.32	Day hour	95.00
DAY LEQ	42.84	Absorptive?	yes
		Use hour?	no
		GRADE dB	6.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Vallecito Street	47	1	3	7	14	31
Montana Avenue to Hardenbrook Avenue						

Existing Noise Contours

8	:Id
Vallecito Street	:Road
Ellen Drive to Washington Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1049
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	64.34	0.79	0.31	47.55	0.14	0.14	11.91	1.05	0.41
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	13.80	-5.33	-9.43	12.49	-12.83	-12.83	6.47	-4.08	-8.18
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.62	36.14	38.19	42.31	28.64	34.79	36.29	37.39	39.44
	DAY LEQ	45.28		EVENING LEQ	43.17		NIGHT LEQ	42.68	

CNEL	49.76	Day hour	96.00
DAY LEQ	45.28	Absorptive?	yes
		Use hour?	no
		GRADE dB	7.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Vallecito Street	50	2	4	10	21	45
Ellen Drive to Washington Avenue						

Existing Noise Contours

9	:Id
Coeur D'Alene Avenue	:Road
Ashby Road to D'Alene Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	400
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	24.53	0.30	0.12	18.13	0.05	0.05	4.54	0.40	0.16
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	9.61	-9.51	-13.62	8.30	-17.02	-17.02	2.29	-8.26	-12.37
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	39.43	31.95	34.00	38.12	24.45	30.60	32.11	33.20	35.25
	DAY LEQ	41.09		EVENING LEQ	38.98		NIGHT LEQ	38.49	

CNEL	45.57
DAY LEQ	41.09

Day hour	97.00
Absorptive?	yes
Use hour?	no
GRADE dB	8.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Coeur D'Alene Avenue	46	1	2	5	11	24
Ashby Road to D'Alene Avenue						

Existing Noise Contours

10	:Id
Pine Grove Avenue	:Road
Lake Boulevard to Ashby Road	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	3865
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	223.85	4.64	7.73	166.20	0.77	1.29	41.23	6.44	10.74
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	16.20	-0.63	1.59	14.91	-8.41	-6.20	8.86	0.79	3.01
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	57.70	48.54	54.99	56.41	40.76	47.20	50.36	49.97	56.41
	DAY LEQ	59.89		EVENING LEQ	57.01		NIGHT LEQ	58.10	

CNEL	64.92
DAY LEQ	59.89

Day hour	98.00
Absorptive?	yes
Use hour?	no
GRADE dB	9.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	65	21	46	99	213	459
Lake Boulevard to Ashby Road						

Existing Noise Contours

11	:Id
Pine Grove Avenue	:Road
Ashby Road to Coeur D'Alene Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	3809
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	220.60	4.57	7.62	163.79	0.76	1.27	40.63	6.35	10.58
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	16.14	-0.70	1.52	14.85	-8.48	-6.26	8.79	0.73	2.95
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	57.64	48.48	54.92	56.35	40.70	47.14	50.29	49.90	56.35
	DAY LEQ	59.83		EVENING LEQ	56.94		NIGHT LEQ	58.04	

CNEL	64.86
DAY LEQ	59.83

Day hour	99.00
Absorptive?	yes
Use hour?	no
GRADE dB	10.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	65	21	45	98	211	454
Ashby Road to Coeur D'Alene Avenue						

Existing Noise Contours

12	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	4901
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow		
Pine Grove Avenue	:Road	Automobiles	75.54	14.02	10.43	92.00	Speed	50
Coeur D'Alene Avenue to Smith Avenue (S)	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Distance	100
		Heavy Trucks	48.00	2.00	50.00	5.00	Left Angle	-90
							Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	283.85	5.88	9.80	210.74	0.98	1.63	52.28	8.17	13.61
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	17.24	0.40	2.62	15.94	-7.38	-5.16	9.89	1.83	4.04
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.73	49.57	56.02	57.44	41.79	48.24	51.39	51.00	57.44
	DAY LEQ	60.93		EVENING LEQ	58.04		NIGHT LEQ	59.13	

CNEL	65.96	Day hour	0.00
DAY LEQ	60.93	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	66	25	54	116	249	537
Coeur D'Alene Avenue to Smith Avenue (S)						

Existing Noise Contours

13	:Id
Pine Grove Avenue	:Road
Smith Avenue to Cascade Boulevard (N)	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	5036
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	291.67	6.04	10.07	216.55	1.01	1.68	53.72	8.39	13.99
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	17.35	0.52	2.74	16.06	-7.26	-5.05	10.01	1.94	4.16
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.85	49.69	56.14	57.56	41.91	48.35	51.51	51.12	57.56
	DAY LEQ	61.04		EVENING LEQ	58.16		NIGHT LEQ	59.25	

CNEL	66.07	Day hour	0.00
DAY LEQ	61.04	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	66	25	55	118	254	547
Smith Avenue to Cascade Boulevard (N)						

Existing Noise Contours

14	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	5036
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
Pine Grove Avenue	:Road					Speed	50
Cascade Boulevard (N) to Virginia Avneue	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance 100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	291.67	6.04	10.07	216.55	1.01	1.68	53.72	8.39	13.99
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	17.35	0.52	2.74	16.06	-7.26	-5.05	10.01	1.94	4.16
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.85	49.69	56.14	57.56	41.91	48.35	51.51	51.12	57.56
	DAY LEQ	61.04		EVENING LEQ	58.16		NIGHT LEQ	59.25	

CNEL	66.07	Day hour	0.00
DAY LEQ	61.04	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	66	25	55	118	254	547
Cascade Boulevard (N) to Virginia Avneue						

Existing Noise Contours

15	:Id
Pine Grove Avenue	:Road
Virginia Avenue to Marilyn Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	516
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	29.89	0.62	1.03	22.19	0.10	0.17	5.50	0.86	1.43
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	10.47	-6.37	-4.15	9.18	-14.15	-11.93	3.12	-4.94	-2.72
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.29	35.10	43.47	39.00	27.32	35.69	32.94	36.53	44.90
	DAY LEQ	45.58		EVENING LEQ	40.86		NIGHT LEQ	45.72	

CNEL	52.12
DAY LEQ	45.58

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	52	3	6	14	30	64
Virginia Avenue to Marilyn Avenue						

Existing Noise Contours

16	:Id
Pine Grove Avenue	:Road
Marilyn Avenue to Leona Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	516
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	29.89	0.62	1.03	22.19	0.10	0.17	5.50	0.86	1.43
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	10.47	-6.37	-4.15	9.18	-14.15	-11.93	3.12	-4.94	-2.72
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.29	35.10	43.47	39.00	27.32	35.69	32.94	36.53	44.90
	DAY LEQ	45.58		EVENING LEQ	40.86		NIGHT LEQ	45.72	

CNEL	52.12
DAY LEQ	45.58

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Pine Grove Avenue	52	3	6	14	30	64
Marilyn Avenue to Leona Avenue						

Existing Noise Contours

17 :Id

Akrich Street :Road

Virginia Avenue to Marilyn Avenue :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	548
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	31.74	0.66	1.10	23.56	0.11	0.18	5.85	0.91	1.52
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	10.73	-6.11	-3.89	9.44	-13.89	-11.67	3.38	-4.68	-2.46
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.55	35.36	43.73	39.26	27.58	35.95	33.20	36.79	45.16
	DAY LEQ	45.84		EVENING LEQ	41.12		NIGHT LEQ	45.98	

CNEL	52.38
DAY LEQ	45.84

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Akrich Street	52	3	7	14	31	67
Virginia Avenue to Marilyn Avenue						

Existing Noise Contours

18	:Id	ADT	1142
Trinity Street	:Road	Speed	25
Butterfly Lane to Sioux Drive	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	70.04	0.86	0.33	51.77	0.15	0.15	12.97	1.14	0.44
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.17	-4.96	-9.06	12.86	-12.46	-12.46	6.84	-3.71	-7.81
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.99	36.51	38.56	42.68	29.01	35.16	36.66	37.76	39.81
	DAY LEQ	45.65		EVENING LEQ	43.54		NIGHT LEQ	43.05	

CNEL	50.13	Day hour	0.00
DAY LEQ	45.65	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Trinity Street	50	2	5	10	22	47
Butterfly Lane to Sioux Drive						

Existing Noise Contours

19	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	1051
Lake Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
North of Mason Drive	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	60.87	1.26	2.10	45.19	0.21	0.35	11.21	1.75	2.92
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	12.10	-4.74	-2.52	10.80	-12.52	-10.30	4.75	-3.31	-1.09
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.59	40.47	47.91	46.29	32.69	40.12	40.24	41.90	49.33
	DAY LEQ	51.15		EVENING LEQ	47.38		NIGHT LEQ	50.48	

CNEL	57.04	Day hour	0.00
DAY LEQ	51.15	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	57	6	14	29	63	137
North of Mason Drive						

Existing Noise Contours

20	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	1051
Lake Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
Mason Drive to Duval Drive	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	60.87	1.26	2.10	45.19	0.21	0.35	11.21	1.75	2.92
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	12.10	-4.74	-2.52	10.80	-12.52	-10.30	4.75	-3.31	-1.09
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.59	40.47	47.91	46.29	32.69	40.12	40.24	41.90	49.33
	DAY LEQ	51.15		EVENING LEQ	47.38		NIGHT LEQ	50.48	

CNEL	57.04	Day hour	0.00
DAY LEQ	51.15	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	57	6	14	29	63	137
Mason Drive to Duval Drive						

Existing Noise Contours

21	:Id	ADT	1870
Lake Boulevard	:Road	Speed	50
Duval Drive to Buckeye Street	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	108.30	2.24	3.74	80.41	0.37	0.62	19.95	3.12	5.19
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	13.05	-3.79	-1.57	11.76	-11.57	-9.35	5.70	-2.36	-0.14
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.55	45.39	51.83	53.26	37.61	44.05	47.20	46.81	53.26
	DAY LEQ	56.74		EVENING LEQ	53.85		NIGHT LEQ	54.95	

CNEL	61.77	Day hour	0.00
DAY LEQ	56.74	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	62	13	28	61	131	283
Duval Drive to Buckeye Street						

Existing Noise Contours

22	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	1870
Lake Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	50
Buckeye Street to Hill Boulevard	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	108.30	2.24	3.74	80.41	0.37	0.62	19.95	3.12	5.19
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	13.05	-3.79	-1.57	11.76	-11.57	-9.35	5.70	-2.36	-0.14
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.55	45.39	51.83	53.26	37.61	44.05	47.20	46.81	53.26
	DAY LEQ	56.74		EVENING LEQ	53.85		NIGHT LEQ	54.95	

CNEL	61.77	Day hour	0.00
DAY LEQ	56.74	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	62	13	28	61	131	283
Buckeye Street to Hill Boulevard						

Existing Noise Contours

23	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2582
Lake Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	50
Hill Boulevard to Flanagan Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	39
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	149.54	3.10	5.16	111.03	0.52	0.86	27.54	4.30	7.17
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.45	-2.38	-0.17	13.16	-10.17	-7.95	7.10	-0.96	1.26
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	-5.48	-5.48	-5.48	-5.48	-5.48	-5.48	-5.48	-5.48	-5.48
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	50.47	41.31	47.76	49.18	33.53	39.98	43.13	42.74	49.18
	DAY LEQ	52.67		EVENING LEQ	49.78		NIGHT LEQ	50.87	

CNEL	57.69	Day hour	0.00
DAY LEQ	52.67	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	58	7	15	33	70	151
Hill Boulevard to Flanagan Road						

Existing Noise Contours

24	:Id
Lake Boulevard	:Road
Flanagan Road to Consruction Way	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2810
Speed	50
Distance	100
Left Angle	40
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	162.75	3.37	5.62	120.83	0.56	0.94	29.97	4.68	7.81
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.82	-2.02	0.20	13.53	-9.80	-7.58	7.47	-0.59	1.63
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	-5.56	-5.56	-5.56	-5.56	-5.56	-5.56	-5.56	-5.56	-5.56
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	50.76	41.59	48.04	49.46	33.81	40.26	43.41	43.02	49.47
	DAY LEQ	52.95		EVENING LEQ	50.06		NIGHT LEQ	51.15	

CNEL	57.98
DAY LEQ	52.95

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	58	7	16	34	73	158
Flanagan Road to Consruction Way						

Existing Noise Contours

25	:Id
Lake Boulevard	:Road
Shasta Lake City Limit to Construction Way	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2810
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	162.75	3.37	5.62	120.83	0.56	0.94	29.97	4.68	7.81
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.82	-2.02	0.20	13.53	-9.80	-7.58	7.47	-0.59	1.63
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.32	47.16	53.60	55.03	39.37	45.82	48.97	48.58	55.03
	DAY LEQ	58.51		EVENING LEQ	55.62		NIGHT LEQ	56.72	

CNEL	63.54
DAY LEQ	58.51

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Lake Boulevard	64	17	37	80	172	371
Shasta Lake City Limit to Construction Way						

Existing Noise Contours

26	:Id	ADT	2889
Ashby Street	:Road	Speed	25
South of Shasta Dam Boulevard to Flower Street	:Segment	Distance	100
		Left Angle	28
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	177.19	2.17	0.84	130.97	0.39	0.39	32.81	2.89	1.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.20	-0.93	-5.03	16.89	-8.43	-8.43	10.87	0.32	-3.78
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	-4.63	-4.63	-4.63	-4.63	-4.63	-4.63	-4.63	-4.63	-4.63
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.39	35.91	37.96	42.08	28.41	34.56	36.07	37.16	39.21
	DAY LEQ	45.05		EVENING LEQ	42.94		NIGHT LEQ	42.45	

CNEL	49.53	Day hour	0.00
DAY LEQ	45.05	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Ashby Street	50	2	4	9	20	43
South of Shasta Dam Boulevard to Flower Street						

Existing Noise Contours

27	:Id	ADT	2889
Ashby Street	:Road	Speed	25
Flower Street to San Gorgonio Avenue	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	177.19	2.17	0.84	130.97	0.39	0.39	32.81	2.89	1.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.20	-0.93	-5.03	16.89	-8.43	-8.43	10.87	0.32	-3.78
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.02	40.54	42.59	46.71	33.04	39.19	40.69	41.79	43.84
	DAY LEQ	49.68		EVENING LEQ	47.57		NIGHT LEQ	47.08	

CNEL	54.16	Day hour	0.00
DAY LEQ	49.68	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Ashby Street	54	4	9	19	41	88
Flower Street to San Gorgonio Avenue						

Existing Noise Contours

28	:Id
Ashby Street	:Road
San Gorgonio Avenue to Los Gatos Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2470
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	151.49	1.85	0.72	111.97	0.33	0.33	28.05	2.47	0.96
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	17.52	-1.61	-5.71	16.21	-9.11	-9.11	10.19	-0.36	-4.46
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.34	39.86	41.91	46.03	32.36	38.51	40.01	41.11	43.16
	DAY LEQ	49.00		EVENING LEQ	46.89		NIGHT LEQ	46.40	

CNEL	53.48
DAY LEQ	49.00

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Ashby Street	53	4	8	17	37	79
San Gorgonio Avenue to Los Gatos Avenue						

Existing Noise Contours

29 :Id

Ashby Street :Road

Los Gatos Avenue to Arlene Court :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2470
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	151.49	1.85	0.72	111.97	0.33	0.33	28.05	2.47	0.96
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	17.52	-1.61	-5.71	16.21	-9.11	-9.11	10.19	-0.36	-4.46
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.34	39.86	41.91	46.03	32.36	38.51	40.01	41.11	43.16
	DAY LEQ	49.00		EVENING LEQ	46.89		NIGHT LEQ	46.40	

CNEL	53.48
DAY LEQ	49.00

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Ashby Street	53	4	8	17	37	79
Los Gatos Avenue to Arlene Court						

Existing Noise Contours

30	:Id	
Ashby Street	:Road	
Arlene Court to Coeur D'Alene Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2310
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	141.68	1.73	0.67	104.72	0.31	0.31	26.23	2.31	0.90
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.22	-4.91	-9.01	12.90	-12.41	-12.41	6.89	-3.66	-7.76
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.72	44.26	44.39	54.40	36.76	40.99	48.39	45.51	45.64
	DAY LEQ	56.31		EVENING LEQ	54.67		NIGHT LEQ	51.50	

CNEL	59.34	Day hour	0.00
DAY LEQ	56.31	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Ashby Street	59	9	19	42	90	195
Arlene Court to Coeur D'Alene Avenue						

Existing Noise Contours

31	:Id
Ashby Street	:Road
Coeur D'Alene Avenue to Pine Grove Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2310
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	141.68	1.73	0.67	104.72	0.31	0.31	26.23	2.31	0.90
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.22	-4.91	-9.01	12.90	-12.41	-12.41	6.89	-3.66	-7.76
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.72	44.26	44.39	54.40	36.76	40.99	48.39	45.51	45.64
	DAY LEQ	56.31		EVENING LEQ	54.67		NIGHT LEQ	51.50	

CNEL	59.34
DAY LEQ	56.31

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Ashby Street	59	9	19	42	90	195
Coeur D'Alene Avenue to Pine Grove Avenue						

Existing Noise Contours

32	:Id
Montana Avenue	:Road
Main Street to Front Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	351
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	21.53	0.26	0.10	15.91	0.05	0.05	3.99	0.35	0.14
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	9.04	-10.08	-14.18	7.73	-17.58	-17.58	1.72	-8.83	-12.93
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.86	31.39	33.44	37.55	23.88	30.04	31.54	32.63	34.69
	DAY LEQ	40.52		EVENING LEQ	38.42		NIGHT LEQ	37.92	

CNEL	45.00	Day hour	0.00
DAY LEQ	40.52	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Montana Avenue	45	1	2	5	10	22
Main Street to Front Street						

Existing Noise Contours

33 :Id

Montana Avenue :Road

Shasta Damn Boulevard to La Mesa Avenue :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1069
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	65.57	0.80	0.31	48.46	0.14	0.14	12.14	1.07	0.42
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	13.88	-5.24	-9.35	12.57	-12.75	-12.75	6.56	-4.00	-8.10
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.70	36.22	38.27	42.39	28.72	34.87	36.38	37.47	39.52
	DAY LEQ	45.36		EVENING LEQ	43.25		NIGHT LEQ	42.76	

CNEL	49.84
DAY LEQ	45.36

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Montana Avenue	50	2	5	10	21	45
Shasta Damn Boulevard to La Mesa Avenue						

Existing Noise Contours

34 :Id

Black Canyon Road :Road

North of Mussell Shoals Road :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	253
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	15.52	0.19	0.07	11.47	0.03	0.03	2.87	0.25	0.10
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	7.62	-11.50	-15.61	6.31	-19.00	-19.00	0.30	-10.25	-14.36
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	37.44	29.96	32.01	36.13	22.46	28.62	30.12	31.21	33.26
	DAY LEQ	39.10		EVENING LEQ	36.99		NIGHT LEQ	36.50	

CNEL	43.58
DAY LEQ	39.10

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Black Canyon Road	44	1	2	4	8	17
North of Mussell Shoals Road						

Existing Noise Contours

35	:Id	Vehicle Distribution (Light Truck Mix)				ADT	253
Black Canyon Road	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
Arrow Rock Street to Pensacoloa Street	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	15.52	0.19	0.07	11.47	0.03	0.03	2.87	0.25	0.10
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	7.62	-11.50	-15.61	6.31	-19.00	-19.00	0.30	-10.25	-14.36
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	37.44	29.96	32.01	36.13	22.46	28.62	30.12	31.21	33.26
	DAY LEQ	39.10		EVENING LEQ	36.99		NIGHT LEQ	36.50	

CNEL	43.58	Day hour	0.00
DAY LEQ	39.10	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Black Canyon Road	44	1	2	4	8	17
Arrow Rock Street to Pensacoloa Street						

Existing Noise Contours

36	:Id
Mc Connel Avenue	:Road
Main Street to Front Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	265
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	16.25	0.20	0.08	12.01	0.04	0.04	3.01	0.27	0.10
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	7.82	-11.30	-15.40	6.51	-18.80	-18.80	0.50	-10.05	-14.15
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	37.64	30.16	32.22	36.33	22.66	28.82	30.32	31.41	33.47
	DAY LEQ	39.30		EVENING LEQ	37.20		NIGHT LEQ	36.70	

CNEL	43.78
DAY LEQ	39.30

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Mc Connel Avenue	44	1	2	4	8	18
Main Street to Front Street						

Existing Noise Contours

37	:Id	ADT	704
Cabello Street	:Road	Speed	25
Shasta Dam Boulevard to La Mesa Avenue	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	43.18	0.53	0.21	31.91	0.09	0.09	7.99	0.70	0.27
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.07	-7.06	-11.16	10.75	-14.56	-14.56	4.74	-5.81	-9.91
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	41.89	34.41	36.46	40.57	26.91	33.06	34.56	35.66	37.71
	DAY LEQ	43.55		EVENING LEQ	41.44		NIGHT LEQ	40.95	

CNEL	48.03	Day hour	0.00
DAY LEQ	43.55	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cabello Street	48	2	3	7	16	34
Shasta Dam Boulevard to La Mesa Avenue						

Existing Noise Contours

38 :Id

Cabello Street :Road

Bonneville Street to Vallecito Street :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	492
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	30.18	0.37	0.14	22.30	0.07	0.07	5.59	0.49	0.19
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	10.51	-8.61	-12.72	9.20	-16.12	-16.12	3.19	-7.37	-11.47
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.33	32.85	34.90	39.02	25.35	31.50	33.01	34.10	36.15
	DAY LEQ	41.99		EVENING LEQ	39.88		NIGHT LEQ	39.39	

CNEL	46.47
DAY LEQ	41.99

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cabello Street	46	1	3	6	13	27
Bonneville Street to Vallecito Street						

Existing Noise Contours

39 :Id

Median Avenue :Road

Front Street to Shasta Dam Boulevard :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1205
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	73.91	0.90	0.35	54.63	0.16	0.16	13.68	1.21	0.47
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.40	-4.72	-8.83	13.09	-12.23	-12.23	7.08	-3.48	-7.58
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.22	36.74	38.79	42.91	29.24	35.39	36.90	37.99	40.04
	DAY LEQ	45.88		EVENING LEQ	43.77		NIGHT LEQ	43.28	

CNEL	50.36
DAY LEQ	45.88

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Median Avenue	50	2	5	11	23	49
Front Street to Shasta Dam Boulevard						

Existing Noise Contours

40	:Id
Mussel Shoals Avenue	:Road
Black Canyon Road to Chico Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	760
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	46.61	0.57	0.22	34.45	0.10	0.10	8.63	0.76	0.30
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.40	-6.73	-10.83	11.09	-14.23	-14.23	5.07	-5.48	-9.58
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.22	34.74	36.79	40.91	27.24	33.39	34.89	35.99	38.04
	DAY LEQ	43.88		EVENING LEQ	41.77		NIGHT LEQ	41.28	

CNEL	48.36
DAY LEQ	43.88

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Mussel Shoals Avenue	48	2	4	8	17	36
Black Canyon Road to Chico Street						

Existing Noise Contours

41	:Id	ADT	760
Mussel Shoals Avenue	:Road	Speed	25
Chico Street to Main Street	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	46.61	0.57	0.22	34.45	0.10	0.10	8.63	0.76	0.30
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.40	-6.73	-10.83	11.09	-14.23	-14.23	5.07	-5.48	-9.58
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.22	34.74	36.79	40.91	27.24	33.39	34.89	35.99	38.04
	DAY LEQ	43.88		EVENING LEQ	41.77		NIGHT LEQ	41.28	

CNEL	48.36	Day hour	0.00
DAY LEQ	43.88	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Mussel Shoals Avenue	48	2	4	8	17	36
Chico Street to Main Street						

Existing Noise Contours

42	:Id	ADT	828
Mussel Shoals Avenue	:Road	Speed	25
Main Street to Front Street	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	50.78	0.62	0.24	37.54	0.11	0.11	9.40	0.83	0.32
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.77	-6.35	-10.46	11.46	-13.86	-13.86	5.45	-5.10	-9.21
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.59	35.11	37.16	41.28	27.61	33.76	35.27	36.36	38.41
	DAY LEQ	44.25		EVENING LEQ	42.14		NIGHT LEQ	41.65	

CNEL	48.73	Day hour	0.00
DAY LEQ	44.25	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Mussel Shoals Avenue	49	2	4	8	18	38
Main Street to Front Street						

Existing Noise Contours

43 :Id

Mussel Shoals Avenue :Road

Front Street to Shasta Dam Boulevard :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	828
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	50.78	0.62	0.24	37.54	0.11	0.11	9.40	0.83	0.32
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.77	-6.35	-10.46	11.46	-13.86	-13.86	5.45	-5.10	-9.21
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.59	35.11	37.16	41.28	27.61	33.76	35.27	36.36	38.41
	DAY LEQ	44.25		EVENING LEQ	42.14		NIGHT LEQ	41.65	

CNEL	48.73
DAY LEQ	44.25

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Mussel Shoals Avenue	49	2	4	8	18	38
Front Street to Shasta Dam Boulevard						

Existing Noise Contours

44	:Id	Vehicle Distribution (Light Truck Mix)				ADT	774
Grand Coulee Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
Shasta Dam Boulevard to Fort Peck Street	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	47.47	0.58	0.23	35.09	0.10	0.10	8.79	0.77	0.30
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	11.02	-8.11	-12.21	9.71	-15.61	-15.61	3.69	-6.86	-10.96
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.51	37.10	38.22	45.19	29.60	34.82	39.18	38.35	39.46
	DAY LEQ	47.52		EVENING LEQ	45.68		NIGHT LEQ	43.80	

CNEL	51.23	Day hour	0.00
DAY LEQ	47.52	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Grand Coulee Boulevard	51	3	6	12	26	56
Shasta Dam Boulevard to Fort Peck Street						

Existing Noise Contours

45 :Id

Grand Coulee Boulevard :Road

Fort Peck Street to Boulder Street :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	701
Speed	35
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	42.99	0.53	0.20	31.78	0.09	0.09	7.96	0.70	0.27
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	10.59	-8.54	-12.64	9.27	-16.04	-16.04	3.26	-7.29	-11.39
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.08	36.67	37.79	44.76	29.17	34.39	38.75	37.92	39.03
	DAY LEQ	47.09		EVENING LEQ	45.25		NIGHT LEQ	43.36	

CNEL	50.80
DAY LEQ	47.09

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Grand Coulee Boulevard	51	2	5	11	24	52
Fort Peck Street to Boulder Street						

Existing Noise Contours

46 :Id

Grand Coulee Boulevard :Road

Boulder Street to Cascade Boulevard :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	701
Speed	35
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	42.99	0.53	0.20	31.78	0.09	0.09	7.96	0.70	0.27
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	10.59	-8.54	-12.64	9.27	-16.04	-16.04	3.26	-7.29	-11.39
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.08	36.67	37.79	44.76	29.17	34.39	38.75	37.92	39.03
	DAY LEQ	47.09		EVENING LEQ	45.25		NIGHT LEQ	43.36	

CNEL	50.80
DAY LEQ	47.09

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Grand Coulee Boulevard	51	2	5	11	24	52
Boulder Street to Cascade Boulevard						

Existing Noise Contours

47 :Id

Shasta Way :Road

Front Street to Shasta Dam Boulevard :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	743
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	45.57	0.56	0.22	33.68	0.10	0.10	8.44	0.74	0.29
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.30	-6.82	-10.93	10.99	-14.33	-14.33	4.98	-5.58	-9.68
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.12	34.64	36.69	40.81	27.14	33.29	34.80	35.89	37.94
	DAY LEQ	43.78		EVENING LEQ	41.67		NIGHT LEQ	41.18	

CNEL	48.26
DAY LEQ	43.78

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Shasta Way	48	2	4	8	16	36
Front Street to Shasta Dam Boulevard						

Existing Noise Contours

48	:Id
Shasta Street	:Road
Shasta Dam Boulevard to Fort Peck Street	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	632
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	38.76	0.47	0.18	28.65	0.08	0.08	7.18	0.63	0.25
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	11.60	-7.53	-11.63	10.29	-15.03	-15.03	4.27	-6.28	-10.38
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	41.42	33.94	35.99	40.11	26.44	32.59	34.09	35.19	37.24
	DAY LEQ	43.08		EVENING LEQ	40.97		NIGHT LEQ	40.48	

CNEL	47.56	Day hour	0.00
DAY LEQ	43.08	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Shasta Street	48	1	3	7	15	32
Shasta Dam Boulevard to Fort Peck Street						

Existing Noise Contours

49	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2066
Cascade Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
North of Kennett Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	119.66	2.48	4.13	88.84	0.41	0.69	22.04	3.44	5.74
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	14.45	-2.38	-0.16	13.16	-10.16	-7.95	7.11	-0.96	1.26
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.19	44.31	51.37	50.90	36.53	43.59	44.84	45.74	52.80
	DAY LEQ	55.18		EVENING LEQ	51.77		NIGHT LEQ	54.13	

CNEL	60.77	Day hour	0.00
DAY LEQ	55.18	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	61	11	24	52	113	242
North of Kennett Street						

Existing Noise Contours

50	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2066
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
Cascade Boulevard	:Road	Automobiles	75.54	14.02	10.43	92.00	Speed 40
Kennett Street to Shasta Dam Boulevard	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Distance 100
		Heavy Trucks	48.00	2.00	50.00	5.00	Left Angle -90
							Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	119.66	2.48	4.13	88.84	0.41	0.69	22.04	3.44	5.74
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	14.45	-2.38	-0.16	13.16	-10.16	-7.95	7.11	-0.96	1.26
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.19	44.31	51.37	50.90	36.53	43.59	44.84	45.74	52.80
	DAY LEQ	55.18		EVENING LEQ	51.77		NIGHT LEQ	54.13	

CNEL	60.77	Day hour	0.00
DAY LEQ	55.18	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	61	11	24	52	113	242
Kennett Street to Shasta Dam Boulevard						

Existing Noise Contours

51	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	4123
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow		
Cascade Boulevard	:Road	Automobiles	75.54	14.02	10.43	92.00	Speed	40
Shasta Dam Boulevard to Second Street	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Distance	100
		Heavy Trucks	48.00	2.00	50.00	5.00	Left Angle	-90
							Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	238.79	4.95	8.25	177.29	0.82	1.37	43.98	6.87	11.45
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	17.45	0.62	2.84	16.16	-7.16	-4.95	10.11	2.04	4.26
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.19	47.31	54.38	53.90	39.53	46.59	47.85	48.74	55.80
	DAY LEQ	58.18		EVENING LEQ	54.77		NIGHT LEQ	57.13	

CNEL	63.77	Day hour	0.00
DAY LEQ	58.18	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	64	18	38	83	178	384
Shasta Dam Boulevard to Second Street						

Existing Noise Contours

52	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	4123
Cascade Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
Second Street to Fell Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	238.79	4.95	8.25	177.29	0.82	1.37	43.98	6.87	11.45
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	17.45	0.62	2.84	16.16	-7.16	-4.95	10.11	2.04	4.26
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.19	47.31	54.38	53.90	39.53	46.59	47.85	48.74	55.80
	DAY LEQ	58.18		EVENING LEQ	54.77		NIGHT LEQ	57.13	

CNEL	63.77	Day hour	0.00
DAY LEQ	58.18	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	64	18	38	83	178	384
Second Street to Fell Street						

Existing Noise Contours

53	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2955
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
Cascade Boulevard	:Road	Automobiles	75.54	14.02	10.43	92.00	Speed 40
Fell Street to Cottage Avenue	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Distance 100
		Heavy Trucks	48.00	2.00	50.00	5.00	Left Angle -90
							Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	171.14	3.55	5.91	127.07	0.59	0.99	31.52	4.93	8.21
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	16.01	-0.83	1.39	14.71	-8.61	-6.39	8.66	0.60	2.82
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	53.75	45.86	52.93	52.45	38.08	45.15	46.40	47.29	54.36
	DAY LEQ	56.74		EVENING LEQ	53.33		NIGHT LEQ	55.68	

CNEL	62.32	Day hour	0.00
DAY LEQ	56.74	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	62	14	31	66	143	308
Fell Street to Cottage Avenue						

Existing Noise Contours

54	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	3012
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow		
Cascade Boulevard	:Road	Automobiles	75.54	14.02	10.43	92.00	Speed	40
Cottage Avenue to Pine Grove Avenue	:Segment	Medium Trucks	48.00	2.00	50.00	3.00	Distance	100
		Heavy Trucks	48.00	2.00	50.00	5.00	Left Angle	-90
							Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	174.45	3.61	6.02	129.52	0.60	1.00	32.13	5.02	8.37
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	16.09	-0.75	1.47	14.80	-8.53	-6.31	8.74	0.68	2.90
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	53.83	45.95	53.01	52.54	38.16	45.23	46.48	47.37	54.44
	DAY LEQ	56.82		EVENING LEQ	53.41		NIGHT LEQ	55.76	

CNEL	62.41	Day hour	0.00
DAY LEQ	56.82	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	62	14	31	67	145	312
Cottage Avenue to Pine Grove Avenue						

Existing Noise Contours

55	:Id
Cascade Boulevard	:Road
Pine Grove Avenue to Riddle Road	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	3012
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	174.45	3.61	6.02	129.52	0.60	1.00	32.13	5.02	8.37
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	16.09	-0.75	1.47	14.80	-8.53	-6.31	8.74	0.68	2.90
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	53.83	45.95	53.01	52.54	38.16	45.23	46.48	47.37	54.44
	DAY LEQ	56.82		EVENING LEQ	53.41		NIGHT LEQ	55.76	

CNEL	62.41	Day hour	0.00
DAY LEQ	56.82	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	62	14	31	67	145	312
Pine Grove Avenue to Riddle Road						

Existing Noise Contours

56	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	3058		
Cascade Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40	
Riddle Road to Arrowhead Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100	
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90	
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90	

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	177.11	3.67	6.12	131.49	0.61	1.02	32.62	5.10	8.49
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	16.16	-0.68	1.54	14.86	-8.46	-6.24	8.81	0.75	2.96
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	53.90	46.01	53.08	52.60	38.23	45.30	46.55	47.44	54.50
	DAY LEQ	56.89		EVENING LEQ	53.47		NIGHT LEQ	55.83	

CNEL	62.47	Day hour	0.00
DAY LEQ	56.89	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Cascade Boulevard	62	15	31	68	146	315
Riddle Road to Arrowhead Road						

Existing Noise Contours

57 :Id

Virginia Avenue :Road

Akrich Street to Pine Grove Avenue :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1126
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	69.06	0.84	0.33	51.05	0.15	0.15	12.79	1.13	0.44
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.11	-5.02	-9.12	12.79	-12.52	-12.52	6.78	-3.77	-7.87
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.93	36.45	38.50	42.61	28.95	35.10	36.60	37.70	39.75
	DAY LEQ	45.59		EVENING LEQ	43.48		NIGHT LEQ	42.99	

CNEL	50.06
DAY LEQ	45.59

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Virginia Avenue	50	2	5	10	22	47
Akrich Street to Pine Grove Avenue						

Existing Noise Contours

58 :Id

Twin View Boulevard :Road

Virginia Avenue to Poppy Lane :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	652
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	39.99	0.49	0.19	29.56	0.09	0.09	7.40	0.65	0.25
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	9.69	-9.43	-13.54	8.38	-16.93	-16.93	2.37	-8.18	-12.29
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.43	37.26	38.00	46.12	29.76	34.60	40.11	38.51	39.25
	DAY LEQ	48.26		EVENING LEQ	46.51		NIGHT LEQ	44.11	

CNEL	51.70
DAY LEQ	48.26

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Twin View Boulevard	52	3	6	13	28	60
Virginia Avenue to Poppy Lane						

Existing Noise Contours

59	:Id	ADT	652
Twin View Boulevard	:Road	Speed	40
Poppy Lane to Mendocino Street	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	39.99	0.49	0.19	29.56	0.09	0.09	7.40	0.65	0.25
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	9.69	-9.43	-13.54	8.38	-16.93	-16.93	2.37	-8.18	-12.29
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.43	37.26	38.00	46.12	29.76	34.60	40.11	38.51	39.25
	DAY LEQ	48.26		EVENING LEQ	46.51		NIGHT LEQ	44.11	

CNEL	51.70	Day hour	0.00
DAY LEQ	48.26	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Twin View Boulevard	52	3	6	13	28	60
Poppy Lane to Mendocino Street						

Existing Noise Contours

60	:Id
Twin View Boulevard	:Road
Mendocino Street to Shasta Lake City Limit	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	438
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	26.86	0.33	0.13	19.86	0.06	0.06	4.97	0.44	0.17
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	7.97	-11.16	-15.26	6.65	-18.66	-18.66	0.64	-9.91	-14.01
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	45.70	35.53	36.28	44.39	28.03	32.88	38.38	36.78	37.53
	DAY LEQ	46.53		EVENING LEQ	44.78		NIGHT LEQ	42.38	

CNEL	49.97
DAY LEQ	46.53

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Twin View Boulevard	50	2	5	10	21	46
Mendocino Street to Shasta Lake City Limit						

Existing Noise Contours

61 :Id

Deer Creek Road :Road

South of Shasta Dam Boulevard :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	315
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	19.32	0.24	0.09	14.28	0.04	0.04	3.58	0.32	0.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.57	-10.55	-14.65	7.26	-18.05	-18.05	1.25	-9.30	-13.40
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.39	30.92	32.97	37.08	23.41	29.57	31.07	32.16	34.22
	DAY LEQ	40.05		EVENING LEQ	37.95		NIGHT LEQ	37.45	

CNEL	44.53	Day hour	0.00
DAY LEQ	40.05	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

CNEL Contours	100 FT	75	70	65	60	55
Deer Creek Road	45	1	2	4	9	20
South of Shasta Dam Boulevard						

Existing Noise Contours

61	:Id
Interstate 5	:Road
North of Shasta Dam Blvd (Hwy 151)	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	68.30
Medium Trucks	48.00	2.00	50.00	8.90
Heavy Trucks	48.00	2.00	50.00	22.80

ADT	22600
Speed	65
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	971.73	80.46	206.11	721.46	13.41	34.35	178.97	111.74	286.27
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	21.44	10.62	14.71	20.15	2.84	6.92	14.09	12.05	16.13
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	67.36	62.71	70.29	66.07	54.93	62.51	60.01	64.14	71.72
	DAY LEQ	72.56		EVENING LEQ	67.88		NIGHT LEQ	72.66	

CNEL	79.07
DAY LEQ	72.56

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Interstate 5	79	187	402	866	1867	4021
North of Shasta Dam Blvd (Hwy 151)						

Existing Noise Contours

61	:Id
Interstate 5	:Road
Shasta Dam Blvd to Pine Grove (Hwy 151)	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	76.90
Medium Trucks	48.00	2.00	50.00	6.30
Heavy Trucks	48.00	2.00	50.00	16.80

ADT	31000
Speed	65
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1500.73	78.12	208.32	1114.21	13.02	34.72	276.39	108.50	289.33
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	23.33	10.49	14.75	22.03	2.71	6.97	15.98	11.92	16.18
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.25	62.58	70.34	67.96	54.80	62.56	61.90	64.01	71.77
	DAY LEQ	73.23		EVENING LEQ	69.22		NIGHT LEQ	72.81	

CNEL	79.31	Day hour	0.00
DAY LEQ	73.23	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Interstate 5	79	194	418	900	1939	4178
Shasta Dam Blvd to Pine Grove (Hwy 151)						

Existing Noise Contours

61	:Id
Interstate 5	:Road
Pine Grove to Arrowhead	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	79.50
Medium Trucks	48.00	2.00	50.00	5.60
Heavy Trucks	48.00	2.00	50.00	14.90

ADT	35500
Speed	65
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1776.69	79.52	211.58	1319.10	13.25	35.26	327.22	110.44	293.86
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	24.06	10.57	14.82	22.77	2.79	7.04	16.71	12.00	16.25
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	69.98	62.66	70.41	68.69	54.88	62.63	62.63	64.09	71.83
	DAY LEQ	73.58		EVENING LEQ	69.79		NIGHT LEQ	72.93	

CNEL	79.49	Day hour	0.00
DAY LEQ	73.58	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Interstate 5	79	199	429	924	1991	4290
Pine Grove to Arrowhead						

Existing Noise Contours

61	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	1502
Shasta Dam Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	45
City Limit to Lake Boulvard	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	86.99	1.80	3.00	64.59	0.30	0.50	16.02	2.50	4.17
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	12.56	-4.28	-2.06	11.26	-12.06	-9.84	5.21	-2.85	-0.63
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.28	43.72	50.46	50.99	35.94	42.68	44.93	45.15	51.89
	DAY LEQ	54.83		EVENING LEQ	51.70		NIGHT LEQ	53.39	

CNEL	60.12	Day hour	0.00
DAY LEQ	54.83	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Shasta Dam Boulevard	60	10	22	47	102	220
City Limit to Lake Boulvard						

Existing Noise Contours

61 :Id

Shasta Dam Boulevard :Road

Lake Boulvard to Sacramento Street :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	1502
Speed	45
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	86.99	1.80	3.00	64.59	0.30	0.50	16.02	2.50	4.17
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	12.56	-4.28	-2.06	11.26	-12.06	-9.84	5.21	-2.85	-0.63
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.28	43.72	50.46	50.99	35.94	42.68	44.93	45.15	51.89
	DAY LEQ	54.83		EVENING LEQ	51.70		NIGHT LEQ	53.39	

CNEL	60.12
DAY LEQ	54.83

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Shasta Dam Boulevard	60	10	22	47	102	220
Lake Boulvard to Sacramento Street						

Existing Noise Contours

61	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	4206
Shasta Dam Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	45
Sacramento Street to North Boulevard	:Segment	Automobiles	75.54	14.02	10.43	95.30	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.60	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	1.10	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	252.34	6.06	1.85	187.35	1.01	0.31	46.47	8.41	2.57
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	17.18	0.98	-4.16	15.89	-6.80	-11.95	9.83	2.41	-2.74
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.91	48.99	48.36	55.61	41.20	40.57	49.56	50.41	49.78
	DAY LEQ	58.05		EVENING LEQ	55.90		NIGHT LEQ	54.70	

CNEL	61.99	Day hour	0.00
DAY LEQ	58.05	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Shasta Dam Boulevard	62	14	29	63	136	292
Sacramento Street to North Boulevard						

Existing Noise Contours

61	:Id
Shasta Dam Boulevard	:Road
North Boulevard to Lassen Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	95.30
Medium Trucks	48.00	2.00	50.00	3.60
Heavy Trucks	48.00	2.00	50.00	1.10

ADT	4206
Speed	30
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	252.34	6.06	1.85	187.35	1.01	0.31	46.47	8.41	2.57
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76
ADJUSTMENTS									
Flow	18.94	2.75	-2.40	17.65	-5.04	-10.19	11.59	4.17	-0.98
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	51.83	46.24	46.74	50.54	38.46	38.95	44.49	47.67	48.16
	DAY LEQ	53.83		EVENING LEQ	51.08		NIGHT LEQ	51.82	

CNEL	58.70
DAY LEQ	53.83

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Shasta Dam Boulevard	59	8	18	38	82	177
North Boulevard to Lassen Avenue						

Existing Noise Contours

61	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	4206
Shasta Dam Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
Lassen Avenue to Nell Orr	:Segment	Automobiles	75.54	14.02	10.43	95.30	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.60	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	1.10	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	252.34	6.06	1.85	187.35	1.01	0.31	46.47	8.41	2.57
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	17.69	1.50	-3.65	16.40	-6.29	-11.43	10.35	2.92	-2.23
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.43	48.19	47.89	54.14	40.41	40.10	48.08	49.61	49.31
	DAY LEQ	56.78		EVENING LEQ	54.48		NIGHT LEQ	53.82	

CNEL	60.98	Day hour	0.00
DAY LEQ	56.78	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Shasta Dam Boulevard	61	12	25	54	116	251
Lassen Avenue to Nell Orr						

Existing Noise Contours

61 :Id

Shasta Dam Boulevard :Road

Nell Orr/Shasta to Cascade :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	95.30
Medium Trucks	48.00	2.00	50.00	3.60
Heavy Trucks	48.00	2.00	50.00	1.10

ADT	13300
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	797.92	19.15	5.85	592.41	3.19	0.98	146.96	26.60	8.13
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	22.69	6.50	1.35	21.40	-1.29	-6.43	15.35	7.92	2.77
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	60.43	53.19	52.89	59.14	45.41	45.10	53.08	54.61	54.31
	DAY LEQ	61.78		EVENING LEQ	59.48		NIGHT LEQ	58.82	

CNEL	65.98
DAY LEQ	61.78

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

CNEL Contours	100 FT	75	70	65	60	55
Shasta Dam Boulevard	66	25	54	116	251	540
Nell Orr/Shasta to Cascade						

2040 Noise Contours

			ADT	15502
1	:Id			
I-5 NB Off-On Ramp	:Road		Speed	40
Shasta Damn Boulevard East of to Cascade Boulevard	:Segment		Distance	100
			Left Angle	-90
			Right Angle	90

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	95.30
Medium Trucks	48.00	2.00	50.00	3.60
Heavy Trucks	48.00	2.00	50.00	1.10

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	930.03	22.32	6.82	690.50	3.72	1.14	171.29	31.00	9.47
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	23.36	7.16	2.01	22.07	-0.62	-5.77	16.01	8.59	3.44
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	61.10	53.85	53.55	59.80	46.07	45.77	53.75	55.28	54.98
	DAY LEQ	62.45		EVENING LEQ	60.15		NIGHT LEQ	59.49	

F		CNEL	66.65	Day hour	89.00
		DAY LEQ	62.45	Absorptive?	yes
				Use hour?	no
				GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

2040 Noise Contours

2	:Id
Red Bluff Street	:Road
Montana Avenue to Locust Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	243
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	14.90	0.18	0.07	11.02	0.03	0.03	2.76	0.24	0.09
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	7.45	-11.68	-15.78	6.13	-19.18	-19.18	0.12	-10.43	-14.53
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	37.27	29.79	31.84	35.95	22.29	28.44	29.94	31.04	33.09
	DAY LEQ	38.93		EVENING LEQ	36.82		NIGHT LEQ	36.33	

CNEL	43.41
DAY LEQ	38.93

Day hour	90.00
Absorptive?	yes
Use hour?	no
GRADE dB	1.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

2040 Noise Contours

3	:Id
Red Bluff Street	:Road
Grand River Avenue to Washington Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	330
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	20.24	0.25	0.10	14.96	0.04	0.04	3.75	0.33	0.13
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.78	-10.35	-14.45	7.46	-17.85	-17.85	1.45	-9.10	-13.20
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.60	31.12	33.17	37.28	23.62	29.77	31.27	32.37	34.42
	DAY LEQ	40.26		EVENING LEQ	38.15		NIGHT LEQ	37.66	

CNEL	44.73
DAY LEQ	40.26

Day hour	91.00
Absorptive?	yes
Use hour?	no
GRADE dB	2.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

2040 Noise Contours

4	:Id
Main Street	:Road
Montana Avenue to Locust Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	186
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	11.41	0.14	0.05	8.43	0.02	0.02	2.11	0.19	0.07
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	6.29	-12.84	-16.94	4.97	-20.34	-20.34	-1.04	-11.59	-15.69
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	36.11	28.63	30.68	34.79	21.13	27.28	28.78	29.88	31.93
	DAY LEQ	37.77		EVENING LEQ	35.66		NIGHT LEQ	35.17	

CNEL	42.24
DAY LEQ	37.77

Day hour	92.00
Absorptive?	yes
Use hour?	no
GRADE dB	3.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on County of Riverside heavy truck mix.

2040 Noise Contours

5	:Id	
Main Street	:Road	
Grand River Avenue to Washington Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	226
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	13.86	0.17	0.07	10.25	0.03	0.03	2.57	0.23	0.09
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	7.13	-11.99	-16.10	5.82	-19.49	-19.49	-0.19	-10.74	-14.85
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	36.95	29.47	31.52	35.64	21.97	28.13	29.63	30.72	32.77
	DAY LEQ	38.61		EVENING LEQ	36.50		NIGHT LEQ	36.01	

CNEL	43.09
DAY LEQ	38.61

Day hour	93.00
Absorptive?	yes
Use hour?	no
GRADE dB	4.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

			ADT	729
6	:Id			
La Mesa Avenue	:Road		Speed	25
Lassen Avenue to San Gorgonio Avenue	:Segment		Distance	100
			Left Angle	-90
			Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	44.71	0.55	0.21	33.05	0.10	0.10	8.28	0.73	0.28
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.22	-6.91	-11.01	10.91	-14.41	-14.41	4.89	-5.66	-9.76
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.04	34.56	36.61	40.73	27.06	33.21	34.71	35.81	37.86
	DAY LEQ	43.70		EVENING LEQ	41.59		NIGHT LEQ	41.10	

CNEL	48.18	Day hour	94.00
DAY LEQ	43.70	Absorptive?	yes
		Use hour?	no
		GRADE dB	5.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

7	:Id
Vallecito Street	:Road
Montana Avenue to Hardenbrook Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1119
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	68.63	0.84	0.33	50.73	0.15	0.15	12.71	1.12	0.44
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.08	-5.05	-9.15	12.77	-12.55	-12.55	6.76	-3.80	-7.90
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.90	36.42	38.47	42.59	28.92	35.07	36.57	37.67	39.72
	DAY LEQ	45.56		EVENING LEQ	43.45		NIGHT LEQ	42.96	

CNEL	50.04
DAY LEQ	45.56

Day hour	95.00
Absorptive?	yes
Use hour?	no
GRADE dB	6.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

8	:Id	Vehicle Distribution (Light Truck Mix)				ADT	1348
Vallecito Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
Ellen Drive to Washington Avenue	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	82.68	1.01	0.39	61.11	0.18	0.18	15.31	1.35	0.52
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.89	-4.24	-8.34	13.58	-11.74	-11.74	7.56	-2.99	-7.09
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.71	37.23	39.28	43.40	29.73	35.88	37.38	38.48	40.53
	DAY LEQ	46.37		EVENING LEQ	44.26		NIGHT LEQ	43.77	

CNEL	50.85	Day hour	96.00
DAY LEQ	46.37	Absorptive?	yes
		Use hour?	no
		GRADE dB	7.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

9	:Id
Coeur D'Alene Avenue	:Road
Ashby Road to D'Alene Avenue	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	476
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	29.19	0.36	0.14	21.58	0.06	0.06	5.41	0.48	0.19
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	10.37	-8.76	-12.86	9.06	-16.26	-16.26	3.04	-7.51	-11.61
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.19	32.71	34.76	38.87	25.21	31.36	32.86	33.96	36.01
	DAY LEQ	41.85		EVENING LEQ	39.74		NIGHT LEQ	39.25	

CNEL	46.33
DAY LEQ	41.85

Day hour	97.00
Absorptive?	yes
Use hour?	no
GRADE dB	8.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

10	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	5632
Pine Grove Avenue	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	50
Lake Boulevard to Ashby Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	326.19	6.76	11.26	242.18	1.13	1.88	60.07	9.39	15.64
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	17.84	1.00	3.22	16.55	-6.78	-4.56	10.49	2.43	4.65
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	59.34	50.18	56.62	58.05	42.39	48.84	51.99	51.60	58.05
	DAY LEQ	61.53		EVENING LEQ	58.64		NIGHT LEQ	59.73	

CNEL	66.56	Day hour	98.00
DAY LEQ	61.53	Absorptive?	yes
		Use hour?	no
		GRADE dB	9.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

11	:Id
Pine Grove Avenue	:Road
Ashby Road to Coeur D'Alene Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	4601
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	266.47	5.52	9.20	197.84	0.92	1.53	49.08	7.67	12.78
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	16.96	0.12	2.34	15.67	-7.66	-5.44	9.61	1.55	3.77
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.46	49.30	55.74	57.17	41.52	47.96	51.11	50.72	57.17
	DAY LEQ	60.65		EVENING LEQ	57.76		NIGHT LEQ	58.86	

CNEL	65.68
DAY LEQ	60.65

Day hour	99.00
Absorptive?	yes
Use hour?	no
GRADE dB	10.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

12	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	7932
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
Pine Grove Avenue	:Road					Speed	50
Coeur D'Alene Avenue to Smith Avenue (S)	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance 100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	459.40	9.52	15.86	341.08	1.59	2.64	84.61	13.22	22.03
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	19.33	2.49	4.71	18.03	-5.29	-3.07	11.98	3.92	6.14
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	60.83	51.66	58.11	59.53	43.88	50.33	53.48	53.09	59.53
	DAY LEQ	63.02		EVENING LEQ	60.13		NIGHT LEQ	61.22	

CNEL	68.05	Day hour	0.00
DAY LEQ	63.02	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

13	:Id
Pine Grove Avenue	:Road
Smith Avenue to Cascade Boulevard (N)	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	5828
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	337.54	6.99	11.66	250.60	1.17	1.94	62.17	9.71	16.19
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	17.99	1.15	3.37	16.69	-6.63	-4.41	10.64	2.58	4.80
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	59.49	50.32	56.77	58.19	42.54	48.99	52.14	51.75	58.20
	DAY LEQ	61.68		EVENING LEQ	58.79		NIGHT LEQ	59.88	

CNEL	66.71
DAY LEQ	61.68

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

14	:Id
Pine Grove Avenue	:Road
Cascade Boulevard (N) to Virginia Avneue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	5828
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	337.54	6.99	11.66	250.60	1.17	1.94	62.17	9.71	16.19
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	17.99	1.15	3.37	16.69	-6.63	-4.41	10.64	2.58	4.80
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	59.49	50.32	56.77	58.19	42.54	48.99	52.14	51.75	58.20
	DAY LEQ	61.68		EVENING LEQ	58.79		NIGHT LEQ	59.88	

CNEL	66.71
DAY LEQ	61.68

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

15	:Id
Pine Grove Avenue	:Road
Virginia Avenue to Marilyn Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	1308
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	75.76	1.57	2.62	56.24	0.26	0.44	13.95	2.18	3.63
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.51	-2.33	-0.11	13.22	-10.11	-7.89	7.16	-0.90	1.32
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.33	39.14	47.51	43.04	31.36	39.73	36.98	40.57	48.94
	DAY LEQ	49.62		EVENING LEQ	44.90		NIGHT LEQ	49.76	

CNEL	**56.16**
DAY LEQ	49.62

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

16	:Id
Pine Grove Avenue	:Road
Marilyn Avenue to Leona Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	1308
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	75.76	1.57	2.62	56.24	0.26	0.44	13.95	2.18	3.63
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.51	-2.33	-0.11	13.22	-10.11	-7.89	7.16	-0.90	1.32
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.33	39.14	47.51	43.04	31.36	39.73	36.98	40.57	48.94
	DAY LEQ	49.62		EVENING LEQ	44.90		NIGHT LEQ	49.76	

CNEL	**56.16**
DAY LEQ	49.62

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

17	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	1943
Akrich Street	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
Virginia Avenue to Marilyn Avenue	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	112.53	2.33	3.89	83.55	0.39	0.65	20.73	3.24	5.40
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	16.23	-0.61	1.61	14.93	-8.39	-6.17	8.88	0.82	3.04
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.05	40.86	49.23	44.75	33.08	41.45	38.70	42.28	50.66
	DAY LEQ	51.34		EVENING LEQ	46.62		NIGHT LEQ	51.48	

CNEL	57.88	Day hour	0.00
DAY LEQ	51.34	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

18	:Id
Trinity Street	:Road
Butterfly Lane to Sioux Drive	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1474
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	90.41	1.11	0.43	66.82	0.20	0.20	16.74	1.47	0.57
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	15.28	-3.85	-7.95	13.96	-11.35	-11.35	7.95	-2.60	-6.70
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	45.10	37.62	39.67	43.78	30.12	36.27	37.77	38.87	40.92
	DAY LEQ	46.76		EVENING LEQ	44.65		NIGHT LEQ	44.16	

CNEL	51.23
DAY LEQ	46.76

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

19	:Id	ADT	1353
Lake Boulevard	:Road	Speed	35
North of Mason Drive	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	78.36	1.62	2.71	58.18	0.27	0.45	14.43	2.26	3.76
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	13.19	-3.64	-1.42	11.90	-11.42	-9.20	5.85	-2.22	0.00
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.68	41.57	49.00	47.39	33.78	41.22	41.34	42.99	50.43
	DAY LEQ	52.24		EVENING LEQ	48.48		NIGHT LEQ	51.58	

CNEL	58.14	Day hour	0.00
DAY LEQ	52.24	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

20	:Id	ADT	1353
Lake Boulevard	:Road	Speed	35
Mason Drive to Duval Drive	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	78.36	1.62	2.71	58.18	0.27	0.45	14.43	2.26	3.76
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	13.19	-3.64	-1.42	11.90	-11.42	-9.20	5.85	-2.22	0.00
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.68	41.57	49.00	47.39	33.78	41.22	41.34	42.99	50.43
	DAY LEQ	52.24		EVENING LEQ	48.48		NIGHT LEQ	51.58	

CNEL	58.14	Day hour	0.00
DAY LEQ	52.24	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

21	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2178
Lake Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	50
Duval Drive to Buckeye Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	126.14	2.61	4.36	93.65	0.44	0.73	23.23	3.63	6.05
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	13.71	-3.12	-0.90	12.42	-10.90	-8.69	6.37	-1.70	0.52
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.21	46.05	52.50	53.92	38.27	44.71	47.86	47.48	53.92
	DAY LEQ	57.40		EVENING LEQ	54.52		NIGHT LEQ	55.61	

CNEL	62.43	Day hour	0.00
DAY LEQ	57.40	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

22	:Id	ADT	2178
Lake Boulevard	:Road	Speed	50
Buckeye Street to Hill Boulevard	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	126.14	2.61	4.36	93.65	0.44	0.73	23.23	3.63	6.05
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	13.71	-3.12	-0.90	12.42	-10.90	-8.69	6.37	-1.70	0.52
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.21	46.05	52.50	53.92	38.27	44.71	47.86	47.48	53.92
	DAY LEQ	57.40		EVENING LEQ	54.52		NIGHT LEQ	55.61	

CNEL	62.43	Day hour	0.00
DAY LEQ	57.40	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

23	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2709
Lake Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	50
Hill Boulevard to Flanagan Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	156.90	3.25	5.42	116.49	0.54	0.90	28.90	4.52	7.53
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.66	-2.18	0.04	13.37	-9.96	-7.74	7.31	-0.75	1.47
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.16	47.00	53.44	54.87	39.22	45.66	48.81	48.42	54.87
	DAY LEQ	58.35		EVENING LEQ	55.46		NIGHT LEQ	56.56	

CNEL	63.38	Day hour	0.00
DAY LEQ	58.35	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

24	:Id
Lake Boulevard	:Road
Flanagan Road to Consruction Way	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2948
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	170.74	3.54	5.90	126.76	0.59	0.98	31.45	4.91	8.19
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	15.03	-1.81	0.41	13.73	-9.59	-7.37	7.68	-0.38	1.84
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.53	47.36	53.81	55.23	39.58	46.03	49.18	48.79	55.24
	DAY LEQ	58.72		EVENING LEQ	55.83		NIGHT LEQ	56.92	

CNEL	63.75
DAY LEQ	58.72

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

25	:Id
Lake Boulevard	:Road
Shasta Lake City Limit to Construction Way	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2948
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	170.74	3.54	5.90	126.76	0.59	0.98	31.45	4.91	8.19
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	15.03	-1.81	0.41	13.73	-9.59	-7.37	7.68	-0.38	1.84
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.53	47.36	53.81	55.23	39.58	46.03	49.18	48.79	55.24
	DAY LEQ	58.72		EVENING LEQ	55.83		NIGHT LEQ	56.92	

CNEL	63.75
DAY LEQ	58.72

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

26	:Id	
Ashby Street	:Road	
South of Shasta Dam Boulevard to Flower Street	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3088
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	189.40	2.32	0.90	139.99	0.41	0.41	35.07	3.09	1.20
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.49	-0.64	-4.74	17.18	-8.14	-8.14	11.16	0.61	-3.49
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.31	40.83	42.88	47.00	33.33	39.48	40.98	42.08	44.13
	DAY LEQ	49.97		EVENING LEQ	47.86		NIGHT LEQ	47.37	

CNEL	54.45	Day hour	0.00
DAY LEQ	49.97	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

27 :Id

Ashby Street :Road

Flower Street to San Gorgonio Avenue :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	3088
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	189.40	2.32	0.90	139.99	0.41	0.41	35.07	3.09	1.20
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.49	-0.64	-4.74	17.18	-8.14	-8.14	11.16	0.61	-3.49
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.31	40.83	42.88	47.00	33.33	39.48	40.98	42.08	44.13
	DAY LEQ	49.97		EVENING LEQ	47.86		NIGHT LEQ	47.37	

CNEL	54.45
DAY LEQ	49.97

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

28	:Id	
Ashby Street	:Road	
San Gorgonio Avenue to Los Gatos Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2876
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	176.39	2.16	0.84	130.38	0.38	0.38	32.66	2.88	1.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.18	-0.95	-5.05	16.87	-8.45	-8.45	10.85	0.30	-3.80
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.00	40.52	42.57	46.69	33.02	39.17	40.67	41.77	43.82
	DAY LEQ	49.66		EVENING LEQ	47.55		NIGHT LEQ	47.06	

CNEL	54.14
DAY LEQ	49.66

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

29	:Id
Ashby Street	:Road
Los Gatos Avenue to Arlene Court	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2876
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	176.39	2.16	0.84	130.38	0.38	0.38	32.66	2.88	1.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	18.18	-0.95	-5.05	16.87	-8.45	-8.45	10.85	0.30	-3.80
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	48.00	40.52	42.57	46.69	33.02	39.17	40.67	41.77	43.82
	DAY LEQ	49.66		EVENING LEQ	47.55		NIGHT LEQ	47.06	

CNEL	54.14
DAY LEQ	49.66

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

30	:Id	
Ashby Street	:Road	
Arlene Court to Coeur D'Alene Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2524
Speed	50
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	154.81	1.89	0.74	114.42	0.34	0.34	28.66	2.52	0.98
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.60	-4.52	-8.63	13.29	-12.03	-12.03	7.28	-3.27	-7.38
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.10	44.65	44.77	54.79	37.15	41.37	48.78	45.90	46.02
	DAY LEQ	56.69		EVENING LEQ	55.05		NIGHT LEQ	51.89	

CNEL	59.73	Day hour	0.00
DAY LEQ	56.69	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

31	:Id					ADT	2524
Ashby Street	:Road					Speed	50
Coeur D'Alene Avenue to Pine Grove Avenue	:Segment					Distance	100
						Left Angle	-90
						Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	154.81	1.89	0.74	114.42	0.34	0.34	28.66	2.52	0.98
Speed in MPH	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	71.12	78.79	83.02	71.12	78.79	83.02	71.12	78.79	83.02
ADJUSTMENTS									
Flow	14.60	-4.52	-8.63	13.29	-12.03	-12.03	7.28	-3.27	-7.38
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.10	44.65	44.77	54.79	37.15	41.37	48.78	45.90	46.02
	DAY LEQ	56.69		EVENING LEQ	55.05		NIGHT LEQ	51.89	

CNEL	59.73	Day hour	0.00
DAY LEQ	56.69	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

32	:Id
Montana Avenue	:Road
Main Street to Front Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	378
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	23.18	0.28	0.11	17.14	0.05	0.05	4.29	0.38	0.15
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	9.37	-9.76	-13.86	8.05	-17.26	-17.26	2.04	-8.51	-12.61
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	39.19	31.71	33.76	37.87	24.21	30.36	31.86	32.96	35.01
	DAY LEQ	40.85		EVENING LEQ	38.74		NIGHT LEQ	38.25	

CNEL	45.32
DAY LEQ	40.85

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

33	:Id	
Montana Avenue	:Road	
Shasta Damn Boulevard to La Mesa Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1121
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	68.75	0.84	0.33	50.82	0.15	0.15	12.73	1.12	0.44
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.09	-5.04	-9.14	12.77	-12.54	-12.54	6.76	-3.79	-7.89
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.91	36.43	38.48	42.59	28.93	35.08	36.58	37.68	39.73
	DAY LEQ	45.57		EVENING LEQ	43.46		NIGHT LEQ	42.97	

CNEL	50.05
DAY LEQ	45.57

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

34	:Id
Black Canyon Road	:Road
North of Mussell Shoals Road	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	316
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	19.38	0.24	0.09	14.33	0.04	0.04	3.59	0.32	0.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.59	-10.54	-14.64	7.28	-18.04	-18.04	1.26	-9.29	-13.39
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.41	30.93	32.98	37.10	23.43	29.58	31.08	32.18	34.23
	DAY LEQ	40.07		EVENING LEQ	37.96		NIGHT LEQ	37.47	

CNEL	44.55
DAY LEQ	40.07

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

35	:Id	
Black Canyon Road	:Road	
Arrow Rock Street to Pensacoloa Street	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	316
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	19.38	0.24	0.09	14.33	0.04	0.04	3.59	0.32	0.12
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.59	-10.54	-14.64	7.28	-18.04	-18.04	1.26	-9.29	-13.39
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.41	30.93	32.98	37.10	23.43	29.58	31.08	32.18	34.23
	DAY LEQ	40.07		EVENING LEQ	37.96		NIGHT LEQ	37.47	

CNEL	44.55	Day hour	0.00
DAY LEQ	40.07	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

36	:Id	
Mc Connel Avenue	:Road	
Main Street to Front Street	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	278
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	17.05	0.21	0.08	12.60	0.04	0.04	3.16	0.28	0.11
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.03	-11.09	-15.20	6.72	-18.60	-18.60	0.71	-9.84	-13.95
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	37.85	30.37	32.42	36.54	22.87	29.02	30.53	31.62	33.67
	DAY LEQ	39.51		EVENING LEQ	37.40		NIGHT LEQ	36.91	

CNEL	43.99	Day hour	0.00
DAY LEQ	39.51	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

37	:Id	
Cabello Street	:Road	
Shasta Dam Boulevard to La Mesa Avenue	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	739
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	45.33	0.55	0.22	33.50	0.10	0.10	8.39	0.74	0.29
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.28	-6.85	-10.95	10.97	-14.35	-14.35	4.95	-5.60	-9.70
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.10	34.62	36.67	40.78	27.12	33.27	34.77	35.87	37.92
	DAY LEQ	43.76		EVENING LEQ	41.65		NIGHT LEQ	41.16	

CNEL	48.24
DAY LEQ	43.76

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

38 :Id

Cabello Street :Road

Bonneville Street to Vallecito Street :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	524
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	32.14	0.39	0.15	23.75	0.07	0.07	5.95	0.52	0.20
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	10.79	-8.34	-12.44	9.47	-15.84	-15.84	3.46	-7.09	-11.19
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	40.60	33.13	35.18	39.29	25.62	31.78	33.28	34.37	36.43
	DAY LEQ	42.26		EVENING LEQ	40.16		NIGHT LEQ	39.67	

CNEL	46.74
DAY LEQ	42.26

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

39	:Id
Median Avenue	:Road
Front Street to Shasta Dam Boulevard	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1264
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	77.53	0.95	0.37	57.30	0.17	0.17	14.35	1.26	0.49
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	14.61	-4.52	-8.62	13.30	-12.02	-12.02	7.28	-3.27	-7.37
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.43	36.95	39.00	43.12	29.45	35.60	37.10	38.20	40.25
	DAY LEQ	46.09		EVENING LEQ	43.98		NIGHT LEQ	43.49	

CNEL	50.57
DAY LEQ	46.09

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

40	:Id
Mussel Shoals Avenue	:Road
Black Canyon Road to Chico Street	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	963
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	59.06	0.72	0.28	43.66	0.13	0.13	10.94	0.96	0.37
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	13.43	-5.70	-9.80	12.12	-13.20	-13.20	6.10	-4.45	-8.55
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.25	35.77	37.82	41.93	28.27	34.42	35.92	37.02	39.07
	DAY LEQ	44.91		EVENING LEQ	42.80		NIGHT LEQ	42.31	

CNEL	49.39
DAY LEQ	44.91

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

41	:Id	Vehicle Distribution (Light Truck Mix)				ADT	963
Mussel Shoals Avenue	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	25
Chico Street to Main Street	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	59.06	0.72	0.28	43.66	0.13	0.13	10.94	0.96	0.37
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	13.43	-5.70	-9.80	12.12	-13.20	-13.20	6.10	-4.45	-8.55
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.25	35.77	37.82	41.93	28.27	34.42	35.92	37.02	39.07
	DAY LEQ	44.91		EVENING LEQ	42.80		NIGHT LEQ	42.31	

CNEL	49.39	Day hour	0.00
DAY LEQ	44.91	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

42	:Id	ADT	1036
Mussel Shoals Avenue	:Road	Speed	25
Main Street to Front Street	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	63.54	0.78	0.30	46.97	0.14	0.14	11.76	1.04	0.40
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	13.75	-5.38	-9.48	12.43	-12.88	-12.88	6.42	-4.13	-8.23
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.56	36.09	38.14	42.25	28.58	34.74	36.24	37.34	39.39
	DAY LEQ	45.22		EVENING LEQ	43.12		NIGHT LEQ	42.63	

CNEL	49.70	Day hour	0.00
DAY LEQ	45.22	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

43 :Id

Mussel Shoals Avenue :Road

Front Street to Shasta Dam Boulevard :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1036
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	63.54	0.78	0.30	46.97	0.14	0.14	11.76	1.04	0.40
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	13.75	-5.38	-9.48	12.43	-12.88	-12.88	6.42	-4.13	-8.23
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	43.56	36.09	38.14	42.25	28.58	34.74	36.24	37.34	39.39
	DAY LEQ	45.22		EVENING LEQ	43.12		NIGHT LEQ	42.63	

CNEL	49.70
DAY LEQ	45.22

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

44	:Id	
Grand Coulee Boulevard	:Road	
Shasta Dam Boulevard to Fort Peck Street	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	895
Speed	35
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	54.89	0.67	0.26	40.57	0.12	0.12	10.16	0.90	0.35
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	11.65	-7.48	-11.58	10.34	-14.98	-14.98	4.32	-6.23	-10.33
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.14	37.73	38.85	45.83	30.23	35.45	39.81	38.98	40.10
	DAY LEQ	48.15		EVENING LEQ	46.31		NIGHT LEQ	44.43	

CNEL	51.86
DAY LEQ	48.15

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

45	:Id	Vehicle Distribution (Light Truck Mix)				ADT	832
Grand Coulee Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	35
Fort Peck Street to Boulder Street	:Segment	Automobiles	75.56	13.96	10.49	97.40	Distance	100
		Medium Trucks	48.91	2.17	48.91	1.84	Left Angle	-90
		Heavy Trucks	47.30	5.41	47.30	0.74	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	51.03	0.62	0.24	37.72	0.11	0.11	9.45	0.83	0.32
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	11.33	-7.79	-11.90	10.02	-15.30	-15.30	4.01	-6.55	-10.65
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.82	37.41	38.53	45.51	29.91	35.13	39.50	38.66	39.78
	DAY LEQ	47.83		EVENING LEQ	46.00		NIGHT LEQ	44.11	

CNEL	51.54	Day hour	0.00
DAY LEQ	47.83	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

46	:Id
Grand Coulee Boulevard	:Road
Boulder Street to Cascade Boulevard	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	832
Speed	35
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	51.03	0.62	0.24	37.72	0.11	0.11	9.45	0.83	0.32
Speed in MPH	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	65.11	74.83	80.05	65.11	74.83	80.05	65.11	74.83	80.05
ADJUSTMENTS									
Flow	11.33	-7.79	-11.90	10.02	-15.30	-15.30	4.01	-6.55	-10.65
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	46.82	37.41	38.53	45.51	29.91	35.13	39.50	38.66	39.78
	DAY LEQ	47.83		EVENING LEQ	46.00		NIGHT LEQ	44.11	

CNEL	51.54
DAY LEQ	47.83

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

47	:Id
Shasta Way	:Road
Front Street to Shasta Dam Boulevard	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1409
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	86.42	1.06	0.41	63.87	0.19	0.19	16.00	1.41	0.55
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	15.08	-4.05	-8.15	13.77	-11.55	-11.55	7.76	-2.80	-6.90
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	44.90	37.42	39.47	43.59	29.92	36.07	37.58	38.67	40.72
	DAY LEQ	46.56		EVENING LEQ	44.45		NIGHT LEQ	43.96	

CNEL	51.04
DAY LEQ	46.56

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

48	:Id	
Shasta Street	:Road	
Shasta Dam Boulevard to Fort Peck Street	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	829
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	50.85	0.62	0.24	37.58	0.11	0.11	9.41	0.83	0.32
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	12.78	-6.35	-10.45	11.46	-13.85	-13.85	5.45	-5.10	-9.20
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	42.60	35.12	37.17	41.28	27.62	33.77	35.27	36.37	38.42
	DAY LEQ	44.26		EVENING LEQ	42.15		NIGHT LEQ	41.66	

CNEL	48.73
DAY LEQ	44.26

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

49	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	2438
Cascade Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
North of Kennett Street	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	141.20	2.93	4.88	104.83	0.49	0.81	26.01	4.06	6.77
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	15.17	-1.66	0.55	13.88	-9.45	-7.23	7.82	-0.24	1.98
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.91	45.03	52.09	51.62	37.25	44.31	45.56	46.45	53.52
	DAY LEQ	55.90		EVENING LEQ	52.49		NIGHT LEQ	54.84	

CNEL	61.49	Day hour	0.00
DAY LEQ	55.90	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

50	:Id	
Cascade Boulevard	:Road	
Kennett Street to Shasta Dam Boulevard	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2438
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	141.20	2.93	4.88	104.83	0.49	0.81	26.01	4.06	6.77
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	15.17	-1.66	0.55	13.88	-9.45	-7.23	7.82	-0.24	1.98
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.91	45.03	52.09	51.62	37.25	44.31	45.56	46.45	53.52
	DAY LEQ	55.90		EVENING LEQ	52.49		NIGHT LEQ	54.84	

CNEL	61.49
DAY LEQ	55.90

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

51	:Id	
Cascade Boulevard	:Road	
Shasta Dam Boulevard to Second Street	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	5045
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	292.19	6.05	10.09	216.94	1.01	1.68	53.81	8.41	14.01
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	18.33	1.49	3.71	17.04	-6.29	-4.07	10.98	2.92	5.14
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.07	48.19	55.25	54.78	40.40	47.47	48.72	49.61	56.68
	DAY LEQ	59.06		EVENING LEQ	55.65		NIGHT LEQ	58.00	

CNEL	64.65
DAY LEQ	59.06

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

52	:Id	
Cascade Boulevard	:Road	
Second Street to Fell Street	:Segment	

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	5045
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	292.19	6.05	10.09	216.94	1.01	1.68	53.81	8.41	14.01
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	18.33	1.49	3.71	17.04	-6.29	-4.07	10.98	2.92	5.14
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	56.07	48.19	55.25	54.78	40.40	47.47	48.72	49.61	56.68
	DAY LEQ	59.06		EVENING LEQ	55.65		NIGHT LEQ	58.00	

CNEL	64.65
DAY LEQ	59.06

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

53	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	3877
Cascade Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
Fell Street to Cottage Avenue	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	224.54	4.65	7.75	166.71	0.78	1.29	41.35	6.46	10.77
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	17.19	0.35	2.57	15.89	-7.43	-5.21	9.84	1.78	4.00
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.93	47.04	54.11	53.63	39.26	46.33	47.58	48.47	55.53
	DAY LEQ	57.92		EVENING LEQ	54.51		NIGHT LEQ	56.86	

CNEL	63.50	Day hour	0.00
DAY LEQ	57.92	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

54	:Id
Cascade Boulevard	:Road
Cottage Avenue to Pine Grove Avenue	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	4437
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	256.98	5.32	8.87	190.79	0.89	1.48	47.33	7.40	12.33
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	17.77	0.94	3.15	16.48	-6.85	-4.63	10.42	2.36	4.58
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.51	47.63	54.69	54.22	39.85	46.91	48.16	49.06	56.12
	DAY LEQ	58.50		EVENING LEQ	55.09		NIGHT LEQ	57.45	

CNEL	64.09
DAY LEQ	58.50

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

55	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	4437
Cascade Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
Pine Grove Avenue to Riddle Road	:Segment	Automobiles	75.54	14.02	10.43	92.00	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.00	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	5.00	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	256.98	5.32	8.87	190.79	0.89	1.48	47.33	7.40	12.33
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	17.77	0.94	3.15	16.48	-6.85	-4.63	10.42	2.36	4.58
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	55.51	47.63	54.69	54.22	39.85	46.91	48.16	49.06	56.12
	DAY LEQ	58.50		EVENING LEQ	55.09		NIGHT LEQ	57.45	

CNEL	64.09	Day hour	0.00
DAY LEQ	58.50	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

56	:Id	ADT	3236
Cascade Boulevard	:Road	Speed	40
Riddle Road to Arrowhead Road	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	187.42	3.88	6.47	139.15	0.65	1.08	34.52	5.39	8.99
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	16.40	-0.43	1.78	15.11	-8.22	-6.00	9.05	0.99	3.21
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.14	46.26	53.32	52.85	38.48	45.54	46.79	47.68	54.75
	DAY LEQ	57.13		EVENING LEQ	53.72		NIGHT LEQ	56.07	

CNEL	62.72	Day hour	0.00
DAY LEQ	57.13	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

57 :Id

Virginia Avenue :Road

Akrich Street to Pine Grove Avenue :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	2521
Speed	25
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	154.62	1.89	0.74	114.29	0.34	0.34	28.63	2.52	0.98
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	17.61	-1.52	-5.62	16.29	-9.02	-9.02	10.28	-0.27	-4.37
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.43	39.95	42.00	46.11	32.45	38.60	40.10	41.20	43.25
	DAY LEQ	49.09		EVENING LEQ	46.98		NIGHT LEQ	46.49	

CNEL	53.57
DAY LEQ	49.09

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

58 :Id

Twin View Boulevard :Road

Virginia Avenue to Poppy Lane :Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	684
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	41.95	0.51	0.20	31.01	0.09	0.09	7.77	0.68	0.27
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	9.90	-9.23	-13.33	8.59	-16.73	-16.73	2.58	-7.98	-12.08
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.64	37.47	38.21	46.33	29.97	34.81	40.32	38.72	39.46
	DAY LEQ	48.47		EVENING LEQ	46.72		NIGHT LEQ	44.32	

CNEL	51.91
DAY LEQ	48.47

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

59	:Id	
Twin View Boulevard	:Road	
Poppy Lane to Mendocino Street	:Segment	

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	684
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	41.95	0.51	0.20	31.01	0.09	0.09	7.77	0.68	0.27
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	9.90	-9.23	-13.33	8.59	-16.73	-16.73	2.58	-7.98	-12.08
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	47.64	37.47	38.21	46.33	29.97	34.81	40.32	38.72	39.46
	DAY LEQ	48.47		EVENING LEQ	46.72		NIGHT LEQ	44.32	

CNEL	51.91	Day hour	0.00
DAY LEQ	48.47	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

60	:Id
Twin View Boulevard	:Road
Mendocino Street to Shasta Lake City Limit	:Segment

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

ADT	1911
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	117.21	1.43	0.56	86.63	0.25	0.25	21.70	1.91	0.74
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	14.36	-4.76	-8.86	13.05	-12.26	-12.26	7.04	-3.51	-7.62
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	52.10	41.93	42.67	50.79	34.43	39.27	44.78	43.18	43.92
	DAY LEQ	52.93		EVENING LEQ	51.18		NIGHT LEQ	48.78	

CNEL	56.37
DAY LEQ	52.93

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

61	:Id	ADT	330
Deer Creek Road	:Road	Speed	25
South of Shasta Dam Boulevard	:Segment	Distance	100
		Left Angle	-90
		Right Angle	90

Vehicle Distribution (Light Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.56	13.96	10.49	97.40
Medium Trucks	48.91	2.17	48.91	1.84
Heavy Trucks	47.30	5.41	47.30	0.74

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	20.24	0.25	0.10	14.96	0.04	0.04	3.75	0.33	0.13
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24
ADJUSTMENTS									
Flow	8.78	-10.35	-14.45	7.46	-17.85	-17.85	1.45	-9.10	-13.20
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	38.60	31.12	33.17	37.28	23.62	29.77	31.27	32.37	34.42
	DAY LEQ	40.26		EVENING LEQ	38.15		NIGHT LEQ	37.66	

CNEL	44.73	Day hour	0.00
DAY LEQ	40.26	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2) Vehicle percentages based on review of other city/county projects.

2040 Noise Contours

61	:Id
Interstate 5	:Road
North of Shasta Dam Blvd (Hwy 151)	:Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	68.30
Medium Trucks	48.00	2.00	50.00	8.90
Heavy Trucks	48.00	2.00	50.00	22.80

ADT	32300
Speed	65
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	1388.80	114.99	294.58	1031.11	19.16	49.10	255.78	159.71	409.13
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	22.99	12.17	16.26	21.70	4.39	8.48	15.64	13.60	17.68
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	68.91	64.26	71.84	67.62	56.48	64.06	61.56	65.69	73.27
	DAY LEQ	74.11		EVENING LEQ	69.43		NIGHT LEQ	74.21	

CNEL	80.62
DAY LEQ	74.11

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	44400
		Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	
Interstate 5	:Road					Speed	65
Shasta Dam Blvd to Pine Grove (Hwy 151)	:Segment	Automobiles	75.54	14.02	10.43	76.90	Distance 100
		Medium Trucks	48.00	2.00	50.00	6.30	Left Angle -90
		Heavy Trucks	48.00	2.00	50.00	16.80	Right Angle 90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	2149.44	111.89	298.37	1595.84	18.65	49.73	395.87	155.40	414.40
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	24.89	12.05	16.31	23.59	4.27	8.53	17.54	13.48	17.74
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	70.81	64.14	71.90	69.52	56.36	64.12	63.46	65.57	73.33
	DAY LEQ	74.79		EVENING LEQ	70.78		NIGHT LEQ	74.37	

CNEL	80.87	Day hour	0.00
DAY LEQ	74.79	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	50800
Interstate 5	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	65
Pine Grove to Arrowhead	:Segment	Automobiles	75.54	14.02	10.43	79.50	Distance	100
		Medium Trucks	48.00	2.00	50.00	5.60	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	14.90	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	2542.42	113.79	302.77	1887.61	18.97	50.46	468.24	158.04	420.51
Speed in MPH	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	75.54	81.71	85.21	75.54	81.71	85.21	75.54	81.71	85.21
ADJUSTMENTS									
Flow	25.62	12.13	16.38	24.32	4.34	8.59	18.27	13.55	17.80
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	71.54	64.22	71.96	70.24	56.43	64.18	64.19	65.64	73.39
	DAY LEQ	75.13		EVENING LEQ	71.35		NIGHT LEQ	74.49	

CNEL	81.04	Day hour	0.00
DAY LEQ	75.13	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61 :Id

Shasta Dam Boulevard :Road

City Limit to Lake Boulvard :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2537
Speed	45
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	146.93	3.04	5.07	109.09	0.51	0.85	27.06	4.23	7.05
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	14.83	-2.00	0.22	13.54	-9.78	-7.57	7.49	-0.58	1.64
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.56	46.00	52.74	53.26	38.22	44.96	47.21	47.43	54.16
	DAY LEQ	57.10		EVENING LEQ	53.98		NIGHT LEQ	55.67	

CNEL	62.40
DAY LEQ	57.10

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61 :Id

Shasta Dam Boulevard :Road

Lake Boulvard to Sacramento Street :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	92.00
Medium Trucks	48.00	2.00	50.00	3.00
Heavy Trucks	48.00	2.00	50.00	5.00

ADT	2537
Speed	45
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	146.93	3.04	5.07	109.09	0.51	0.85	27.06	4.23	7.05
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	14.83	-2.00	0.22	13.54	-9.78	-7.57	7.49	-0.58	1.64
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	54.56	46.00	52.74	53.26	38.22	44.96	47.21	47.43	54.16
	DAY LEQ	57.10		EVENING LEQ	53.98		NIGHT LEQ	55.67	

CNEL	62.40
DAY LEQ	57.10

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61 :Id

Shasta Dam Boulevard :Road

Sacramento Street to North Boulevard :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	95.30
Medium Trucks	48.00	2.00	50.00	3.60
Heavy Trucks	48.00	2.00	50.00	1.10

ADT	5756
Speed	45
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	345.33	8.29	2.53	256.39	1.38	0.42	63.60	11.51	3.52
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14
ADJUSTMENTS									
Flow	18.54	2.35	-2.80	17.25	-5.43	-10.58	11.20	3.77	-1.38
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	58.27	50.35	49.72	56.98	42.57	41.94	50.92	51.78	51.15
	DAY LEQ	59.41		EVENING LEQ	57.26		NIGHT LEQ	56.07	

CNEL	63.35
DAY LEQ	59.41

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61 :Id

Shasta Dam Boulevard :Road

North Boulevard to Lassen Avenue :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	95.30
Medium Trucks	48.00	2.00	50.00	3.60
Heavy Trucks	48.00	2.00	50.00	1.10

ADT	5756
Speed	30
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	345.33	8.29	2.53	256.39	1.38	0.42	63.60	11.51	3.52
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76
ADJUSTMENTS									
Flow	20.31	4.11	-1.04	19.01	-3.67	-8.82	12.96	5.53	0.39
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	53.20	47.60	48.10	51.90	39.82	40.32	45.85	49.03	49.53
	DAY LEQ	55.20		EVENING LEQ	52.44		NIGHT LEQ	53.18	

CNEL	60.06
DAY LEQ	55.20

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61	:Id	Vehicle Distribution (Heavy Truck Mix)				ADT	13001
Shasta Dam Boulevard	:Road	Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow	Speed	40
Lassen Avenue to Nell Orr	:Segment	Automobiles	75.54	14.02	10.43	95.30	Distance	100
		Medium Trucks	48.00	2.00	50.00	3.60	Left Angle	-90
		Heavy Trucks	48.00	2.00	50.00	1.10	Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	779.98	18.72	5.72	579.10	3.12	0.95	143.65	26.00	7.95
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	22.59	6.40	1.25	21.30	-1.38	-6.53	15.25	7.82	2.67
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	60.33	53.09	52.79	59.04	45.31	45.01	52.99	54.52	54.21
	DAY LEQ	61.68		EVENING LEQ	59.38		NIGHT LEQ	58.73	

CNEL	65.88	Day hour	0.00
DAY LEQ	61.68	Absorptive?	yes
		Use hour?	no
		GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

2040 Noise Contours

61 :Id

Shasta Dam Boulevard :Road

Nell Orr/Shasta to Cascade :Segment

Vehicle Distribution (Heavy Truck Mix)				
Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	75.54	14.02	10.43	95.30
Medium Trucks	48.00	2.00	50.00	3.60
Heavy Trucks	48.00	2.00	50.00	1.10

ADT	14269
Speed	40
Distance	100
Left Angle	-90
Right Angle	90

	Daytime			Evening			Night		
Noise Parameters	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
INPUT PARAMETERS									
Vehicles per hour	856.06	20.55	6.28	635.58	3.42	1.05	157.66	28.54	8.72
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
NOISE CALCULATIONS									
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16
ADJUSTMENTS									
Flow	23.00	6.80	1.65	21.71	-0.98	-6.13	15.65	8.23	3.08
Distance	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62	-4.62
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
LEQ	60.74	53.49	53.19	59.44	45.71	45.41	53.39	54.92	54.62
	DAY LEQ	62.09		EVENING LEQ	59.79		NIGHT LEQ	59.13	

CNEL	66.29
DAY LEQ	62.09

Day hour	0.00
Absorptive?	yes
Use hour?	no
GRADE dB	0.00

Notes:

(1) FHWA Traffic Noise Prediction Model FHWA-RD-77-108

(2)

Existing-Shasta Lake General Plan
Run info
Shasta Lake GP CNEL

Project description

Project title:	Existing-Shasta Lake General Plan
Project No.:	19251
Project engineer:	Roma Stromberg
Customer:	

Description:

Run description

Calculation type:	Grid Map
Title:	Shasta Lake GP CNEL
Calculation group	
Run file:	RunFile.runx
Result number:	5
Local calculation (ThreadCount=8)	
Calculation start:	7/18/2022 8:43:17 AM
Calculation end:	7/18/2022 8:43:18 AM
No. of points:	417120
No. of calculated points:	417120
Kernel version:	SoundPLAN 8.2 (7/14/2022) - 64 bit

Run parameters

Reflection order:	3	
Maximum reflection distance to receiver		200 m
Maximum reflection distance to source		50 m
Search radius	5000 m	
Weighting:	dB(A)	
Allowed tolerance:	0.100 dB	
Create ground effect areas from road surfaces:		Yes

Standards:

Road:	TNM 2.5	
Emission according to:	TNM 2.5	
Road gradient smoothed with smooth length of:		15 m
Air absorption:	ISO 9613-1	

Side diffraction: disabled

Allow changes (bugs) to be conform with TNM 2.5

Environment:

Air pressure	1013.3 mbar
rel. humidity	50.0 %
Temperature	20.0 °C

Dissection parameters:

Distance to diameter factor	8
Minimal distance	1 m

Attenuation

Foliage:	ISO 9613-2
Built-up area:	ISO 9613-2
Industrial site:	ISO 9613-2

Existing-Shasta Lake General Plan
Run info
Shasta Lake GP CNEL

Assessment:	CNEL (CA)	
Grid Noise Map:		
Grid space:	10.00 m	
Height above ground:	1.500 m	
Grid interpolation:		
	Field size =	9x9
	Min/Max =	10.0 dB
	Difference =	0.2 dB
	Limit level=	40.0 dB

Geometry data

Situation1.sit	7/15/2022 9:58:48 AM	
- contains:		
DXF_Caltrans_Functional_Road_Class_UTM10.geo		7/1/2022 12:47:16 PM
DXF_Caltrans_Functional_Road_Class_UTM (1).geo		7/1/2022 12:47:16 PM
DXF_Caltrans_Functional_Road_Class_UTM (2).geo		7/1/2022 1:04:28 PM
DXF_Caltrans_Functional_Road_Class_UTM (3).geo		7/4/2022 9:12:06 PM
DXF_Caltrans_Functional_Road_Class_UTM (4).geo		7/5/2022 9:18:30 AM
DXF_Caltrans_Functional_Road_Class_UTM (5).geo		7/5/2022 10:01:14 AM
Geo-File1.geo	7/15/2022 9:58:48 AM	

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Shasta Dam	Traffic direction: In entry direction												
City Limit to Lake	0+000	1502	Total	-	92	65	23	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	87	65	16	72					
			Medium trucks	-	2	0	3	72					
			Heavy trucks	-	3	1	4	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Shasta Dam	Traffic direction: In entry direction												
Lake to Sacramento	0+000	1502	Total	-	92	65	23	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	87	65	16	72					
			Medium trucks	-	2	0	3	72					
			Heavy trucks	-	3	1	4	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Sacramento to North	0+410	4206	Total	-	257	183	64	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	244	181	45	72					
			Medium trucks	-	5	1	7	72					
			Heavy trucks	-	8	1	12	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Shasta Dam	Traffic direction: In entry direction												
Sacramento to North	0+000	1578	Total	-	38	183	64	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	25	181	45	72					
			Medium trucks	-	5	1	7	72					
			Heavy trucks	-	8	1	12	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
-	0+009	4206	Total	-	257	183	64	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	244	181	45	72					
			Medium trucks	-	5	1	7	72					
			Heavy trucks	-	8	1	12	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values						Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
			Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h					
North to Lassen	2+115	4206	Total	-	257	183	64	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	244	181	45	48					
			Medium trucks	-	5	1	7	48					
			Heavy trucks	-	8	1	12	48					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Lassen to Nell Orr	2+363	10993	Total	-	735	524	66	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	697	517	13	64					
			Medium trucks	-	14	2	20	64					
			Heavy trucks	-	24	4	33	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Nell Orr to Cascade	4+009	13301	Total	-	813	579	201	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	770	572	142	64					
			Medium trucks	-	16	3	22	64					
			Heavy trucks	-	27	4	37	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Shasta to Cascade	4+143	13301	Total	-	813	579	201	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	770	572	142	64					
			Medium trucks	-	16	3	22	64					
			Heavy trucks	-	27	4	37	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
I-5 Ramp E. of Cascade	4+277	13063	Total	-	808	586	178	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	784	582	144	64					
			Medium trucks	-	19	3	26	64					
			Heavy trucks	-	6	1	8	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Pine Grove	Traffic direction: In entry direction												
Lake to Ashby	0+000	3863	Total	-	236	168	58	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	224	166	41	81					
			Medium trucks	-	5	1	6	81					
			Heavy trucks	-	8	1	11	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Ashby to Coeur D'Alene	0+723	3809	Total	-	233	166	58	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	221	164	41	81					
			Medium trucks	-	5	1	6	81					
			Heavy trucks	-	8	1	11	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Coeur D'Alene to Smith	1+721	4901	Total	-	300	213	74	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	284	211	52	81					
			Medium trucks	-	6	1	8	81					
			Heavy trucks	-	10	2	14	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Smith to Cascade	3+061	5038	Total	-	308	220	76	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	292	217	54	81					
			Medium trucks	-	6	2	8	81					
			Heavy trucks	-	10	2	14	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Pine Grove	Traffic direction: In entry direction												
Virginia to Leona	0+000	516	Total	-	32	23	8	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	30	22	6	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Lake Boulevard			Traffic direction: In entry direction										
City Limit to Construction	0+000	2810	Total	-	172	122	43	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	163	121	30	81					
			Medium trucks	-	3	1	5	81					
			Heavy trucks	-	6	1	8	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Construction to Flanagan	1+532	2810	Total	-	172	122	43	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	163	121	30	81					
			Medium trucks	-	3	1	5	81					
			Heavy trucks	-	6	1	8	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Flanagan to Hill	2+770	2582	Total	-	158	112	39	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	150	111	28	81					
			Medium trucks	-	3	1	4	81					
			Heavy trucks	-	5	1	7	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Hill to Buckeye	2+998	1868	Total	-	114	81	28	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	108	80	20	81					
			Medium trucks	-	2	0	3	81					
			Heavy trucks	-	4	1	5	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Buckeye to Duvall	4+222	1868	Total	-	114	81	28	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	108	80	20	81					
			Medium trucks	-	2	0	3	81					
			Heavy trucks	-	4	1	5	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Duvall to Mason	4+714	1052	Total	-	64	46	16	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	61	45	11	56					
			Medium trucks	-	1	0	2	56					
			Heavy trucks	-	2	0	3	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Ashby			Traffic direction: In entry direction										
Pine to Coeur D'Alene	0+000	2310	Total	-	144	105	29	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	142	105	26	81					
			Medium trucks	-	2	0	2	81					
			Heavy trucks	-	1	0	1	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Coeur D'Alene to Arlene	0+560	2310	Total	-	144	105	29	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	142	105	26	81					
			Medium trucks	-	2	0	2	81					
			Heavy trucks	-	1	0	1	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Arlene to Los Gatos	0+701	2471	Total	-	154	113	32	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	152	112	28	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Los Gatos to San Gorgonio	2+033	2471	Total	-	154	113	32	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	152	112	28	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
San Gorgonio to Flower	2+300	2889	Total	-	180	132	37	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	177	131	33	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Flower to Shasta Dam	2+348	2889	Total	-	180	132	37	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	177	131	33	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Mussel Shoals			Traffic direction: In entry direction										
Shasta Dam to Front	0+000	829	Total	-	51	36	13	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	48	36	9	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	2	0	2	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Front to Main	0+070	829	Total	-	51	36	13	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	48	36	9	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	2	0	2	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Main to Chico	0+180	760	Total	-	46	33	12	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	44	33	8	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	2	0	2	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Black Canyon			Traffic direction: In entry direction										
North of Mussel Shoals	0+000	254	Total	-	16	12	3	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	16	12	3	40					
			Medium trucks	-	0	-	0	40					
			Heavy trucks	-	0	-	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Grand Coulee Boulevard			Traffic direction: In entry direction										
Boulder St to Cascade Blvd	0+000	700	Total	-	43	30	11	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	41	30	8	56					
			Medium trucks	-	1	0	1	56					
			Heavy trucks	-	1	0	2	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Boulder to Fort Peck	0+542	700	Total	-	43	30	11	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	41	30	8	56					
			Medium trucks	-	1	0	1	56					
			Heavy trucks	-	1	0	2	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Fort Peck to Shasta	0+762	774	Total	-	47	34	12	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	45	33	8	56					
			Medium trucks	-	1	0	1	56					
			Heavy trucks	-	2	0	2	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cascade			Traffic direction: In entry direction										
Arrowhead to Riddle	0+000	3058	Total	-	187	133	46	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	177	132	33	64					
			Medium trucks	-	4	1	5	64					
			Heavy trucks	-	6	1	9	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Riddle to Pine Grove	0+220	3058	Total	-	187	133	46	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	177	132	33	64					
			Medium trucks	-	4	1	5	64					
			Heavy trucks	-	6	1	9	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cascade			Traffic direction: In entry direction										
North of Kennet	0+000	2065	Total	-	126	90	31	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	120	89	22	64					
			Medium trucks	-	3	0	3	64					
			Heavy trucks	-	4	1	6	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Kennet to Shasta Dam	1+123	2065	Total	-	126	90	31	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	120	89	22	64					
			Medium trucks	-	3	0	3	64					
			Heavy trucks	-	4	1	6	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cascade			Traffic direction: In entry direction										
Shasta Dam to 2nd	0+000	4123	Total	-	252	180	62	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	239	177	44	64					
			Medium trucks	-	5	1	7	64					
			Heavy trucks	-	8	1	12	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
2nd to Fell	0+136	4123	Total	-	252	180	62	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	239	177	44	64					
			Medium trucks	-	5	1	7	64					
			Heavy trucks	-	8	1	12	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Fell to Cottage	1+405	2954	Total	-	181	129	45	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	171	127	32	64					
			Medium trucks	-	4	1	5	64					
			Heavy trucks	-	6	1	8	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cottage to Pine Grove	1+841	3011	Total	-	184	131	46	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	174	130	32	64					
			Medium trucks	-	4	1	5	64					
			Heavy trucks	-	6	1	8	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Twin View			Traffic direction: In entry direction										
City Limit to Mendocino	0+000	438	Total	-	27	20	6	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	27	20	5	64					
			Medium trucks	-	0	0	0	64					
			Heavy trucks	-	0	0	0	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Mendocino to Poppy	0+934	653	Total	-	41	30	8	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	40	30	7	64					
			Medium trucks	-	1	0	1	64					
			Heavy trucks	-	0	0	0	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Poppy to Virginia	1+187	653	Total	-	41	30	8	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	40	30	7	64					
			Medium trucks	-	1	0	1	64					
			Heavy trucks	-	0	0	0	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - Existing

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Deer Creek			Traffic direction: In entry direction										
South of Shasta Dam	0+000	314	Total	-	20	14	4	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	19	14	4	40					
			Medium trucks	-	0	-	0	40					
			Heavy trucks	-	0	-	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Interstate 5			Traffic direction: In entry direction										
Arrowhead to Pine Grove	0+000	35581	Total	-	2170	1545	546	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	2056	1527	388	105					
			Medium trucks	-	43	7	59	105					
			Heavy trucks	-	71	12	99	105					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Pine Grove to Shasta Dam	1+500	31000	Total	-	1895	1350	469	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	1795	1333	331	105					
			Medium trucks	-	37	6	52	105					
			Heavy trucks	-	62	10	86	105					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
North of Shasta Dam	3+329	22600	Total	-	1381	984	342	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	1309	972	241	105					
			Medium trucks	-	27	5	38	105					
			Heavy trucks	-	45	8	63	105					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan Existing
Emission calculation road - Shasta Lake GP CNEL

Road	Section name	KM	ADT	Gradient	
		km	Veh/24h	%	
Shasta Dam	City Limit to Lake	0.000	1502	0.0	
Shasta Dam	Lake to Sacramento	0.000	1502	0.0	
Shasta Dam	Sacramento to North	0.410	4206	0.0	
Shasta Dam	Sacramento to North	0.000	1578	0.0	
Shasta Dam	Sacramento to North	0.009	4206	0.0	
Shasta Dam	North to Lassen	2.115	4206	0.0	
Shasta Dam	Lassen to Nell Orr	2.363	10993	0.0	
Shasta Dam	Nell Orr to Cascade	4.009	13301	0.0	
Shasta Dam	Shasta to Cascade	4.143	13301	0.0	
Shasta Dam	I-5 Ramp E. of Cascade	4.277	13063	0.0	
Pine Grove	Lake to Ashby	0.000	3863	0.0	
Pine Grove	Ashby to Coeur D'Alene	0.723	3809	0.0	
Pine Grove	Coeur D'Alene to Smith	1.721	4901	0.0	
Pine Grove	Smith to Cascade	3.061	5038	0.0	
Pine Grove	Virginia to Leona	0.000	516	0.0	
Lake Boulevard	City Limit to Construction	0.000	2810	0.0	
Lake Boulevard	Construction to Flanagan	1.532	2810	0.0	
Lake Boulevard	Flanagan to Hill	2.770	2582	0.0	
Lake Boulevard	Hill to Buckeye	2.998	1868	0.0	
Lake Boulevard	Buckeye to Duvall	4.222	1868	0.0	
Lake Boulevard	Duvall to Mason	4.714	1052	0.0	
Ashby	Pine to Coeur D'Alene	0.000	2310	0.0	
Ashby	Coeur D'Alene to Arlene	0.560	2310	0.0	
Ashby	Arlene to Los Gatos	0.701	2471	0.0	
Ashby	Los Gatos to San Gorgonio	2.033	2471	0.0	
Ashby	San Gorgonio to Flower	2.300	2889	0.0	
Ashby	Flower to Shasta Dam	2.348	2889	0.0	
Mussel Shoals	Shasta Dam to Front	0.000	829	0.0	
Mussel Shoals	Front to Main	0.070	829	0.0	
Mussel Shoals	Main to Chico	0.180	760	0.0	
Black Canyon	North of Mussel Shoals	0.000	254	0.0	

Shasta Lake General Plan Existing
Emission calculation road - Shasta Lake GP CNEL

Road	Section name	KM km	ADT Veh/24h	Gradient %
Grand Coulee Boulevard	Boulder St to Cascade Blvd	0.000	700	0.0
Grand Coulee Boulevard	Boulder to Fort Peck	0.542	700	0.0
Grand Coulee Boulevard	Fort Peck to Shasta	0.762	774	0.0
Cascade	Arrowhead to Riddle	0.000	3058	0.0
Cascade	Riddle to Pine Grove	0.220	3058	0.0
Cascade	North of Kennet	0.000	2065	0.0
Cascade	Kennet to Shasta Dam	1.123	2065	0.0
Cascade	Shasta Dam to 2nd	0.000	4123	0.0
Cascade	2nd to Fell	0.136	4123	0.0
Cascade	Fell to Cottage	1.405	2954	0.0
Cascade	Cottage to Pine Grove	1.841	3011	0.0
Twin View	City Limit to Mendocino	0.000	438	0.0
Twin View	Mendocino to Poppy	0.934	653	0.0
Twin View	Poppy to Virginia	1.187	653	0.0
Deer Creek	South of Shasta Dam	0.000	314	0.0
Interstate 5	Arrowhead to Pine Grove	0.000	35581	0.0
Interstate 5	Pine Grove to Shasta Dam	1.500	31000	0.0
Interstate 5	North of Shasta Dam	3.329	22600	0.0

2040-Shasta Lake General Plan
Run info
Shasta Lake GP CNEL

Project description

Project title:	2040-Shasta Lake General Plan
Project No.:	19251
Project engineer:	Roma Stromberg
Customer:	

Description:

Run description

Calculation type:	Grid Map
Title:	Shasta Lake GP CNEL
Calculation group	
Run file:	RunFile.runx
Result number:	5
Local calculation (ThreadCount=8)	
Calculation start:	7/18/2022 9:06:27 AM
Calculation end:	7/18/2022 9:06:27 AM
No. of points:	417120
No. of calculated points:	417120
Kernel version:	SoundPLAN 8.2 (7/14/2022) - 64 bit

Run parameters

Reflection order:	3	
Maximum reflection distance to receiver		200 m
Maximum reflection distance to source		50 m
Search radius	5000 m	
Weighting:	dB(A)	
Allowed tolerance:	0.100 dB	
Create ground effect areas from road surfaces:		Yes

Standards:

Road:	TNM 2.5	
Emission according to:	TNM 2.5	
Road gradient smoothed with smooth length of:		15 m
Air absorption:	ISO 9613-1	

Side diffraction: disabled

Allow changes (bugs) to be conform with TNM 2.5

Environment:

Air pressure	1013.3 mbar
rel. humidity	50.0 %
Temperature	20.0 °C

Dissection parameters:

Distance to diameter factor	8
Minimal distance	1 m

Attenuation

Foliage:	ISO 9613-2
Built-up area:	ISO 9613-2
Industrial site:	ISO 9613-2

2040-Shasta Lake General Plan
Run info
Shasta Lake GP CNEL

Assessment:	CNEL (CA)	
Grid Noise Map:		
Grid space:	10.00 m	
Height above ground:	1.500 m	
Grid interpolation:		
	Field size =	9x9
	Min/Max =	10.0 dB
	Difference =	0.2 dB
	Limit level=	40.0 dB

Geometry data

Situation1.sit	7/15/2022 9:58:48 AM	
- contains:		
DXF_Caltrans_Functional_Road_Class_UTM10.geo		7/1/2022 12:47:16 PM
DXF_Caltrans_Functional_Road_Class_UTM (1).geo		7/1/2022 12:47:16 PM
DXF_Caltrans_Functional_Road_Class_UTM (2).geo		7/1/2022 1:04:28 PM
DXF_Caltrans_Functional_Road_Class_UTM (3).geo		7/4/2022 9:12:06 PM
DXF_Caltrans_Functional_Road_Class_UTM (4).geo		7/5/2022 9:18:30 AM
DXF_Caltrans_Functional_Road_Class_UTM (5).geo		7/5/2022 10:01:14 AM
Geo-File1.geo	7/15/2022 9:58:48 AM	

Shasta Lake General Plan
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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Shasta Dam	Traffic direction: In entry direction												
City Limit to Lake	0+000	2538	Total	-	169	42	42	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	161	40	40	72					
			Medium trucks	-	6	2	2	72					
			Heavy trucks	-	2	1	1	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Shasta Dam	Traffic direction: In entry direction												
Lake to Sacramento	0+000	2536	Total	-	155	110	38	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	147	109	27	72					
			Medium trucks	-	3	1	4	72					
			Heavy trucks	-	5	1	7	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Sacramento to North	0+410	5755	Total	-	356	258	79	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	345	256	64	72					
			Medium trucks	-	8	1	12	72					
			Heavy trucks	-	3	0	4	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Shasta Dam	Traffic direction: In entry direction												
Sacramento to North	0+000	5755	Total	-	356	258	79	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	345	256	64	72					
			Medium trucks	-	8	1	12	72					
			Heavy trucks	-	3	0	4	72					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
North to Lassen	2+115	5755	Total	-	356	258	79	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	345	256	64	48					
			Medium trucks	-	8	1	12	48					
			Heavy trucks	-	3	0	4	48					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Lassen to Nell Orr	2+363	13001	Total	-	804	583	178	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	780	579	144	64					
			Medium trucks	-	19	3	26	64					
			Heavy trucks	-	6	1	8	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Nell Orr to Cascade	4+009	14269	Total	-	883	640	195	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	856	636	158	64					
			Medium trucks	-	21	3	29	64					
			Heavy trucks	-	6	1	9	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Shasta to Cascade	4+143	14269	Total	-	883	640	195	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	856	636	158	64					
			Medium trucks	-	21	3	29	64					
			Heavy trucks	-	6	1	9	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
I-5 Ramp E. of Cascade	4+277	15501	Total	-	959	695	212	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	930	691	171	64					
			Medium trucks	-	22	4	31	64					
			Heavy trucks	-	7	1	10	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Pine Grove			Traffic direction: In entry direction										
Lake to Ashby	0+000	11633	Total	-	344	2245	85	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	326	2242	60	81					
			Medium trucks	-	7	1	9	81					
			Heavy trucks	-	11	2	16	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Ashby to Coeur D'Alene	0+723	4601	Total	-	281	200	70	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	267	198	49	81					
			Medium trucks	-	6	1	8	81					
			Heavy trucks	-	9	2	13	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Coeur D'Alene to Smith	1+721	7932	Total	-	485	345	120	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	459	341	85	81					
			Medium trucks	-	10	2	13	81					
			Heavy trucks	-	16	3	22	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Smith to Cascade	3+061	5828	Total	-	356	254	88	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	338	251	62	81					
			Medium trucks	-	7	1	10	81					
			Heavy trucks	-	12	2	16	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Pine Grove			Traffic direction: In entry direction										
Virginia to Leona	0+000	1309	Total	-	80	57	20	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	76	56	14	40					
			Medium trucks	-	2	0	2	40					
			Heavy trucks	-	3	0	4	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Lake Boulevard			Traffic direction: In entry direction										
City Limit to Construction	0+000	2947	Total	-	180	128	45	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	171	127	31	81					
			Medium trucks	-	4	1	5	81					
			Heavy trucks	-	6	1	8	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Construction to Flanagan	1+532	2947	Total	-	180	128	45	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	171	127	31	81					
			Medium trucks	-	4	1	5	81					
			Heavy trucks	-	6	1	8	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Flanagan to Hill	2+770	2709	Total	-	166	118	41	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	157	117	29	81					
			Medium trucks	-	3	1	5	81					
			Heavy trucks	-	5	1	8	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Hill to Buckeye	2+998	2178	Total	-	133	95	33	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	126	94	23	81					
			Medium trucks	-	3	0	4	81					
			Heavy trucks	-	4	1	6	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Buckeye to Duvall	4+222	2178	Total	-	133	95	33	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	126	94	23	81					
			Medium trucks	-	3	0	4	81					
			Heavy trucks	-	4	1	6	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Duvall to Mason	4+714	1354	Total	-	83	59	21	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	78	58	14	56					
			Medium trucks	-	2	0	2	56					
			Heavy trucks	-	3	1	4	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
North of Mason	4+877	1354	Total	-	83	59	21	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	78	58	14	56					
			Medium trucks	-	2	0	2	56					
			Heavy trucks	-	3	1	4	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Ashby			Traffic direction: In entry direction										
Pine to Coeur D'Alene	0+000	2524	Total	-	157	115	32	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	155	114	29	81					
			Medium trucks	-	2	0	3	81					
			Heavy trucks	-	1	0	1	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Coeur D'Alene to Arlene	0+560	2524	Total	-	157	115	32	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	155	114	29	81					
			Medium trucks	-	2	0	3	81					
			Heavy trucks	-	1	0	1	81					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Arlene to Los Gatos	0+701	2877	Total	-	179	131	37	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	176	130	33	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Los Gatos to San Gorgonio	2+033	2877	Total	-	179	131	37	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	176	130	33	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
San Gorgonio to Flower	2+300	3088	Total	-	193	141	39	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	189	140	35	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Flower to Shasta Dam	2+348	3088	Total	-	193	141	39	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	189	140	35	40					
			Medium trucks	-	2	0	3	40					
			Heavy trucks	-	1	0	1	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Mussel Shoals			Traffic direction: In entry direction										
Shasta Dam to Front	0+000	1036	Total	-	65	47	13	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	64	47	12	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	0	0	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Front to Main	0+070	1036	Total	-	65	47	13	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	64	47	12	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	0	0	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Main to Chico	0+180	964	Total	-	60	44	12	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	59	44	11	40					
			Medium trucks	-	1	0	1	40					
			Heavy trucks	-	0	0	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Black Canyon	Traffic direction: In entry direction												
North of Mussel Shoals	0+000	279	Total	-	17	13	4	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	17	13	3	40					
			Medium trucks	-	0	-	0	40					
			Heavy trucks	-	0	-	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Grand Coulee Boulevard	Traffic direction: In entry direction												
Shasta Dam to Fort Peck S	0+000	897	Total	-	56	41	11	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	55	41	10	56					
			Medium trucks	-	1	0	1	56					
			Heavy trucks	-	0	0	0	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Boulder to Fort Peck	0+542	830	Total	-	52	38	11	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	51	38	9	56					
			Medium trucks	-	1	0	1	56					
			Heavy trucks	-	0	0	0	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Boulder to Cascade	0+762	830	Total	-	52	38	11	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	51	38	9	56					
			Medium trucks	-	1	0	1	56					
			Heavy trucks	-	0	0	0	56					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cascade	Traffic direction: In entry direction												
Arrowhead to Riddle	0+000	3236	Total	-	198	141	49	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	187	139	35	64					
			Medium trucks	-	4	1	5	64					
			Heavy trucks	-	7	1	9	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Riddle to Pine Grove	0+220	3236	Total	-	198	141	49	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	187	139	35	64					
			Medium trucks	-	4	1	5	64					
			Heavy trucks	-	7	1	9	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cascade			Traffic direction: In entry direction										
North of Kennet	0+000	2438	Total	-	149	106	37	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	141	105	26	64					
			Medium trucks	-	3	1	4	64					
			Heavy trucks	-	5	1	7	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Kennet to Shasta Dam	1+123	2438	Total	-	149	106	37	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	141	105	26	64					
			Medium trucks	-	3	1	4	64					
			Heavy trucks	-	5	1	7	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cascade			Traffic direction: In entry direction										
Shasta Dam to 2nd	0+000	5045	Total	-	308	220	76	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	292	217	54	64					
			Medium trucks	-	6	1	8	64					
			Heavy trucks	-	10	2	14	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
2nd to Fell	0+136	5045	Total	-	308	220	76	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	292	217	54	64					
			Medium trucks	-	6	1	8	64					
			Heavy trucks	-	10	2	14	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

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Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Fell to Cottage	1+405	3879	Total	-	237	169	59	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	225	167	41	64					
			Medium trucks	-	5	1	7	64					
			Heavy trucks	-	8	1	11	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Cottage to Pine Grove	1+841	4437	Total	-	271	193	67	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	257	191	47	64					
			Medium trucks	-	5	1	7	64					
			Heavy trucks	-	9	2	12	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Twin View			Traffic direction: In entry direction										
City Limit to Mendocino	0+000	1911	Total	-	119	87	24	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	117	87	22	64					
			Medium trucks	-	1	0	2	64					
			Heavy trucks	-	1	0	1	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Mendocino to Poppy	0+934	685	Total	-	43	31	9	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	42	31	8	64					
			Medium trucks	-	1	0	1	64					
			Heavy trucks	-	0	0	0	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Poppy to Virginia	1+187	685	Total	-	43	31	9	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	42	31	8	64					
			Medium trucks	-	1	0	1	64					
			Heavy trucks	-	0	0	0	64					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

Shasta Lake General Plan
SoundPLAN Traffic Input - 2040

Section name	Station km	ADT Veh/24	Traffic values: Vehicles type	Vehicle name	day Veh/h	evening Veh/h	night Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Ma %
Deer Creek			Traffic direction: In entry direction										
South of Shasta Dam	0+000	330	Total	-	21	15	4	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	20	15	4	40					
			Medium trucks	-	0	-	0	40					
			Heavy trucks	-	0	-	0	40					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Interstate 5			Traffic direction: In entry direction										
Arrowhead to Pine Grove	0+000	50800	Total	-	2959	1957	1047	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	2542	1888	468	105					
			Medium trucks	-	114	19	158	105					
			Heavy trucks	-	303	51	421	105					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
Pine Grove to Shasta Dam	1+500	44400	Total	-	2560	1664	966	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	2149	1596	396	105					
			Medium trucks	-	112	19	155	105					
			Heavy trucks	-	298	50	414	105					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					
North of Shasta Dam	3+329	32300	Total	-	1798	1099	825	-	none	-	-	Average (of DGAC and PCC)	0.0
			Automobiles	-	1389	1031	256	105					
			Medium trucks	-	115	19	160	105					
			Heavy trucks	-	295	49	409	105					
			Buses	-	-	-	-	-					
			Motorcycles	-	-	-	-	-					
			Auxiliary vehicle	-	-	-	-	-					

2040-Shasta Lake General Plan
Emission calculation road - Shasta Lake GP CNEL

Road	Section name	KM	ADT	Gradient	
		km	Veh/24h	%	
Shasta Dam	City Limit to Lake	0.000	2538	0.0	
Shasta Dam	Lake to Sacramento	0.000	2536	0.0	
Shasta Dam	Sacramento to North	0.410	5755	0.0	
Shasta Dam	Sacramento to North	0.000	5755	0.0	
Shasta Dam	North to Lassen	2.115	5755	0.0	
Shasta Dam	Lassen to Nell Orr	2.363	13001	0.0	
Shasta Dam	Nell Orr to Cascade	4.009	14269	0.0	
Shasta Dam	Shasta to Cascade	4.143	14269	0.0	
Shasta Dam	I-5 Ramp E. of Cascade	4.277	15501	0.0	
Pine Grove	Lake to Ashby	0.000	11633	0.0	
Pine Grove	Ashby to Coeur D'Alene	0.723	4601	0.0	
Pine Grove	Coeur D'Alene to Smith	1.721	7932	0.0	
Pine Grove	Smith to Cascade	3.061	5828	0.0	
Pine Grove	Virginia to Leona	0.000	1309	0.0	
Lake Boulevard	City Limit to Construction	0.000	2947	0.0	
Lake Boulevard	Construction to Flanagan	1.532	2947	0.0	
Lake Boulevard	Flanagan to Hill	2.770	2709	0.0	
Lake Boulevard	Hill to Buckeye	2.998	2178	0.0	
Lake Boulevard	Buckeye to Duvall	4.222	2178	0.0	
Lake Boulevard	Duvall to Mason	4.714	1354	0.0	
Lake Boulevard	North of Mason	4.877	1354	0.0	
Ashby	Pine to Coeur D'Alene	0.000	2524	0.0	
Ashby	Coeur D'Alene to Arlene	0.560	2524	0.0	
Ashby	Arlene to Los Gatos	0.701	2877	0.0	
Ashby	Los Gatos to San Gorgonio	2.033	2877	0.0	
Ashby	San Gorgonio to Flower	2.300	3088	0.0	
Ashby	Flower to Shasta Dam	2.348	3088	0.0	
Mussel Shoals	Shasta Dam to Front	0.000	1036	0.0	
Mussel Shoals	Front to Main	0.070	1036	0.0	
Mussel Shoals	Main to Chico	0.180	964	0.0	
Black Canyon	North of Mussel Shoals	0.000	279	0.0	

2040-Shasta Lake General Plan
Emission calculation road - Shasta Lake GP CNEL

Road	Section name	KM	ADT	Gradient	
		km	Veh/24h	%	
Grand Coulee Boulevard	Shasta Dam to Fort Peck Street	0.000	897	0.0	
Grand Coulee Boulevard	Boulder to Fort Peck	0.542	830	0.0	
Grand Coulee Boulevard	Boulder to Cascade	0.762	830	0.0	
Cascade	Arrowhead to Riddle	0.000	3236	0.0	
Cascade	Riddle to Pine Grove	0.220	3236	0.0	
Cascade	North of Kennet	0.000	2438	0.0	
Cascade	Kennet to Shasta Dam	1.123	2438	0.0	
Cascade	Shasta Dam to 2nd	0.000	5045	0.0	
Cascade	2nd to Fell	0.136	5045	0.0	
Cascade	Fell to Cottage	1.405	3879	0.0	
Cascade	Cottage to Pine Grove	1.841	4437	0.0	
Twin View	City Limit to Mendocino	0.000	1911	0.0	
Twin View	Mendocino to Poppy	0.934	685	0.0	
Twin View	Poppy to Virginia	1.187	685	0.0	
Deer Creek	South of Shasta Dam	0.000	330	0.0	
Interstate 5	Arrowhead to Pine Grove	0.000	50800	0.0	
Interstate 5	Pine Grove to Shasta Dam	1.500	44400	0.0	
Interstate 5	North of Shasta Dam	3.329	32300	0.0	

Appendix E.

Traffic Impact Analysis

Vehicle Miles Traveled Analysis

Digital hyperlink:

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SHASTA LAKE GENERAL PLAN UPDATE TRAFFIC IMPACT ANALYSIS

City of Shasta Lake

February 22, 2022

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

February 22, 2022

Mr. Ethan Mobley, Owner
DYNAMIC PLANNING + SCIENCE
1901 Harrison Street, Suite 1100
Oakland, California 94612

RE: Shasta Lake General Plan Update Traffic Impact Analysis
Project No. 19251

Dear Mr. Mobley:

Ganddini Group, Inc. is pleased to provide this Traffic Impact Analysis for the proposed Shasta Lake General Plan Update project in the City of Shasta Lake, California. The purpose of this study is to provide an assessment of potential traffic impacts resulting from potential future development associated the proposed general plan land use modifications and to identify the traffic mitigation measures necessary to maintain the established level of service standards for the circulation elements of the impacted roadway system. The traffic issues related to the proposed general plan land uses and development have been evaluated in the context of the California Environmental Quality Act (CEQA).

PROJECT DESCRIPTION

The proposed project consists of modifications to the current City of Shasta Lake General Plan Land Use Element that are forecast to result in additional future development. The City of Shasta Lake is expected to build out by year 2040. The updated General Plan land use assumptions have been incorporated into the input parameters for the Future Year 2040 traffic modeling tool for the City of Shasta Lake to determine the future traffic forecast.

STUDY AREA

Figure 1 shows the regional vicinity of the City of Lake Shasta. Figure 2 shows the project study area. The study area consists of the following 19 study area intersections and 48 study area roadway segments located in the City of Shasta Lake:

	Study Area Intersections	Jurisdiction
1.	Lake Boulevard (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
2.	Shasta Park Drive (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
3.	Ashby Road (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
4.	Montana Avenue (NS) at WB Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
5.	Montana Avenue (NS) at EB Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
6.	Median Avenue (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
7.	Mussel Shoals Avenue (NS) at Red Bluff Street (EW)	Shasta Lake
8.	Mussel Shoals Avenue (NS) at Main Street (EW)	Shasta Lake

	Study Area Intersections	Jurisdiction
9.	Mussel Shoals/Grand Coulee (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
10.	Shasta Way (NS) at Front Street (EW)	Shasta Lake
11.	Shasta Way/Shasta Street (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
12.	Cascade Boulevard (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
13.	I-5 Southbound Off-Ramp (NS) at Shasta Dam Boulevard/SR-151 (EW)	Shasta Lake/Caltrans
14.	Ashby Road (NS) at Pine Grove Avenue (EW)	Shasta Lake
15.	North Cascade Boulevard (NS) at Pine Grove Avenue (EW)	Shasta Lake
16.	I-5 Southbound Ramps (NS) at Pine Grove Avenue (EW)	Shasta Lake/Caltrans
17.	I-5 Northbound Ramps (NS) at Pine Grove Avenue (EW)	Shasta Lake/Caltrans
18.	Twin View Boulevard (NS) at Pine Grove Avenue (EW)	Shasta Lake
19.	South Cascade Boulevard (NS) at Pine Grove Avenue (EW)	Shasta Lake

The study area consists of the following 48 study area roadway segments located in the City of Shasta Lake:

	Study Area Roadway Segment	Jurisdiction
1.	Shasta Dam Boulevard/SR-151: Lake Boulevard to Sacramento Street	Shasta Lake/Caltrans
2.	Shasta Dam Boulevard/SR-151: North Boulevard to Ashby Road	Shasta Lake/Caltrans
3.	Shasta Dam Boulevard/SR-151: Nell Orr Street to Shasta Way	Shasta Lake/Caltrans
4.	Shasta Dam Boulevard/SR-151: Shasta Way to Cascade Boulevard	Shasta Lake/Caltrans
5.	I-5 Northbound Ramps: Shasta Dam Boulevard/SR-151 to East of Cascade Boulevard	Shasta Lake/Caltrans
6.	Red Bluff Street: Montana Avenue to Locust Avenue	Shasta Lake
7.	Red Bluff Street: Grand River Avenue to Washington Avenue	Shasta Lake
8.	Main Street: Montana Avenue to Locust Avenue	Shasta Lake
9.	Main Street: Grand River Avenue to Washington Avenue	Shasta Lake
10.	La Mesa Avenue: Lassen Avenue to San Gorgonio Avenue	Shasta Lake
11.	Vallecito Street: Montana Avenue to Hardenbrook Avenue	Shasta Lake
12.	Vallecito Street: Ellen Drive to Washington Avenue	Shasta Lake
13.	Coeur D'Alene Avenue: Ashby Road to D'Alene Avenue	Shasta Lake
14.	Pine Grove Avenue: Newton Road to Shasta Lake City Limit	Shasta Lake
15.	Pine Grove Avenue: Ashby Road to Coeur D'Alene Avenue	Shasta Lake
16.	Pine Grove Avenue: Coeur D'Alene Avenue to Smith Avenue (South)	Shasta Lake
17.	Pine Grove Avenue: Smith Avenue to Cascade Boulevard (North)	Shasta Lake
18.	Pine Grove Avenue: Virginia Avenue to Marilyn Avenue	Shasta Lake
19.	Akrich Street: Virginia Avenue to Marilyn Avenue	Shasta Lake
20.	Trinity Street: Butterfly Lane to Sioux Drive	Shasta Lake
21.	Lake Boulevard: Mason Drive to Duval Drive	Shasta Lake
22.	Lake Boulevard: Buckeye Street to Hill Boulevard	Shasta Lake
23.	Lake Boulevard: Hill Boulevard to Flanagan Road	Shasta Lake

	Study Area Roadway Segment	Jurisdiction
24.	Lake Boulevard: Shasta Lake City Limit to Construction Way	Shasta Lake
25.	Ashby Road: South of Shasta Dam Boulevard/SR-151 to Flower Street	Shasta Lake
26.	Ashby Road: Los Gatos Avenue to San Gorgonio Avenue	Shasta Lake
27.	Ashby Road: Arlene Court to Coeur D' Arlene	Shasta Lake
28.	Montana Avenue: Main Street to Front Street	Shasta Lake
29.	Montana Avenue: Shasta Dam Boulevard/SR-151 to La Mesa Avenue	Shasta Lake
30.	Black Canyon Road: Arrow Rock Street to Pensacola Street	Shasta Lake
31.	McConnell Avenue: Main Street to Front Street	Shasta Lake
32.	Cabello Street: Shasta Dam Boulevard/SR-151 to Meade Street	Shasta Lake
33.	Cabello Street: Bonneville Street to Vallecito Street	Shasta Lake
34.	Median Avenue: Front Street to Shasta Dam Boulevard/SR-151	Shasta Lake
35.	Mussel Shoals Avenue: Chico Street to Main Street	Shasta Lake
36.	Mussel Shoals Avenue: Front Street to Shasta Dam Boulevard/SR-151	Shasta Lake
37.	Grand Coulee Boulevard: Shasta Dam Boulevard/SR-151 at Fort Peck Street	Shasta Lake
38.	Grand Coulee Boulevard: Fort Peck Street to Boulder Street	Shasta Lake
39.	Shasta Way: Front Street to Shasta Dam Boulevard/SR-151	Shasta Lake
40.	Shasta Way: Shasta Dam Boulevard/SR-151 to Fort Peck Street	Shasta Lake
41.	Cascade Boulevard: Kennett Street to Shasta Dam Boulevard/SR-151	Shasta Lake
42.	Cascade Boulevard: Shasta Dam Boulevard/SR-151 to Second Street	Shasta Lake
43.	Cascade Boulevard: Fell Street to Cottage Avenue	Shasta Lake
44.	Cascade Boulevard: Cottage Avenue to Pine Grove Avenue	Shasta Lake
45.	Cascade Boulevard: Riddle Road to Arrowhead Avenue	Shasta Lake
46.	Virginia Avenue: Akrich Street to Pine Grove Avenue	Shasta Lake
47.	Twin View Boulevard: Virginia Avenue to Poppy Lane	Shasta Lake
48.	Twin View Boulevard: Mendocino Street to Shasta Lake City Limit	Shasta Lake

EXISTIN TRAFFIC

Current traffic counts were collected during the months of February and December in 2020. The 2020 traffic counts are compared to other historic traffic counts so that the more conservative (higher intensity) data is used. The weekday AM peak period was counted between 7:00 AM and 9:00 AM and the weekday PM peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15-minute periods with the highest total volume when all movements are added together. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15 minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix A. To derive 2022 conditions, a 2% growth rate has been applied to the 2020 intersection counts.

Roadway segment average daily traffic (ADT) volumes are based on the traffic count data from the *City of Shasta Lake Traffic Count Report* published in February 23, 2021. The roadway segment data sheets are

included in Appendix A. To derive the Existing 2022 conditions, a 2% growth factor has been applied to the 2021 roadway segment counts.

Table 1 shows the Existing 2022 average daily traffic (ADT) volumes for the study area roadway segments.

GENERAL PLAN BUILDOUT 2040 TRAFFIC

The proposed project consists of modifications to the current City of Shasta Lake General Plan Land Use Element that are forecast to result in additional future development. The City of Shasta Lake is expected to build out by year 2040. The updated General Plan land use assumptions have been incorporated into the input parameters for the Future Year 2040 traffic modeling tool for the City of Shasta Lake to determine the future traffic forecast.

The post-processed traffic modeling output data for the study area intersections and roadway segments have been extracted from the Base Year 2020 traffic model and the Future Year 2040 traffic model. The volume changes between the Base Year 2020 traffic model and the Future Year 2040 traffic model are assumed to be the "incremental traffic model growth" from existing traffic conditions to the future General Plan Buildout 2040 traffic conditions. The calculation for the incremental traffic model growth includes a minimum increase of 10 peak hour vehicles for intersection locations with nominal growth. For roadway segments, a minimum 5% growth factor is applied for roadway segments with nominal growth. The incremental traffic model growth is added to the Existing 2022 traffic volumes to derive the General Plan Buildout 2040 traffic volumes. Appendix B includes the traffic model post-processing forecasting calculation sheets for the traffic forecast.

Table 1 shows the General Plan Buildout 2040 average daily traffic (ADT) volumes for the study area roadway segments.

INTERSECTION LEVEL OF SERVICE ANALYSIS

Intersection Level of Service (LOS) analysis methodologies from the latest edition (6th Edition) of the Transportation Research Board *Highway Capacity Manual* (HCM) are used to evaluate the operation of the driveways and intersections. The HCM methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle, Level of Service, and queuing. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

Level of Service	Intersection Control Delay (Seconds / Vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board, Highway Capacity Manual (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst individual movement (or movements sharing a single lane).

Intersection Level of Service analysis was performed using the Synchro software with HCM-default saturation flow rates and measured peak hour factors from the intersection volume counts. Detailed Level of Service analysis worksheets for each of the analysis scenarios are provided in Appendix C.

Performance Criteria

City of Shasta Lake. The City of Shasta Lake General Plan has established Level of Service C as the minimum Level of Service standard for intersections and roadways within the City of Shasta Lake. Therefore, Level of Service A, B, or C operations are considered acceptable and Level of Service D, E, or F operations are considered deficient for intersections/roadways within City of Shasta Lake jurisdiction.

Caltrans. As stated in the Guide for the Preparation of Traffic Impact Studies (State of California Department of Transportation, 2002), "Caltrans endeavors to maintain a target LOS [Level of Service] at the transition between LOS "C" and LOS "D" on State highway facilities". For consistency with the City of Shasta Lake requirements, Level of Service A, B, or C operations are considered acceptable and Level of Service D, E, or F operations are considered deficient for intersections/roadways within Caltrans jurisdiction.

Existing 2022 Intersection Level of Service

The intersection delay Levels of Service for Existing 2022 conditions are shown in Table 2. Detailed Level of Service analysis worksheets are provided in Appendix C. As shown in Table 2, the study area intersections are currently operating at Levels of Service C or better during the peak hours for Existing 2022 conditions, except for the following intersections:

- Mussel Shoals/Grand Coulee (NS) at Shasta Dam Boulevard/SR-151 (EW) – #9 (PM)
- Cascade Boulevard (NS) at Shasta Dam Boulevard/SR-151 (EW) – #12 (AM and PM)
- South Cascade Boulevard (NS) at Pine Grove Avenue (EW) – #19 (PM)

General Plan Buildout Intersection Level of Service

The intersection delay Levels of Service for General Plan Buildout 2040 conditions are shown in Table 3. Detailed Level of Service analysis worksheets are provided in Appendix C. As shown in Table 3, the study area intersections are projected to operating at Levels of Service C or better during the peak hours for General Plan Buildout 2040 conditions, except for the following intersections:

- Mussel Shoals/Grand Coulee (NS) at Shasta Dam Boulevard/SR-151 (EW) – #9 (AM and PM)
- Cascade Boulevard (NS) at Shasta Dam Boulevard/SR-151 (EW) – #12 (AM and PM)
- I-5 Northbound Ramps (NS) at Pine Grove Avenue (EW) – #17 (PM)
- South Cascade Boulevard (NS) at Pine Grove Avenue (EW) – #19 (PM)

As shown in Table 3, the following study area intersection improvements are recommended to mitigate the deficient level of service:

- Mussel Shoals/Grand Coulee (NS) at Shasta Dam Boulevard/SR-151 (EW) – #9
  - Restrict northbound and southbound approaches to right turns only during peak hours.

- Cascade Boulevard (NS) at Shasta Dam Boulevard/SR-151 (EW) – #12
  - Modify signal phasing to permissive phasing for all approaches and optimize signal timing.

- I-5 Northbound Ramps (NS) at Pine Grove Avenue (EW) – #17
  - Install new traffic signal.

- South Cascade Boulevard (NS) at Pine Grove Avenue (EW) – #19
  - Install new traffic signal.

As shown in Table 3, the deficient study area intersections are projected to operate within acceptable Levels of Service during the peak hours for General Plan Buildout conditions with implementation of the recommended intersection mitigation measures.

Signal Warrant Analysis

A traffic signal is projected to be warranted at the following study intersections based upon the *California Manual on Uniform Traffic Control Devices* (2014) peak hour volume graphs (Warrant 3), for General Plan Buildout 2040 conditions:

- I-5 Northbound Ramps (NS) at Pine Grove Avenue (EW) – #17
- South Cascade Boulevard (NS) at Pine Grove Avenue (EW) – #19

Traffic signal warrant analysis worksheets are provided in Appendix D.

ROADWAY SEGMENT CAPACITY ANALYSIS

Roadway segment capacity analysis is based on the average daily traffic (ADT) volume travelling on the roadway compared to the theoretical vehicular daily capacity thresholds for each roadway classification type listed below.

Roadway Classification	Capacity by Level of Service				
	A	B	C	D	E
6-Lane Expressway	36,000	42,000	48,000	54,000	60,000
6-Lane Divided Arterial	32,000	38,000	43,000	49,000	54,000
4-Lane Expressway	24,000	28,000	32,000	36,000	40,000
4-Lane Divided Arterial	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial	18,000	21,000	24,000	27,000	30,000
2-Lane Divided Arterial	11,000	12,500	14,500	16,000	18,000
2-Lane Undivided Arterial	9,000	10,500	12,000	13,500	15,000
4-Lane Collector	12,000	15,000	18,000	21,000	24,000
3-Lane Collector	9,000	11,250	13,500	15,750	18,000
2-Lane Collector	6,000	7,500	9,000	10,500	12,000
Residential Collector	1,600	3,200	4,800	6,400	8,000
Residential	600	1,200	2,000	3,000	4,500

Source: Mountain Gate at Shasta Lake Traffic Impact Analysis Report (Omni-Means, August 2008).

Existing 2022 Roadway Segment Level of Service

Table 4 shows the average daily traffic (ADT), volume/capacity ratio and roadway segment Level of Service at the study area roadway segments for Existing 2022 traffic conditions. As shown in Table 4, all the study area roadway segments currently operating within acceptable Levels of Service.

General Plan Buildout 2040 Roadway Segment Level of Service

Table 5 shows the average daily traffic (ADT), volume/capacity ratio and roadway segment Level of Service at the study area roadway segments for General Plan Buildout 2040 traffic conditions. As shown in Table 5, all the study area roadway segments currently operate within acceptable Levels of Service.

Based on the roadway segment capacity level of service analysis, no roadway segment improvements are recommended.

IMPROVEMENT RECOMMENDATIONS

Study Area Intersections

The following study area intersection improvements are recommended to mitigate the deficient level of service:

- Mussel Shoals/Grand Coulee (NS) at Shasta Dam Boulevard/SR-151 (EW) – #9
  - Restrict northbound and southbound approaches to right turns only during peak hours.

- Cascade Boulevard (NS) at Shasta Dam Boulevard/SR-151 (EW) – #12
  - Modify signal phasing to permissive left-turn phasing for all approaches and optimize signal timing.

- I-5 Northbound Ramps (NS) at Pine Grove Avenue (EW) – #17
  - Install new traffic signal.

- South Cascade Boulevard (NS) at Pine Grove Avenue (EW) – #19
  - Install new traffic signal.

Study Area Roadway Segment

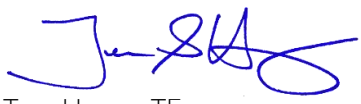
Based on the roadway segment capacity level of service analysis, no roadway segment improvements are recommended.

CONCLUSION

It has been a pleasure to assist you with this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Sincerely,

GANDDINI GROUP, INC.



Tom Huang, TE
Senior Traffic Engineer

Table 1
Roadway Segment Average Daily Traffic (ADT) Summary

Roadway Segment				Existing 2022 Daily Traffic[1]	Traffic Model Incremental Growth[2]	GP Buildout 2040 Daily Traffic[3]
ID	Name	From	To			
1	Shasta Dam Blvd	Lake Blvd	Sacramento St	1,502	1,035	2,537
2	Shasta Dam Blvd	North Blvd	Lassen Ave	4,206	1,550	5,756
3	Shasta Dam Blvd	Nell Orr St	Shasta Way	12,032	969	13,001
4	Shasta Dam Blvd	Shasta Way	Cascade Blvd	13,300	969	14,269
5	I-5 NB Off/On Ramp	Shasta Dam Blvd	E of Cascade Blvd	13,064	2,438	15,502
6	Red Bluff St	Montana Ave	Locust Ave	103	140	243
7	Red Bluff St	Grand River Ave	Washington Ave	315	15	330
8	Main St	Montana Ave	Locust Ave	166	20	186
9	Main St	Grand River Ave	Washington Ave	215	11	226
10	La Mesa Ave	Lassen Ave	San Gorgonio Ave	695	34	729
11	Vallecito St	Montana Ave	Hardenbrook Ave	599	520	1,119
12	Vallecito St	Ellen Dr	Washington Ave	1,049	299	1,348
13	Coeur D'Alene Ave	Ashby Rd	D'Alene Ave	400	76	476
14	Pine Grove Ave	Newton Rd	Shasta Lake City Limit	3,865	1,767	5,632
15	Pine Grove Ave	Ashby Rd	Coeur D'Alene Ave	3,809	792	4,601
16	Pine Grove Ave	Coeur D'Alene Ave	Smith Ave (S)	4,901	3,031	7,932
17	Pine Grove Ave	Smith Ave	Cascade Blvd (N)	5,036	792	5,828
18	Pine Grove Ave	Virginia Ave	Marilyn Ave	516	792	1,308
19	Akrich St	Virginia Ave	Marilyn Ave	548	1,395	1,943
20	Trinity St	Butterfly Ln	Sioux Dr	1,142	332	1,474
21	Lake Blvd	Mason Dr	Duval Dr	1,051	302	1,353
22	Lake Blvd	Buckeye St	Hill Blvd	1,870	308	2,178
23	Lake Blvd	Hill Blvd	Flanagan Rd	2,582	127	2,709
24	Lake Blvd	Shasta Lake City Limit	Construction Way	2,810	138	2,948
25	Ashby Rd	S of Shasta Dam Blvd	Flower St	2,889	199	3,088
26	Ashby Rd	Los Gatos Ave	San Gorgonio Ave	2,470	406	2,876
27	Ashby Rd	Arlene Ct	Coeur D'Alene Ave	2,310	214	2,524
28	Montana Ave	Main St	Front St	351	27	378
29	Montana Ave	Shasta Dam Blvd	La Mesa Ave	1,069	52	1,121
30	Black Canyon Rd	Arrow Rock St	Pensacola St	253	63	316
31	McConnell Ave	Main St	Front St	265	13	278
32	Cabello St	Shasta Dam Blvd	La Mesa Ave	704	35	739
33	Cabello St	Bonneville St	Vallecito St	492	32	524
34	Median Ave	Front St	Shasta Dam Blvd	1,205	59	1,264
35	Mussel Shoals Ave	Chico St	Main St	760	203	963
36	Mussel Shoals Ave	Front St	Shasta Dam Blvd	828	208	1,036
37	Grand Coulee Blvd	Shasta Dam Blvd	Fort Peck St	774	121	895
38	Grand Coulee Blvd	Fort Peck St	Boulder St	701	131	832
39	Shasta Way	Front St	Shast Dam Blvd	743	666	1,409
40	Shasta St	Shasta Dam Blvd	Fort Peck St	632	197	829
41	Cascade Blvd	Kennett St	Shasta Dam Blvd	2,066	372	2,438
42	Cascade Blvd	Shasta Dam Blvd	Second St	4,123	922	5,045
43	Cascade Blvd	Fell St	Cottage Ave	2,955	922	3,877
44	Cascade Blvd	Cottage Ave	Pine Grove Ave	3,012	1,425	4,437
45	Cascade Blvd	Riddle Rd	Arrowhead Rd	3,058	178	3,236
46	Viriginia Ave	Akrich St	Pine Grove Ave	1,126	1,395	2,521
47	Twin View Blvd	Virginia Ave	Poppy Ln	652	32	684
48	Twin View Blvd	Mendocino St	Shasta Lake City Limit	438	1,473	1,911

Note:

1 2020 segment counts with a 2% Total Growth to factor up to 2022 conditions.

2 Traffic model incremental growth with a minimum 5% growth over existing traffic count.

3 Existing 2022 traffic plus traffic model incremental growth to General Plan Buildout 2040 conditions.

Table 2
Existing 2022 Intersection Levels of Service

Study Intersection	Jurisdiction[1]	Traffic Control[2]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. Lake Blvd (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	AWS	7.5	A	7.8	A
2. Shasta Park Dr (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	9.7	A	10.1	B
3. Ashby Road (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	10.8	B	10.7	B
4. Montana Ave (NS) at WB Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	11.4	B	13.4	B
5. Montana Ave (NS) at EB Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	12.0	B	12.5	B
6. Median Ave (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	13.4	B	14.7	B
7. Mussel Shoals Ave (NS) at Red Bluff St (EW)	SL	AWS	7.2	A	7.3	A
8. Mussel Shoals Ave (NS) at Main St (EW)	SL	AWS	7.2	A	7.3	A
9. Mussel Shoals/Grand Coulee (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	24.1	C	27.8	D
10. Shasta Way (NS) at Front St (EW)	SL	CSS	9.7	A	8.9	A
11. Shasta Way/Shasta St (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	13.7	B	11.7	B
12. Cascade Blvd (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	TS	43.9	D	36.6	D
13. I-5 SB Off-Ramp (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	TS	6.8	A	6.9	A
14. Ashby Road (NS) at Pine Grove Ave (EW)	SL	CSS	13.0	B	10.6	B
15. North Cascade Blvd (NS) at Pine Grove Ave (EW)	SL	TS	16.6	B	19.0	B
16. I-5 SB Ramps (NS) at Pine Grove Ave (EW)	SL/Caltrans	CSS	11.8	B	13.2	B
17. I-5 NB Ramps (NS) at Pine Grove Ave (EW)	SL/Caltrans	CSS	11.3	B	15.3	C
18. Twin View Blvd (NS) at Pine Grove Ave (EW)	SL	CSS	10.0	B	10.1	B
19. South Cascade Blvd (NS) at Pine Grove Ave (EW)	SL	CSS	16.8	C	31.2	D

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst approach.

(3) LOS = Level of Service

Table 3
General Plan Buildout 2040 Intersection Levels of Service

Study Intersection	Jurisdiction[1]	Traffic Control[2]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. Lake Blvd (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	AWS	7.3	A	7.6	A
2. Shasta Park Dr (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	9.8	A	10.4	B
3. Ashby Road (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	11.5	B	11.6	B
4. Montana Ave (NS) at WB Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	11.8	B	15.4	C
5. Montana Ave (NS) at EB Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	13.4	B	14.4	B
6. Median Ave (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	14.6	B	16.8	C
7. Mussel Shoals Ave (NS) at Red Bluff St (EW)	SL	AWS	7.1	A	7.2	A
8. Mussel Shoals Ave (NS) at Main St (EW)	SL	AWS	7.2	A	7.4	A
9. Mussel Shoals/Grand Coulee (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	31.0	D	41.1	E
- Restrict to NB/SB Right Turns Only		CSS	14.5	B	13.1	B
10. Shasta Way (NS) at Front St (EW)	SL	CSS	9.9	A	9.4	A
11. Shasta Way/Shasta St (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	CSS	15.0	C	12.6	B
12. Cascade Blvd (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	TS	48.4	D	41.2	D
- Modify signal phasing to permissive left-turn phasing for all approaches and optimize signal timing		TS	12.6	B	9.2	A
13. I-5 SB Off-Ramp (NS) at Shasta Dam Blvd/SR-151 (EW)	SL/Caltrans	TS	6.8	A	7.2	A
14. Ashby Road (NS) at Pine Grove Ave (EW)	SL	CSS	18.1	C	11.6	B
15. North Cascade Blvd (NS) at Pine Grove Ave (EW)	SL	TS	17.1	B	19.8	B
16. I-5 SB Ramps (NS) at Pine Grove Ave (EW)	SL/Caltrans	CSS	15.0	C	22.3	C
17. I-5 NB Ramps (NS) at Pine Grove Ave (EW)	SL/Caltrans	CSS	14.0	B	64.8	F
- Install new traffic signal		**TS**	8.8	A	10.6	B
18. Twin View Blvd (NS) at Pine Grove Ave (EW)	SL	CSS	11.8	B	14.3	B
19. South Cascade Blvd (NS) at Pine Grove Ave (EW)	SL	CSS	22.3	C	109.0	F
- Install new traffic signal		**TS**	13.7	B	11.7	B

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; **Bold = Improvements**

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst approach.

(3) LOS = Level of Service

Table 4
Existing 2022 Conditions Roadway Segment Level of Service

Roadway Segment				Existing 2021 Daily Traffic[1]	Roadway Classification[2]	Roadway Capacity[2]	Volume/ Capacity Ratio	Level of Service
ID	Name	From	To					
1	Shasta Dam Blvd	Lake Blvd	Sacramento St	1,502	2-Lane Undivided Arterial	15,000	0.10	A
2	Shasta Dam Blvd	North Blvd	Lassen Ave	4,206	2-Lane Undivided Arterial	15,000	0.28	A
3	Shasta Dam Blvd	Nell Orr St	Shasta Way	12,032	2-Lane Divided Arterial	18,000	0.67	B
4	Shasta Dam Blvd	Shasta Way	Cascade Blvd	13,300	4-Lane Divided Arterial	36,000	0.37	A
5	I-5 NB Off/On Ramp	Shasta Dam Blvd	E of Cascade Blvd	13,064	4-Lane Divided Arterial	36,000	0.36	A
6	Red Bluff St	Montana Ave	Locust Ave	103	Residential Collector	8,000	0.01	A
7	Red Bluff St	Grand River Ave	Washington Ave	315	Residential Collector	8,000	0.04	A
8	Main St	Montana Ave	Locust Ave	166	Residential	4,500	0.04	A
9	Main St	Grand River Ave	Washington Ave	215	Residential	4,500	0.05	A
10	La Mesa Ave	Lassen Ave	San Gorgonio Ave	695	Residential Collector	8,000	0.09	A
11	Vallecito St	Montana Ave	Hardenbrook Ave	599	Residential Collector	8,000	0.07	A
12	Vallecito St	Ellen Dr	Washington Ave	1,049	Residential Collector	8,000	0.13	A
13	Coeur D'Alene Ave	Ashby Rd	D'Alene Ave	400	Residential	4,500	0.09	A
14	Pine Grove Ave	Newton Rd	Shasta Lake City Limit	3,865	2-Lane Undivided Arterial	15,000	0.26	A
15	Pine Grove Ave	Ashby Rd	Coeur D'Alene Ave	3,809	2-Lane Divided Arterial	18,000	0.21	A
16	Pine Grove Ave	Coeur D'Alene Ave	Smith Ave (S)	4,901	2-Lane Divided Arterial	18,000	0.27	A
17	Pine Grove Ave	Smith Ave	Cascade Blvd (N)	5,036	2-Lane Divided Arterial	18,000	0.28	A
18	Pine Grove Ave	Virginia Ave	Marilyn Ave	516	2-Lane Undivided Arterial	15,000	0.03	A
19	Akrich St	Virginia Ave	Marilyn Ave	548	2-Lane Undivided Arterial	15,000	0.04	A
20	Trinity St	Butterfly Ln	Sioux Dr	1,142	Residential Collector	8,000	0.14	A
21	Lake Blvd	Mason Dr	Duval Dr	1,051	2-Lane Undivided Arterial	15,000	0.07	A
22	Lake Blvd	Buckeye St	Hill Blvd	1,870	4-Lane Undivided Arterial	30,000	0.06	A
23	Lake Blvd	Hill Blvd	Flanagan Rd	2,582	2-Lane Undivided Arterial	15,000	0.17	A
24	Lake Blvd	Shasta Lake City Limit	Construction Way	2,810	2-Lane Undivided Arterial	15,000	0.19	A
25	Ashby Rd	S of Shasta Dam Blvd	Flower St	2,889	2-Lane Collector	12,000	0.24	A
26	Ashby Rd	Los Gatos Ave	San Gorgonio Ave	2,470	2-Lane Collector	12,000	0.21	A
27	Ashby Rd	Arlene Ct	Coeur D'Alene Ave	2,310	2-Lane Collector	12,000	0.19	A
28	Montana Ave	Main St	Front St	351	2-Lane Collector	12,000	0.03	A
29	Montana Ave	Shasta Dam Blvd	La Mesa Ave	1,069	Residential Collector	8,000	0.13	A
30	Black Canyon Rd	Arrow Rock St	Pensacola St	253	Residential Collector	8,000	0.03	A
31	McConnell Ave	Main St	Front St	265	2-Lane Collector	12,000	0.02	A
32	Cabello St	Shasta Dam Blvd	La Mesa Ave	704	Residential	4,500	0.16	B
33	Cabello St	Bonneville St	Vallecito St	492	2-Lane Collector	12,000	0.04	A
34	Median Ave	Front St	Shasta Dam Blvd	1,205	Residential Collector	8,000	0.15	A
35	Mussel Shoals Ave	Chico St	Main St	760	Residential Collector	8,000	0.10	A
36	Mussel Shoals Ave	Front St	Shasta Dam Blvd	828	2-Lane Collector	12,000	0.07	A
37	Grand Coulee Blvd	Shasta Dam Blvd	Fort Peck St	774	Residential Collector	8,000	0.10	A
38	Grand Coulee Blvd	Fort Peck St	Boulder St	701	Residential Collector	8,000	0.09	A
39	Shasta Way	Front St	Shast Dam Blvd	743	Residential Collector	8,000	0.09	A
40	Shasta St	Shasta Dam Blvd	Fort Peck St	632	2-Lane Undivided Arterial	15,000	0.04	A
41	Cascade Blvd	Kennett St	Shasta Dam Blvd	2,066	2-Lane Undivided Arterial	15,000	0.14	A
42	Cascade Blvd	Shasta Dam Blvd	Second St	4,123	2-Lane Undivided Arterial	15,000	0.27	A
43	Cascade Blvd	Fell St	Cottage Ave	2,955	2-Lane Undivided Arterial	15,000	0.20	A
44	Cascade Blvd	Cottage Ave	Pine Grove Ave	3,012	2-Lane Undivided Arterial	15,000	0.20	A
45	Cascade Blvd	Riddle Rd	Arrowhead Rd	3,058	2-Lane Undivided Arterial	15,000	0.20	A
46	Viriginia Ave	Akrich St	Pine Grove Ave	1,126	2-Lane Collector	12,000	0.09	A
47	Twin View Blvd	Virginia Ave	Poppy Ln	652	2-Lane Collector	12,000	0.05	A
48	Twin View Blvd	Mendocino St	Shasta Lake City Limit	438	2-Lane Collector	12,000	0.04	A

Notes:

(1) Roadway Link Average Daily Traffic Traffic (see Appendix G).

(2) Source: Mountain Gate at Shasta Lake Traffic Impact Analysis Report (Kunzman Associates, Inc, June 6, 2016)

Table 5
General Plan Buildout 2040 Conditions Roadway Segment Level of Service

Roadway Segment				Future 2040 Daily Traffic[1]	Roadway Classification[2]	Roadway Capacity[2]	Volume/ Capacity Ratio	Level of Service
ID	Name	From	To					
1	Shasta Dam Blvd	Lake Blvd	Sacramento St	2,537	2-Lane Undivided Arterial	15,000	0.17	A
2	Shasta Dam Blvd	North Blvd	Lassen Ave	5,756	2-Lane Undivided Arterial	15,000	0.38	A
3	Shasta Dam Blvd	Nell Orr St	Shasta Way	13,001	2-Lane Divided Arterial	18,000	0.72	C
4	Shasta Dam Blvd	Shasta Way	Cascade Blvd	14,269	4-Lane Divided Arterial	36,000	0.40	A
5	I-5 NB Off/On Ramp	Shasta Dam Blvd	E of Cascade Blvd	15,502	4-Lane Divided Arterial	36,000	0.43	A
6	Red Bluff St	Montana Ave	Locust Ave	243	Residential Collector	8,000	0.03	A
7	Red Bluff St	Grand River Ave	Washington Ave	330	Residential Collector	8,000	0.04	A
8	Main St	Montana Ave	Locust Ave	186	Residential	4,500	0.04	A
9	Main St	Grand River Ave	Washington Ave	226	Residential	4,500	0.05	A
10	La Mesa Ave	Lassen Ave	San Gorgonio Ave	729	Residential Collector	8,000	0.09	A
11	Vallecito St	Montana Ave	Hardenbrook Ave	1,119	Residential Collector	8,000	0.14	A
12	Vallecito St	Ellen Dr	Washington Ave	1,348	Residential Collector	8,000	0.17	A
13	Coeur D'Alene Ave	Ashby Rd	D'Alene Ave	476	Residential	4,500	0.11	A
14	Pine Grove Ave	Newton Rd	Shasta Lake City Limit	5,632	2-Lane Undivided Arterial	15,000	0.38	A
15	Pine Grove Ave	Ashby Rd	Coeur D'Alene Ave	4,601	2-Lane Divided Arterial	18,000	0.26	A
16	Pine Grove Ave	Coeur D'Alene Ave	Smith Ave (S)	7,932	2-Lane Divided Arterial	18,000	0.44	A
17	Pine Grove Ave	Smith Ave	Cascade Blvd (N)	5,828	2-Lane Divided Arterial	18,000	0.32	A
18	Pine Grove Ave	Virginia Ave	Marilyn Ave	1,308	2-Lane Undivided Arterial	15,000	0.09	A
19	Akrich St	Virginia Ave	Marilyn Ave	1,943	2-Lane Undivided Arterial	15,000	0.13	A
20	Trinity St	Butterfly Ln	Sioux Dr	1,474	Residential Collector	8,000	0.18	A
21	Lake Blvd	Mason Dr	Duval Dr	1,353	2-Lane Undivided Arterial	15,000	0.09	A
22	Lake Blvd	Buckeye St	Hill Blvd	2,178	4-Lane Undivided Arterial	30,000	0.07	A
23	Lake Blvd	Hill Blvd	Flanagan Rd	2,709	2-Lane Undivided Arterial	15,000	0.18	A
24	Lake Blvd	Shasta Lake City Limit	Construction Way	2,948	2-Lane Undivided Arterial	15,000	0.20	A
25	Ashby Rd	S of Shasta Dam Blvd	Flower St	3,088	2-Lane Collector	12,000	0.26	A
26	Ashby Rd	Los Gatos Ave	San Gorgonio Ave	2,876	2-Lane Collector	12,000	0.24	A
27	Ashby Rd	Arlene Ct	Coeur D'Alene Ave	2,524	2-Lane Collector	12,000	0.21	A
28	Montana Ave	Main St	Front St	378	2-Lane Collector	12,000	0.03	A
29	Montana Ave	Shasta Dam Blvd	La Mesa Ave	1,121	Residential Collector	8,000	0.14	A
30	Black Canyon Rd	Arrow Rock St	Pensacola St	316	Residential Collector	8,000	0.04	A
31	McConnell Ave	Main St	Front St	278	2-Lane Collector	12,000	0.02	A
32	Cabello St	Shasta Dam Blvd	La Mesa Ave	739	Residential	4,500	0.16	B
33	Cabello St	Bonneville St	Vallecito St	524	2-Lane Collector	12,000	0.04	A
34	Median Ave	Front St	Shasta Dam Blvd	1,264	Residential Collector	8,000	0.16	A
35	Mussel Shoals Ave	Chico St	Main St	963	Residential Collector	8,000	0.12	A
36	Mussel Shoals Ave	Front St	Shasta Dam Blvd	1,036	2-Lane Collector	12,000	0.09	A
37	Grand Coulee Blvd	Shasta Dam Blvd	Fort Peck St	895	Residential Collector	8,000	0.11	A
38	Grand Coulee Blvd	Fort Peck St	Boulder St	832	Residential Collector	8,000	0.10	A
39	Shasta Way	Front St	Shast Dam Blvd	1,409	Residential Collector	8,000	0.18	A
40	Shasta St	Shasta Dam Blvd	Fort Peck St	829	2-Lane Undivided Arterial	15,000	0.06	A
41	Cascade Blvd	Kennett St	Shasta Dam Blvd	2,438	2-Lane Undivided Arterial	15,000	0.16	A
42	Cascade Blvd	Shasta Dam Blvd	Second St	5,045	2-Lane Undivided Arterial	15,000	0.34	A
43	Cascade Blvd	Fell St	Cottage Ave	3,877	2-Lane Undivided Arterial	15,000	0.26	A
44	Cascade Blvd	Cottage Ave	Pine Grove Ave	4,437	2-Lane Undivided Arterial	15,000	0.30	A
45	Cascade Blvd	Riddle Rd	Arrowhead Rd	3,236	2-Lane Undivided Arterial	15,000	0.22	A
46	Viriginia Ave	Akrich St	Pine Grove Ave	2,521	2-Lane Collector	12,000	0.21	A
47	Twin View Blvd	Virginia Ave	Poppy Ln	684	2-Lane Collector	12,000	0.06	A
48	Twin View Blvd	Mendocino St	Shasta Lake City Limit	1,911	2-Lane Collector	12,000	0.16	A

Notes:

(1) Roadway Link Average Daily Traffic Traffic (see Appendix G).

(2) Source: Mountain Gate at Shasta Lake Traffic Impact Analysis Report (Kunzman Associates, Inc, June 6, 2016)

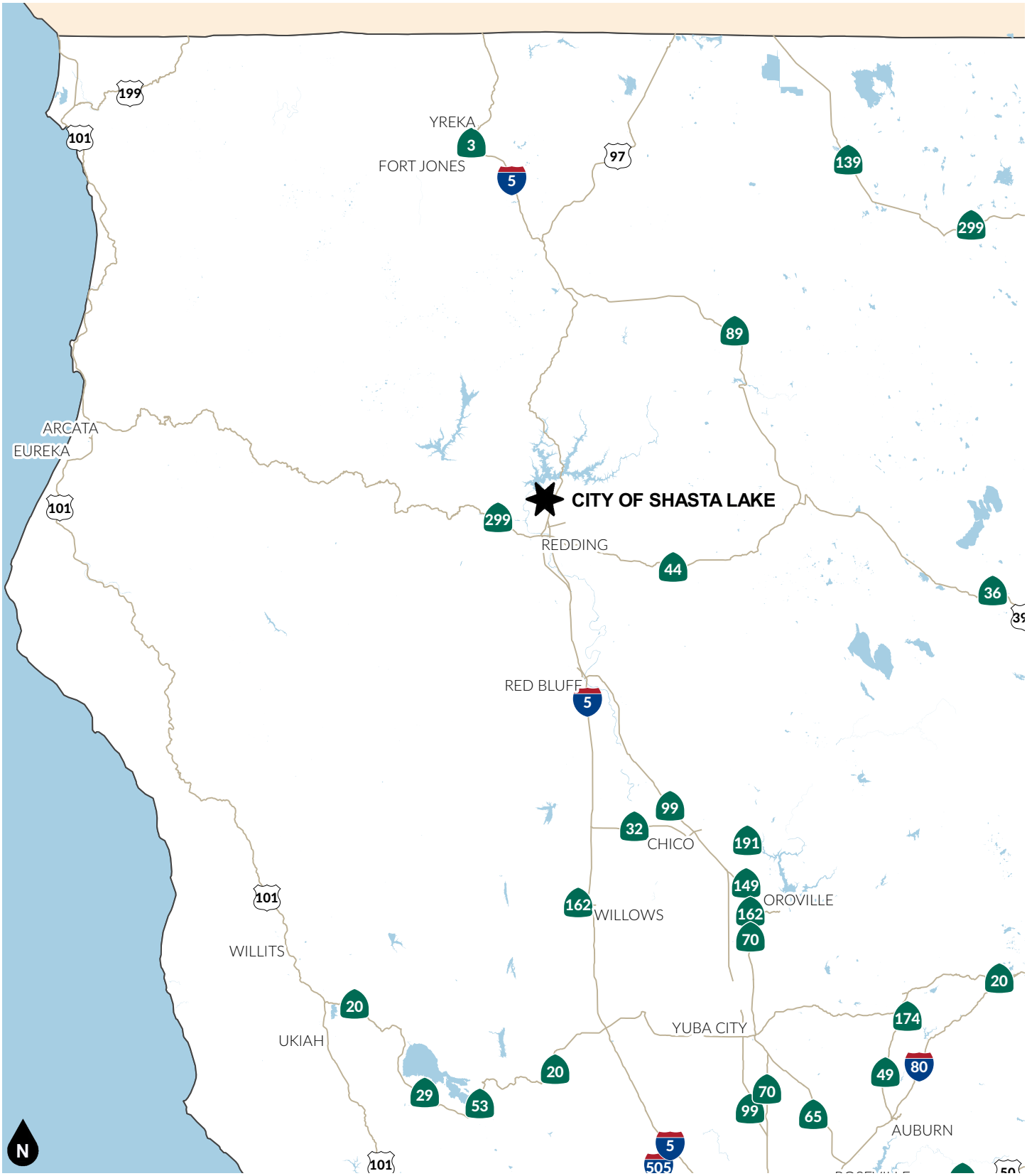


Figure 1
Regional Vicinity

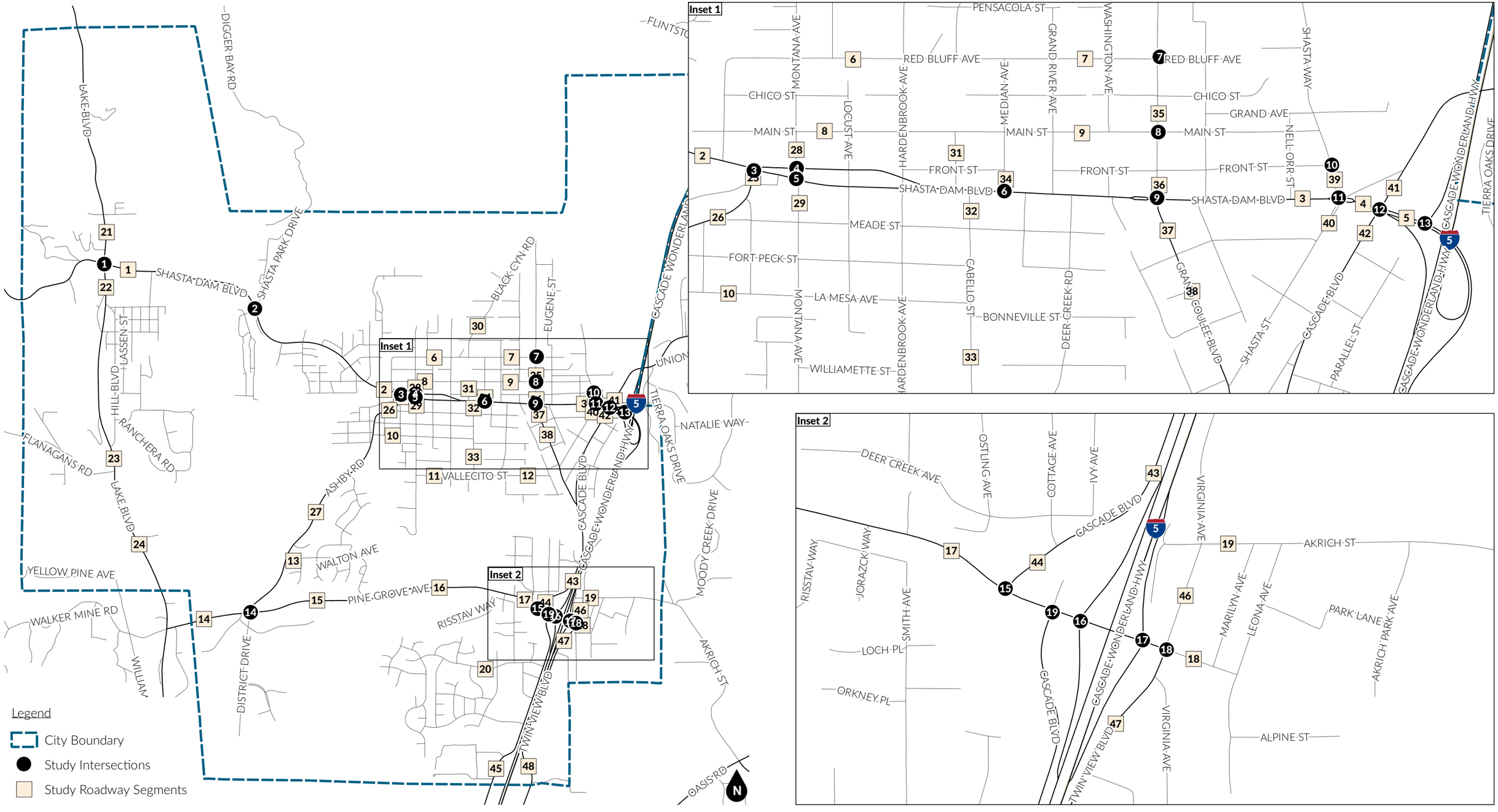


Figure 2
Study Location Map

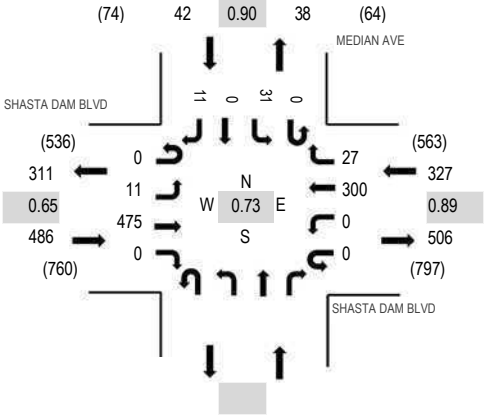
APPENDIX A

TRAFFIC COUNT DATA SHEETS

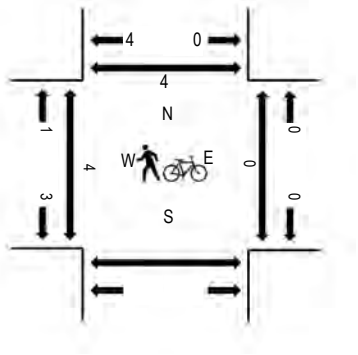
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 2 MEDIAN AVE & SHASTA DAM BLVD AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				Northbound				MEDIAN AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	88	0	0	0	62	8					0	6	0	4	169	855	3	0		2
7:15 AM	0	3	121	0	0	0	85	2					0	6	0	3	220	812	0	0		0
7:30 AM	0	4	183	0	0	0	86	6					0	9	0	3	291	728	1	0		2
7:45 AM	0	3	83	0	0	0	67	11					0	10	0	1	175	575	0	0		0
8:00 AM	0	1	64	0	0	0	44	6					0	7	0	4	126	542	0	0		0
8:15 AM	0	1	65	0	0	0	58	6					0	5	0	1	136		2	0		1
8:30 AM	0	2	80	0	0	0	43	4					0	6	0	3	138		0	0		0
8:45 AM	0	0	61	0	0	0	69	6					0	3	0	3	142		1	0		3

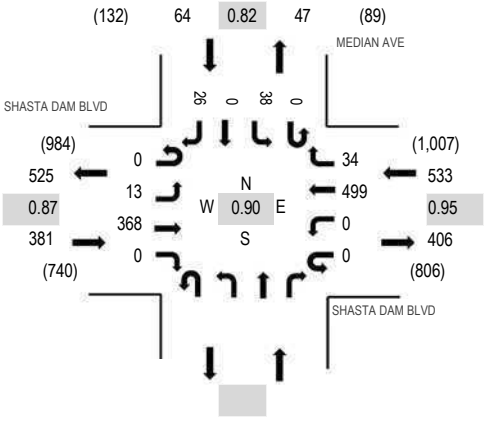
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	6	0					0	0	0	0	6
Lights	0	11	465	0	0	0	280	27					0	31	0	11	825
Mediums	0	0	10	0	0	0	14	0					0	0	0	0	24
Total	0	11	475	0	0	0	300	27					0	31	0	11	855

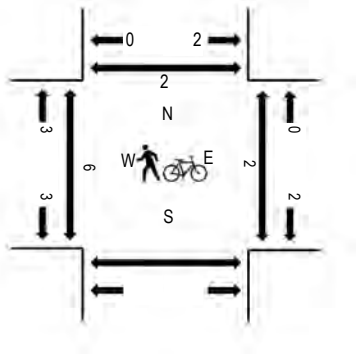
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Location: 2 MEDIAN AVE & SHASTA DAM BLVD PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				Northbound				MEDIAN AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	95	0	0	0	118	11					0	17	0	2	246	942	0	0		0
4:15 PM	0	4	95	0	0	0	118	9					0	16	0	3	245	968	6	0		5
4:30 PM	0	1	87	0	0	0	99	9					0	5	0	4	205	965	0	0		1
4:45 PM	0	4	88	0	0	0	130	8					0	8	0	8	246	978	0	0		0
5:00 PM	0	2	111	0	0	0	133	7					0	11	0	8	272	937	3	0		0
5:15 PM	0	4	92	0	0	0	115	11					0	14	0	6	242		3	0		0
5:30 PM	0	3	77	0	0	0	121	8					0	5	0	4	218		0	2		0
5:45 PM	0	1	73	0	0	0	106	4					0	12	0	9	205		0	0		0

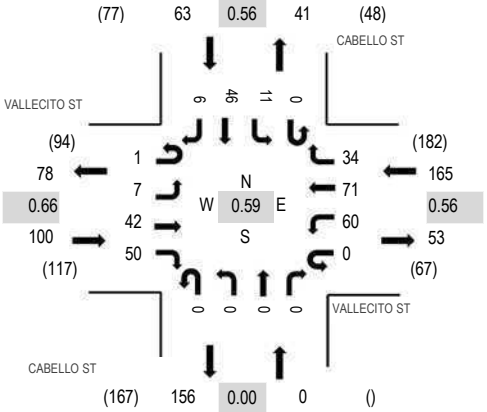
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0					0	0	0	0	1
Lights	0	13	364	0	0	0	497	34					0	38	0	25	971
Mediums	0	0	4	0	0	0	1	0					0	0	0	1	6
Total	0	13	368	0	0	0	499	34					0	38	0	26	978

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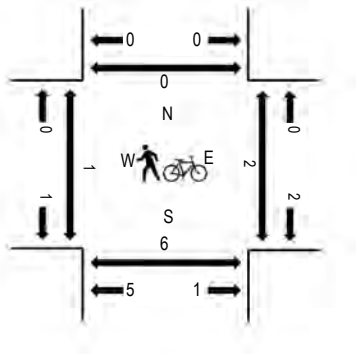
Location: 1 CABELLO ST & VALLECITO ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITO ST Eastbound				VALLECITO ST Westbound				CABELLO ST Northbound				CABELLO ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	2	0	0	6	2	0	0	0	0	0	0	0	4	1	17	313	0	0	0	0
7:15 AM	0	3	14	6	0	18	8	6	0	0	0	0	0	1	14	1	71	328	0	2	2	0
7:30 AM	0	4	8	26	0	24	34	16	0	0	0	0	0	2	24	2	140	271	1	0	2	0
7:45 AM	1	0	11	17	0	17	16	9	0	0	0	0	0	5	7	2	85	142	0	0	0	0
8:00 AM	0	0	9	1	0	1	13	3	0	0	0	0	0	3	1	1	32	63	0	0	1	0
8:15 AM	0	2	4	0	0	0	2	2	0	0	0	0	0	1	0	3	14		0	0	0	0
8:30 AM	0	0	5	0	0	1	1	0	0	0	0	0	0	0	0	4	11		0	0	0	0
8:45 AM	0	0	2	0	0	0	3	0	0	0	0	0	1	0	0	0	6		0	0	0	0

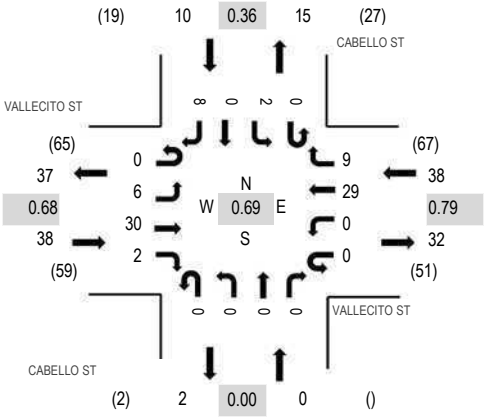
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	1	7	41	48	0	60	70	32	0	0	0	0	0	8	42	5	314
Mediums	0	0	1	2	0	0	1	2	0	0	0	0	0	3	4	1	14
Total	1	7	42	50	0	60	71	34	0	0	0	0	0	11	46	6	328

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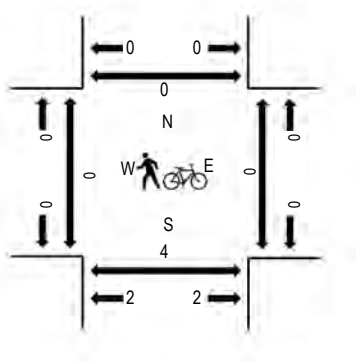
Location: 1 CABELLO ST & VALLECITO ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITO ST Eastbound				VALLECITO ST Westbound				CABELLO ST Northbound				CABELLO ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	10	2	0	0	8	2	0	0	0	0	0	2	0	5	31	86	0	0	1	0
4:15 PM	0	1	3	0	0	0	8	3	0	0	0	0	0	0	0	1	16	71	0	0	0	0
4:30 PM	0	2	10	0	0	0	9	3	0	0	0	0	0	0	0	1	25	71	0	0	0	0
4:45 PM	0	1	7	0	0	0	4	1	0	0	0	0	0	0	0	1	14	64	0	0	3	0
5:00 PM	0	2	4	0	0	0	4	3	0	0	0	0	0	2	0	1	16	59	0	0	1	0
5:15 PM	0	1	3	0	0	0	9	0	0	0	0	0	0	1	0	2	16		0	0	3	0
5:30 PM	0	2	4	0	0	0	8	2	0	0	0	0	0	1	0	1	18		0	0	0	0
5:45 PM	0	1	4	0	0	0	2	1	0	0	0	0	0	0	0	1	9		0	0	0	0

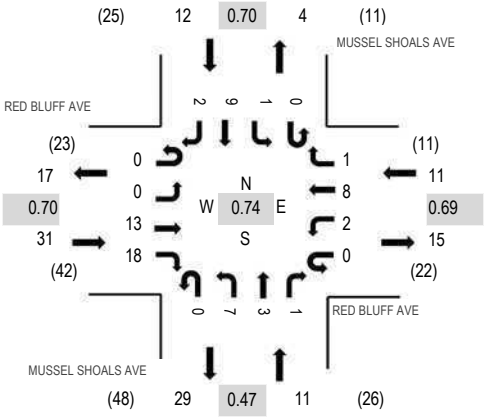
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	6	30	2	0	0	28	9	0	0	0	0	0	2	0	8	85
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	6	30	2	0	0	29	9	0	0	0	0	0	2	0	8	86

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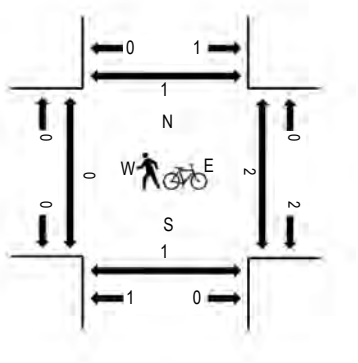
Location: 2 MUSSEL SHOALS AVE & RED BLUFF AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				MUSSEL SHOALS AVE Northbound				MUSSEL SHOALS AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	1	0	0	0	0	0	0	2	0	0	1	1	1	6	62	0	0	0	0
7:15 AM	0	0	6	3	0	0	4	0	0	2	0	0	0	1	2	2	20	65	0	0	1	1
7:30 AM	0	0	5	6	0	0	3	1	0	1	2	0	0	0	4	0	22	50	0	2	0	0
7:45 AM	0	0	2	5	0	0	1	0	0	3	0	1	0	0	2	0	14	46	0	0	0	0
8:00 AM	0	0	0	4	0	2	0	0	0	1	1	0	0	0	1	0	9	42	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	2	0	5		0	0	0	0
8:30 AM	0	0	1	3	0	0	0	0	0	3	3	3	0	1	4	0	18		0	0	0	0
8:45 AM	0	0	1	4	0	0	0	0	0	1	1	0	0	0	3	0	10		0	0	0	0

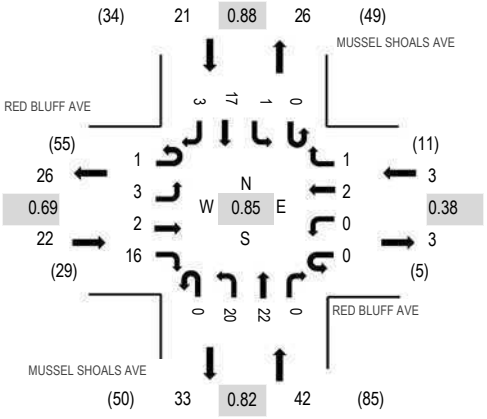
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	13	17	0	2	7	1	0	7	3	1	0	1	9	2	63
Mediums	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
Total	0	0	13	18	0	2	8	1	0	7	3	1	0	1	9	2	65

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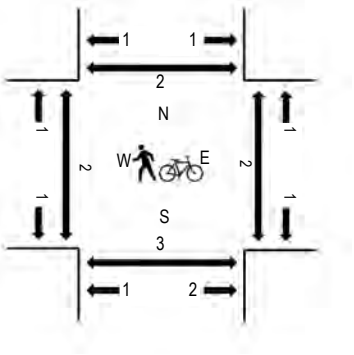
Location: 2 MUSSEL SHOALS AVE & RED BLUFF AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				MUSSEL SHOALS AVE Northbound				MUSSEL SHOALS AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	1	2	0	0	1	0	0	7	6	0	0	0	5	1	23	84	0	0	2	2
4:15 PM	0	0	0	2	0	0	4	0	0	5	5	0	0	0	4	0	20	82	0	1	3	3
4:30 PM	0	2	0	3	0	0	1	0	0	6	2	0	0	0	3	1	18	88	0	0	0	0
4:45 PM	1	0	1	1	0	0	0	0	0	6	8	0	0	0	5	1	23	87	2	0	0	0
5:00 PM	0	1	1	6	0	0	1	0	0	4	3	0	0	1	4	0	21	75	0	1	1	1
5:15 PM	0	0	0	6	0	0	0	1	0	4	9	0	0	0	5	1	26		0	0	1	1
5:30 PM	0	0	1	0	0	0	2	0	0	4	8	0	0	0	2	0	17		0	0	0	0
5:45 PM	0	0	0	1	0	0	1	0	0	4	4	0	0	0	1	0	11		0	0	0	0

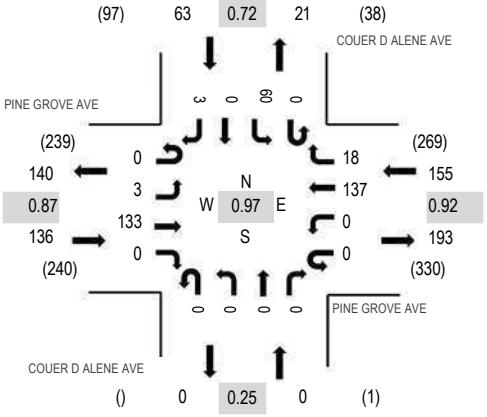
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	1	3	2	16	0	0	2	1	0	20	22	0	0	1	17	3	88
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	3	2	16	0	0	2	1	0	20	22	0	0	1	17	3	88

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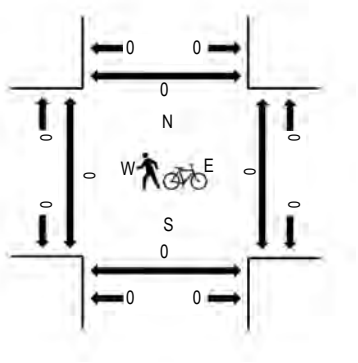
Location: 3 COUER D ALENE AVE & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				COUER D ALENE AVE Northbound				COUER D ALENE AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	28	0	0	0	12	5	0	0	0	0	0	8	0	1	54	318	0	0	0	0
7:15 AM	0	0	39	0	0	0	34	4	0	0	0	0	0	13	0	1	91	354	0	0	0	0
7:30 AM	0	0	35	0	0	0	30	3	0	0	0	0	0	21	0	1	90	340	0	0	0	0
7:45 AM	0	2	29	0	0	0	36	6	0	0	0	0	0	9	0	1	83	305	0	0	0	0
8:00 AM	0	1	30	0	0	0	37	5	0	0	0	0	0	17	0	0	90	289	0	0	0	0
8:15 AM	0	0	30	0	0	0	30	5	0	1	0	0	0	11	0	0	77		0	0	0	0
8:30 AM	0	0	17	0	0	0	24	5	0	0	0	0	0	9	0	0	55		0	0	0	0
8:45 AM	0	0	29	0	0	0	31	2	0	0	0	0	0	5	0	0	67		0	0	0	0

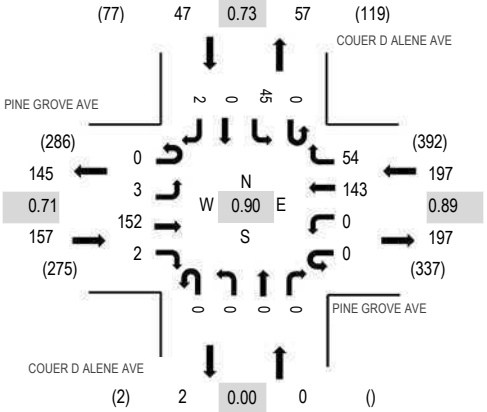
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3
Lights	0	3	130	0	0	0	132	17	0	0	0	0	0	60	0	3	345
Mediums	0	0	2	0	0	0	3	1	0	0	0	0	0	0	0	0	6
Total	0	3	133	0	0	0	137	18	0	0	0	0	0	60	0	3	354

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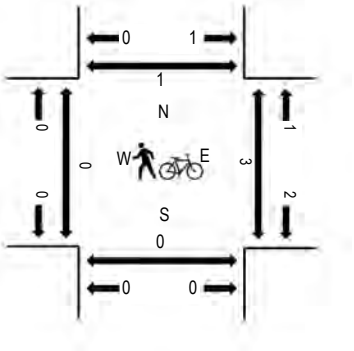
Location: 3 COUER D ALENE AVE & PINE GROVE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				COUER D ALENE AVE Northbound				COUER D ALENE AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	42	0	0	0	39	17	0	0	0	0	1	6	0	1	109	398	0	1	0	0
4:15 PM	0	1	29	1	0	0	40	18	0	0	0	0	0	16	0	0	105	401	0	1	0	0
4:30 PM	0	1	33	1	0	0	30	13	0	0	0	0	0	13	0	0	91	388	0	1	0	1
4:45 PM	0	0	36	0	0	0	38	12	0	0	0	0	0	6	0	1	93	381	0	1	0	0
5:00 PM	0	1	54	0	0	0	35	11	0	0	0	0	0	10	0	1	112	346	0	0	0	0
5:15 PM	0	0	20	0	0	0	47	18	0	0	0	0	0	7	0	0	92		0	0	0	0
5:30 PM	0	1	30	0	0	0	34	11	0	0	0	0	0	7	0	1	84		0	0	0	0
5:45 PM	0	1	21	0	0	0	19	10	0	0	0	0	0	7	0	0	58		0	0	0	0

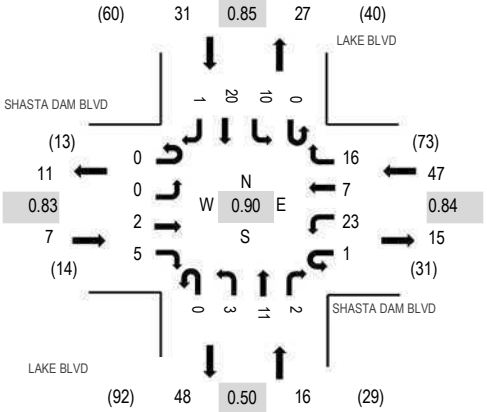
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	8
Lights	0	3	147	2	0	0	139	54	0	0	0	0	0	45	0	2	392
Mediums	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	3	152	2	0	0	143	54	0	0	0	0	0	45	0	2	401

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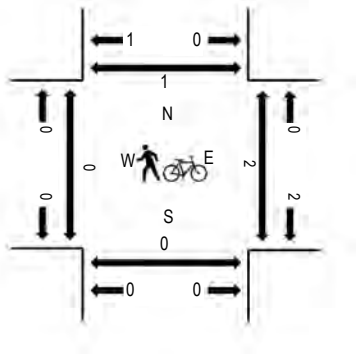
Location: 4 LAKE BLVD & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	1	0	0	2	2	1	1	0	0	1	0	2	5	0	15	92	0	0	0	0
7:15 AM	0	0	0	1	1	2	3	3	0	1	6	1	0	2	3	1	24	101	0	0	0	1
7:30 AM	0	0	1	1	0	7	1	5	0	0	1	1	0	3	5	0	25	98	0	0	0	0
7:45 AM	0	0	1	0	0	6	1	7	0	1	2	0	0	4	6	0	28	96	0	2	0	0
8:00 AM	0	0	0	3	0	8	2	1	0	1	2	0	0	1	6	0	24	84	0	0	0	0
8:15 AM	0	0	2	1	1	4	0	1	0	0	3	0	0	5	4	0	21		0	0	0	0
8:30 AM	0	0	1	2	0	9	0	0	0	0	4	0	0	1	6	0	23		0	0	0	0
8:45 AM	0	0	0	0	0	6	0	0	0	0	4	0	0	2	4	0	16		0	0	0	0

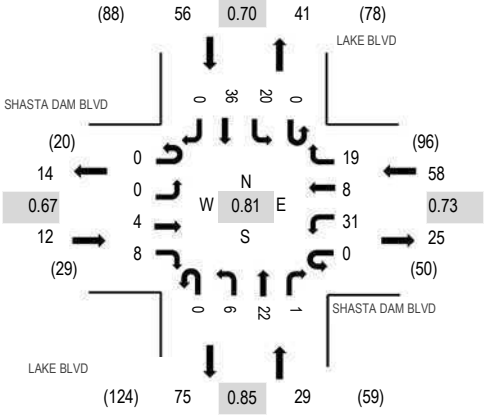
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	2
Lights	0	0	2	5	0	21	7	16	0	3	11	0	0	10	19	1	95
Mediums	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	4
Total	0	0	2	5	1	23	7	16	0	3	11	2	0	10	20	1	101

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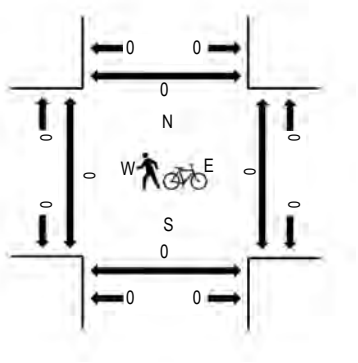
Location: 4 LAKE BLVD & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	4	2	0	9	2	2	0	0	8	1	0	4	8	0	40	147	0	0	0	0
4:15 PM	0	0	1	3	0	8	4	5	0	0	5	0	0	4	5	0	35	155	0	0	0	0
4:30 PM	0	0	1	4	0	8	0	4	0	2	7	0	0	7	9	0	42	153	0	0	0	0
4:45 PM	0	0	0	1	0	6	1	2	0	2	7	0	0	6	5	0	30	135	0	0	0	0
5:00 PM	0	0	2	0	0	9	3	8	0	2	3	1	0	3	17	0	48	125	0	0	0	0
5:15 PM	0	0	0	3	0	6	0	5	0	2	8	0	0	5	4	0	33		0	0	0	0
5:30 PM	0	0	3	3	0	5	0	4	0	1	2	1	0	2	3	0	24		0	1	0	0
5:45 PM	0	0	2	0	0	2	1	2	0	0	6	1	0	2	4	0	20		0	1	0	0

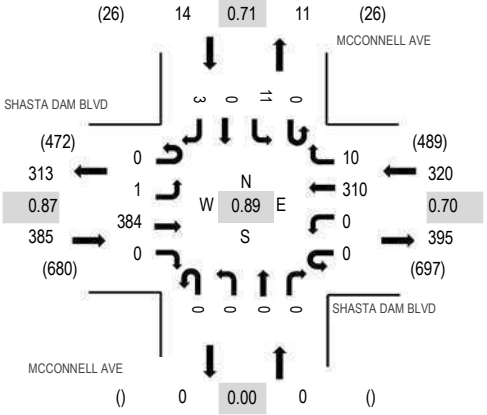
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	4	8	0	31	8	19	0	6	22	0	0	20	36	0	154
Mediums	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	0	0	4	8	0	31	8	19	0	6	22	1	0	20	36	0	155

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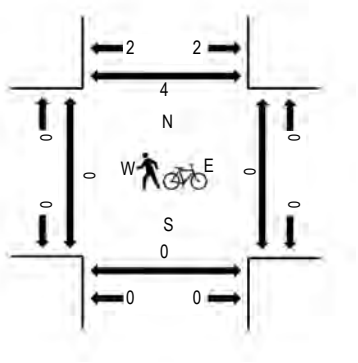
Location: 5 MCCONNELL AVE & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				MCCONNELL AVE Northbound				MCCONNELL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	66	0	0	0	25	1	0	0	0	0	0	0	0	0	92	648	0	0	0	1
7:15 AM	0	1	96	0	0	0	51	3	0	0	0	0	0	3	0	0	154	719	0	0	0	1
7:30 AM	0	0	111	0	0	0	83	3	0	0	0	0	0	6	0	0	203	715	0	0	0	2
7:45 AM	0	0	82	0	0	0	111	3	0	0	0	0	0	1	0	2	199	624	0	0	0	1
8:00 AM	0	0	95	0	0	0	65	1	0	0	0	0	0	1	0	1	163	547	0	0	0	0
8:15 AM	0	2	88	0	0	0	48	6	0	0	0	0	0	5	0	1	150		0	0	0	1
8:30 AM	0	0	74	0	0	0	34	2	0	0	0	0	0	1	0	1	112		0	0	0	2
8:45 AM	0	1	64	0	0	0	50	3	0	0	0	0	0	4	0	0	122		0	0	0	0

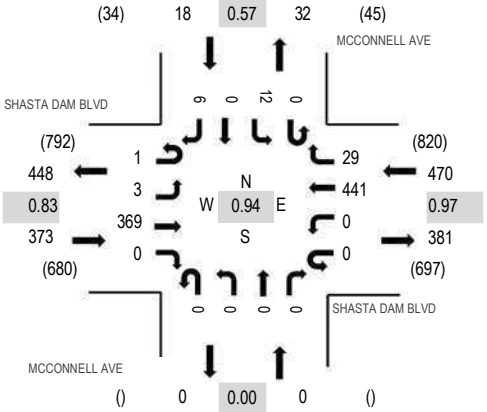
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	9	0	0	0	0	0	0	1	0	1	15
Lights	0	1	371	0	0	0	294	10	0	0	0	0	0	10	0	2	688
Mediums	0	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	16
Total	0	1	384	0	0	0	310	10	0	0	0	0	0	11	0	3	719

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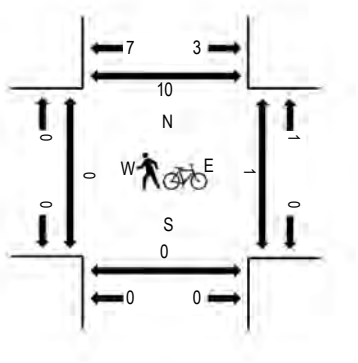
Location: 5 MCCONNELL AVE & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				MCCONNELL AVE Northbound				MCCONNELL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	1	118	0	0	0	79	4	0	0	0	0	0	10	0	1	213	849	0	0	0	1
4:15 PM	0	0	89	0	0	0	95	6	0	0	0	0	0	3	0	3	196	861	0	0	0	4
4:30 PM	0	1	103	0	0	0	114	10	0	0	0	0	0	1	0	0	229	855	0	0	0	1
4:45 PM	0	1	81	0	0	0	114	8	0	0	0	0	0	5	0	2	211	771	0	0	0	3
5:00 PM	1	1	96	0	0	0	118	5	0	0	0	0	0	3	0	1	225	685	0	0	0	1
5:15 PM	0	0	73	0	0	0	109	5	0	0	0	0	0	0	0	3	190		0	0	0	0
5:30 PM	0	1	57	0	0	0	85	2	0	0	0	0	0	0	0	0	145		0	1	0	1
5:45 PM	0	0	57	0	0	0	66	0	0	0	0	0	0	1	0	1	125		0	0	0	0

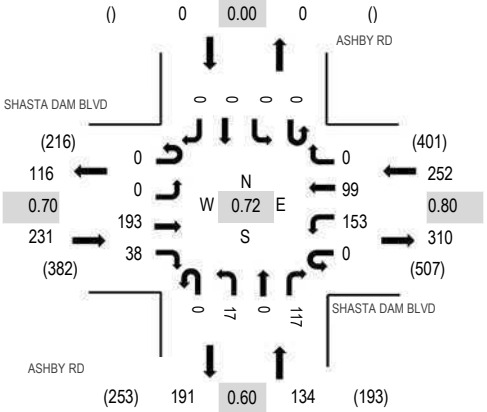
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0	5
Lights	1	3	363	0	0	0	438	28	0	0	0	0	0	11	0	6	850
Mediums	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	6
Total	1	3	369	0	0	0	441	29	0	0	0	0	0	12	0	6	861

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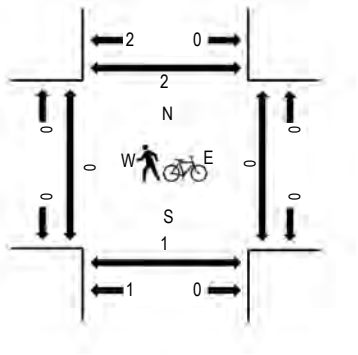
Location: 1 ASHBY RD & SHASTA DAM BLVD AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	37	5	0	38	16	0	0	2	0	20	0	0	0	0	118	617	0	0	0	0
7:15 AM	0	0	47	15	0	57	22	0	0	6	0	32	0	0	0	0	179	587	0	0	0	0
7:30 AM	0	0	68	15	0	41	35	0	0	5	0	51	0	0	0	0	215	509	0	0	1	1
7:45 AM	0	0	41	3	0	17	26	0	0	4	0	14	0	0	0	0	105	378	0	0	0	1
8:00 AM	0	0	34	2	0	12	27	0	0	1	0	12	0	0	0	0	88	359	0	0	0	0
8:15 AM	0	0	43	4	1	12	25	0	0	2	0	14	0	0	0	0	101		0	0	0	0
8:30 AM	0	0	34	2	0	13	15	0	0	3	0	17	0	0	0	0	84		0	0	0	0
8:45 AM	0	0	32	0	0	17	27	0	0	0	0	10	0	0	0	0	86		0	0	0	0

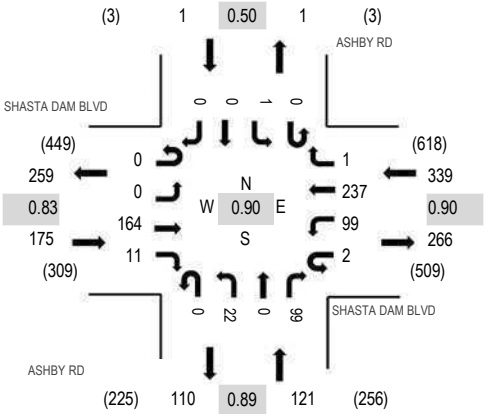
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	6	0	0	0	0	0	1	0	0	0	0	7
Lights	0	0	190	36	0	138	89	0	0	16	0	112	0	0	0	0	581
Mediums	0	0	3	2	0	9	10	0	0	1	0	4	0	0	0	0	29
Total	0	0	193	38	0	153	99	0	0	17	0	117	0	0	0	0	617

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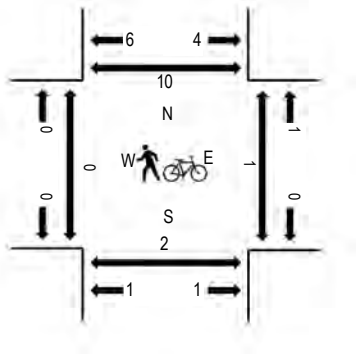
Location: 1 ASHBY RD & SHASTA DAM BLVD PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	28	4	0	22	46	0	0	1	0	37	0	0	0	0	138	551	0	0	0	2
4:15 PM	0	0	33	2	0	29	40	2	0	3	0	25	0	1	0	0	135	589	0	1	1	1
4:30 PM	0	0	26	3	0	23	43	0	0	5	0	29	0	0	1	0	130	592	0	0	0	1
4:45 PM	0	0	33	4	1	30	55	0	0	4	0	21	0	0	0	0	148	636	0	0	0	1
5:00 PM	0	0	50	3	0	29	65	0	0	6	0	23	0	0	0	0	176	635	0	1	1	2
5:15 PM	0	0	35	2	1	16	52	1	0	8	0	22	0	1	0	0	138		0	0	1	3
5:30 PM	0	0	46	2	0	24	65	0	0	4	0	33	0	0	0	0	174		0	0	0	3
5:45 PM	0	0	34	4	0	27	47	0	0	5	0	30	0	0	0	0	147		0	2	1	2

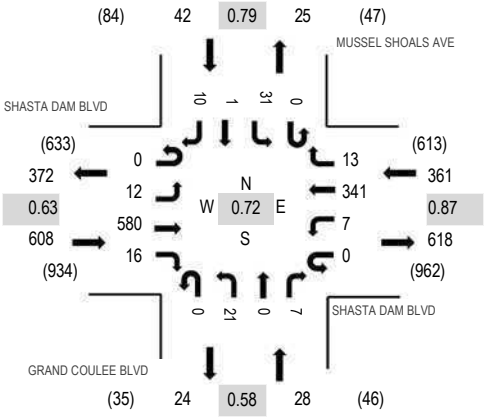
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Lights	0	0	162	11	2	97	237	1	0	22	0	99	0	1	0	0	632
Mediums	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	164	11	2	99	237	1	0	22	0	99	0	1	0	0	636

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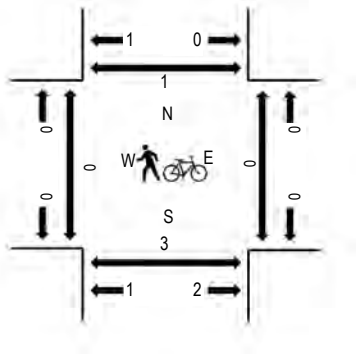
Location: 3 GRAND COULEE BLVD & SHASTA DAM BLVD AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				GRAND COULEE BLVD Northbound				MUSSEL SHOALS AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	106	1	0	0	65	1	0	5	0	0	0	8	0	2	188	1,039	0	0	1	0
7:15 AM	0	1	141	1	0	0	95	3	0	6	0	6	0	6	1	3	263	1,008	0	0	2	1
7:30 AM	0	5	227	10	0	5	94	5	0	5	0	1	0	9	0	2	363	909	0	0	0	0
7:45 AM	0	6	106	4	0	2	87	4	0	5	0	0	0	8	0	3	225	710	0	0	0	0
8:00 AM	0	0	82	4	0	0	57	3	0	2	0	0	0	7	0	2	157	638	0	0	0	0
8:15 AM	0	1	72	3	0	0	67	6	0	3	1	1	0	6	0	4	164		0	0	0	0
8:30 AM	2	2	94	0	0	0	40	5	0	7	0	0	0	12	1	1	164		0	0	1	1
8:45 AM	0	0	64	2	0	1	69	4	0	4	0	0	0	6	0	3	153		0	0	1	1

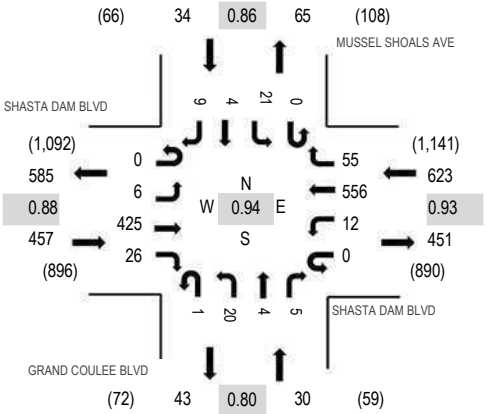
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	7	0	0	0	0	0	0	0	0	0	8
Lights	0	12	565	16	0	5	320	13	0	20	0	6	0	31	1	10	999
Mediums	0	0	14	0	0	2	14	0	0	1	0	1	0	0	0	0	32
Total	0	12	580	16	0	7	341	13	0	21	0	7	0	31	1	10	1,039

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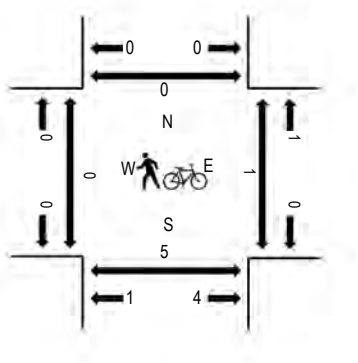
Location: 3 GRAND COULEE BLVD & SHASTA DAM BLVD PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				GRAND COULEE BLVD Northbound				MUSSEL SHOALS AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	114	9	0	0	140	7	0	2	1	2	0	5	0	2	283	1,098	0	0	4	0
4:15 PM	0	4	127	3	0	2	126	10	0	4	3	0	0	5	1	1	286	1,118	0	0	1	3
4:30 PM	0	1	90	7	0	1	116	5	0	5	1	3	0	9	0	1	239	1,132	0	0	0	1
4:45 PM	0	1	103	3	0	2	148	17	0	5	0	1	0	7	1	2	290	1,144	0	0	0	0
5:00 PM	0	2	119	10	0	2	139	13	1	4	1	1	0	7	2	2	303	1,064	0	0	3	0
5:15 PM	0	2	114	8	0	7	142	14	0	5	0	2	0	3	1	2	300		0	0	1	0
5:30 PM	0	1	89	5	0	1	127	11	0	6	3	1	0	4	0	3	251		0	0	0	0
5:45 PM	0	3	76	4	0	2	103	6	0	6	1	1	0	7	0	1	210		0	0	0	0

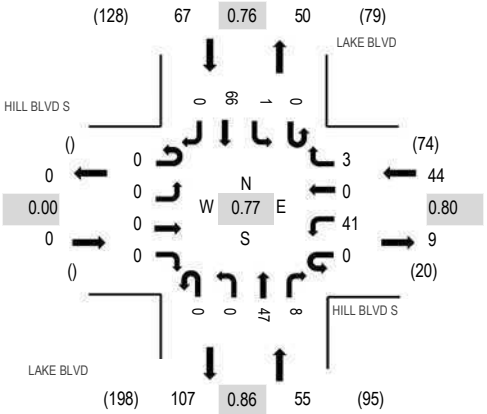
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3
Lights	0	6	421	26	0	12	553	55	1	20	4	5	0	21	4	9	1,137
Mediums	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4
Total	0	6	425	26	0	12	556	55	1	20	4	5	0	21	4	9	1,144

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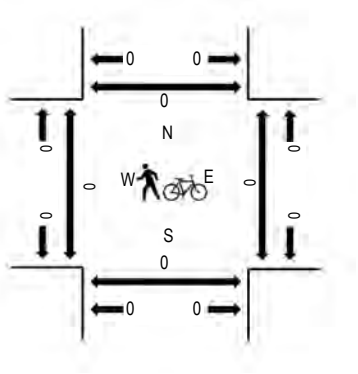
Location: 6 LAKE BLVD & HILL BLVD S AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	HILL BLVD S Eastbound				HILL BLVD S Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	15	0	0	0	0	1	3	0	0	12	0	31	161	0	0	0	0
7:15 AM	0	0	0	0	0	11	0	2	0	0	13	1	0	0	10	0	37	166	0	0	0	0
7:30 AM	0	0	0	0	0	16	0	0	0	0	12	2	0	0	24	0	54	161	0	0	0	0
7:45 AM	0	0	0	0	0	7	0	0	0	0	13	3	0	1	15	0	39	149	0	0	0	0
8:00 AM	0	0	0	0	0	7	0	1	0	0	9	2	0	0	17	0	36	136	0	0	0	0
8:15 AM	0	0	0	0	0	5	0	0	0	0	8	3	0	0	16	0	32		0	0	0	0
8:30 AM	0	0	0	0	0	8	0	0	0	0	9	3	0	0	22	0	42		0	0	0	0
8:45 AM	0	0	0	0	0	2	0	0	0	0	11	2	0	0	11	0	26		0	0	0	0

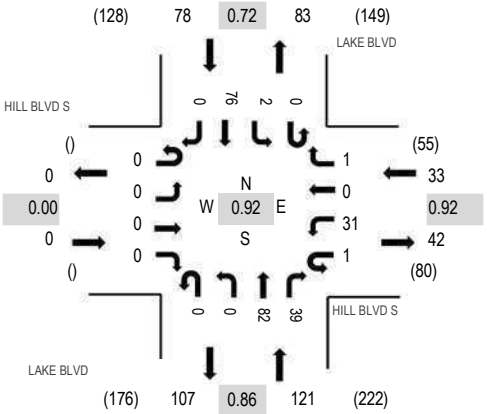
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	41	0	3	0	0	45	6	0	1	63	0	159
Mediums	0	0	0	0	0	0	0	0	0	0	2	2	0	0	3	0	7
Total	0	0	0	0	0	41	0	3	0	0	47	8	0	1	66	0	166

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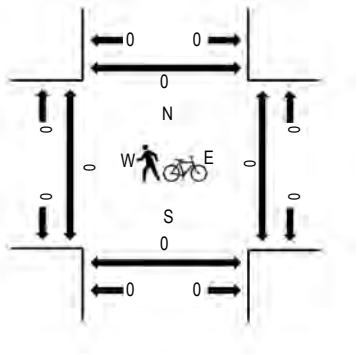
Location: 6 LAKE BLVD & HILL BLVD S PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	HILL BLVD S Eastbound				HILL BLVD S Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	3	0	2	0	0	15	7	0	0	20	0	47	216	0	0	0	0
4:15 PM	0	0	0	0	0	9	0	0	0	0	24	11	0	1	15	0	60	232	0	0	0	0
4:30 PM	0	0	0	0	0	9	0	0	0	0	18	9	0	1	22	0	59	220	0	0	0	0
4:45 PM	0	0	0	0	1	6	0	1	0	0	23	7	0	0	12	0	50	203	0	0	0	0
5:00 PM	0	0	0	0	0	7	0	0	0	0	17	12	0	0	27	0	63	189	0	0	0	0
5:15 PM	0	0	0	0	0	6	0	0	0	0	19	11	0	0	12	0	48		0	0	0	0
5:30 PM	0	0	0	0	0	5	0	0	0	0	13	12	0	1	11	0	42		0	0	0	0
5:45 PM	0	0	0	0	0	6	0	0	0	0	17	7	0	0	6	0	36		0	0	0	0

Peak Rolling Hour Flow Rates

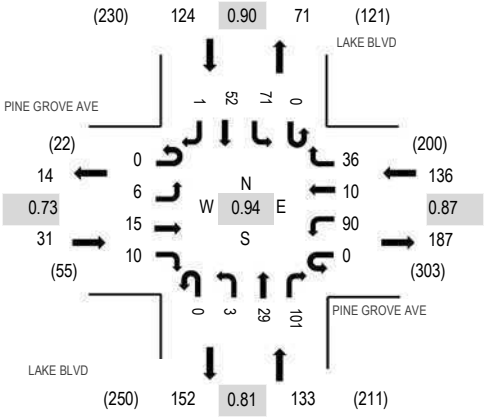
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	1	29	0	1	0	0	82	36	0	2	76	0	227
Mediums	0	0	0	0	0	2	0	0	0	0	0	3	0	0	0	0	5
Total	0	0	0	0	1	31	0	1	0	0	82	39	0	2	76	0	232

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Location: 7 LAKE BLVD & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

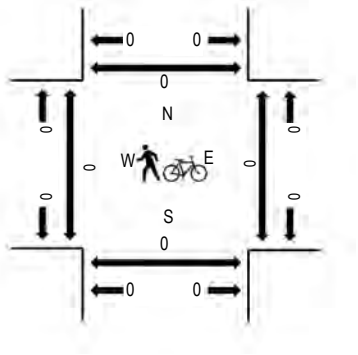
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	2	0	0	5	1	3	0	1	3	10	0	8	9	0	42	353	0	0	0	0
7:15 AM	0	1	6	3	0	12	0	9	0	0	5	16	0	19	12	2	85	421	0	0	0	0
7:30 AM	0	3	6	3	0	17	2	10	0	1	3	30	0	20	18	0	113	424	0	0	0	0
7:45 AM	0	0	5	5	0	21	2	11	0	1	12	22	0	19	15	0	113	379	0	0	0	0
8:00 AM	0	2	0	1	0	27	1	6	0	0	7	34	0	20	11	1	110	343	0	0	0	0
8:15 AM	0	1	4	1	0	25	5	9	0	1	7	15	0	12	8	0	88		0	0	0	0
8:30 AM	0	0	2	2	0	7	2	7	0	1	4	13	0	12	18	0	68		0	0	0	0
8:45 AM	0	0	5	3	0	12	1	5	1	0	13	11	0	12	14	0	77		0	0	0	0

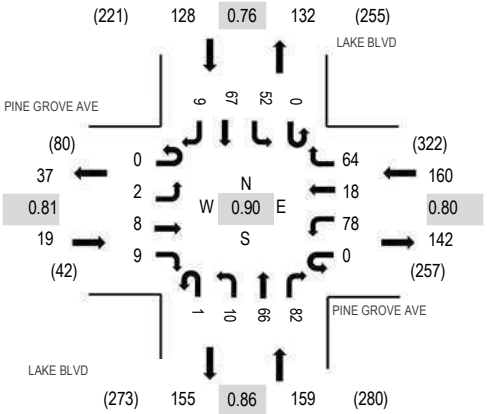
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	6	15	10	0	84	10	35	0	2	28	98	0	71	49	1	409
Mediums	0	0	0	0	0	6	0	1	0	1	1	3	0	0	3	0	15
Total	0	6	15	10	0	90	10	36	0	3	29	101	0	71	52	1	424

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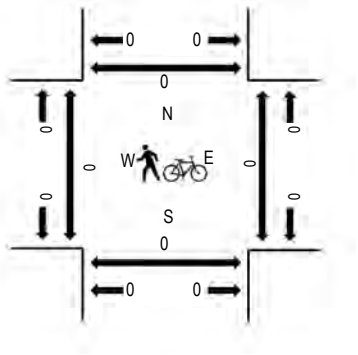
Location: 7 LAKE BLVD & PINE GROVE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	2	0	0	25	6	16	0	1	15	14	0	11	23	1	115	466	0	0	0	0
4:15 PM	0	1	3	2	0	18	3	15	0	3	17	19	0	18	9	3	111	454	0	0	0	0
4:30 PM	0	0	0	4	0	17	4	17	0	5	18	23	0	18	22	2	130	455	0	0	0	0
4:45 PM	0	0	3	3	0	18	5	16	1	1	16	26	0	5	13	3	110	429	0	0	0	0
5:00 PM	0	0	4	1	0	18	6	12	0	2	15	10	0	21	14	0	103	399	0	0	0	0
5:15 PM	0	2	4	1	0	18	13	22	0	5	12	16	0	5	13	1	112		0	0	0	0
5:30 PM	0	3	4	1	0	21	5	15	0	3	14	17	0	9	10	2	104		0	0	0	0
5:45 PM	0	0	2	1	0	15	4	13	0	2	15	10	0	13	5	0	80		0	0	0	0

Peak Rolling Hour Flow Rates

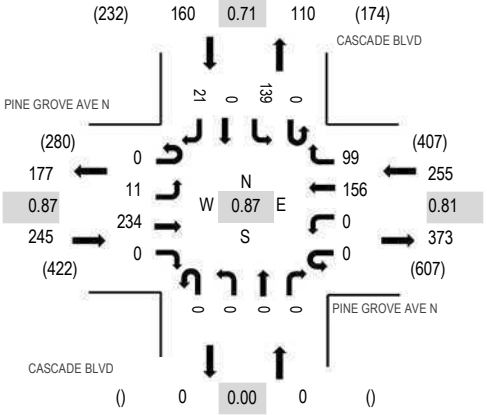
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Lights	0	2	8	9	0	75	18	64	1	10	65	81	0	52	67	8	460
Mediums	0	0	0	0	0	2	0	0	0	0	1	1	0	0	0	1	5
Total	0	2	8	9	0	78	18	64	1	10	66	82	0	52	67	9	466

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Location: 8 CASCADE BLVD & PINE GROVE AVE N AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

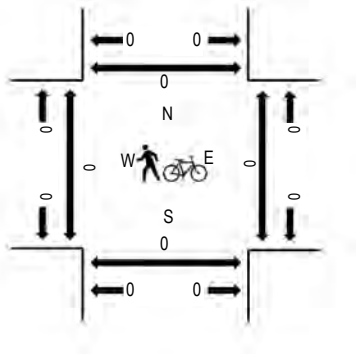
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE N Eastbound				PINE GROVE AVE N Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	42	0	0	0	13	18	0	0	0	0	0	10	0	0	83	606	0	0	0	0
7:15 AM	0	2	53	0	0	0	36	43	0	0	0	0	0	23	0	3	160	660	0	0	0	0
7:30 AM	0	4	67	0	0	0	36	22	0	0	0	0	0	39	0	6	174	618	0	0	0	0
7:45 AM	0	5	62	0	0	0	43	23	0	0	0	0	0	51	0	5	189	550	0	0	0	0
8:00 AM	0	0	52	0	0	0	41	11	0	0	0	0	0	26	0	7	137	455	0	0	0	0
8:15 AM	0	2	56	0	0	0	23	15	0	0	0	0	0	17	0	5	118		0	0	0	0
8:30 AM	0	1	44	0	0	0	25	14	0	0	0	0	0	19	0	3	106		0	0	0	0
8:45 AM	0	1	31	0	0	0	31	13	0	0	0	0	0	15	0	3	94		0	0	0	0

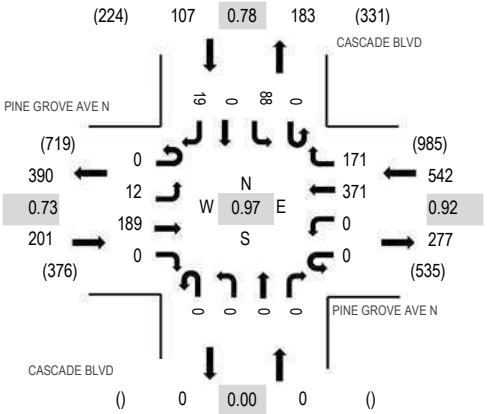
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	11
Lights	0	10	223	0	0	0	148	98	0	0	0	0	0	134	0	20	633
Mediums	0	1	5	0	0	0	3	1	0	0	0	0	0	5	0	1	16
Total	0	11	234	0	0	0	156	99	0	0	0	0	0	139	0	21	660

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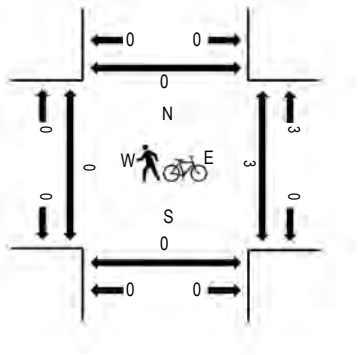
Location: 8 CASCADE BLVD & PINE GROVE AVE N PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE N Eastbound				PINE GROVE AVE N Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	47	0	0	0	56	39	0	0	0	0	0	29	0	8	182	779	0	0	0	0
4:15 PM	0	3	49	0	0	0	62	32	0	0	0	0	0	20	0	6	172	813	0	0	0	0
4:30 PM	0	4	37	0	0	0	105	35	0	0	0	0	0	26	0	5	212	843	0	0	0	0
4:45 PM	0	4	40	0	0	0	103	44	0	0	0	0	0	19	0	3	213	850	0	2	0	0
5:00 PM	0	2	69	0	0	0	88	40	0	0	0	0	0	12	0	5	216	806	0	0	0	0
5:15 PM	0	4	42	0	0	0	88	35	0	0	0	0	0	29	0	4	202		0	1	0	0
5:30 PM	0	2	38	0	0	0	92	52	0	0	0	0	0	28	0	7	219		0	0	0	0
5:45 PM	0	2	30	0	0	0	84	30	0	0	0	0	0	20	0	3	169		0	2	0	0

Peak Rolling Hour Flow Rates

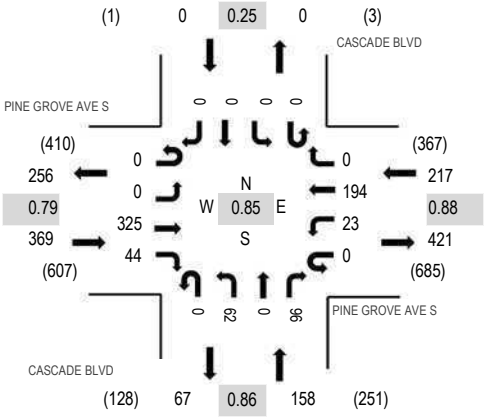
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Lights	0	12	186	0	0	0	368	171	0	0	0	0	0	87	0	19	843
Mediums	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	3
Total	0	12	189	0	0	0	371	171	0	0	0	0	0	88	0	19	850

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Location: 9 CASCADE BLVD & PINE GROVE AVE S AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

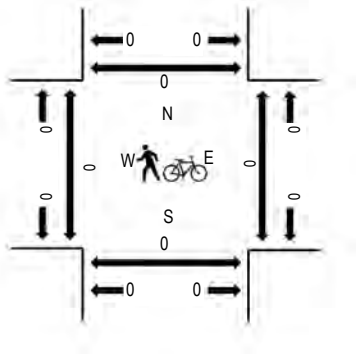
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE S Eastbound				PINE GROVE AVE S Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	47	8	0	6	27	1	0	5	0	9	0	0	0	0	103	696	0	0	0	0
7:15 AM	0	0	67	8	0	1	57	0	0	22	0	24	0	0	0	0	179	744	0	0	0	0
7:30 AM	0	0	90	12	0	6	46	0	0	11	0	29	0	0	0	0	194	697	0	0	0	0
7:45 AM	0	0	106	11	0	7	55	0	0	14	0	27	0	0	0	0	220	628	0	0	0	0
8:00 AM	0	0	62	13	0	9	36	0	0	15	0	16	0	0	0	0	151	530	0	0	0	0
8:15 AM	0	0	64	9	0	6	20	1	0	15	1	15	0	0	0	1	132		0	0	0	0
8:30 AM	0	0	56	7	0	6	32	0	0	8	0	16	0	0	0	0	125		0	0	0	0
8:45 AM	0	0	40	7	0	12	39	0	0	7	0	17	0	0	0	0	122		0	0	0	0

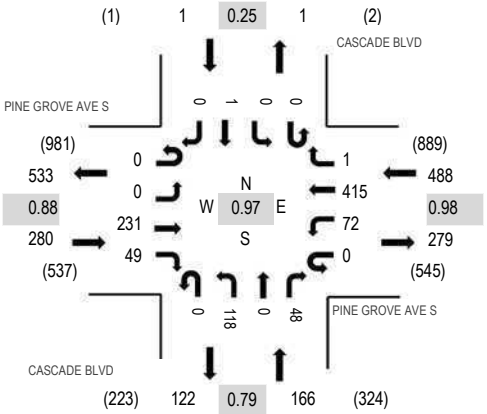
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	7	0	0	0	0	1	0	0	0	0	14
Lights	0	0	311	41	0	23	185	0	0	61	0	92	0	0	0	0	713
Mediums	0	0	8	3	0	0	2	0	0	1	0	3	0	0	0	0	17
Total	0	0	325	44	0	23	194	0	0	62	0	96	0	0	0	0	744

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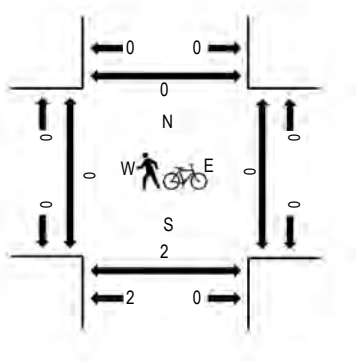
Location: 9 CASCADE BLVD & PINE GROVE AVE S PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE S Eastbound				PINE GROVE AVE S Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	63	14	0	17	76	0	0	20	0	17	0	0	0	0	207	858	0	0	0	0
4:15 PM	0	0	58	9	0	14	84	0	0	15	1	12	0	0	0	0	193	893	0	0	1	0
4:30 PM	0	0	51	11	0	15	95	0	0	45	0	12	0	0	0	0	229	928	0	0	0	0
4:45 PM	0	0	53	9	0	12	102	1	0	39	0	12	0	0	1	0	229	935	0	0	2	0
5:00 PM	0	0	71	9	0	21	102	0	0	27	0	12	0	0	0	0	242	893	0	0	0	0
5:15 PM	0	0	51	20	0	22	103	0	0	21	0	11	0	0	0	0	228		0	0	0	0
5:30 PM	0	0	56	11	0	17	108	0	0	31	0	13	0	0	0	0	236		0	0	0	0
5:45 PM	0	0	45	6	0	15	85	0	0	28	0	8	0	0	0	0	187		0	0	0	0

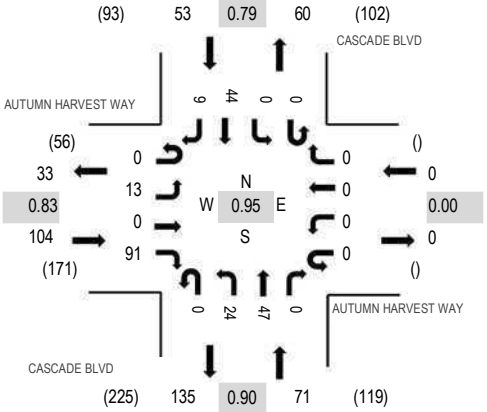
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	0	0	0	1	0	0	1	0	0	0	0	0	0	5
Lights	0	0	228	48	0	71	413	1	0	116	0	47	0	0	1	0	925
Mediums	0	0	0	1	0	1	1	0	0	1	0	1	0	0	0	0	5
Total	0	0	231	49	0	72	415	1	0	118	0	48	0	0	1	0	935

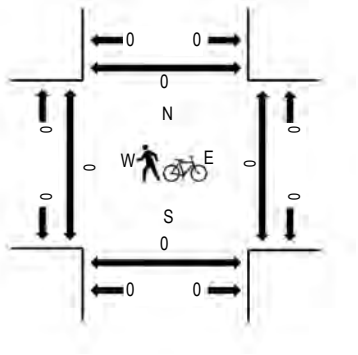
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Location: 10 CASCADE BLVD & AUTUMN HARVEST WAY AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	AUTUMN HARVEST WAY Eastbound				AUTUMN HARVEST WAY Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	0	12	0	0	0	0	0	4	6	0	0	0	4	1	29	188	0	0	0	0
7:15 AM	0	6	0	18	0	0	0	0	0	1	7	0	0	0	15	1	48	219	0	0	0	0
7:30 AM	0	6	0	26	0	0	0	0	0	4	10	0	0	0	7	3	56	228	0	0	0	0
7:45 AM	0	3	0	21	0	0	0	0	0	8	12	0	0	0	10	1	55	203	0	0	0	0
8:00 AM	0	1	0	25	0	0	0	0	0	8	9	0	0	0	14	3	60	195	0	0	0	0
8:15 AM	0	3	0	19	0	0	0	0	0	4	16	0	0	0	13	2	57		0	0	0	0
8:30 AM	0	0	0	7	0	0	0	0	0	4	11	0	0	0	5	4	31		0	0	0	0
8:45 AM	0	1	0	21	0	0	0	0	0	6	9	0	0	0	8	2	47		0	0	0	0

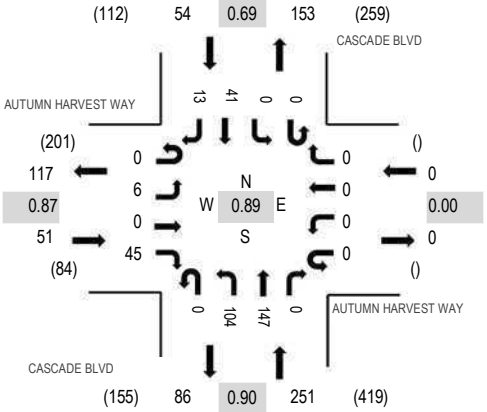
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	12	0	91	0	0	0	0	0	24	47	0	0	0	43	8	225
Mediums	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Total	0	13	0	91	0	0	0	0	0	24	47	0	0	0	44	9	228

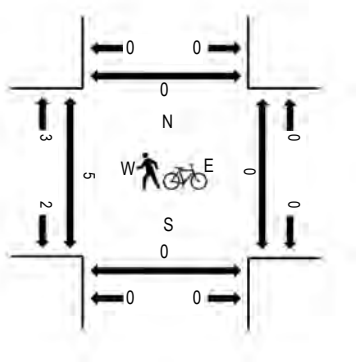
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Location: 10 CASCADE BLVD & AUTUMN HARVEST WAY PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	AUTUMN HARVEST WAY Eastbound				AUTUMN HARVEST WAY Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	5	0	0	0	0	0	11	12	0	0	0	14	7	49	273	0	0	0	0
4:15 PM	0	1	0	3	0	0	0	0	0	8	26	0	0	0	6	5	49	305	0	0	0	0
4:30 PM	0	1	0	11	0	0	0	0	0	20	47	0	0	0	10	7	96	356	0	0	0	0
4:45 PM	0	2	0	11	0	0	0	0	0	16	41	0	0	0	9	0	79	341	0	0	0	0
5:00 PM	0	1	0	10	0	0	0	0	0	30	27	0	0	0	10	3	81	342	2	0	0	0
5:15 PM	0	2	0	13	0	0	0	0	0	38	32	0	0	0	12	3	100		2	0	0	0
5:30 PM	0	2	0	11	0	0	0	0	0	22	30	0	0	0	11	5	81		0	0	0	0
5:45 PM	0	1	0	10	0	0	0	0	0	25	34	0	0	0	9	1	80		0	0	0	0

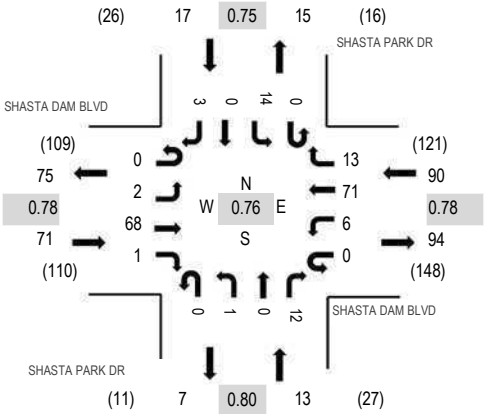
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	6	0	44	0	0	0	0	0	104	147	0	0	0	39	13	353
Mediums	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	3
Total	0	6	0	45	0	0	0	0	0	104	147	0	0	0	41	13	356

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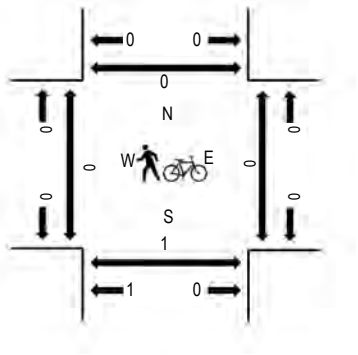
Location: 11 SHASTA PARK DR & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				SHASTA PARK DR Northbound				SHASTA PARK DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	7	0	0	0	8	0	0	0	0	3	0	4	0	0	22	180	0	0	0	0
7:15 AM	0	0	13	0	0	3	14	1	0	0	0	2	0	5	0	1	39	191	0	0	0	0
7:30 AM	0	0	24	0	0	1	24	4	0	1	0	3	0	5	0	1	63	183	0	0	0	0
7:45 AM	0	1	22	1	0	1	23	4	0	0	0	2	0	1	0	1	56	142	0	0	1	0
8:00 AM	0	1	9	0	0	1	10	4	0	0	0	5	0	3	0	0	33	104	0	0	0	0
8:15 AM	0	1	16	0	0	1	7	0	0	3	0	1	0	1	0	1	31		0	0	0	0
8:30 AM	0	0	7	1	0	1	8	0	0	1	0	3	0	1	0	0	22		0	0	0	0
8:45 AM	0	0	7	0	0	1	5	0	0	0	0	3	0	1	0	1	18		0	0	0	0

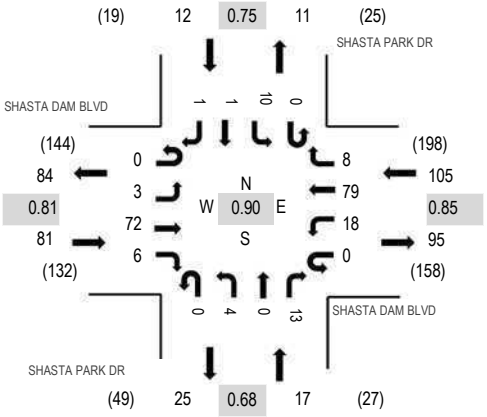
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	2	64	0	0	6	69	12	0	1	0	12	0	14	0	3	183
Mediums	0	0	3	1	0	0	2	1	0	0	0	0	0	0	0	0	7
Total	0	2	68	1	0	6	71	13	0	1	0	12	0	14	0	3	191

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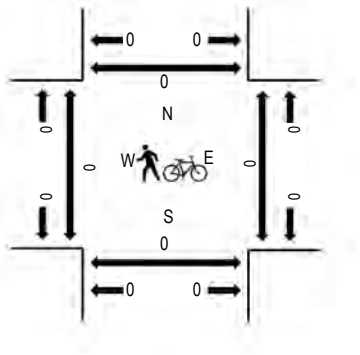
Location: 11 SHASTA PARK DR & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				SHASTA PARK DR Northbound				SHASTA PARK DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	14	0	0	5	17	4	0	0	1	6	0	2	0	0	50	205	0	0	0	0
4:15 PM	0	2	22	1	0	2	27	2	0	0	0	0	0	2	1	1	60	215	0	0	0	0
4:30 PM	0	0	18	3	0	7	17	1	0	1	0	6	0	2	0	0	55	195	0	0	0	0
4:45 PM	0	1	13	0	0	5	12	2	0	2	0	2	0	3	0	0	40	174	0	0	0	0
5:00 PM	0	0	19	2	0	4	23	3	0	1	0	5	0	3	0	0	60	171	0	0	0	0
5:15 PM	0	0	14	0	0	9	11	3	0	0	0	2	0	1	0	0	40		0	0	0	0
5:30 PM	0	0	8	1	0	3	20	2	0	0	0	0	0	0	0	0	34		0	0	0	0
5:45 PM	0	0	12	1	0	5	11	3	0	0	0	1	0	3	0	1	37		0	0	0	0

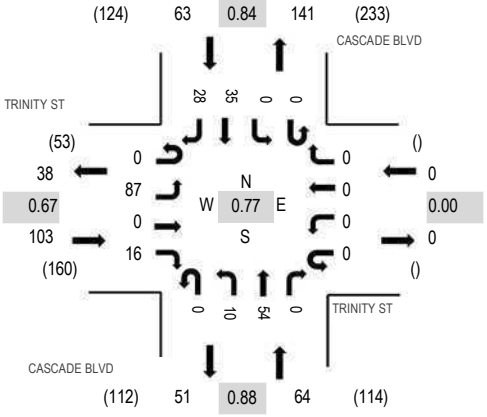
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	3	70	6	0	18	79	8	0	3	0	13	0	10	0	1	211
Mediums	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	4
Total	0	3	72	6	0	18	79	8	0	4	0	13	0	10	1	1	215

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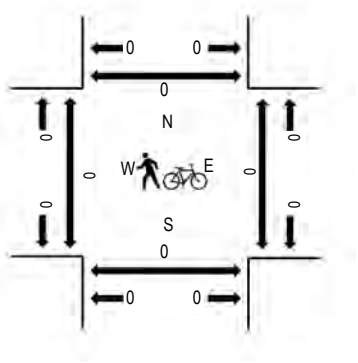
Location: 12 CASCADE BLVD & TRINITY ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	16	0	3	0	0	0	0	0	1	7	0	0	0	10	0	37	223	0	0	0	0
7:15 AM	0	21	0	5	0	0	0	0	0	1	13	0	0	0	8	4	52	230	0	0	0	0
7:30 AM	0	34	0	5	0	0	0	0	0	3	17	0	0	0	10	6	75	223	0	0	0	0
7:45 AM	0	18	0	2	0	0	0	0	0	3	17	0	0	0	9	10	59	189	0	0	0	0
8:00 AM	0	14	0	4	0	0	0	0	0	3	7	0	0	0	8	8	44	175	0	0	0	0
8:15 AM	0	9	0	3	0	0	0	0	0	2	18	0	0	0	12	1	45		0	0	0	0
8:30 AM	0	10	0	2	0	0	0	0	0	1	10	0	0	0	14	4	41		0	0	0	0
8:45 AM	0	13	0	1	0	0	0	0	0	2	9	0	0	0	16	4	45		0	0	0	0

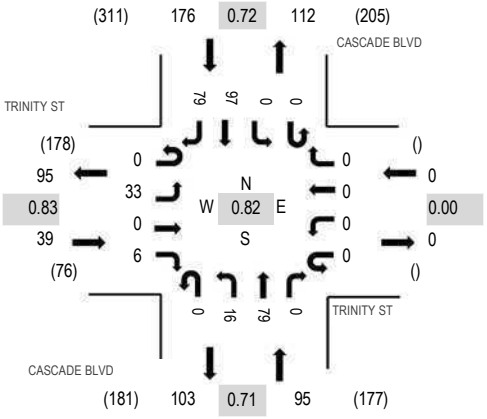
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	87	0	16	0	0	0	0	0	10	52	0	0	0	33	26	224
Mediums	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	6
Total	0	87	0	16	0	0	0	0	0	10	54	0	0	0	35	28	230

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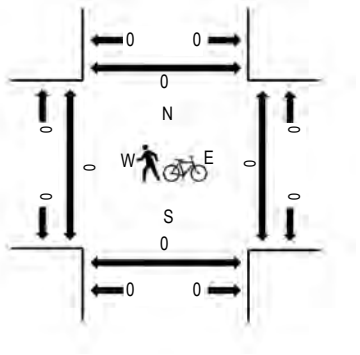
Location: 12 CASCADE BLVD & TRINITY ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	7	0	4	0	0	0	0	0	7	17	0	0	0	18	17	70	257	0	0	0	0
4:15 PM	0	9	0	2	0	0	0	0	0	4	22	0	0	0	19	15	71	257	0	0	0	2
4:30 PM	0	7	0	1	0	0	0	0	0	3	17	0	0	0	15	11	54	269	0	0	0	0
4:45 PM	0	12	0	1	0	0	0	0	0	6	15	0	0	0	16	12	62	310	0	0	0	0
5:00 PM	0	6	0	1	0	0	0	0	0	3	18	0	0	0	18	24	70	307	0	0	0	0
5:15 PM	0	6	0	2	0	0	0	0	0	5	29	0	0	0	21	20	83		0	0	0	0
5:30 PM	0	9	0	2	0	0	0	0	0	2	17	0	0	0	42	23	95		0	0	0	0
5:45 PM	0	5	0	2	0	0	0	0	0	3	9	0	0	0	17	23	59		0	0	0	0

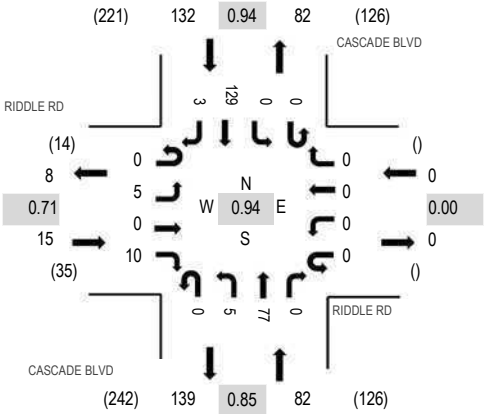
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	33	0	6	0	0	0	0	0	16	78	0	0	0	95	79	307
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3
Total	0	33	0	6	0	0	0	0	0	16	79	0	0	0	97	79	310

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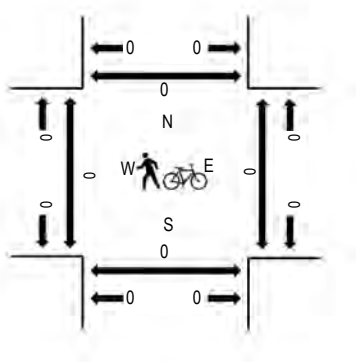
Location: 13 CASCADE BLVD & RIDDLE RD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RIDDLE RD Eastbound				RIDDLE RD Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	3	0	3	0	0	0	0	0	0	7	0	0	0	17	1	31	184	0	0	0	0
7:15 AM	0	0	0	4	0	0	0	0	0	0	9	0	0	0	30	0	43	214	0	0	0	0
7:30 AM	0	1	0	6	0	0	0	0	0	1	13	0	0	0	33	0	54	229	0	0	0	0
7:45 AM	0	1	0	2	0	0	0	0	0	1	20	0	0	0	31	1	56	206	0	0	0	0
8:00 AM	0	2	0	0	0	0	0	0	0	1	23	0	0	0	34	1	61	198	0	0	0	0
8:15 AM	0	1	0	2	0	0	0	0	0	2	21	0	0	0	31	1	58		0	0	0	0
8:30 AM	0	1	0	4	0	0	0	0	0	2	12	0	0	0	12	0	31		0	0	0	0
8:45 AM	0	0	0	5	0	0	0	0	0	2	12	0	0	0	28	1	48		0	0	0	0

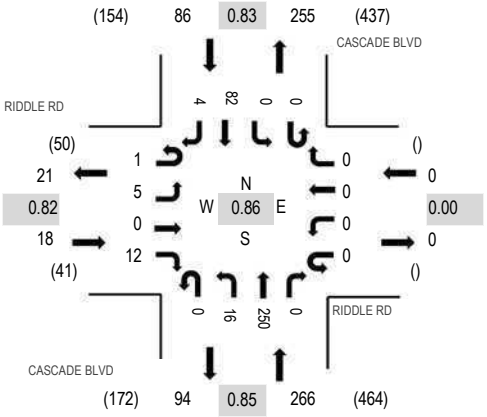
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	5	0	10	0	0	0	0	0	5	75	0	0	0	127	3	225
Mediums	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
Total	0	5	0	10	0	0	0	0	0	5	77	0	0	0	129	3	229

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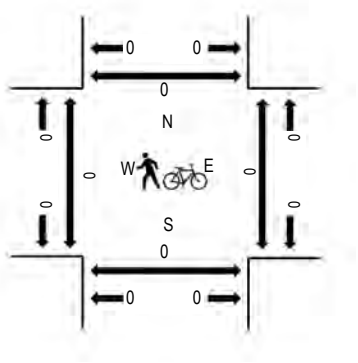
Location: 13 CASCADE BLVD & RIDDLE RD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RIDDLE RD Eastbound				RIDDLE RD Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	0	6	0	0	0	0	0	7	23	0	0	0	17	1	55	305	0	0	0	0
4:15 PM	0	1	0	4	0	0	0	0	0	4	45	0	0	0	9	0	63	339	0	0	0	0
4:30 PM	0	0	0	4	0	0	0	0	0	3	75	0	0	0	25	1	108	370	0	0	0	0
4:45 PM	1	3	0	3	0	0	0	0	0	3	52	0	0	0	17	0	79	349	0	0	0	0
5:00 PM	0	1	0	2	0	0	0	0	0	7	59	0	0	0	19	1	89	354	0	0	0	0
5:15 PM	0	1	0	3	0	0	0	0	0	3	64	0	0	0	21	2	94		0	0	0	0
5:30 PM	0	3	0	2	0	0	0	0	0	9	50	0	0	0	19	4	87		0	0	0	0
5:45 PM	0	1	0	5	0	0	0	0	0	2	58	0	0	0	16	2	84		0	0	0	0

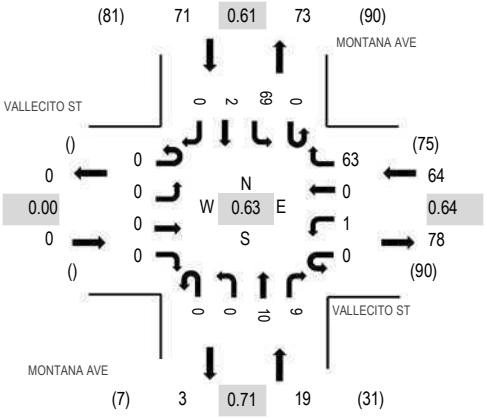
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Lights	1	5	0	12	0	0	0	0	0	16	249	0	0	0	79	4	366
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Total	1	5	0	12	0	0	0	0	0	16	250	0	0	0	82	4	370

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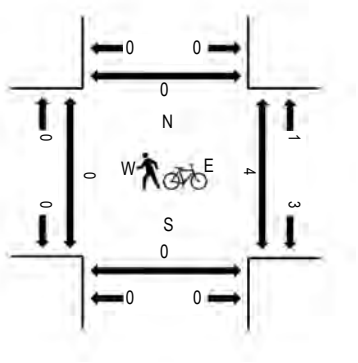
Location: 14 MONTANA AVE & VALLECITO ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITO ST Eastbound				VALLECITO ST Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	5	143	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	8	0	0	2	1	0	13	1	0	25	154	0	3	0	0
7:30 AM	0	0	0	0	0	1	0	24	0	0	4	3	0	29	0	0	61	141	0	1	0	0
7:45 AM	0	0	0	0	0	0	0	22	0	0	2	4	0	23	1	0	52	89	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	9	0	0	2	1	0	4	0	0	16	44	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	4	0	0	1	3	0	3	1	0	12		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	2	0	0	3	1	0	1	2	0	9		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	3	0	0	0	2	0	1	1	0	7		0	0	0	0

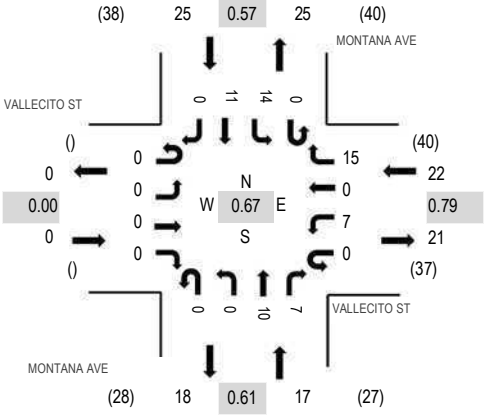
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	1	0	62	0	0	10	9	0	68	2	0	152
Mediums	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2
Total	0	0	0	0	0	1	0	63	0	0	10	9	0	69	2	0	154

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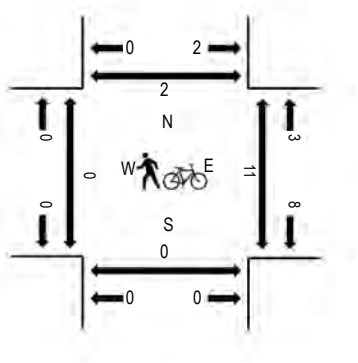
Location: 14 MONTANA AVE & VALLECITO ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITO ST Eastbound				VALLECITO ST Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	2	0	4	0	0	5	2	0	5	6	0	24	64	0	0	0	0
4:15 PM	0	0	0	0	0	2	0	4	0	0	2	1	0	1	1	0	11	45	0	2	0	0
4:30 PM	0	0	0	0	0	3	0	0	0	0	2	2	0	6	3	0	16	48	0	7	0	0
4:45 PM	0	0	0	0	0	0	0	7	0	0	1	2	0	2	1	0	13	42	0	2	0	0
5:00 PM	0	0	0	0	0	0	0	2	0	0	0	1	0	1	1	0	5	41	0	1	0	0
5:15 PM	0	0	0	0	0	1	0	6	0	0	1	2	0	2	2	0	14		0	1	0	0
5:30 PM	0	0	0	0	0	3	0	2	0	0	0	2	0	2	1	0	10		0	0	0	0
5:45 PM	0	0	0	0	0	1	0	3	0	0	1	3	0	3	1	0	12		0	0	0	0

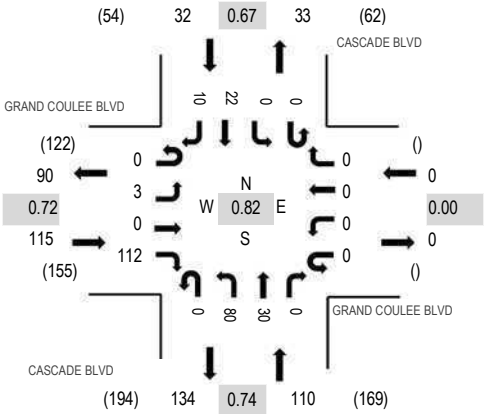
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	7	0	15	0	0	10	7	0	14	11	0	64
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	7	0	15	0	0	10	7	0	14	11	0	64

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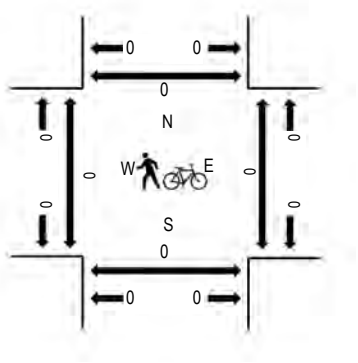
Location: 15 CASCADE BLVD & GRAND COULEE BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	GRAND COULEE BLVD Eastbound				GRAND COULEE BLVD Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	4	0	0	0	0	0	13	3	0	0	0	2	0	22	240	0	0	0	0
7:15 AM	0	0	0	19	0	0	0	0	0	28	11	0	0	0	4	2	64	257	0	0	0	0
7:30 AM	0	1	0	38	0	0	0	0	0	23	7	0	0	0	5	4	78	230	0	0	0	0
7:45 AM	0	1	0	39	0	0	0	0	0	21	10	0	0	0	1	4	76	186	0	0	0	0
8:00 AM	0	1	0	16	0	0	0	0	0	8	2	0	0	0	12	0	39	138	0	0	0	0
8:15 AM	0	1	0	16	0	0	0	0	0	5	11	0	0	0	4	0	37		0	0	0	0
8:30 AM	0	0	0	11	0	0	0	0	0	7	9	0	0	0	7	0	34		0	0	0	0
8:45 AM	0	1	0	7	0	0	0	0	0	7	4	0	0	0	9	0	28		0	0	0	0

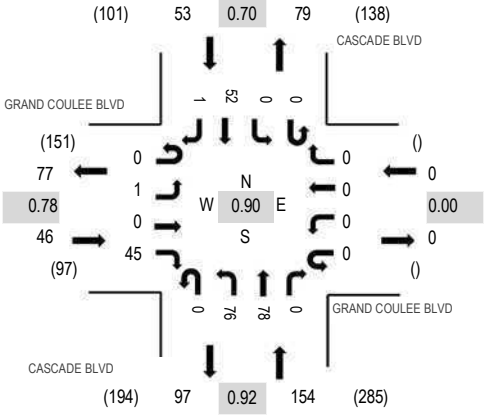
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	0	107	0	0	0	0	0	80	27	0	0	0	21	10	247
Mediums	0	1	0	5	0	0	0	0	0	0	3	0	0	0	1	0	10
Total	0	3	0	112	0	0	0	0	0	80	30	0	0	0	22	10	257

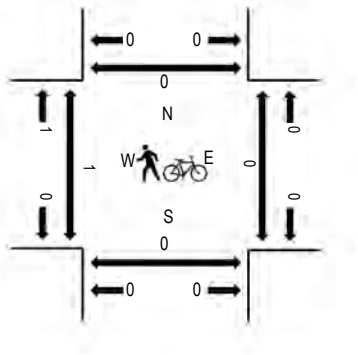
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Location: 15 CASCADE BLVD & GRAND COULEE BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	GRAND COULEE BLVD Eastbound				GRAND COULEE BLVD Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	13	0	0	0	0	0	21	16	0	0	0	11	1	62	240	0	0	0	0
4:15 PM	0	0	0	10	0	0	0	0	0	24	10	0	0	0	13	1	58	237	0	0	0	0
4:30 PM	0	0	0	16	0	0	0	0	0	13	17	0	0	0	13	0	59	242	0	0	0	0
4:45 PM	0	1	0	10	0	0	0	0	0	19	22	0	0	0	9	0	61	253	0	0	0	0
5:00 PM	0	0	0	9	0	0	0	0	0	19	20	0	0	0	11	0	59	243	0	0	0	0
5:15 PM	0	0	0	12	0	0	0	0	0	15	17	0	0	0	18	1	63		1	0	0	0
5:30 PM	0	0	0	14	0	0	0	0	0	23	19	0	0	0	14	0	70		0	0	0	0
5:45 PM	0	0	0	12	0	0	0	0	0	14	16	0	0	0	9	0	51		0	0	0	0

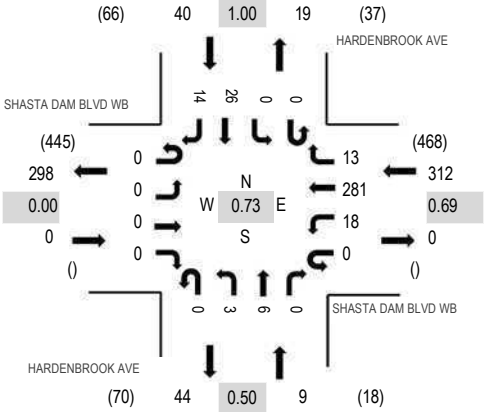
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	0	45	0	0	0	0	0	76	78	0	0	0	51	1	252
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	1	0	45	0	0	0	0	0	76	78	0	0	0	52	1	253

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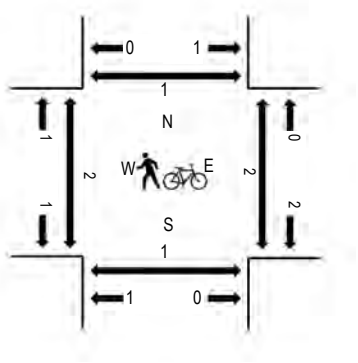
Location: 16 HARDENBROOK AVE & SHASTA DAM BLVD WB AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD WB Eastbound				SHASTA DAM BLVD WB Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	21	4	0	0	1	0	0	0	5	1	32	306	1	0	0	0
7:15 AM	0	0	0	0	0	3	45	2	0	0	1	0	0	0	5	1	57	355	0	1	1	0
7:30 AM	0	0	0	0	0	5	71	4	0	2	1	0	0	0	8	2	93	361	2	0	0	0
7:45 AM	0	0	0	0	0	8	103	2	0	0	1	0	0	0	6	4	124	311	0	2	1	0
8:00 AM	0	0	0	0	0	3	61	3	0	1	3	0	0	0	4	6	81	246	0	0	0	0
8:15 AM	0	0	0	0	0	2	46	4	0	0	1	0	0	0	8	2	63		0	0	0	1
8:30 AM	0	0	0	0	0	3	27	2	0	0	6	0	0	0	3	2	43		0	0	1	0
8:45 AM	0	0	0	0	0	1	46	2	0	1	0	0	0	0	6	3	59		0	0	0	0

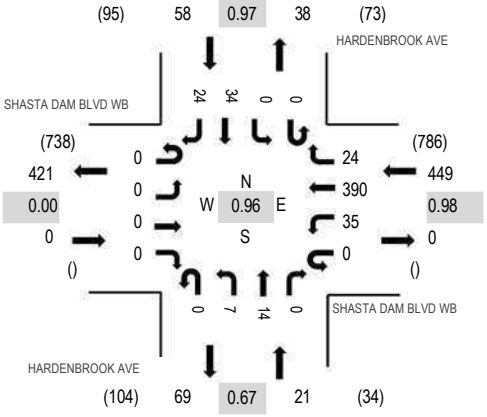
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9
Lights	0	0	0	0	0	18	262	13	0	3	6	0	0	0	26	14	342
Mediums	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	10
Total	0	0	0	0	0	18	281	13	0	3	6	0	0	0	26	14	361

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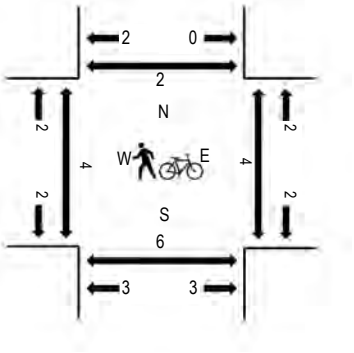
Location: 16 HARDENBROOK AVE & SHASTA DAM BLVD WB PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD WB Eastbound				SHASTA DAM BLVD WB Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	1	76	7	0	0	3	0	0	0	9	10	106	481	1	1	1	1
4:15 PM	0	0	0	0	0	6	88	3	0	0	4	0	0	0	3	1	105	508	0	0	0	0
4:30 PM	0	0	0	0	0	8	98	4	0	2	5	0	0	0	9	6	132	528	0	0	0	0
4:45 PM	0	0	0	0	0	10	97	8	0	3	6	0	0	0	5	9	138	491	0	2	2	0
5:00 PM	0	0	0	0	0	12	97	5	0	1	3	0	0	0	7	8	133	434	2	2	3	2
5:15 PM	0	0	0	0	0	5	98	7	0	1	0	0	0	0	13	1	125		2	0	0	0
5:30 PM	0	0	0	0	0	6	73	7	0	1	2	0	0	0	4	2	95		0	0	0	0
5:45 PM	0	0	0	0	0	1	62	7	0	1	2	0	0	0	5	3	81		0	0	0	0

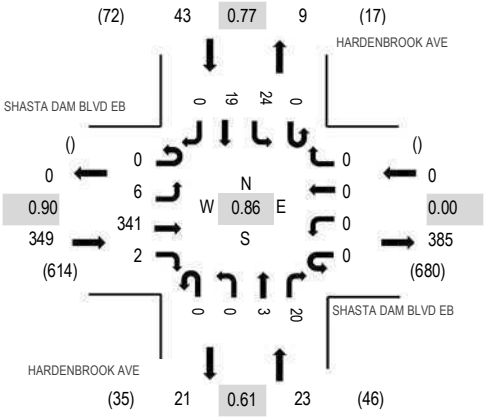
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	0	0	0	0	35	389	24	0	7	14	0	0	0	33	24	526
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	0	35	390	24	0	7	14	0	0	0	34	24	528

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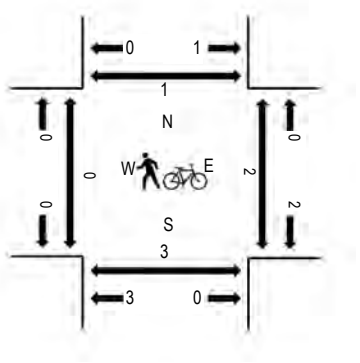
Location: 17 HARDENBROOK AVE & SHASTA DAM BLVD EB AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD EB Eastbound				SHASTA DAM BLVD EB Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	58	1	0	0	0	0	0	0	0	2	0	4	1	0	67	381	0	0	0	0
7:15 AM	0	1	87	1	0	0	0	0	0	0	0	4	0	5	3	0	101	415	0	0	0	1
7:30 AM	0	1	95	1	0	0	0	0	0	0	2	8	0	8	6	0	121	408	0	0	2	0
7:45 AM	0	1	73	0	0	0	0	0	0	0	0	3	0	7	8	0	92	374	0	2	0	0
8:00 AM	0	3	86	0	0	0	0	0	0	0	1	5	0	4	2	0	101	351	0	0	1	0
8:15 AM	0	1	76	0	0	0	0	0	0	0	0	6	0	7	4	0	94		0	0	0	0
8:30 AM	0	3	66	1	0	0	0	0	0	0	2	9	0	3	3	0	87		0	0	3	1
8:45 AM	0	0	57	1	0	0	0	0	0	0	1	3	0	4	3	0	69		0	0	0	0

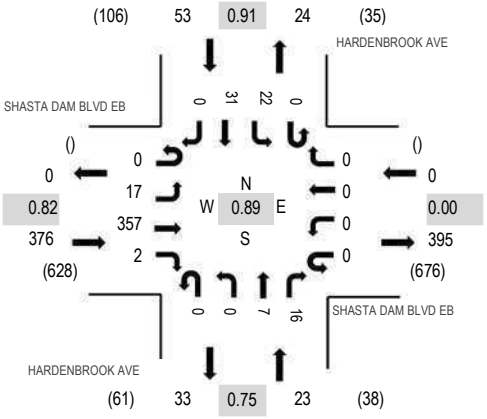
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Lights	0	6	328	2	0	0	0	0	0	0	3	19	0	24	19	0	401
Mediums	0	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0	7
Total	0	6	341	2	0	0	0	0	0	0	3	20	0	24	19	0	415

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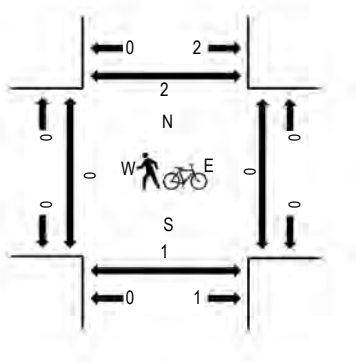
Location: 17 HARDENBROOK AVE & SHASTA DAM BLVD EB PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD EB Eastbound				SHASTA DAM BLVD EB Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	111	1	0	0	0	0	0	0	1	1	0	6	5	0	127	452	0	0	0	0
4:15 PM	0	4	82	1	0	0	0	0	0	0	0	5	0	3	7	0	102	434	0	0	1	0
4:30 PM	0	5	94	0	0	0	0	0	0	0	3	5	0	9	8	0	124	412	0	0	0	0
4:45 PM	0	6	70	0	0	0	0	0	0	0	3	5	0	4	11	0	99	354	0	0	0	2
5:00 PM	0	2	84	1	0	0	0	0	0	0	2	1	0	7	12	0	109	320	2	0	0	2
5:15 PM	0	1	57	0	0	0	0	0	0	0	1	3	0	13	5	0	80		2	0	0	0
5:30 PM	0	2	50	1	0	0	0	0	0	0	0	4	0	3	6	0	66		0	0	4	0
5:45 PM	0	1	53	0	0	0	0	0	0	0	2	2	0	4	3	0	65		0	0	0	0

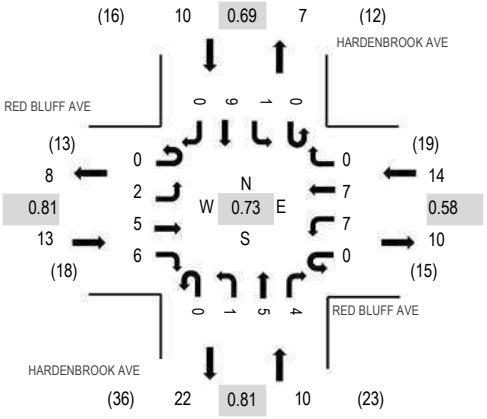
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Lights	0	16	348	2	0	0	0	0	0	0	7	16	0	22	31	0	442
Mediums	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	17	357	2	0	0	0	0	0	0	7	16	0	22	31	0	452

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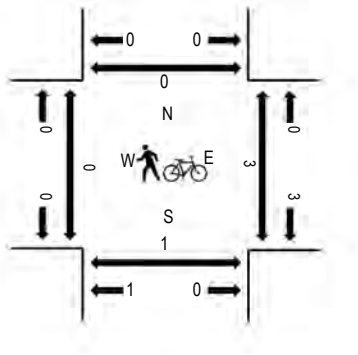
Location: 18 HARDENBROOK AVE & RED BLUFF AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	3	0	2	0	0	0	0	1	1	0	0	0	0	7	47	0	0	1	0
7:15 AM	0	0	4	0	0	2	4	0	0	0	1	1	0	1	3	0	16	46	0	1	0	0
7:30 AM	0	1	1	1	0	1	2	0	0	1	2	2	0	0	3	0	14	38	0	0	0	0
7:45 AM	0	1	0	2	0	2	1	0	0	0	1	0	0	0	3	0	10	32	0	2	0	0
8:00 AM	0	0	0	1	0	1	0	0	0	1	1	1	0	0	1	0	6	29	0	0	0	0
8:15 AM	0	0	1	1	0	2	0	0	0	3	0	0	0	0	1	0	8		0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	1	3	0	0	0	3	0	8		0	0	0	0
8:45 AM	0	0	1	1	0	1	0	0	0	0	1	2	0	0	1	0	7		0	0	0	0

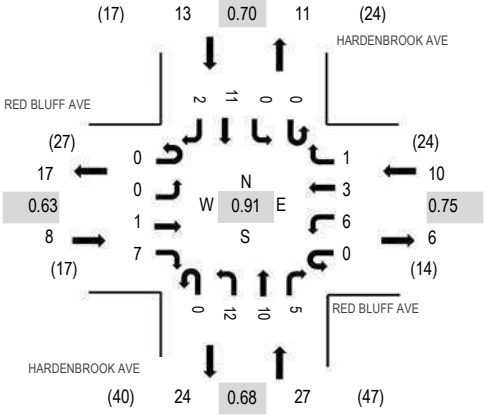
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	5	6	0	6	5	0	0	1	5	3	0	1	9	0	43
Mediums	0	0	0	0	0	1	2	0	0	0	0	1	0	0	0	0	4
Total	0	2	5	6	0	7	7	0	0	1	5	4	0	1	9	0	47

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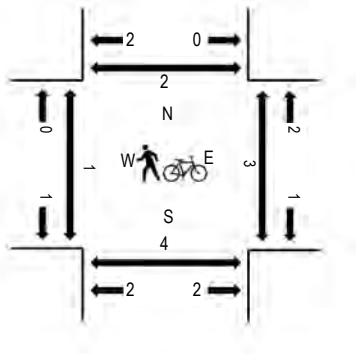
Location: 18 HARDENBROOK AVE & RED BLUFF AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	2	0	3	0	1	0	3	1	0	0	0	0	0	10	52	0	0	2	0
4:15 PM	0	0	0	1	0	3	1	1	0	1	2	3	0	0	1	0	13	55	0	0	0	0
4:30 PM	0	0	0	3	0	3	1	0	0	2	2	1	0	0	0	1	13	58	0	0	0	2
4:45 PM	0	0	0	1	0	1	0	1	0	2	5	3	0	0	3	0	16	57	0	0	2	0
5:00 PM	0	0	1	1	0	1	0	0	0	4	1	1	0	0	4	0	13	53	1	1	2	0
5:15 PM	0	0	0	2	0	1	2	0	0	4	2	0	0	0	4	1	16		0	2	0	0
5:30 PM	0	0	2	2	1	0	0	1	0	3	1	0	0	0	2	0	12		0	0	2	0
5:45 PM	0	0	2	0	0	1	1	1	0	1	5	0	0	0	1	0	12		0	0	0	0

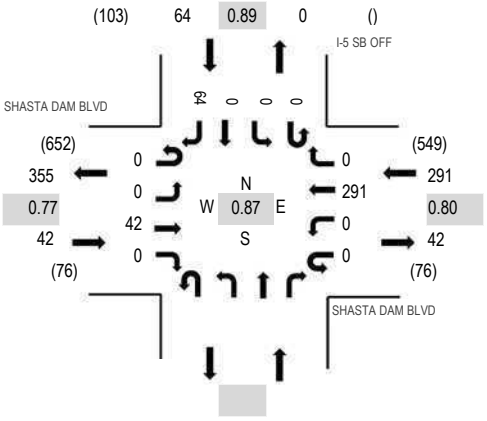
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	1	7	0	6	3	1	0	12	10	5	0	0	11	2	58
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	7	0	6	3	1	0	12	10	5	0	0	11	2	58

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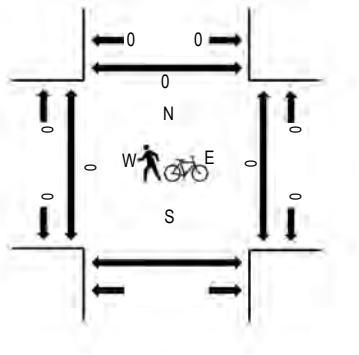
Location: 6 I-5 SB OFF & SHASTA DAM BLVD AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				Northbound				I-5 SB OFF Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	5	0	0	0	61	0					0	0	0	18	84	397	0	0		0
7:15 AM	0	0	14	0	0	0	66	0					0	0	0	18	98	390	0	0		0
7:30 AM	0	0	10	0	0	0	73	0					0	0	0	18	101	373	0	0		0
7:45 AM	0	0	13	0	0	0	91	0					0	0	0	10	114	352	0	0		0
8:00 AM	0	0	6	0	0	0	63	0					0	0	0	8	77	331	0	0		0
8:15 AM	0	0	10	0	0	0	59	0					0	0	0	12	81		0	0		0
8:30 AM	0	0	9	0	0	0	62	0					0	0	0	9	80		0	0		0
8:45 AM	0	0	9	0	0	0	74	0					0	0	0	10	93		0	0		0

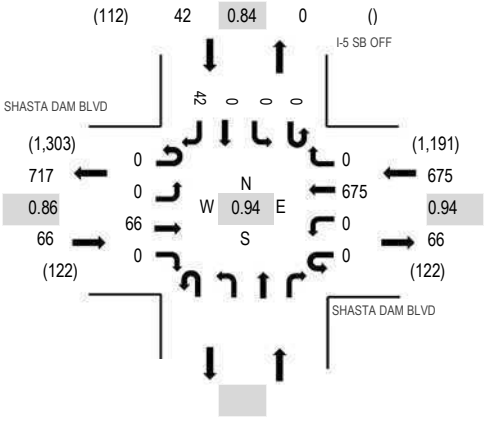
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	3	0					0	0	0	6	10
Lights	0	0	38	0	0	0	279	0					0	0	0	56	373
Mediums	0	0	3	0	0	0	9	0					0	0	0	2	14
Total	0	0	42	0	0	0	291	0					0	0	0	64	397

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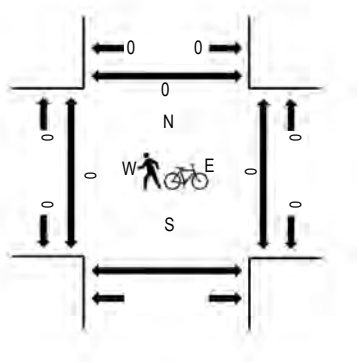
Location: 6 I-5 SB OFF & SHASTA DAM BLVD PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				Northbound				I-5 SB OFF Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	14	0	0	0	127	0					0	0	0	18	159	718	0	0		0
4:15 PM	0	0	20	0	0	0	153	0					0	0	0	22	195	768	0	0		0
4:30 PM	0	0	13	0	0	0	129	0					0	0	0	16	158	773	0	0		0
4:45 PM	0	0	16	0	0	0	172	0					0	0	0	18	206	783	0	0		0
5:00 PM	0	0	20	0	0	0	180	0					0	0	0	9	209	707	0	0		0
5:15 PM	0	0	15	0	0	0	173	0					0	0	0	12	200		0	0		0
5:30 PM	0	0	15	0	0	0	150	0					0	0	0	3	168		0	0		0
5:45 PM	0	0	9	0	0	0	107	0					0	0	0	14	130		0	0		0

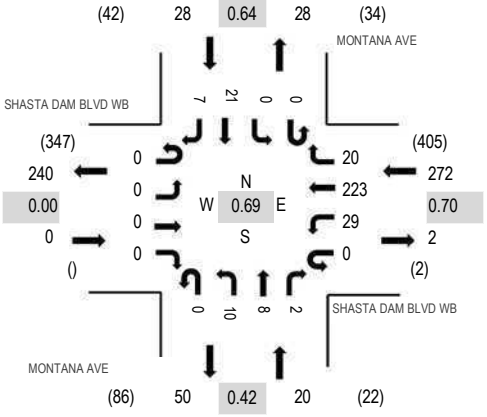
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	1	0					0	0	0	1	3
Lights	0	0	65	0	0	0	671	0					0	0	0	41	777
Mediums	0	0	0	0	0	0	3	0					0	0	0	0	3
Total	0	0	66	0	0	0	675	0					0	0	0	42	783

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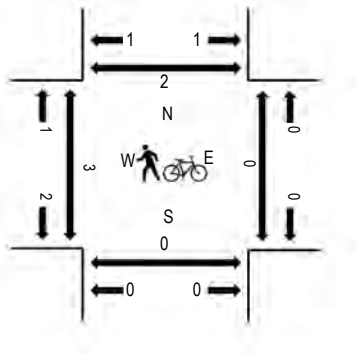
Location: 19 MONTANA AVE & SHASTA DAM BLVD WB AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD WB Eastbound				SHASTA DAM BLVD WB Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	2	19	0	0	1	0	0	0	0	3	0	25	265	0	0	0	1
7:15 AM	0	0	0	0	0	4	33	2	0	0	0	0	0	0	5	0	44	308	0	0	0	0
7:30 AM	0	0	0	0	0	4	58	4	0	2	1	0	0	0	9	2	80	320	1	0	0	1
7:45 AM	0	0	0	0	0	15	70	12	0	8	4	0	0	0	3	4	116	274	1	0	0	0
8:00 AM	0	0	0	0	0	5	54	0	0	0	3	2	0	0	3	1	68	204	1	0	0	1
8:15 AM	0	0	0	0	0	5	41	4	0	0	0	0	0	0	6	0	56		0	0	0	0
8:30 AM	0	0	0	0	0	6	22	0	0	1	0	0	0	0	5	0	34		0	0	0	0
8:45 AM	0	0	0	0	0	10	31	4	0	0	0	0	0	0	1	0	46		0	0	0	0

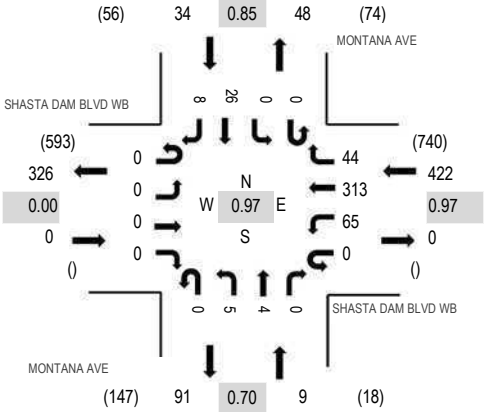
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	1	11	0	0	0	0	0	0	0	0	0	12
Lights	0	0	0	0	0	28	206	19	0	10	8	2	0	0	21	6	300
Mediums	0	0	0	0	0	0	6	1	0	0	0	0	0	0	0	1	8
Total	0	0	0	0	0	29	223	20	0	10	8	2	0	0	21	7	320

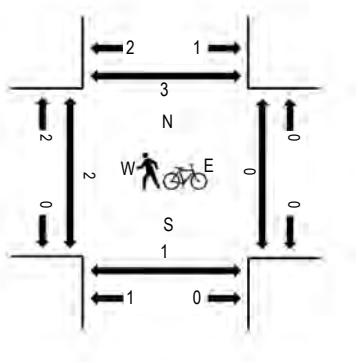
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Location: 19 MONTANA AVE & SHASTA DAM BLVD WB PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD WB Eastbound				SHASTA DAM BLVD WB Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	13	62	5	0	2	3	0	0	0	8	1	94	428	1	0	1	2
4:15 PM	0	0	0	0	0	8	80	8	0	2	1	0	0	0	3	1	103	448	0	0	2	0
4:30 PM	0	0	0	0	0	24	71	10	0	1	0	0	0	0	4	2	112	465	1	0	0	0
4:45 PM	0	0	0	0	0	13	79	13	0	2	3	0	0	0	9	0	119	431	0	0	0	1
5:00 PM	0	0	0	0	0	18	76	9	0	1	0	0	0	0	9	1	114	386	0	0	0	0
5:15 PM	0	0	0	0	0	10	87	12	0	1	1	0	0	0	4	5	120		1	0	0	1
5:30 PM	0	0	0	0	0	7	64	4	0	0	0	0	0	0	2	1	78		0	0	1	0
5:45 PM	0	0	0	0	0	12	50	5	0	1	0	0	0	0	3	3	74		0	0	0	0

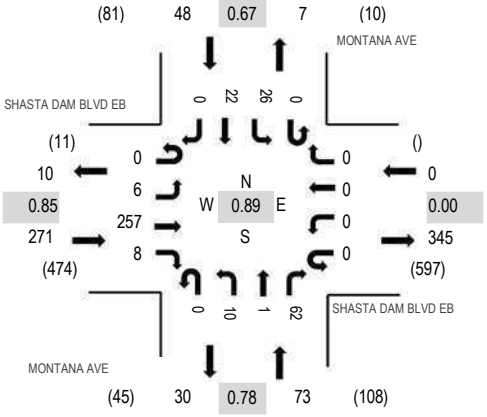
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	0	0	0	0	65	311	44	0	5	4	0	0	0	26	8	463
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	65	313	44	0	5	4	0	0	0	26	8	465

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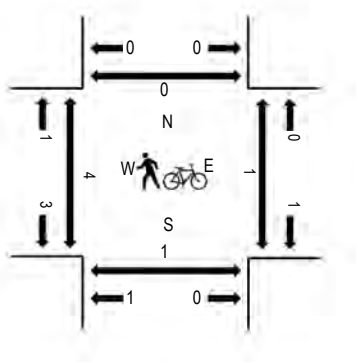
Location: 20 MONTANA AVE & SHASTA DAM BLVD EB AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD EB Eastbound				SHASTA DAM BLVD EB Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	49	0	0	0	0	0	0	1	0	5	0	3	2	0	60	359	0	0	0	0
7:15 AM	0	0	62	1	0	0	0	0	0	0	0	13	0	7	4	0	87	392	0	0	0	0
7:30 AM	0	1	76	3	0	0	0	0	0	5	0	13	0	5	7	0	110	386	1	0	0	0
7:45 AM	0	3	61	2	0	0	0	0	0	5	1	12	0	10	8	0	102	339	2	0	0	0
8:00 AM	0	2	58	2	0	0	0	0	0	0	0	24	0	4	3	0	93	304	1	0	1	0
8:15 AM	0	2	53	0	0	0	0	0	0	0	0	15	0	7	4	0	81		0	0	0	0
8:30 AM	0	1	48	0	0	0	0	0	0	0	0	8	0	3	3	0	63		0	0	0	0
8:45 AM	0	0	48	2	0	0	0	0	0	0	0	6	0	7	4	0	67		0	0	0	0

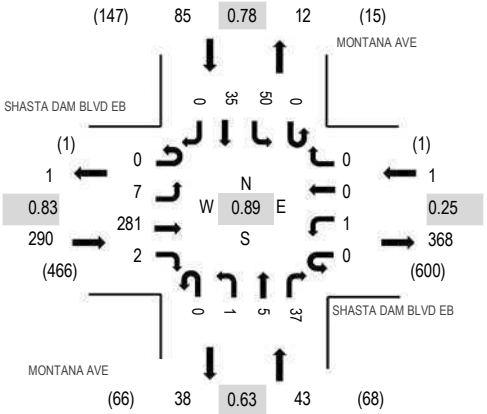
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	5
Lights	0	6	245	8	0	0	0	0	0	10	1	61	0	25	22	0	378
Mediums	0	0	8	0	0	0	0	0	0	0	0	1	0	0	0	0	9
Total	0	6	257	8	0	0	0	0	0	10	1	62	0	26	22	0	392

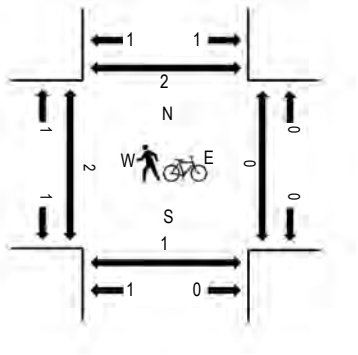
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Location: 20 MONTANA AVE & SHASTA DAM BLVD EB PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD EB Eastbound				SHASTA DAM BLVD EB Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	84	0	0	0	0	0	0	1	0	9	0	16	5	0	118	419	0	0	0	0
4:15 PM	0	1	63	1	0	0	0	0	0	0	2	15	0	7	6	0	95	393	0	0	0	2
4:30 PM	0	0	78	0	0	1	0	0	0	0	1	7	0	15	14	0	116	357	1	0	0	0
4:45 PM	0	3	56	1	0	0	0	0	0	0	2	6	0	12	10	0	90	296	0	0	1	0
5:00 PM	0	1	55	3	0	0	0	0	0	0	0	8	0	16	9	0	92	263	0	0	0	0
5:15 PM	0	1	36	0	0	0	0	0	0	0	0	8	0	10	4	0	59		1	0	0	0
5:30 PM	0	0	39	0	0	0	0	0	0	0	0	5	0	6	5	0	55		0	0	0	0
5:45 PM	0	0	41	0	0	0	0	0	0	0	1	3	0	5	7	0	57		0	0	0	0

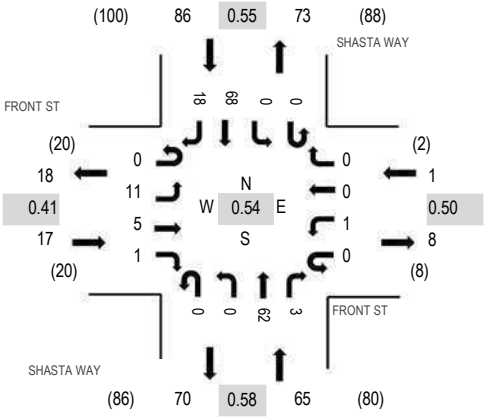
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	7	270	2	0	1	0	0	0	1	5	37	0	50	35	0	408
Mediums	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Total	0	7	281	2	0	1	0	0	0	1	5	37	0	50	35	0	419

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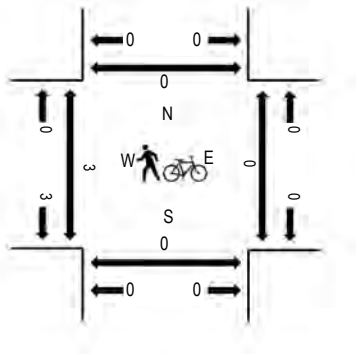
Location: 21 SHASTA WAY & FRONT ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	FRONT ST Eastbound				FRONT ST Westbound				SHASTA WAY Northbound				SHASTA WAY Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	0	0	0	0	0	0	0	0	11	1	0	0	7	1	21	169	0	0	0	0
7:15 AM	0	6	4	1	0	0	0	0	0	0	27	1	0	0	30	9	78	161	0	0	0	0
7:30 AM	0	4	0	0	0	1	0	0	0	0	21	1	0	0	26	7	60	91	1	0	0	0
7:45 AM	0	0	1	0	0	0	0	0	0	0	3	0	0	0	5	1	10	37	2	0	0	0
8:00 AM	0	0	0	2	0	1	0	0	0	0	4	0	0	0	6	0	13	33	0	1	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	3	1	8		1	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	1	0	6		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	6		2	0	0	1

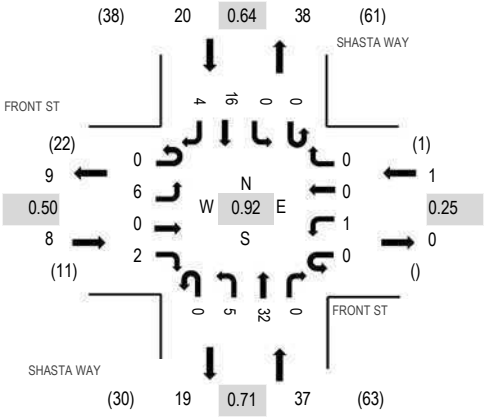
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	11	2	1	0	1	0	0	0	0	61	1	0	0	61	17	155
Mediums	0	0	3	0	0	0	0	0	0	0	1	2	0	0	7	1	14
Total	0	11	5	1	0	1	0	0	0	0	62	3	0	0	68	18	169

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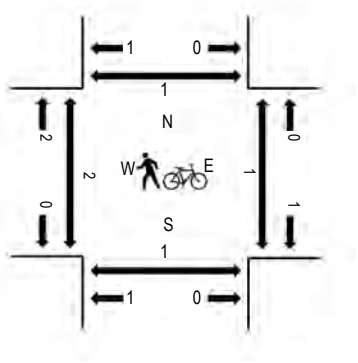
Location: 21 SHASTA WAY & FRONT ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	FRONT ST Eastbound				FRONT ST Westbound				SHASTA WAY Northbound				SHASTA WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	1	0	0	0	0	0	1	7	0	0	0	0	1	10	58	0	1	1	0
4:15 PM	0	1	0	0	0	0	0	0	0	3	5	0	0	0	2	1	12	66	0	0	0	0
4:30 PM	0	2	0	2	0	0	0	0	0	0	6	0	0	0	6	2	18	65	1	0	1	0
4:45 PM	0	1	0	0	0	1	0	0	0	1	12	0	0	0	3	0	18	57	0	0	0	1
5:00 PM	0	2	0	0	0	0	0	0	0	1	9	0	0	0	5	1	18	55	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	2	4	0	0	0	4	1	11		0	0	0	0
5:30 PM	0	2	0	0	0	0	0	0	0	1	4	0	0	0	3	0	10		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	6	0	0	0	3	6	16		1	0	0	0

Peak Rolling Hour Flow Rates

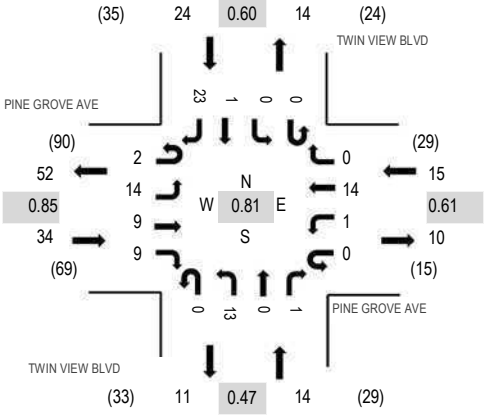
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	6	0	2	0	1	0	0	0	5	32	0	0	0	16	4	66
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	6	0	2	0	1	0	0	0	5	32	0	0	0	16	4	66

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Location: 22 TWIN VIEW BLVD & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

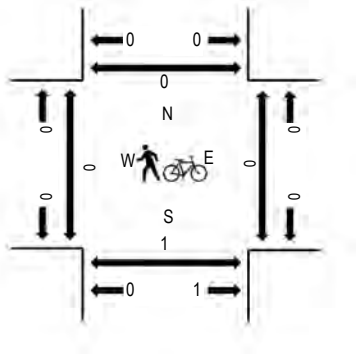
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				TWIN VIEW BLVD Northbound				TWIN VIEW BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	0	3	0	0	4	0	0	1	0	0	0	0	0	2	11	76	0	0	0	0
7:15 AM	2	3	2	1	0	1	2	0	0	4	0	0	0	0	0	3	18	87	0	0	1	0
7:30 AM	0	2	2	0	0	0	3	0	0	2	0	1	0	0	0	10	20	83	0	0	0	0
7:45 AM	0	4	2	3	0	0	7	0	0	4	0	0	0	0	1	6	27	84	0	0	0	0
8:00 AM	0	5	3	5	0	0	2	0	0	3	0	0	0	0	0	4	22	86	0	0	0	0
8:15 AM	0	1	2	5	0	0	3	0	0	3	0	0	0	0	0	0	14		0	0	0	0
8:30 AM	0	3	2	6	0	0	2	0	0	2	0	0	0	0	0	6	21		0	0	0	0
8:45 AM	0	3	1	8	0	0	5	0	0	7	2	0	0	0	0	3	29		0	0	0	0

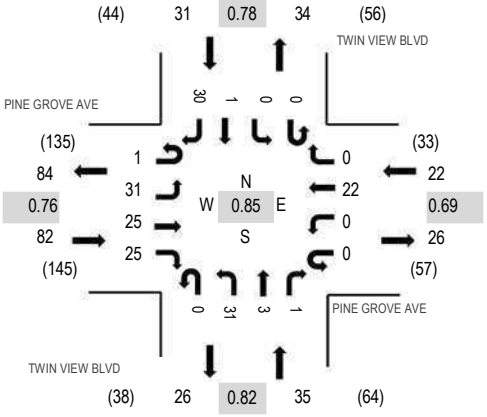
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	2	14	8	9	0	1	13	0	0	12	0	1	0	0	1	23	84
Mediums	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	3
Total	2	14	9	9	0	1	14	0	0	13	0	1	0	0	1	23	87

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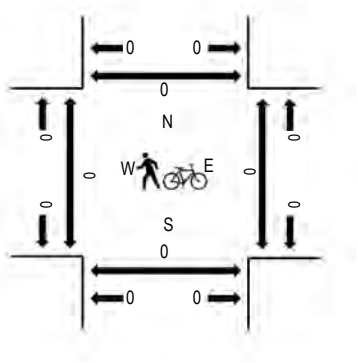
Location: 22 TWIN VIEW BLVD & PINE GROVE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				TWIN VIEW BLVD Northbound				TWIN VIEW BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	6	6	4	0	0	8	0	0	7	1	0	0	0	0	6	38	170	0	0	0	0
4:15 PM	0	9	10	7	0	0	2	0	0	11	0	0	0	0	0	8	47	163	0	0	0	0
4:30 PM	1	4	4	4	0	0	5	0	0	5	2	0	0	0	1	9	35	147	0	0	0	0
4:45 PM	0	12	5	10	0	0	7	0	0	8	0	1	0	0	0	7	50	142	0	0	0	0
5:00 PM	1	6	6	3	0	0	2	0	0	9	0	0	0	0	0	4	31	116	0	0	0	0
5:15 PM	0	6	9	4	0	0	3	0	0	8	1	0	0	0	0	0	31		0	0	0	0
5:30 PM	0	5	8	2	0	0	2	0	0	6	1	0	0	0	0	6	30		0	0	0	0
5:45 PM	0	2	8	3	0	0	4	0	0	3	1	0	0	0	0	3	24		0	0	0	0

Peak Rolling Hour Flow Rates

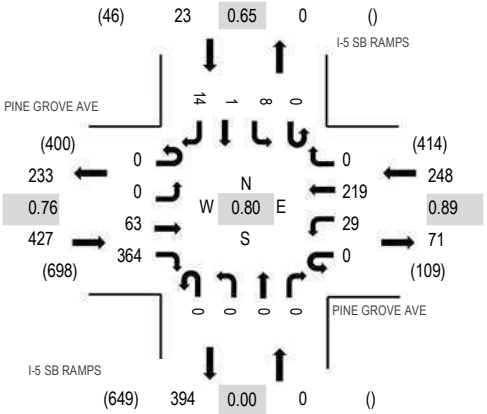
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	1	31	25	25	0	0	22	0	0	31	3	1	0	0	1	30	170
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	31	25	25	0	0	22	0	0	31	3	1	0	0	1	30	170

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Location: 23 I-5 SB RAMPS & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

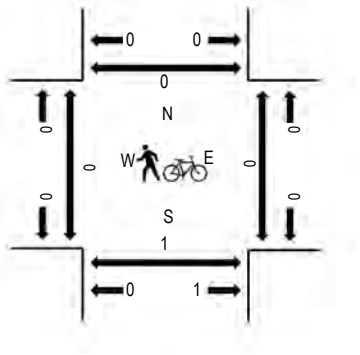
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				I-5 SB RAMPS Northbound				I-5 SB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	6	54	0	1	35	0	0	0	0	0	0	0	0	3	99	661	0	0	0	0
7:15 AM	0	0	17	75	0	9	59	0	0	0	0	0	0	3	0	0	163	698	0	0	1	0
7:30 AM	0	0	11	104	0	7	53	0	0	0	0	0	0	0	1	5	181	648	0	0	0	0
7:45 AM	0	0	17	123	0	9	61	0	0	0	0	0	0	2	0	6	218	592	0	0	0	0
8:00 AM	0	0	18	62	0	4	46	0	0	0	0	0	0	3	0	3	136	497	0	0	0	0
8:15 AM	0	0	7	70	0	2	30	0	0	0	0	0	0	1	0	3	113		0	0	0	0
8:30 AM	0	0	11	64	0	6	38	0	0	0	0	0	0	3	0	3	125		0	0	0	0
8:45 AM	0	0	6	53	0	5	49	0	0	0	0	0	0	4	0	6	123		0	0	0	0

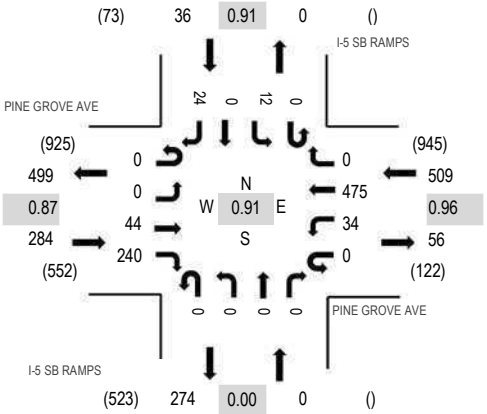
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	5	0	0	7	0	0	0	0	0	0	0	0	0	15
Lights	0	0	58	352	0	28	210	0	0	0	0	0	0	8	1	14	671
Mediums	0	0	2	7	0	1	2	0	0	0	0	0	0	0	0	0	12
Total	0	0	63	364	0	29	219	0	0	0	0	0	0	8	1	14	698

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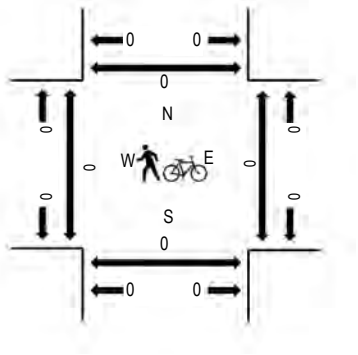
Location: 23 I-5 SB RAMPS & PINE GROVE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				I-5 SB RAMPS Northbound				I-5 SB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	18	61	0	10	92	0	0	0	0	0	0	1	0	6	188	775	0	0	0	0
4:15 PM	0	0	14	56	0	15	98	0	0	0	0	0	0	9	1	1	194	814	0	0	1	0
4:30 PM	0	0	13	55	0	3	115	0	0	0	0	0	0	3	0	7	196	819	0	0	0	0
4:45 PM	0	0	12	57	0	8	111	0	0	0	0	0	0	4	0	5	197	829	0	0	0	0
5:00 PM	0	0	9	75	0	16	117	0	0	0	0	0	0	2	0	8	227	795	0	0	0	0
5:15 PM	0	0	13	48	0	5	122	0	0	0	0	0	0	5	0	6	199		0	0	0	0
5:30 PM	0	0	10	60	0	5	125	0	0	0	0	0	0	1	0	5	206		0	0	0	0
5:45 PM	0	0	7	44	0	4	99	0	0	0	0	0	0	1	0	8	163		0	0	0	0

Peak Rolling Hour Flow Rates

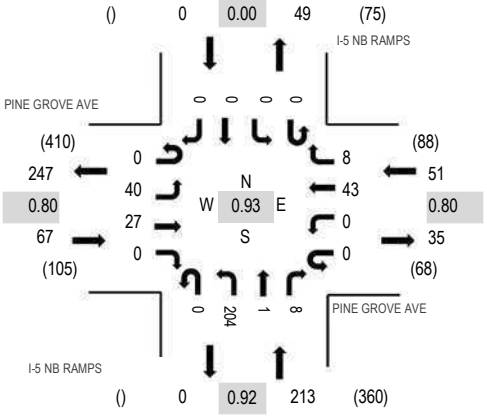
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	3
Lights	0	0	44	236	0	34	474	0	0	0	0	0	0	12	0	22	822
Mediums	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	1	4
Total	0	0	44	240	0	34	475	0	0	0	0	0	0	12	0	24	829

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Location: 24 I-5 NB RAMPS & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

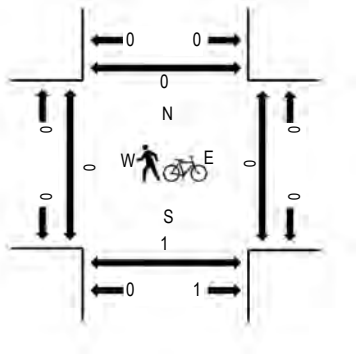
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				I-5 NB RAMPS Northbound				I-5 NB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	5	1	0	0	0	7	0	0	26	0	2	0	0	0	0	41	293	0	0	0	0
7:15 AM	0	11	6	0	0	0	12	0	0	57	0	1	0	0	0	0	87	331	0	0	1	0
7:30 AM	0	10	1	0	0	0	10	4	0	49	0	2	0	0	0	0	76	291	0	0	0	0
7:45 AM	0	9	9	0	0	0	15	1	0	53	1	1	0	0	0	0	89	275	0	0	0	0
8:00 AM	0	10	11	0	0	0	6	3	0	45	0	4	0	0	0	0	79	260	0	0	0	0
8:15 AM	0	4	4	0	0	0	4	3	0	28	0	4	0	0	0	0	47		0	0	0	0
8:30 AM	0	5	8	0	0	0	8	2	0	36	0	1	0	0	0	0	60		0	0	0	0
8:45 AM	0	4	7	0	0	0	11	2	0	43	1	6	0	0	0	0	74		0	0	0	0

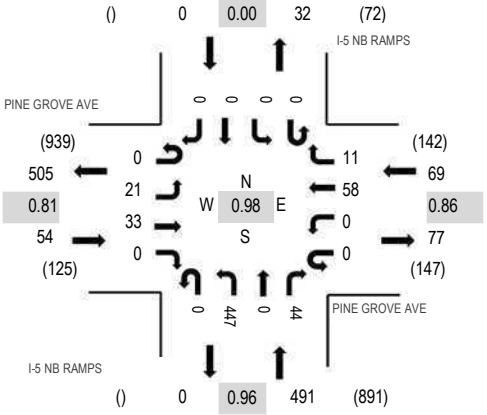
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	3	0	0	0	0	0	0	0	7	0	0	0	0	0	0	10
Lights	0	36	26	0	0	0	40	8	0	197	1	8	0	0	0	0	316
Mediums	0	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	5
Total	0	40	27	0	0	0	43	8	0	204	1	8	0	0	0	0	331

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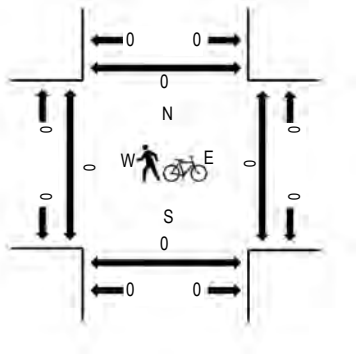
Location: 24 I-5 NB RAMPS & PINE GROVE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				I-5 NB RAMPS Northbound				I-5 NB RAMPS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	9	14	0	0	0	16	5	0	85	1	4	0	0	0	0	134	580	0	0	0	0
4:15 PM	0	4	20	0	0	0	20	2	0	99	0	6	0	0	0	0	151	601	0	0	1	0
4:30 PM	0	7	9	0	0	0	13	6	0	100	2	5	0	0	0	0	142	607	0	0	0	0
4:45 PM	0	4	11	0	0	0	17	3	0	103	0	15	0	0	0	0	153	614	0	0	0	0
5:00 PM	0	4	6	0	0	0	21	4	0	110	0	10	0	0	0	0	155	578	0	0	0	0
5:15 PM	0	10	8	0	0	0	8	3	0	116	0	12	0	0	0	0	157		0	0	0	0
5:30 PM	0	3	8	0	0	0	12	1	0	118	0	7	0	0	0	0	149		0	0	0	0
5:45 PM	0	3	5	0	0	0	11	0	0	90	1	7	0	0	0	0	117		0	0	0	0

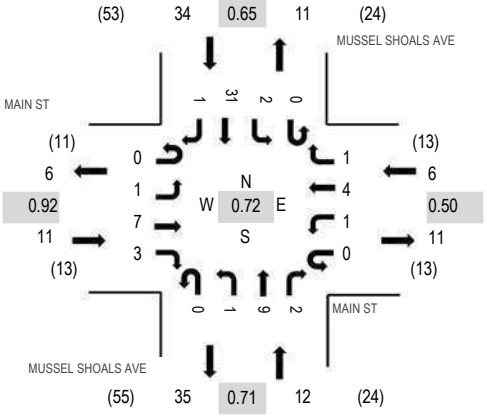
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	21	33	0	0	0	58	11	0	446	0	44	0	0	0	0	613
Mediums	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	21	33	0	0	0	58	11	0	447	0	44	0	0	0	0	614

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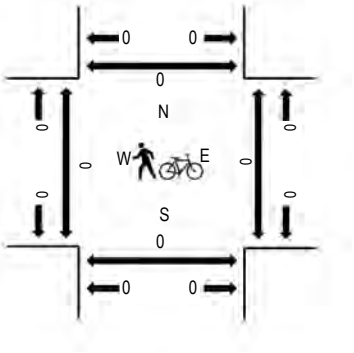
Location: 25 MUSSEL SHOALS AVE & MAIN ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				MUSSEL SHOALS AVE Northbound				MUSSEL SHOALS AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	3	53	0	0	0	0
7:15 AM	0	0	2	1	0	0	1	0	0	0	2	1	0	0	7	0	14	63	0	0	0	0
7:30 AM	0	0	3	0	0	0	3	1	0	0	2	0	0	2	11	0	22	61	0	0	0	0
7:45 AM	0	0	1	2	0	1	0	0	0	0	3	0	0	0	7	0	14	56	0	0	0	0
8:00 AM	0	1	1	0	0	0	0	0	0	1	2	1	0	0	6	1	13	50	0	0	0	0
8:15 AM	0	0	0	1	0	1	2	0	0	1	3	0	0	1	3	0	12		2	0	2	0
8:30 AM	0	1	0	0	0	0	2	1	0	0	6	0	0	0	7	0	17		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	6	0	8		0	0	0	0

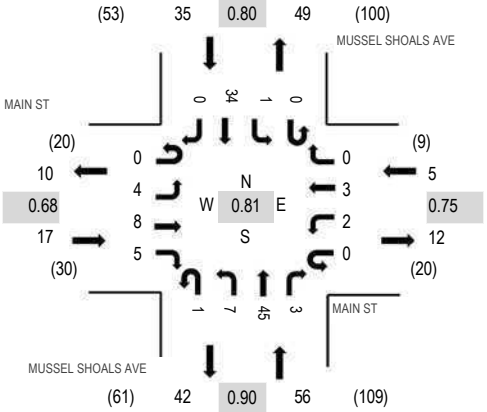
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	6	3	0	1	4	1	0	1	9	2	0	2	30	1	61
Mediums	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2
Total	0	1	7	3	0	1	4	1	0	1	9	2	0	2	31	1	63

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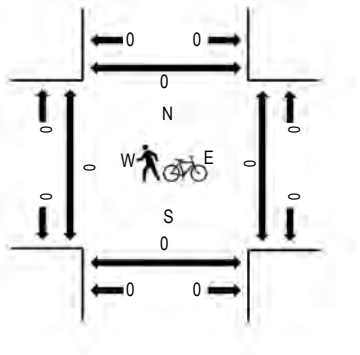
Location: 25 MUSSEL SHOALS AVE & MAIN ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				MUSSEL SHOALS AVE Northbound				MUSSEL SHOALS AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	0	1	0	0	1	0	0	1	11	0	0	0	3	0	18	92	0	0	0	0
4:15 PM	0	0	1	0	0	0	1	1	0	3	10	0	0	1	6	2	25	103	0	1	0	0
4:30 PM	0	1	2	2	0	1	0	0	0	1	13	0	0	0	5	0	25	113	0	0	0	0
4:45 PM	0	2	0	1	0	1	1	0	0	1	8	0	0	1	9	0	24	112	0	0	0	0
5:00 PM	0	0	4	0	0	0	0	0	1	3	11	1	0	0	9	0	29	109	0	0	0	0
5:15 PM	0	1	2	2	0	0	2	0	0	2	13	2	0	0	11	0	35		0	0	0	0
5:30 PM	0	1	4	2	0	0	0	0	0	0	14	1	0	0	2	0	24		0	0	0	0
5:45 PM	0	1	1	1	0	0	1	0	0	1	12	0	0	0	4	0	21		0	0	0	0

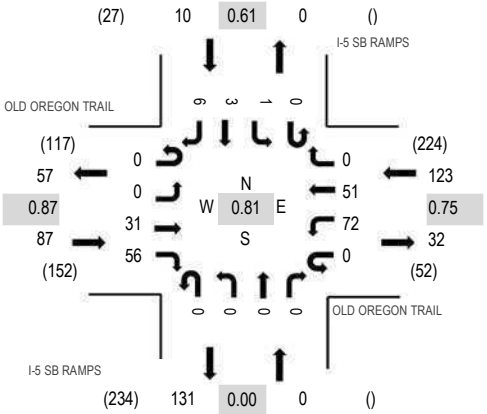
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	4	8	5	0	2	3	0	1	7	45	3	0	1	34	0	113
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	8	5	0	2	3	0	1	7	45	3	0	1	34	0	113

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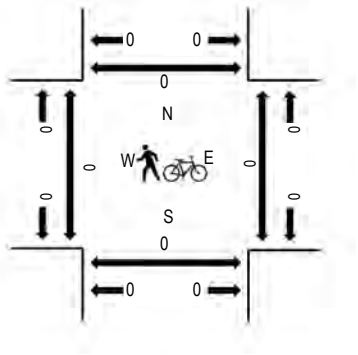
Location: 26 I-5 SB RAMPS & OLD OREGON TRAIL AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	OLD OREGON TRAIL Eastbound				OLD OREGON TRAIL Westbound				I-5 SB RAMPS Northbound				I-5 SB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	12	8	0	17	15	0	0	0	0	0	0	1	1	1	55	220	0	0	0	0
7:15 AM	0	0	6	17	0	14	7	0	0	0	0	0	0	0	2	2	48	208	0	0	0	0
7:30 AM	0	0	8	17	0	23	18	0	0	0	0	0	0	0	0	2	68	215	0	0	0	0
7:45 AM	0	0	5	14	0	18	11	0	0	0	0	0	0	0	0	1	49	196	0	0	0	0
8:00 AM	0	0	2	12	0	12	10	0	0	0	0	0	0	1	0	6	43	183	0	0	0	0
8:15 AM	0	0	4	17	0	13	18	0	0	0	0	0	0	1	0	2	55		0	0	0	0
8:30 AM	0	0	9	10	0	16	11	0	0	0	0	0	0	1	0	2	49		0	0	0	0
8:45 AM	0	0	1	10	0	13	8	0	0	0	0	0	0	1	0	3	36		0	0	0	0

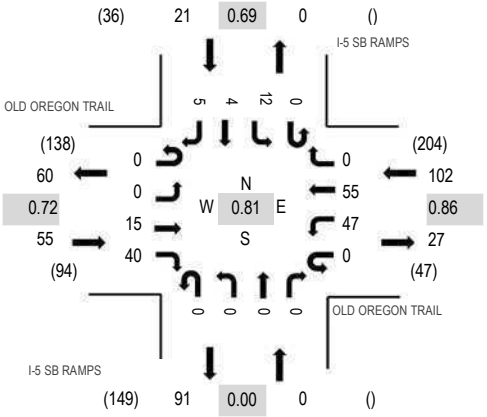
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	11	3	0	0	0	0	0	0	0	3	0	17
Lights	0	0	28	55	0	57	46	0	0	0	0	0	0	1	0	6	193
Mediums	0	0	3	1	0	4	2	0	0	0	0	0	0	0	0	0	10
Total	0	0	31	56	0	72	51	0	0	0	0	0	0	1	3	6	220

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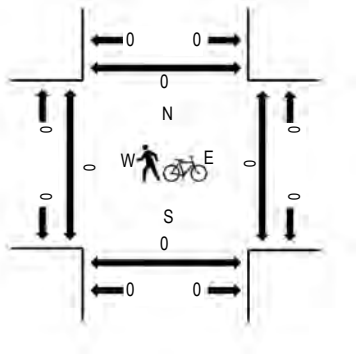
Location: 26 I-5 SB RAMPS & OLD OREGON TRAIL PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	OLD OREGON TRAIL Eastbound				OLD OREGON TRAIL Westbound				I-5 SB RAMPS Northbound				I-5 SB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	2	15	0	16	14	0	0	0	0	0	0	1	0	1	49	178	0	0	0	0
4:15 PM	0	0	4	7	0	9	15	0	0	0	0	0	0	3	1	0	39	166	0	0	0	0
4:30 PM	0	0	4	15	0	13	16	0	0	0	0	0	0	4	0	3	55	171	0	0	0	0
4:45 PM	0	0	5	3	0	9	10	0	0	0	0	0	0	4	3	1	35	151	0	0	0	0
5:00 PM	0	0	4	5	0	7	18	0	0	0	0	0	0	2	0	1	37	156	0	0	0	0
5:15 PM	0	0	2	9	0	8	22	0	0	0	0	0	0	1	0	2	44		0	0	0	0
5:30 PM	0	0	4	6	0	8	13	0	0	0	0	0	0	1	0	3	35		0	0	0	0
5:45 PM	0	0	3	6	0	9	17	0	0	0	0	0	0	3	0	2	40		0	0	0	0

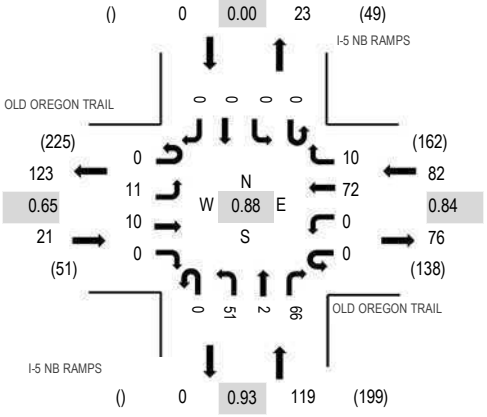
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	14	0	0	0	0	0	0	0	0	2	0	16
Lights	0	0	15	40	0	33	55	0	0	0	0	0	0	12	2	5	162
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	15	40	0	47	55	0	0	0	0	0	0	12	4	5	178

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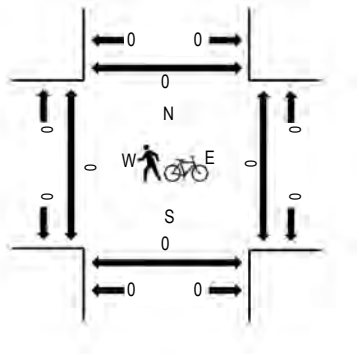
Location: 27 I-5 NB RAMPS & OLD OREGON TRAIL AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	OLD OREGON TRAIL Eastbound				OLD OREGON TRAIL Westbound				I-5 NB RAMPS Northbound				I-5 NB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	5	7	0	0	0	21	0	0	10	0	6	0	0	0	0	49	217	0	0	0	0
7:15 AM	0	6	0	0	0	0	17	2	0	7	0	11	0	0	0	0	43	213	0	0	0	0
7:30 AM	0	5	2	0	0	0	24	3	0	16	1	12	0	0	0	0	63	222	0	0	0	0
7:45 AM	0	4	2	0	0	0	19	5	0	10	1	21	0	0	0	0	62	212	0	0	0	0
8:00 AM	0	1	2	0	0	0	11	2	0	11	0	18	0	0	0	0	45	195	0	0	0	0
8:15 AM	0	1	4	0	0	0	18	0	0	14	0	15	0	0	0	0	52		0	0	0	0
8:30 AM	0	5	5	0	0	0	23	3	0	4	2	11	0	0	0	0	53		0	0	0	0
8:45 AM	0	0	2	0	0	0	12	2	0	8	1	20	0	0	0	0	45		0	0	0	0

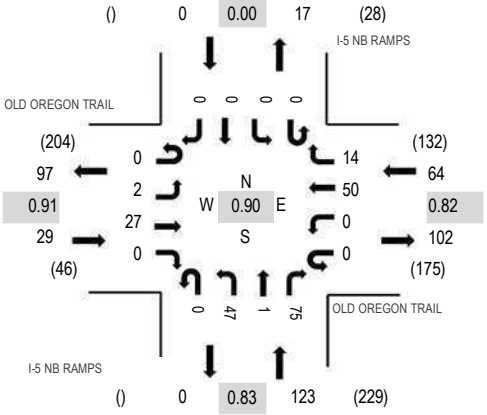
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	16	0	0	1	1	17	0	0	0	0	35
Lights	0	9	9	0	0	0	55	10	0	46	0	49	0	0	0	0	178
Mediums	0	2	1	0	0	0	1	0	0	4	1	0	0	0	0	0	9
Total	0	11	10	0	0	0	72	10	0	51	2	66	0	0	0	0	222

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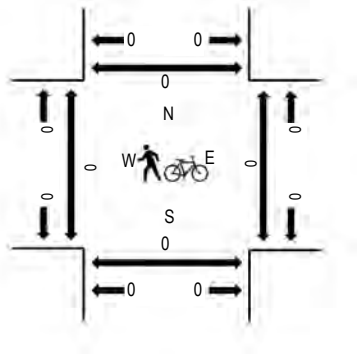
Location: 27 I-5 NB RAMPS & OLD OREGON TRAIL PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	OLD OREGON TRAIL Eastbound				OLD OREGON TRAIL Westbound				I-5 NB RAMPS Northbound				I-5 NB RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	3	0	0	0	19	3	0	11	0	14	0	0	0	0	50	215	0	0	0	0
4:15 PM	0	0	7	0	0	0	12	4	0	12	0	25	0	0	0	0	60	216	0	0	0	0
4:30 PM	0	1	7	0	0	0	16	3	0	13	0	19	0	0	0	0	59	209	0	0	0	0
4:45 PM	0	1	7	0	0	0	11	4	0	8	0	15	0	0	0	0	46	186	0	0	0	0
5:00 PM	0	0	6	0	0	0	11	3	0	14	1	16	0	0	0	0	51	192	0	0	0	0
5:15 PM	0	1	3	0	0	0	15	3	0	16	0	15	0	0	0	0	53		0	0	0	0
5:30 PM	0	1	4	0	0	0	11	1	0	9	0	10	0	0	0	0	36		0	0	0	0
5:45 PM	0	0	5	0	0	0	14	2	0	12	0	19	0	0	0	0	52		0	0	0	0

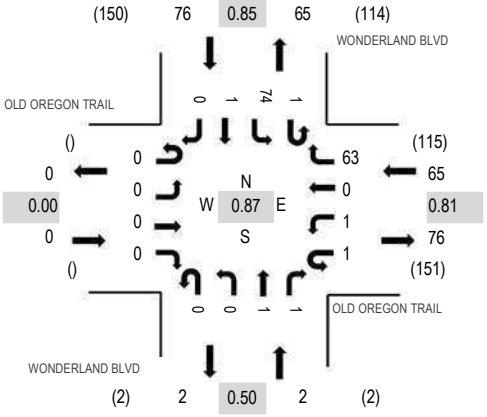
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	11	0	0	0	1	10	0	0	0	0	22
Lights	0	2	27	0	0	0	39	14	0	47	0	65	0	0	0	0	194
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	27	0	0	0	50	14	0	47	1	75	0	0	0	0	216

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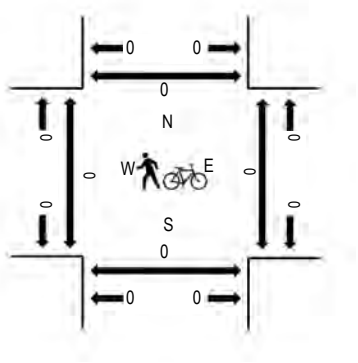
Location: 28 WONDERLAND BLVD & OLD OREGON TRAIL AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	OLD OREGON TRAIL Eastbound				OLD OREGON TRAIL Westbound				WONDERLAND BLVD Northbound				WONDERLAND BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	1	0	0	15	0	0	0	0	0	19	0	0	35	141	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	10	0	0	0	0	0	25	0	0	35	137	0	0	0	0
7:30 AM	0	0	0	0	1	1	0	15	0	0	0	1	0	22	1	0	41	143	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	12	0	0	0	0	0	18	0	0	30	134	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	16	0	0	1	0	0	14	0	0	31	126	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	20	0	0	0	0	1	20	0	0	41		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	13	0	0	0	0	0	19	0	0	32		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	11	0	0	0	0	0	11	0	0	22		0	0	0	0

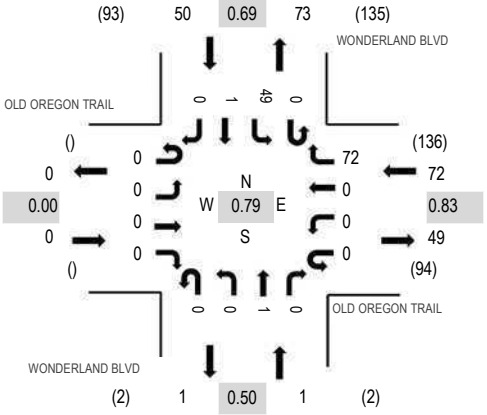
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2
Lights	0	0	0	0	0	1	0	59	0	0	1	1	0	72	1	0	135
Mediums	0	0	0	0	1	0	0	3	0	0	0	0	0	2	0	0	6
Total	0	0	0	0	1	1	0	63	0	0	1	1	1	74	1	0	143

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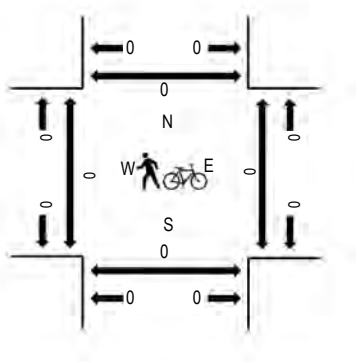
Location: 28 WONDERLAND BLVD & OLD OREGON TRAIL PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	OLD OREGON TRAIL Eastbound				OLD OREGON TRAIL Westbound				WONDERLAND BLVD Northbound				WONDERLAND BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	1	0	0	14	0	0	0	0	0	16	0	0	31	115	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	15	0	0	0	0	0	10	0	0	25	114	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	19	0	0	0	0	0	20	0	0	39	123	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	11	0	0	0	0	0	9	0	0	20	110	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	19	0	0	1	0	0	9	1	0	30	116	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	23	0	0	0	0	0	11	0	0	34		0	0	0	0
5:30 PM	0	0	0	0	0	1	0	16	0	0	0	1	0	8	0	0	26		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	17	0	0	0	0	0	9	0	0	26		0	0	0	0

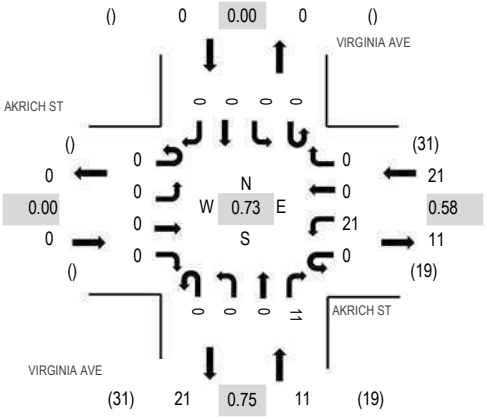
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	0	0	72	0	0	1	0	0	49	1	0	123
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	72	0	0	1	0	0	49	1	0	123

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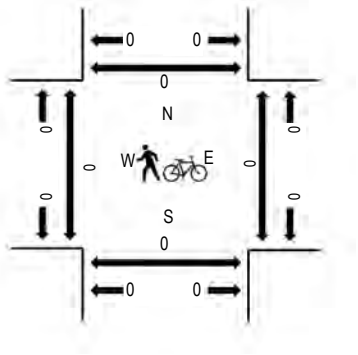
Location: 29 VIRGINIA AVE & AKRICH ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	AKRICH ST Eastbound				AKRICH ST Westbound				VIRGINIA AVE Northbound				VIRGINIA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	26	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	3	32	0	0	0	0
7:30 AM	0	0	0	0	0	9	0	0	0	0	0	2	0	0	0	0	11	31	0	0	0	0
7:45 AM	0	0	0	0	0	6	0	0	0	0	0	4	0	0	0	0	10	29	0	0	0	0
8:00 AM	0	0	0	0	0	4	0	0	0	0	0	4	0	0	0	0	8	24	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2		0	0	0	0
8:30 AM	0	0	0	0	0	6	0	0	0	0	0	3	0	0	0	0	9		0	0	0	0
8:45 AM	0	0	0	0	0	2	0	0	0	0	0	3	0	0	0	0	5		0	0	0	0

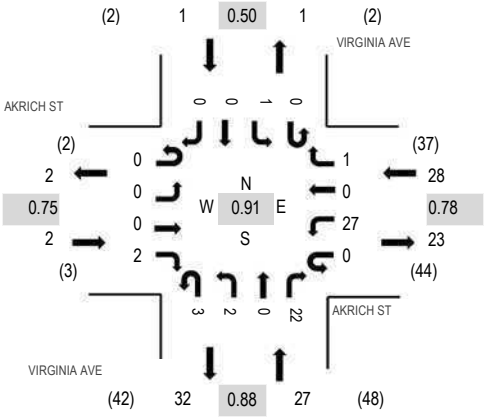
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	21	0	0	0	0	0	11	0	0	0	0	32
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	21	0	0	0	0	0	11	0	0	0	0	32

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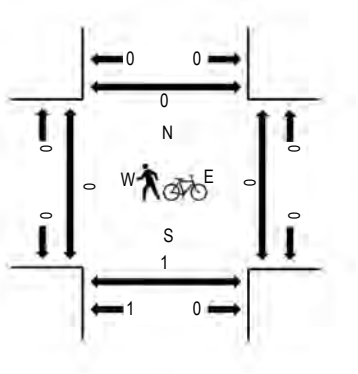
Location: 29 VIRGINIA AVE & AKRICH ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	AKRICH ST Eastbound				AKRICH ST Westbound				VIRGINIA AVE Northbound				VIRGINIA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	1	0	3	0	0	0	0	0	7	0	0	0	0	11	57	0	0	0	0
4:15 PM	0	0	0	1	0	7	0	0	0	1	0	7	0	0	0	0	16	58	0	0	1	0
4:30 PM	0	0	0	1	0	9	0	0	1	1	0	4	0	0	0	0	16	51	0	0	0	0
4:45 PM	0	0	0	0	0	5	0	1	1	0	0	6	0	1	0	0	14	41	0	0	0	0
5:00 PM	0	0	0	0	0	6	0	0	1	0	0	5	0	0	0	0	12	33	0	0	0	0
5:15 PM	0	0	0	0	0	2	0	1	0	0	0	6	0	0	0	0	9		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	6		0	0	0	0
5:45 PM	0	0	0	0	0	3	0	0	0	0	0	3	0	0	0	0	6		0	0	0	0

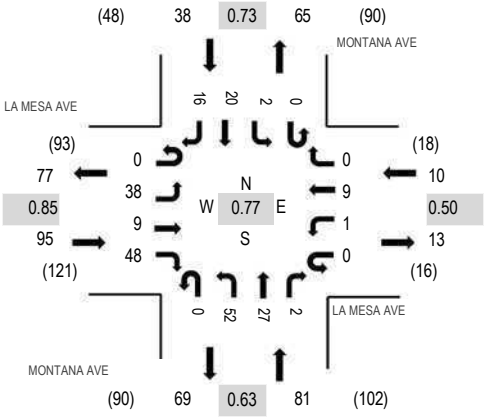
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	2	0	27	0	1	3	2	0	22	0	1	0	0	58
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	27	0	1	3	2	0	22	0	1	0	0	58

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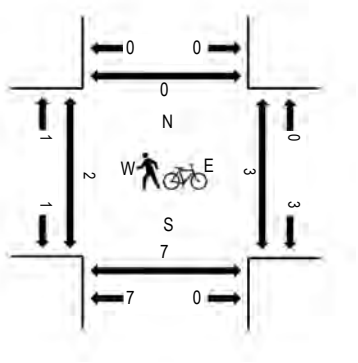
Location: 30 MONTANA AVE & LA MESA AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	LA MESA AVE Eastbound				LA MESA AVE Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	0	1	0	1	4	0	0	2	2	0	0	0	1	0	13	183	1	1	0	0
7:15 AM	0	4	2	10	0	0	1	0	0	5	7	1	0	0	5	4	39	224	0	0	0	0
7:30 AM	0	5	4	17	0	0	2	0	0	22	9	1	0	1	10	2	73	216	0	0	3	0
7:45 AM	0	8	2	15	0	0	2	0	0	14	8	0	0	1	3	5	58	152	0	1	1	0
8:00 AM	0	21	1	6	0	1	4	0	0	11	3	0	0	0	2	5	54	106	2	2	3	0
8:15 AM	0	8	1	7	0	0	1	0	0	5	5	0	0	0	2	2	31		0	1	4	0
8:30 AM	0	1	0	3	0	0	2	0	0	0	2	0	0	0	1	0	9		0	1	0	0
8:45 AM	0	1	1	1	0	0	0	0	0	0	4	1	0	0	4	0	12		0	1	0	0

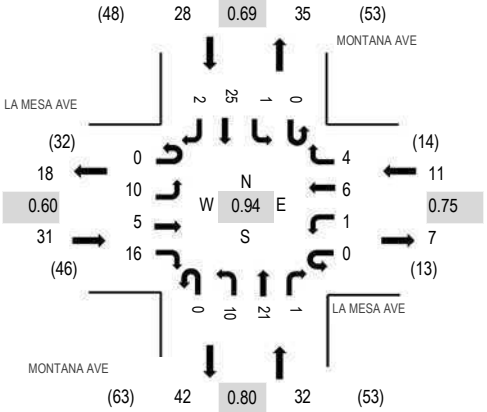
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	37	8	48	0	1	9	0	0	51	27	2	0	2	19	16	220
Mediums	0	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	4
Total	0	38	9	48	0	1	9	0	0	52	27	2	0	2	20	16	224

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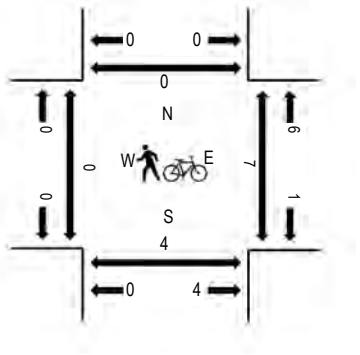
Location: 30 MONTANA AVE & LA MESA AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	LA MESA AVE Eastbound				LA MESA AVE Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	3	1	9	0	0	0	0	0	4	5	0	0	0	5	0	27	102	0	0	0	0
4:15 PM	0	4	0	3	0	0	1	3	0	1	9	0	0	1	4	0	26	98	0	1	4	0
4:30 PM	0	2	0	2	0	1	2	0	0	2	2	0	0	0	11	1	23	88	0	4	0	0
4:45 PM	0	1	4	2	0	0	3	1	0	3	5	1	0	0	5	1	26	79	0	2	0	0
5:00 PM	1	0	0	4	0	0	1	0	0	1	6	0	0	0	8	2	23	59	0	0	1	0
5:15 PM	0	4	0	1	0	0	0	0	0	3	3	1	0	2	2	0	16		0	3	0	0
5:30 PM	0	2	2	1	0	0	1	0	0	3	1	1	0	0	2	1	14		0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	3	0	6		0	0	0	0

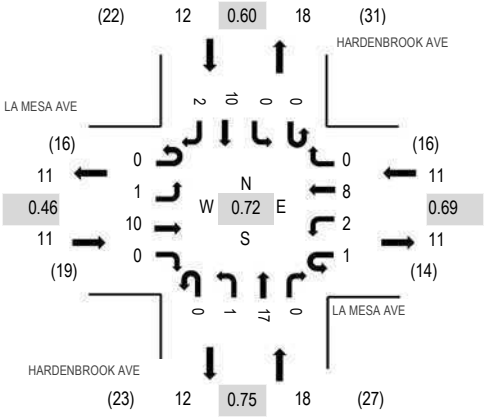
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	10	5	16	0	1	6	4	0	10	21	1	0	1	25	2	102
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	10	5	16	0	1	6	4	0	10	21	1	0	1	25	2	102

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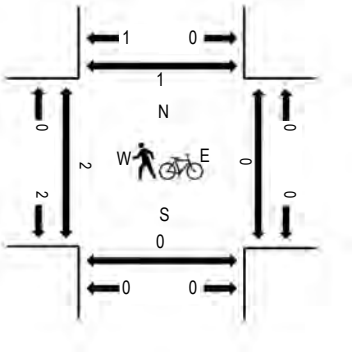
Location: 31 HARDENBROOK AVE & LA MESA AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	LA MESA AVE Eastbound				LA MESA AVE Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	3	42	0	0	0	0
7:15 AM	0	0	1	0	0	1	2	0	0	0	4	0	0	0	3	0	11	52	2	0	0	0
7:30 AM	0	0	6	0	1	1	0	0	0	0	5	0	0	0	5	0	18	49	0	0	0	0
7:45 AM	0	1	2	0	0	0	2	0	0	1	2	0	0	0	0	2	10	41	0	0	0	0
8:00 AM	0	0	1	0	0	0	4	0	0	0	6	0	0	0	2	0	13	42	0	0	0	0
8:15 AM	0	0	0	1	0	1	0	1	0	1	2	0	1	0	1	0	8		0	0	2	0
8:30 AM	0	2	0	0	0	0	0	0	0	0	4	0	0	0	3	1	10		1	0	0	0
8:45 AM	0	1	3	1	0	1	1	0	0	0	1	0	0	0	2	1	11		0	0	0	0

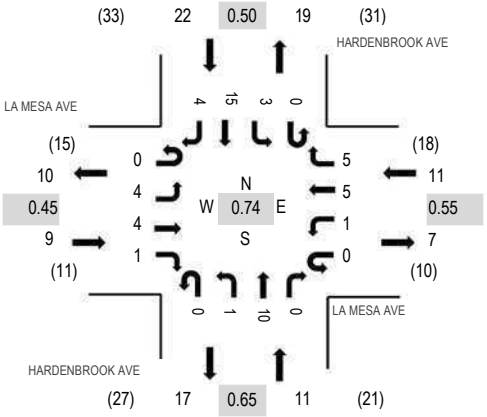
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	9	0	1	2	8	0	0	1	15	0	0	0	9	2	48
Mediums	0	0	1	0	0	0	0	0	0	0	2	0	0	0	1	0	4
Total	0	1	10	0	1	2	8	0	0	1	17	0	0	0	10	2	52

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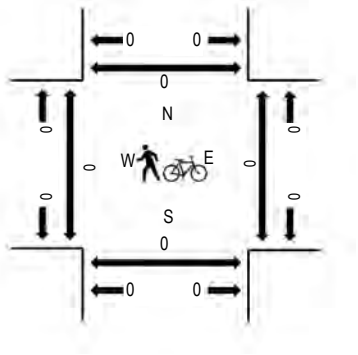
Location: 31 HARDENBROOK AVE & LA MESA AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	LA MESA AVE Eastbound				LA MESA AVE Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	1	0	0	0	0	2	0	0	0	0	0	1	1	0	5	41	0	0	1	0
4:15 PM	0	0	0	0	0	0	2	0	0	0	3	0	0	0	4	0	9	51	0	0	0	0
4:30 PM	0	0	0	0	0	0	2	0	0	0	5	0	0	0	2	0	9	47	0	0	0	0
4:45 PM	0	2	3	0	0	1	2	2	0	1	2	0	0	1	2	2	18	53	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	2	0	0	2	0	0	1	9	1	15	42	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2	0	5		0	0	0	0
5:30 PM	0	1	1	1	0	0	3	1	0	0	5	0	0	0	2	1	15		0	0	0	0
5:45 PM	0	0	1	0	0	0	0	1	0	1	1	0	0	0	3	0	7		0	0	0	0

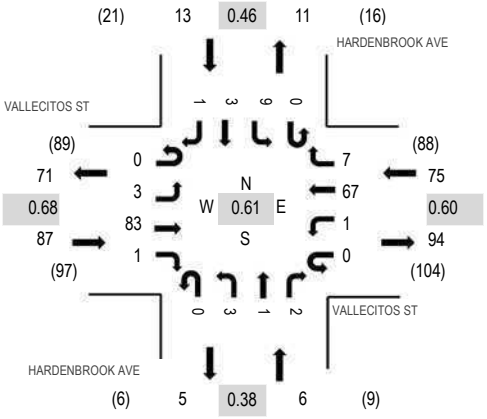
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	4	4	1	0	1	5	5	0	1	10	0	0	3	15	4	53
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	4	1	0	1	5	5	0	1	10	0	0	3	15	4	53

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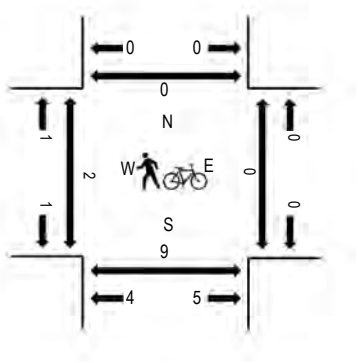
Location: 32 HARDENBROOK AVE & VALLECITOS ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITOS ST Eastbound				VALLECITOS ST Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	1	0	0	0	3	0	0	0	1	1	0	0	1	0	7	162	0	0	0	0
7:15 AM	0	1	17	0	0	0	8	1	0	0	0	0	0	4	0	0	31	181	1	0	3	0
7:30 AM	0	2	30	0	0	0	29	2	0	1	1	2	0	4	2	1	74	162	1	0	3	0
7:45 AM	0	0	29	0	0	0	19	1	0	0	0	0	0	1	0	0	50	98	0	0	0	0
8:00 AM	0	0	7	1	0	1	11	3	0	2	0	0	0	0	1	0	26	53	0	0	1	0
8:15 AM	0	1	3	0	0	0	4	0	0	0	0	0	0	1	0	3	12		0	0	0	0
8:30 AM	0	2	2	0	0	0	4	0	0	0	0	0	0	1	0	1	10		0	0	0	0
8:45 AM	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	1	5		0	0	0	0

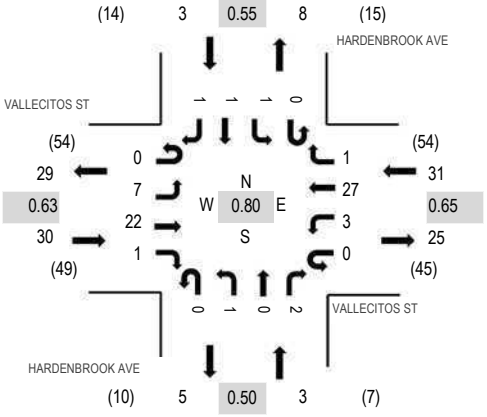
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	81	1	0	1	66	6	0	2	1	2	0	9	2	1	174
Mediums	0	1	2	0	0	0	1	1	0	1	0	0	0	0	1	0	7
Total	0	3	83	1	0	1	67	7	0	3	1	2	0	9	3	1	181

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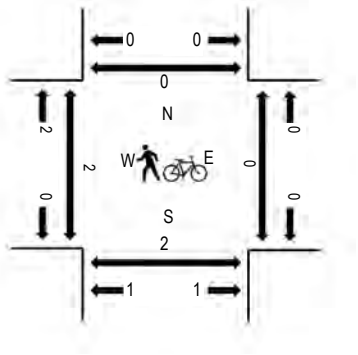
Location: 32 HARDENBROOK AVE & VALLECITOS ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITOS ST Eastbound				VALLECITOS ST Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	5	0	0	2	10	0	0	0	0	1	0	0	1	0	19	67	1	0	1	0
4:15 PM	0	3	3	0	0	0	8	0	0	0	0	0	0	0	0	0	14	63	1	0	0	0
4:30 PM	0	2	10	0	0	1	4	1	0	1	0	1	0	0	0	1	21	63	0	0	0	0
4:45 PM	0	2	4	1	0	0	5	0	0	0	0	0	0	1	0	0	13	58	0	0	0	0
5:00 PM	0	0	5	0	0	0	6	0	0	0	0	1	0	1	1	1	15	57	0	0	1	0
5:15 PM	0	0	3	0	0	0	9	1	0	0	1	0	0	0	0	0	14		0	0	1	0
5:30 PM	0	2	4	0	0	0	6	0	0	0	1	0	0	1	2	0	16		0	0	0	0
5:45 PM	0	1	4	0	0	0	1	0	0	0	1	0	0	1	2	2	12		0	0	0	0

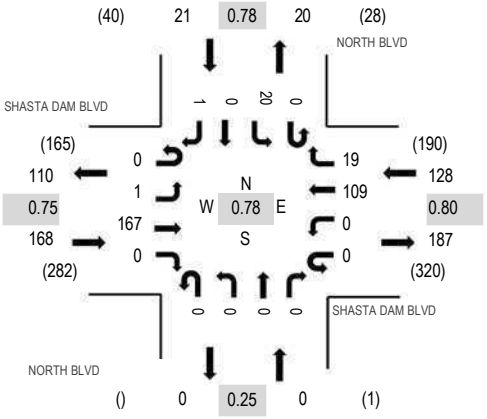
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	7	22	1	0	3	26	1	0	1	0	2	0	1	1	1	66
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	7	22	1	0	3	27	1	0	1	0	2	0	1	1	1	67

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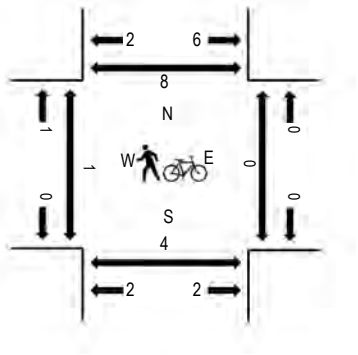
Location: 33 NORTH BLVD & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				NORTH BLVD Northbound				NORTH BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	33	0	0	0	10	0	0	0	0	1	0	4	0	0	49	301	3	0	0	4
7:15 AM	0	0	36	0	0	0	19	3	0	0	0	0	0	4	0	0	62	317	0	0	2	4
7:30 AM	0	1	55	0	0	0	34	6	0	0	0	0	0	6	0	0	102	308	0	0	1	0
7:45 AM	0	0	43	0	0	0	34	5	0	0	0	0	0	5	0	1	88	249	1	0	0	3
8:00 AM	0	0	33	0	0	0	22	5	0	0	0	0	0	5	0	0	65	212	0	0	1	1
8:15 AM	0	0	24	0	0	0	19	2	0	0	0	0	0	7	0	1	53		0	0	0	1
8:30 AM	0	0	26	0	0	0	13	0	0	0	0	0	0	4	0	0	43		0	0	0	0
8:45 AM	0	0	30	0	1	0	12	5	0	0	0	0	0	3	0	0	51		0	0	0	0

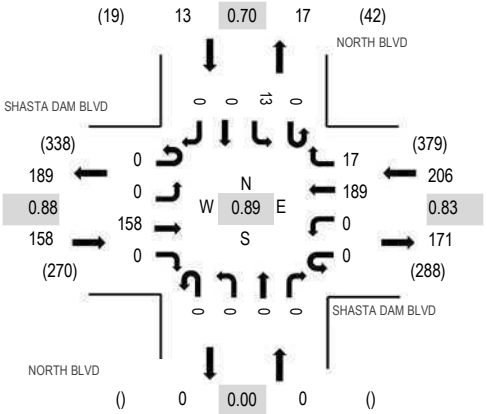
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lights	0	1	162	0	0	0	101	19	0	0	0	0	0	19	0	1	303
Mediums	0	0	5	0	0	0	7	0	0	0	0	0	0	1	0	0	13
Total	0	1	167	0	0	0	109	19	0	0	0	0	0	20	0	1	317

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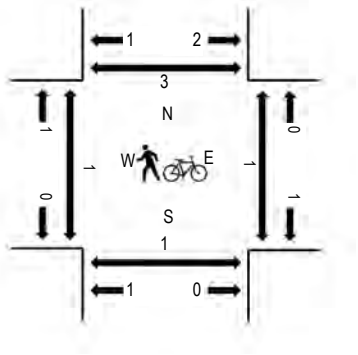
Location: 33 NORTH BLVD & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				NORTH BLVD Northbound				NORTH BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	39	0	0	0	28	6	0	0	0	0	0	1	0	0	74	350	0	0	0	1
4:15 PM	0	0	45	0	0	0	52	5	0	0	0	0	0	4	0	0	106	377	0	0	0	0
4:30 PM	0	0	43	0	0	0	40	5	0	0	0	0	0	0	0	0	88	361	0	0	0	0
4:45 PM	0	0	30	0	0	0	44	3	0	0	0	0	0	5	0	0	82	344	0	0	0	1
5:00 PM	0	0	40	0	0	0	53	4	0	0	0	0	0	4	0	0	101	318	0	0	1	1
5:15 PM	0	0	25	0	0	0	55	9	0	0	0	0	0	1	0	0	90		0	0	0	0
5:30 PM	0	0	22	0	0	0	40	5	0	0	0	0	0	3	0	1	71		0	0	0	0
5:45 PM	0	0	26	0	0	0	25	5	0	0	0	0	0	0	0	0	56		1	0	0	0

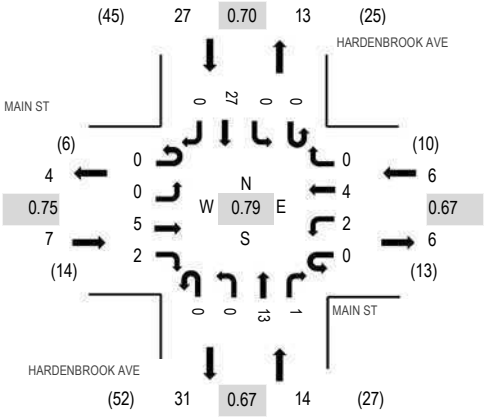
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	156	0	0	0	186	17	0	0	0	0	0	13	0	0	372
Mediums	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5
Total	0	0	158	0	0	0	189	17	0	0	0	0	0	13	0	0	377

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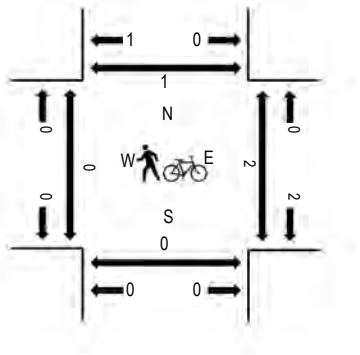
Location: 34 HARDENBROOK AVE & MAIN ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	2	0	1	1	1	0	0	5	0	10	51	0	0	0	0
7:15 AM	0	1	2	0	0	0	0	0	0	0	1	0	0	0	6	0	10	51	0	0	0	0
7:30 AM	0	0	2	1	0	0	0	0	0	0	4	0	0	0	7	0	14	54	0	0	0	0
7:45 AM	0	0	2	0	0	0	2	0	0	0	3	0	0	0	10	0	17	51	0	2	0	0
8:00 AM	0	0	1	0	0	1	0	0	0	0	3	0	0	0	5	0	10	45	0	0	0	1
8:15 AM	0	0	0	1	0	1	2	0	0	0	3	1	0	0	5	0	13		0	0	0	0
8:30 AM	0	0	0	1	0	0	1	1	0	0	3	3	0	0	2	0	11		0	0	1	0
8:45 AM	0	0	1	2	0	0	0	0	0	0	3	0	0	0	5	0	11		0	0	0	0

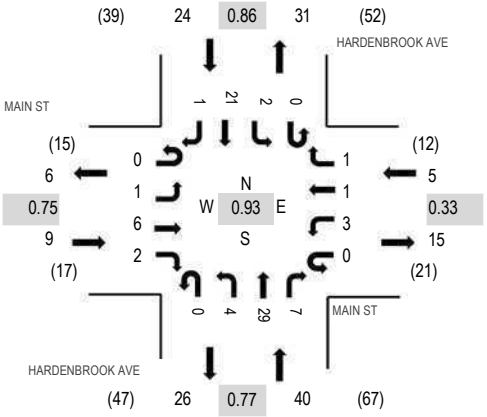
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	5	2	0	2	4	0	0	0	13	1	0	0	27	0	54
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	5	2	0	2	4	0	0	0	13	1	0	0	27	0	54

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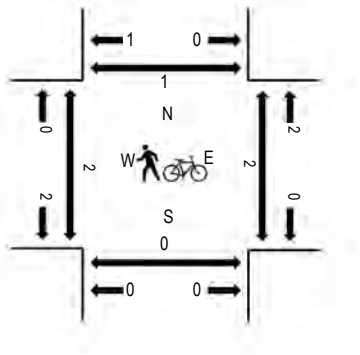
Location: 34 HARDENBROOK AVE & MAIN ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				HARDENBROOK AVE Northbound				HARDENBROOK AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	1	0	0	1	0	2	4	0	0	1	6	1	0	0	3	0	19	67	0	0	0	0
4:15 PM	0	0	1	1	0	0	0	0	0	1	6	1	0	0	5	0	15	67	0	0	0	0
4:30 PM	0	0	1	0	0	1	0	0	0	0	5	0	0	0	5	0	12	70	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	1	10	2	0	0	7	0	21	78	0	0	0	0
5:00 PM	0	1	0	0	0	1	0	0	0	1	7	2	0	0	7	0	19	68	2	0	0	0
5:15 PM	0	0	2	2	0	0	0	0	0	1	7	2	0	0	3	1	18		0	2	0	1
5:30 PM	0	0	4	0	0	1	1	1	0	1	5	1	0	2	4	0	20		0	0	0	0
5:45 PM	0	0	2	1	0	0	0	0	0	2	4	0	0	0	2	0	11		0	0	0	0

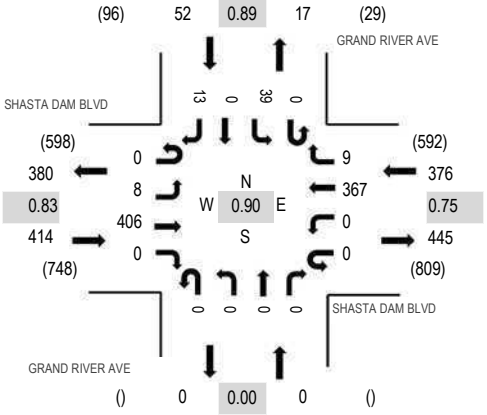
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	6	2	0	3	1	0	0	4	29	7	0	2	21	1	77
Mediums	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	1	6	2	0	3	1	1	0	4	29	7	0	2	21	1	78

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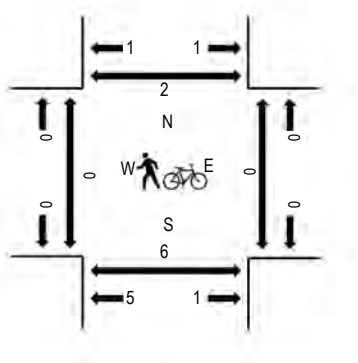
Location: 35 GRAND RIVER AVE & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				GRAND RIVER AVE Northbound				GRAND RIVER AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	71	0	0	0	34	2	0	0	0	0	0	11	0	3	121	774	0	0	0	0
7:15 AM	0	1	97	0	0	0	75	2	0	0	0	0	0	15	0	0	190	842	0	0	3	1
7:30 AM	0	4	121	0	0	0	91	3	0	0	0	0	0	13	0	3	235	811	0	0	1	1
7:45 AM	0	3	87	0	0	0	124	2	0	0	0	0	0	8	0	4	228	728	0	0	1	0
8:00 AM	0	0	101	0	0	0	77	2	0	0	0	0	0	3	0	6	189	662	0	0	1	0
8:15 AM	0	0	96	0	0	0	57	0	0	0	0	0	0	5	0	1	159		0	0	0	1
8:30 AM	0	1	88	0	0	0	50	3	0	0	0	0	0	9	0	1	152		0	0	1	0
8:45 AM	0	0	78	0	0	0	64	6	0	0	0	0	0	6	0	8	162		0	0	0	0

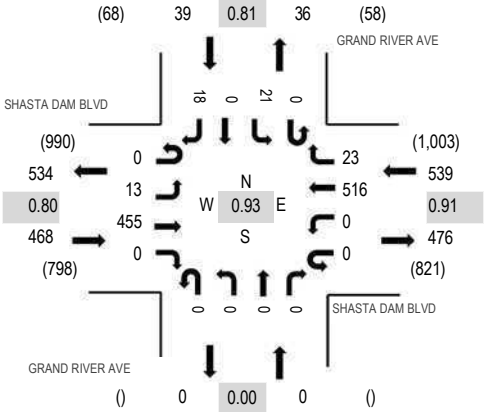
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	10	1	0	0	0	0	0	0	0	0	17
Lights	0	8	392	0	0	0	345	8	0	0	0	0	0	38	0	13	804
Mediums	0	0	8	0	0	0	12	0	0	0	0	0	0	1	0	0	21
Total	0	8	406	0	0	0	367	9	0	0	0	0	0	39	0	13	842

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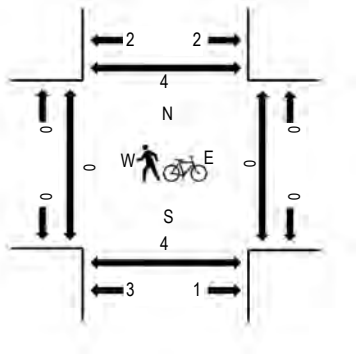
Location: 35 GRAND RIVER AVE & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				GRAND RIVER AVE Northbound				GRAND RIVER AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	5	141	0	0	0	115	7	0	0	0	0	0	5	0	7	280	1,046	0	0	0	0
4:15 PM	0	2	103	0	0	0	119	4	0	0	0	0	0	7	0	4	239	1,021	0	0	2	0
4:30 PM	0	3	116	0	0	0	149	6	0	0	0	0	0	5	0	3	282	1,007	0	0	0	2
4:45 PM	0	3	95	0	0	0	133	6	0	0	0	0	0	4	0	4	245	912	0	0	0	1
5:00 PM	0	2	103	0	1	0	134	5	0	0	0	0	0	5	0	5	255	823	0	0	0	2
5:15 PM	0	1	84	0	0	0	130	2	0	0	0	0	0	5	0	3	225		0	0	1	1
5:30 PM	0	1	71	0	0	0	101	7	0	0	0	0	0	4	0	3	187		0	0	0	1
5:45 PM	0	1	67	0	1	0	80	3	0	0	0	0	0	4	0	0	156		0	0	1	1

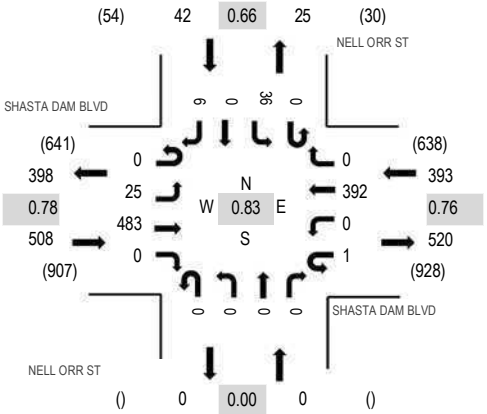
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	7
Lights	0	13	445	0	0	0	511	22	0	0	0	0	0	21	0	18	1,030
Mediums	0	0	5	0	0	0	3	1	0	0	0	0	0	0	0	0	9
Total	0	13	455	0	0	0	516	23	0	0	0	0	0	21	0	18	1,046

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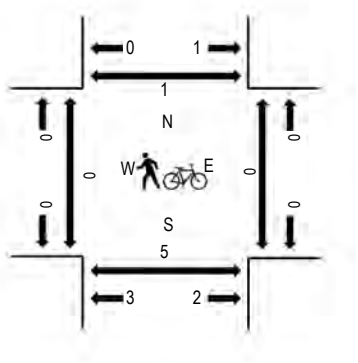
Location: 36 NELL ORR ST & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				NELL ORR ST Northbound				NELL ORR ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	85	0	0	0	44	0	0	0	0	0	0	2	0	0	132	889	0	0	0	0
7:15 AM	0	14	109	0	0	0	84	0	0	0	0	0	0	12	0	2	221	943	0	0	1	0
7:30 AM	0	9	154	0	0	0	104	0	0	0	0	0	0	13	0	3	283	904	0	0	2	0
7:45 AM	0	2	112	0	0	0	129	0	0	0	0	0	0	9	0	1	253	789	0	0	2	1
8:00 AM	0	0	108	0	1	0	75	0	0	0	0	0	0	2	0	0	186	710	0	0	0	0
8:15 AM	0	3	106	0	1	0	67	0	0	0	0	0	0	5	0	0	182		0	0	0	0
8:30 AM	0	0	106	0	0	0	59	0	0	0	0	0	0	3	0	0	168		0	0	0	0
8:45 AM	0	1	97	0	1	0	73	0	0	0	0	0	0	2	0	0	174		0	0	1	0

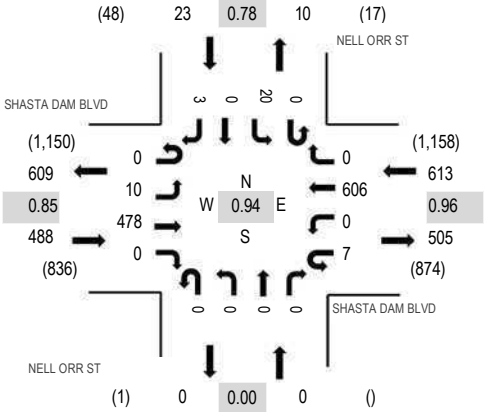
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	8	0	0	0	12	0	0	0	0	0	0	0	0	0	20
Lights	0	24	468	0	1	0	367	0	0	0	0	0	0	36	0	5	901
Mediums	0	1	7	0	0	0	13	0	0	0	0	0	0	0	0	1	22
Total	0	25	483	0	1	0	392	0	0	0	0	0	0	36	0	6	943

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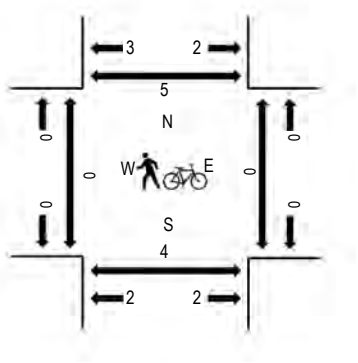
Location: 36 NELL ORR ST & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				NELL ORR ST Northbound				NELL ORR ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	140	0	1	0	138	0	0	0	0	0	0	6	0	1	289	1,124	0	0	2	1
4:15 PM	0	1	105	0	0	0	155	0	0	0	0	0	0	1	0	1	263	1,107	0	0	0	0
4:30 PM	0	3	127	0	3	0	158	0	0	0	0	0	0	8	0	1	300	1,103	0	0	1	0
4:45 PM	0	3	106	0	3	0	155	0	0	0	0	0	0	5	0	0	272	1,011	0	0	0	3
5:00 PM	0	4	109	0	1	0	149	0	0	0	0	0	0	7	0	2	272	918	0	0	1	1
5:15 PM	0	1	89	0	1	0	163	0	0	0	0	0	0	5	0	0	259		0	0	1	1
5:30 PM	1	2	73	0	4	0	125	0	0	0	0	0	0	3	0	0	208		0	0	1	0
5:45 PM	0	0	68	1	1	0	101	0	0	0	0	0	0	8	0	0	179		0	0	2	1

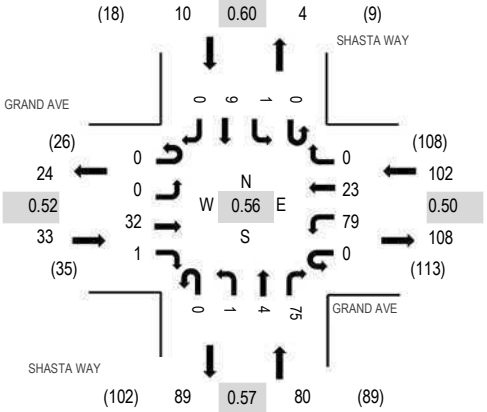
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5
Lights	0	10	468	0	7	0	601	0	0	0	0	0	0	20	0	3	1,109
Mediums	0	0	7	0	0	0	3	0	0	0	0	0	0	0	0	0	10
Total	0	10	478	0	7	0	606	0	0	0	0	0	0	20	0	3	1,124

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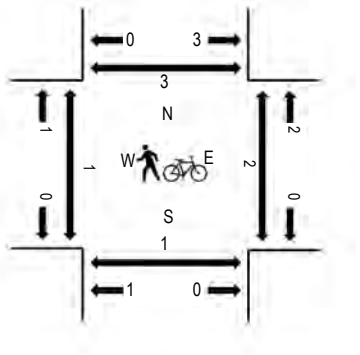
Location: 37 SHASTA WAY & GRAND AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	GRAND AVE Eastbound				GRAND AVE Westbound				SHASTA WAY Northbound				SHASTA WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	2	0	0	5	0	0	0	0	1	10	0	1	1	0	20	225	0	0	0	0
7:15 AM	0	0	15	1	0	32	10	0	0	0	2	30	0	0	5	0	95	212	1	0	0	3
7:30 AM	0	0	12	0	0	39	12	0	0	0	1	34	0	0	2	0	100	128	0	2	1	0
7:45 AM	0	0	3	0	0	3	1	0	0	1	0	1	0	0	1	0	10	32	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	1	1	0	0	4	0	7	25	0	0	0	0
8:15 AM	0	2	0	0	0	4	1	0	0	0	0	2	0	0	2	0	11		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	4		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	3		0	0	0	0

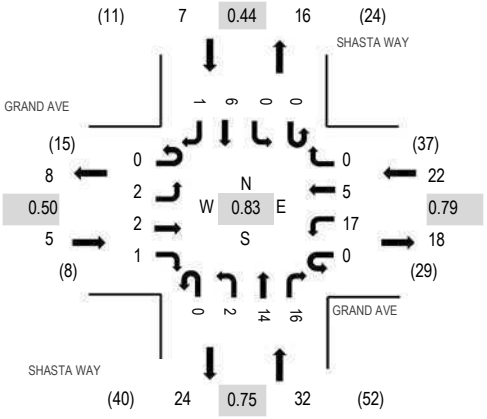
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	32	1	0	73	22	0	0	1	4	74	0	1	9	0	217
Mediums	0	0	0	0	0	6	1	0	0	0	0	1	0	0	0	0	8
Total	0	0	32	1	0	79	23	0	0	1	4	75	0	1	9	0	225

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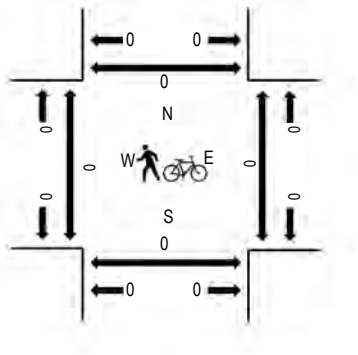
Location: 37 SHASTA WAY & GRAND AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	GRAND AVE Eastbound				GRAND AVE Westbound				SHASTA WAY Northbound				SHASTA WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	1	0	0	1	1	0	0	1	2	2	0	0	2	0	10	57	0	0	0	0
4:15 PM	0	0	0	0	0	2	2	0	0	1	0	4	0	0	0	0	9	64	0	0	0	3
4:30 PM	0	0	1	0	0	7	0	0	0	0	3	5	0	0	3	1	20	66	0	0	0	0
4:45 PM	0	2	0	1	0	1	2	0	0	0	6	5	0	0	1	0	18	55	0	0	0	0
5:00 PM	0	0	1	0	0	6	1	0	0	1	3	5	0	0	0	0	17	51	0	0	0	0
5:15 PM	0	0	0	0	0	3	2	0	0	1	2	1	0	0	2	0	11		0	0	0	0
5:30 PM	0	1	0	1	0	2	0	0	0	0	2	2	0	0	1	0	9		0	0	0	0
5:45 PM	0	0	0	0	0	6	1	0	0	1	3	2	0	0	1	0	14		0	0	0	0

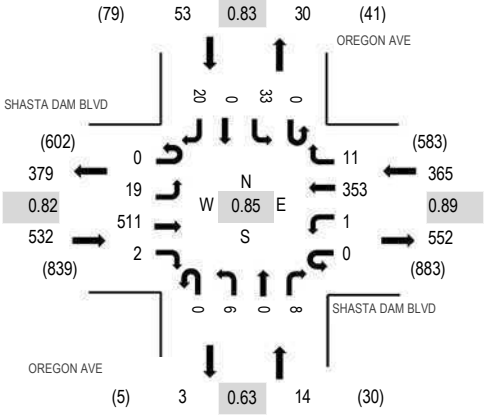
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	2	1	0	17	5	0	0	2	14	16	0	0	6	1	66
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	2	1	0	17	5	0	0	2	14	16	0	0	6	1	66

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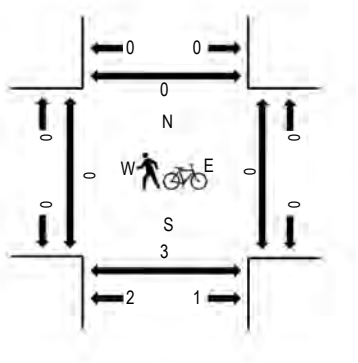
Location: 38 OREGON AVE & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				OREGON AVE Northbound				OREGON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	67	0	0	0	48	2	0	0	0	3	0	9	0	2	131	894	0	0	0	0
7:15 AM	0	4	134	1	0	0	87	3	0	2	0	2	0	8	0	2	243	964	0	0	1	0
7:30 AM	0	7	156	0	0	1	96	5	0	1	0	3	0	11	0	5	285	880	0	0	1	0
7:45 AM	0	4	117	1	0	0	95	1	0	1	0	3	0	7	0	6	235	740	0	0	1	0
8:00 AM	0	4	104	0	0	0	75	2	0	2	0	0	0	7	0	7	201	637	0	0	0	0
8:15 AM	0	3	82	1	0	1	59	4	0	1	0	2	0	3	0	3	159		0	0	0	0
8:30 AM	0	2	82	0	0	0	51	0	0	1	0	3	0	4	0	2	145		0	0	0	0
8:45 AM	0	0	70	0	0	0	53	0	0	2	0	4	0	2	0	1	132		0	0	0	0

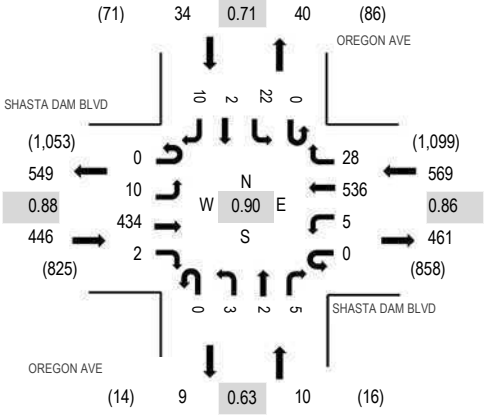
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	13	0	0	0	0	0	0	0	0	0	17
Lights	0	17	487	2	0	1	324	10	0	6	0	8	0	33	0	20	908
Mediums	0	2	20	0	0	0	16	1	0	0	0	0	0	0	0	0	39
Total	0	19	511	2	0	1	353	11	0	6	0	8	0	33	0	20	964

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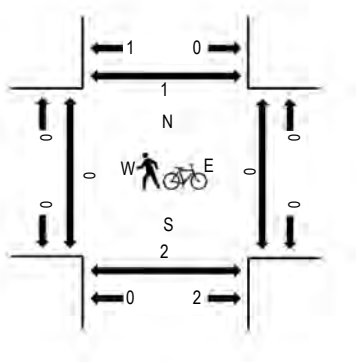
Location: 38 OREGON AVE & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				OREGON AVE Northbound				OREGON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	123	0	0	2	123	13	0	1	1	2	0	6	0	0	274	1,059	0	0	0	0
4:15 PM	0	2	108	1	0	2	156	7	0	0	1	2	0	8	2	4	293	1,044	0	0	2	0
4:30 PM	0	2	101	0	0	0	132	4	0	2	0	0	0	3	0	4	248	1,010	0	0	0	1
4:45 PM	0	3	102	1	0	1	125	4	0	0	0	1	0	5	0	2	244	984	0	0	0	0
5:00 PM	0	3	114	0	0	0	121	8	0	0	0	1	0	8	0	4	259	952	0	0	0	0
5:15 PM	0	1	92	0	0	0	138	15	0	0	1	1	0	5	0	6	259		0	0	0	2
5:30 PM	0	2	81	1	0	1	120	8	0	0	0	2	0	5	0	2	222		0	0	0	0
5:45 PM	0	0	83	2	0	1	110	8	0	1	0	0	0	5	0	2	212		0	0	0	1

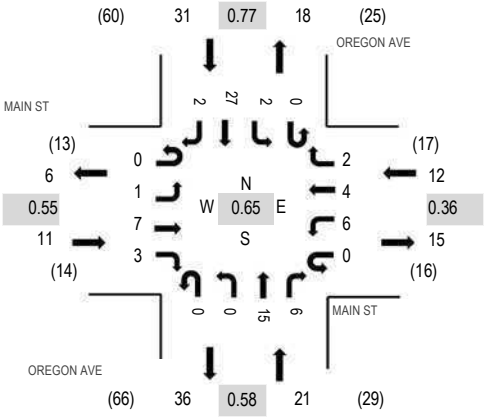
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Lights	0	10	429	2	0	5	531	28	0	3	2	5	0	22	2	10	1,049
Mediums	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	8
Total	0	10	434	2	0	5	536	28	0	3	2	5	0	22	2	10	1,059

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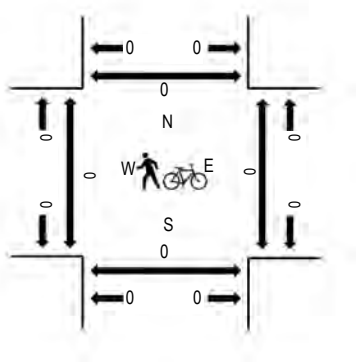
Location: 39 OREGON AVE & MAIN ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				OREGON AVE Northbound				OREGON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	2	0	0	0	0	0	0	2	0	0	0	7	0	11	73	0	0	0	0
7:15 AM	0	0	1	1	0	0	0	1	0	0	0	1	0	1	9	1	15	75	0	0	0	0
7:30 AM	0	0	4	1	0	4	4	1	0	0	3	4	0	0	8	0	29	71	0	0	0	0
7:45 AM	0	0	0	1	0	0	0	0	0	0	9	0	0	1	6	1	18	55	0	0	0	0
8:00 AM	0	1	2	0	0	2	0	0	0	0	3	1	0	0	4	0	13	47	0	0	0	0
8:15 AM	0	0	1	0	0	0	2	0	0	1	0	0	0	0	6	1	11		0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	8	1	13		0	0	0	0
8:45 AM	0	0	0	0	0	1	1	0	0	0	2	0	0	0	6	0	10		0	0	0	0

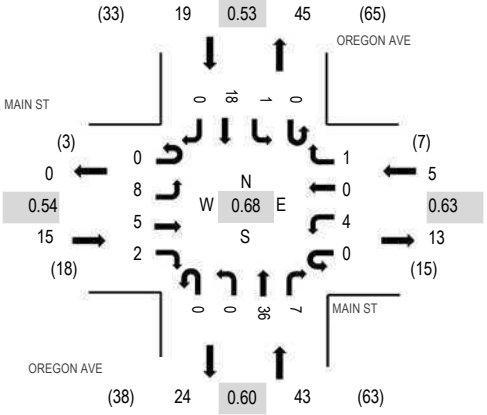
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	7	2	0	6	4	2	0	0	15	6	0	2	27	2	74
Mediums	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	7	3	0	6	4	2	0	0	15	6	0	2	27	2	75

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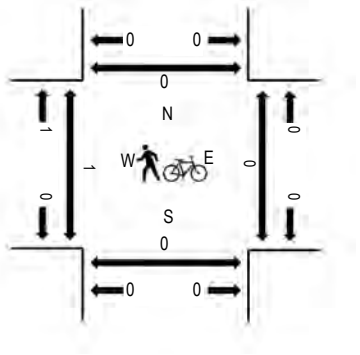
Location: 39 OREGON AVE & MAIN ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				OREGON AVE Northbound				OREGON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	0	0	0	0	0	12	0	0	0	8	0	20	39	0	0	0	0
4:15 PM	0	1	2	0	0	0	1	0	0	1	4	0	0	0	3	1	13	49	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	3	0	0	0	2	0	6	55	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	0	0	0	0
5:00 PM	0	4	1	2	0	1	0	1	0	0	14	4	0	0	3	0	30	82	0	0	0	0
5:15 PM	0	1	0	0	0	2	0	0	0	0	10	1	0	0	5	0	19		1	0	0	0
5:30 PM	0	3	3	0	0	1	0	0	0	0	6	0	0	0	2	0	15		0	0	0	0
5:45 PM	0	0	1	0	0	0	0	0	0	0	6	2	0	1	8	0	18		0	0	0	0

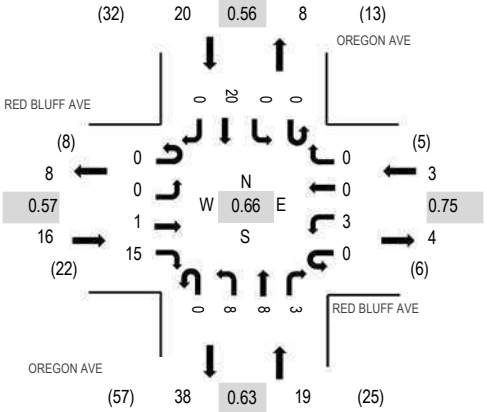
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	8	5	2	0	4	0	1	0	0	36	7	0	1	18	0	82
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	8	5	2	0	4	0	1	0	0	36	7	0	1	18	0	82

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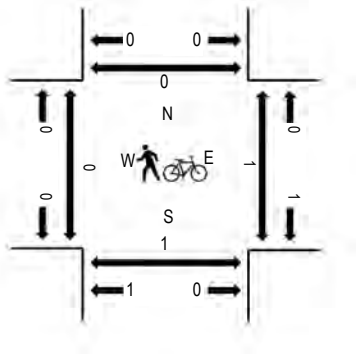
Location: 40 OREGON AVE & RED BLUFF AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				OREGON AVE Northbound				OREGON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	2	0	0	0	0	0	0	1	0	0	0	4	0	7	58	0	0	0	0
7:15 AM	0	0	0	7	0	1	0	0	0	3	2	0	0	0	9	0	22	56	0	0	1	0
7:30 AM	0	0	1	4	0	1	0	0	0	5	1	2	0	0	5	0	19	41	0	0	0	0
7:45 AM	0	0	0	2	0	1	0	0	0	0	4	1	0	0	2	0	10	30	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	0	2	0	0	0	2	0	5	26	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6	0	7		0	0	0	0
8:30 AM	0	1	0	2	0	1	0	0	0	0	0	1	0	0	3	0	8		0	0	0	0
8:45 AM	0	0	0	1	0	1	0	0	0	0	2	1	0	0	1	0	6		0	0	0	0

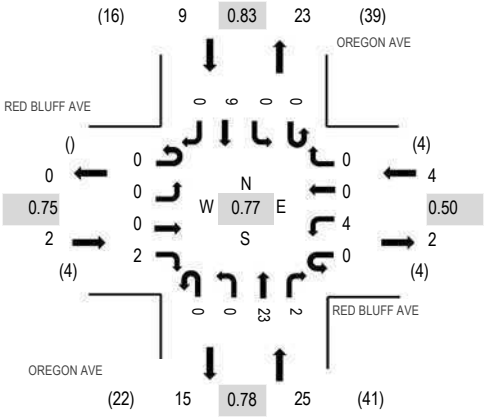
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	1	15	0	3	0	0	0	8	7	3	0	0	19	0	56
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
Total	0	0	1	15	0	3	0	0	0	8	8	3	0	0	20	0	58

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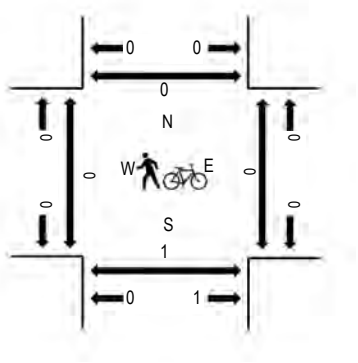
Location: 40 OREGON AVE & RED BLUFF AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				OREGON AVE Northbound				OREGON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	1	0	0	0	0	0	0	4	0	0	0	2	0	7	32	0	4	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	6	33	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	6	0	0	0	2	0	9	40	0	0	0	0
4:45 PM	0	0	0	1	0	0	0	0	0	0	6	0	0	0	3	0	10	38	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	5	0	0	0	2	0	8	33	0	0	1	0
5:15 PM	0	0	0	1	0	2	0	0	0	0	6	2	0	0	2	0	13		0	0	0	0
5:30 PM	0	0	1	0	0	0	0	0	0	0	4	1	1	0	0	0	7		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	5		0	0	0	0

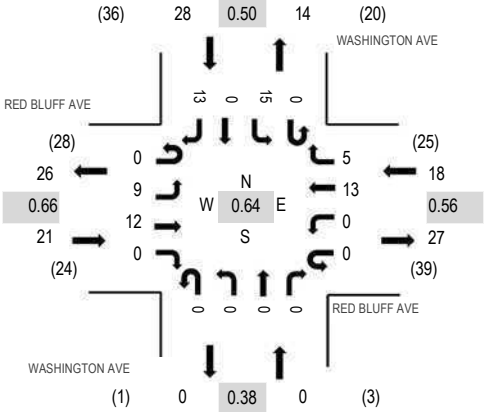
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	2	0	4	0	0	0	0	23	2	0	0	9	0	40
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	4	0	0	0	0	23	2	0	0	9	0	40

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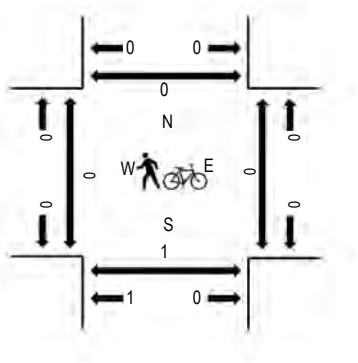
Location: 41 WASHINGTON AVE & RED BLUFF AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				WASHINGTON AVE Northbound				WASHINGTON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	4	67	0	0	1	0
7:15 AM	0	2	6	0	0	0	7	1	0	0	0	0	0	3	0	2	21	66	0	0	0	0
7:30 AM	0	4	4	0	0	0	2	2	0	0	0	0	0	6	0	8	26	46	0	0	0	0
7:45 AM	0	3	2	0	0	0	4	1	0	0	0	0	0	5	0	1	16	31	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	21	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1		0	0	0	1
8:30 AM	0	0	1	1	0	0	1	4	0	1	0	1	0	2	0	0	11		0	0	0	0
8:45 AM	0	0	1	0	0	0	0	1	0	0	0	1	0	3	0	0	6		0	0	0	0

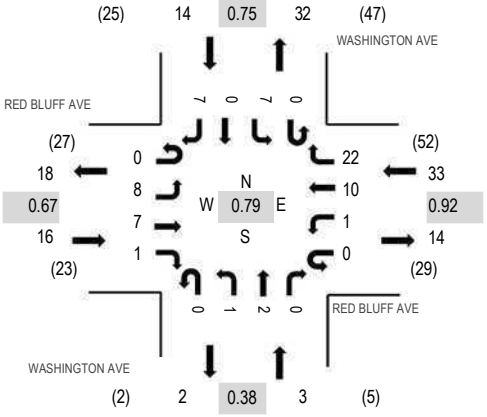
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	9	12	0	0	0	12	5	0	0	0	0	0	14	0	13	65
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
Total	0	9	12	0	0	0	13	5	0	0	0	0	0	15	0	13	67

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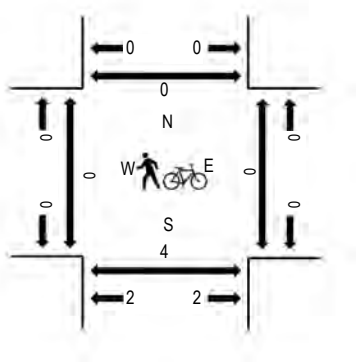
Location: 41 WASHINGTON AVE & RED BLUFF AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				WASHINGTON AVE Northbound				WASHINGTON AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	4	1	1	0	0	2	7	0	1	0	0	0	2	0	3	21	66	0	0	0	0
4:15 PM	0	1	0	0	0	0	3	5	0	0	0	0	0	2	0	0	11	59	0	0	1	0
4:30 PM	0	2	4	0	0	0	2	6	0	0	2	0	0	2	0	1	19	60	0	0	2	0
4:45 PM	0	1	2	0	0	1	3	4	0	0	0	0	0	1	0	3	15	48	0	0	1	0
5:00 PM	0	1	2	0	0	0	2	3	0	0	0	0	0	5	0	1	14	39	0	0	0	0
5:15 PM	0	0	1	0	0	0	1	4	0	1	0	0	0	5	0	0	12		0	0	0	0
5:30 PM	0	0	1	0	0	0	2	3	0	0	0	1	0	0	0	0	7		0	0	0	0
5:45 PM	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	6		0	0	0	0

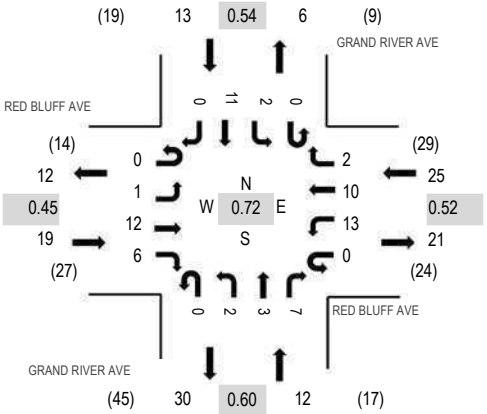
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	8	7	1	0	1	10	22	0	1	2	0	0	7	0	7	66
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	8	7	1	0	1	10	22	0	1	2	0	0	7	0	7	66

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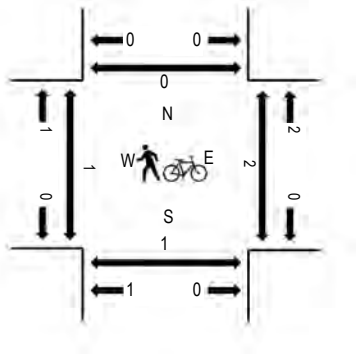
Location: 42 GRAND RIVER AVE & RED BLUFF AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				GRAND RIVER AVE Northbound				GRAND RIVER AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	1	0	2	0	0	0	0	1	1	0	1	5	0	11	69	0	0	1	0
7:15 AM	0	1	7	3	0	0	6	1	0	0	1	1	0	0	4	0	24	61	0	2	0	0
7:30 AM	0	0	3	1	0	8	3	1	0	0	0	5	0	1	0	0	22	37	1	0	0	0
7:45 AM	0	0	2	1	0	3	1	0	0	2	1	0	0	0	2	0	12	24	0	0	0	0
8:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	3	23	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1
8:30 AM	0	0	0	3	0	1	1	0	0	0	2	1	0	0	1	0	9		0	0	0	2
8:45 AM	0	0	0	3	0	1	1	0	0	0	1	1	0	1	3	0	11		0	0	0	0

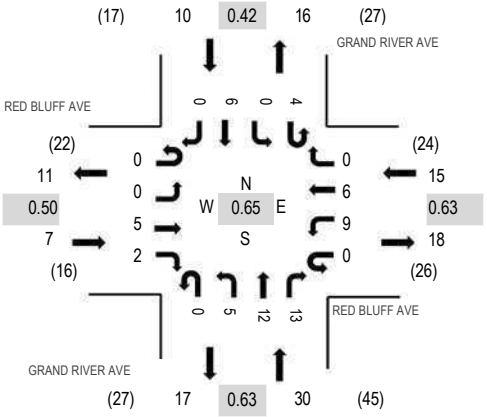
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	12	6	0	13	9	2	0	2	3	7	0	2	10	0	67
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2
Total	0	1	12	6	0	13	10	2	0	2	3	7	0	2	11	0	69

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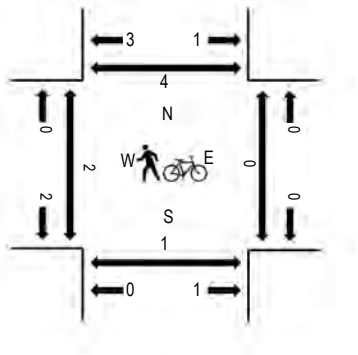
Location: 42 GRAND RIVER AVE & RED BLUFF AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				GRAND RIVER AVE Northbound				GRAND RIVER AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	1	0	0	3	2	0	0	3	4	5	4	0	2	0	24	62	0	0	0	0
4:15 PM	0	0	1	0	0	0	1	0	0	0	2	2	0	0	2	0	8	48	0	0	0	3
4:30 PM	0	0	0	0	0	2	1	0	0	0	3	4	0	0	1	0	11	45	2	0	0	0
4:45 PM	0	0	3	2	0	4	2	0	0	2	3	2	0	0	1	0	19	50	0	0	1	1
5:00 PM	0	0	1	0	0	0	2	1	0	2	1	0	0	0	3	0	10	40	0	0	0	0
5:15 PM	0	0	1	0	0	0	2	0	0	0	1	1	0	0	0	0	5		0	0	1	0
5:30 PM	0	0	2	1	0	0	2	0	0	0	7	1	0	0	3	0	16		0	0	3	0
5:45 PM	0	0	2	2	0	0	2	0	0	1	1	0	0	0	1	0	9		0	0	0	0

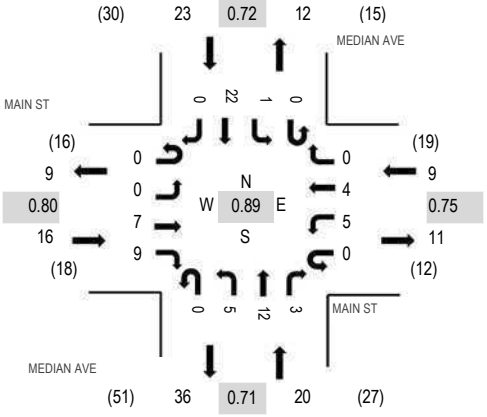
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	5	2	0	9	6	0	0	5	11	13	4	0	6	0	61
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	5	2	0	9	6	0	0	5	12	13	4	0	6	0	62

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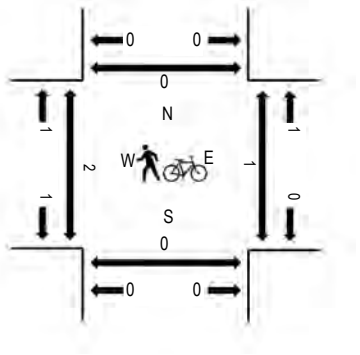
Location: 43 MEDIAN AVE & MAIN ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				MEDIAN AVE Northbound				MEDIAN AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	1	0	1	0	0	0	2	1	1	0	0	2	0	8	62	0	0	0	0
7:15 AM	0	0	2	3	0	2	0	0	0	1	3	1	0	1	5	0	18	68	0	0	0	0
7:30 AM	0	0	2	3	0	2	0	0	0	2	5	0	0	0	5	0	19	55	2	1	0	0
7:45 AM	0	0	1	3	0	0	2	0	0	0	3	0	0	0	8	0	17	43	0	0	0	0
8:00 AM	0	0	2	0	0	1	2	0	0	2	1	2	0	0	4	0	14	32	0	0	0	0
8:15 AM	0	0	0	0	0	1	2	0	0	0	1	0	0	0	1	0	5		0	1	0	0
8:30 AM	0	0	0	1	0	2	2	0	0	0	1	0	0	0	1	0	7		0	0	0	0
8:45 AM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	3	0	6		0	0	0	0

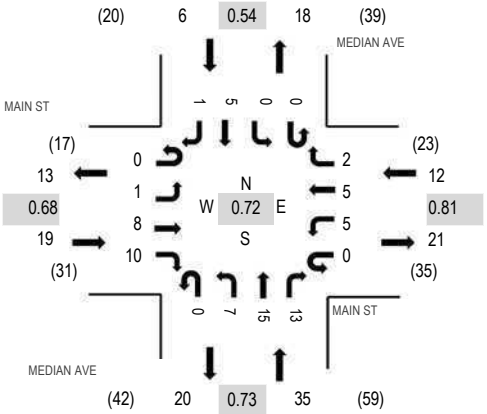
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	6	9	0	5	4	0	0	5	11	3	0	1	22	0	66
Mediums	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
Total	0	0	7	9	0	5	4	0	0	5	12	3	0	1	22	0	68

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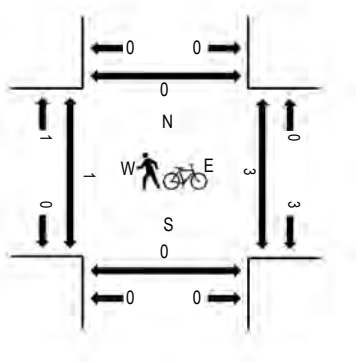
Location: 43 MEDIAN AVE & MAIN ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				MEDIAN AVE Northbound				MEDIAN AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	2	4	0	1	2	1	0	0	3	1	0	3	2	1	21	68	2	0	3	0
4:15 PM	0	0	0	1	0	2	0	2	0	0	3	2	0	0	3	0	13	60	1	1	0	0
4:30 PM	0	0	1	0	0	1	1	0	1	0	7	2	0	0	3	0	16	63	0	0	0	0
4:45 PM	0	0	2	1	0	1	1	1	0	2	5	4	0	0	1	0	18	72	0	0	0	0
5:00 PM	0	1	1	1	0	1	2	0	0	2	2	2	0	0	0	1	13	65	0	0	0	0
5:15 PM	0	0	3	4	0	1	0	0	0	1	3	2	0	0	2	0	16		1	1	0	0
5:30 PM	0	0	2	4	0	2	2	1	0	2	5	5	0	0	2	0	25		0	1	0	0
5:45 PM	0	0	2	1	0	1	0	0	0	0	4	1	0	0	2	0	11		0	0	0	0

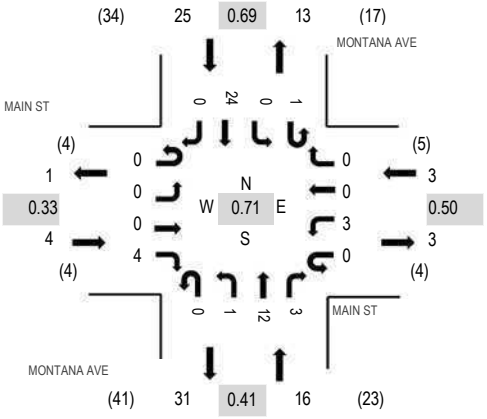
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	8	10	0	5	5	2	0	7	15	13	0	0	5	1	72
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	8	10	0	5	5	2	0	7	15	13	0	0	5	1	72

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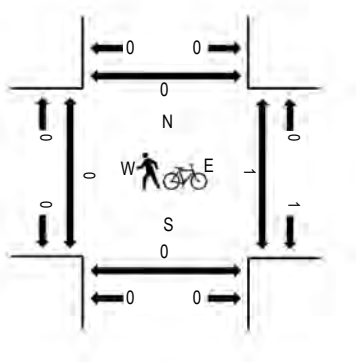
Location: 44 MONTANA AVE & MAIN ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3	45	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	9	48	0	0	0	0
7:30 AM	0	0	0	3	0	1	0	0	0	0	3	0	1	0	8	0	16	46	0	0	0	0
7:45 AM	0	0	0	0	0	2	0	0	0	1	7	3	0	0	4	0	17	33	0	1	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5	0	6	21	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	2	2	0	0	0	3	0	7		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3		0	0	0	0
8:45 AM	0	0	0	0	0	0	1	0	0	0	2	1	0	0	1	0	5		0	0	0	0

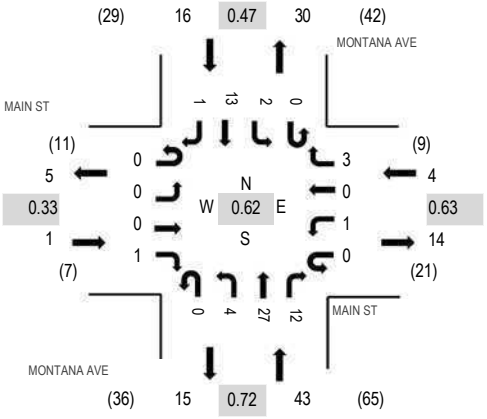
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	4	0	3	0	0	0	1	12	3	0	0	22	0	45
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3
Total	0	0	0	4	0	3	0	0	0	1	12	3	1	0	24	0	48

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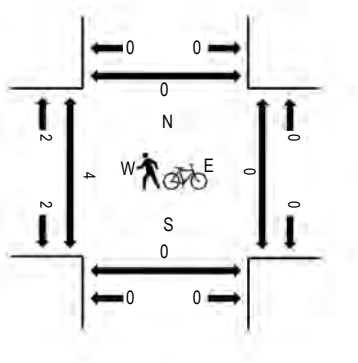
Location: 44 MONTANA AVE & MAIN ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	1	2	0	2	1	0	0	3	5	1	0	0	6	0	21	55	1	0	1	0
4:15 PM	0	0	0	0	0	1	0	0	1	1	4	0	0	0	2	0	9	47	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	8	1	0	1	2	0	13	64	2	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	7	3	0	0	1	0	12	61	2	0	0	0
5:00 PM	0	0	0	1	0	1	0	1	0	0	5	2	0	0	3	0	13	55	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	2	0	2	7	6	0	1	7	1	26		0	0	0	0
5:30 PM	0	0	1	2	0	0	1	0	0	0	2	3	0	0	1	0	10		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	4	0	6		0	0	0	0

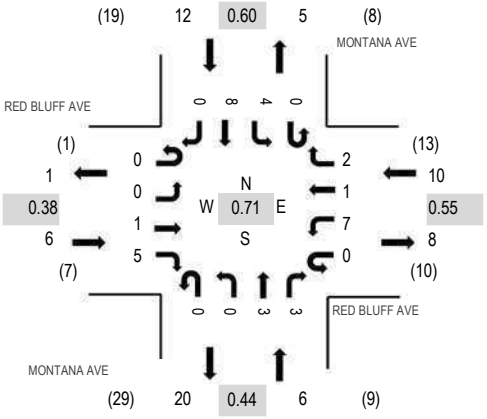
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	1	0	1	0	3	0	4	27	12	0	2	13	1	64
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0	3	0	4	27	12	0	2	13	1	64

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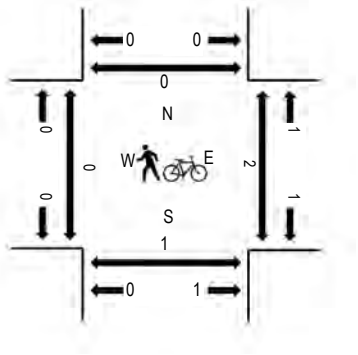
Location: 45 MONTANA AVE & RED BLUFF AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3	32	0	3	3	0
7:15 AM	0	0	0	4	0	1	0	2	0	0	0	0	0	3	2	0	12	34	0	1	1	0
7:30 AM	0	0	0	1	0	4	1	0	0	0	0	2	0	0	2	0	10	26	0	0	0	0
7:45 AM	0	0	1	0	0	1	0	0	0	0	3	1	0	0	1	0	7	19	0	1	0	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	3	0	5	16	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	4		0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	4		0	0	0	0

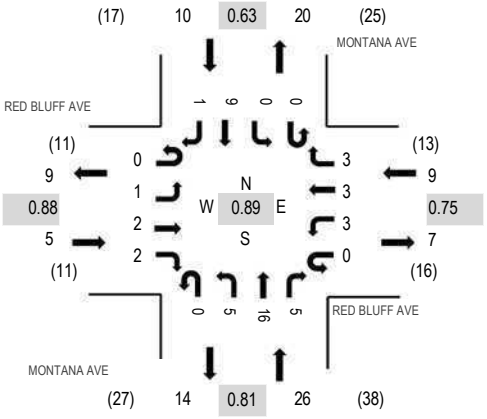
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	1	5	0	5	1	2	0	0	3	3	0	4	8	0	32
Mediums	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	1	5	0	7	1	2	0	0	3	3	0	4	8	0	34

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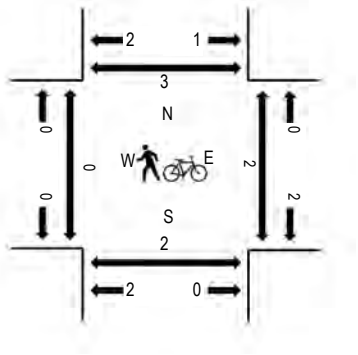
Location: 45 MONTANA AVE & RED BLUFF AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	RED BLUFF AVE Eastbound				RED BLUFF AVE Westbound				MONTANA AVE Northbound				MONTANA AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	2	0	1	0	0	0	1	2	1	0	1	3	0	11	43	0	0	0	0
4:15 PM	0	0	1	0	0	1	0	1	0	0	1	1	0	0	1	0	6	42	0	0	0	0
4:30 PM	0	1	0	1	0	1	0	2	0	1	4	2	0	0	1	1	14	50	0	0	0	2
4:45 PM	0	0	2	0	0	0	1	0	0	1	5	2	0	0	1	0	12	39	0	2	2	1
5:00 PM	0	0	0	0	0	1	0	1	0	2	3	0	0	0	3	0	10	36	0	0	0	0
5:15 PM	0	0	0	1	0	1	2	0	0	1	4	1	0	0	4	0	14		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	3		0	0	0	0
5:45 PM	0	0	1	2	0	1	0	0	0	0	1	3	0	0	1	0	9		0	0	0	0

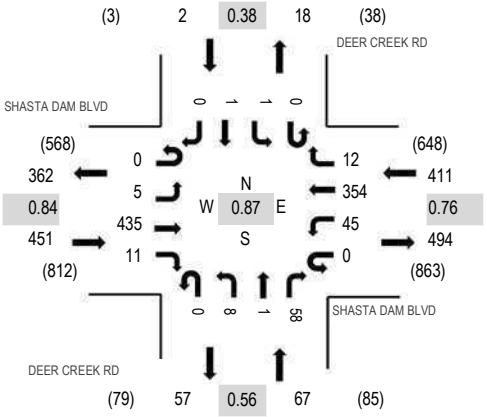
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	2	2	0	3	3	3	0	5	16	5	0	0	9	1	50
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	2	2	0	3	3	3	0	5	16	5	0	0	9	1	50

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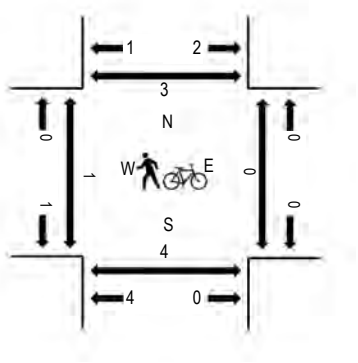
Location: 46 DEER CREEK RD & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				DEER CREEK RD Northbound				DEER CREEK RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	76	3	0	4	35	1	0	0	0	2	0	1	0	0	123	853	0	0	0	0
7:15 AM	0	3	107	6	0	11	74	1	0	2	1	10	0	0	0	0	215	931	0	0	2	1
7:30 AM	0	0	130	5	0	16	86	2	0	5	0	25	0	0	0	0	269	890	0	0	0	2
7:45 AM	0	2	92	0	0	11	121	3	0	0	0	15	0	1	1	0	246	777	1	0	1	0
8:00 AM	0	0	106	0	0	7	73	6	0	1	0	8	0	0	0	0	201	695	0	0	1	0
8:15 AM	0	1	98	1	0	8	52	6	0	1	0	7	0	0	0	0	174		0	0	0	1
8:30 AM	0	0	96	0	0	1	53	3	0	0	0	3	0	0	0	0	156		0	0	1	0
8:45 AM	0	0	84	1	0	4	64	6	0	1	2	2	0	0	0	0	164		0	0	0	0

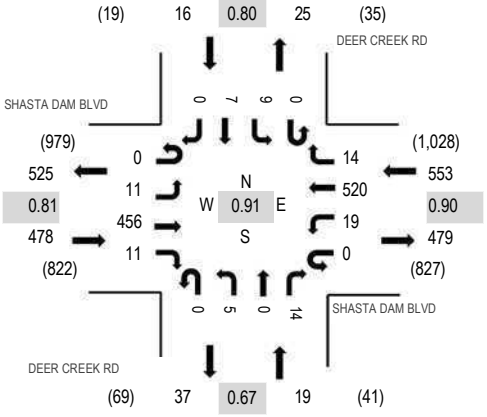
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	9	0	0	0	0	10	0	0	0	0	0	0	0	0	19
Lights	0	5	419	11	0	44	342	2	0	7	1	56	0	1	1	0	889
Mediums	0	0	7	0	0	1	12	0	0	1	0	2	0	0	0	0	23
Total	0	5	435	11	0	45	354	12	0	8	1	58	0	1	1	0	931

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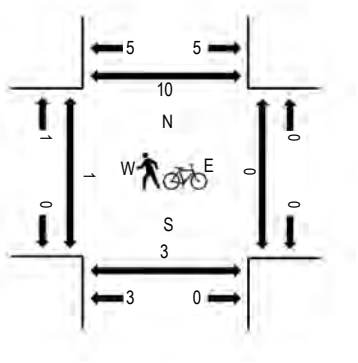
Location: 46 DEER CREEK RD & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				DEER CREEK RD Northbound				DEER CREEK RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	7	138	2	0	5	116	6	0	0	0	4	0	2	2	0	282	1,066	1	0	0	1
4:15 PM	0	1	104	5	0	8	118	3	0	1	0	0	0	2	3	0	245	1,039	0	0	2	0
4:30 PM	0	2	118	2	0	5	151	4	0	3	0	6	0	3	0	0	294	1,025	0	0	0	4
4:45 PM	0	1	96	2	0	1	135	1	0	1	0	4	0	2	2	0	245	926	0	0	0	5
5:00 PM	0	1	105	1	1	0	138	2	0	0	0	6	0	1	0	0	255	844	0	0	0	3
5:15 PM	0	1	86	1	0	8	130	0	0	0	1	3	0	0	1	0	231		0	0	1	1
5:30 PM	0	1	74	3	0	7	103	1	0	2	0	4	0	0	0	0	195		0	0	0	1
5:45 PM	0	2	64	5	0	5	79	1	0	2	0	4	0	0	1	0	163		1	0	1	3

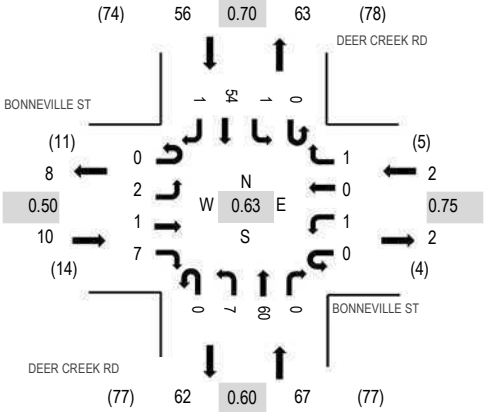
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	0	2	0	0	0	0	0	0	0	0	6
Lights	0	11	445	11	0	19	516	12	0	5	0	14	0	9	7	0	1,049
Mediums	0	0	7	0	0	0	4	0	0	0	0	0	0	0	0	0	11
Total	0	11	456	11	0	19	520	14	0	5	0	14	0	9	7	0	1,066

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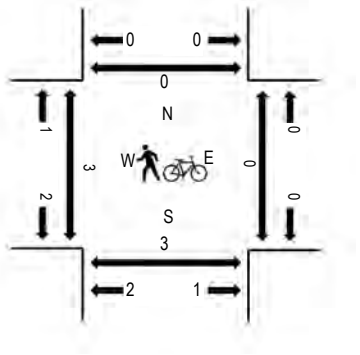
Location: 47 DEER CREEK RD & BONNEVILLE ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BONNEVILLE ST Eastbound				BONNEVILLE ST Westbound				DEER CREEK RD Northbound				DEER CREEK RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	1	2	1	0	0	6	0	10	128	1	0	0	0
7:15 AM	0	0	0	2	0	0	0	0	0	3	13	0	0	0	16	1	35	135	0	0	0	0
7:30 AM	0	1	0	4	0	1	0	0	0	1	27	0	0	0	20	0	54	112	0	0	0	0
7:45 AM	0	1	1	0	0	0	0	1	0	1	13	0	0	0	12	0	29	62	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	2	7	0	0	1	6	0	17	42	1	0	3	0
8:15 AM	0	1	0	0	0	0	0	1	0	0	3	0	0	0	7	0	12		0	0	0	0
8:30 AM	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4		0	0	0	0
8:45 AM	0	1	0	0	0	0	0	1	0	0	2	0	0	1	2	2	9		0	0	0	0

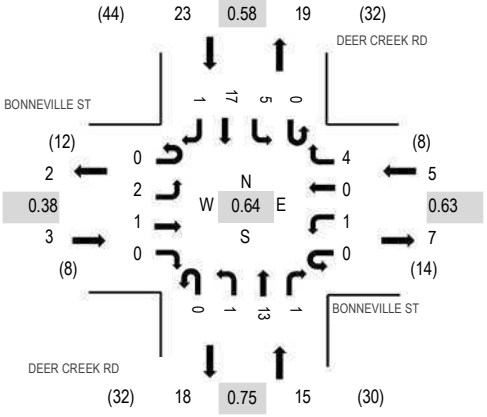
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	0	6	0	1	0	0	0	7	56	0	0	1	54	0	127
Mediums	0	0	1	1	0	0	0	1	0	0	4	0	0	0	0	1	8
Total	0	2	1	7	0	1	0	1	0	7	60	0	0	1	54	1	135

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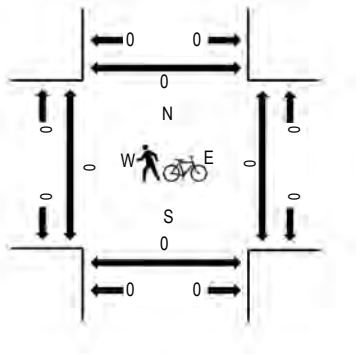
Location: 47 DEER CREEK RD & BONNEVILLE ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:45 PM - 06:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BONNEVILLE ST Eastbound				BONNEVILLE ST Westbound				DEER CREEK RD Northbound				DEER CREEK RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	1	0	0	0	0	1	0	0	1	1	0	1	1	0	6	44	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	2	6	4	15	44	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	1	11	39	0	0	0	0
4:45 PM	0	1	1	2	0	0	1	0	0	1	3	1	0	0	1	1	12	40	0	0	0	0
5:00 PM	0	0	1	0	0	0	0	1	0	0	4	0	0	0	0	0	6	46	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	5	1	10		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	2	0	1	2	0	0	1	6	0	12		0	0	0	0
5:45 PM	0	1	0	0	0	1	0	1	0	0	4	1	0	4	6	0	18		0	0	0	0

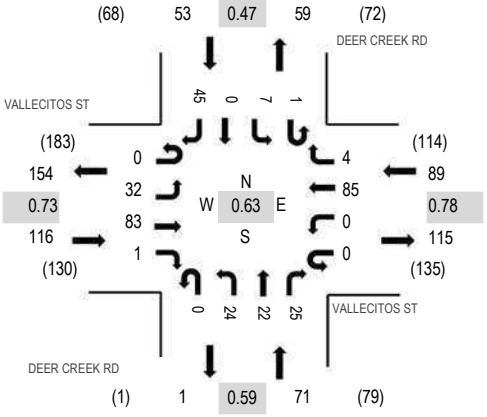
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	1	0	0	1	0	4	0	1	13	1	0	5	17	1	46
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	1	0	0	1	0	4	0	1	13	1	0	5	17	1	46

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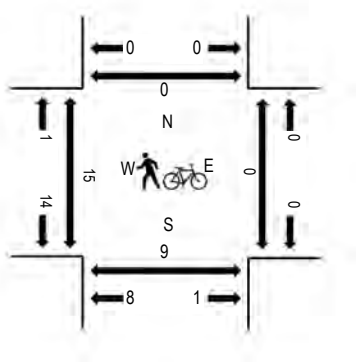
Location: 48 DEER CREEK RD & VALLECITOS ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITOS ST Eastbound				VALLECITOS ST Westbound				DEER CREEK RD Northbound				DEER CREEK RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	2	0	0	0	9	4	0	2	0	0	4	0	0	2	24	308	2	0	1	0
7:15 AM	0	8	14	0	0	0	26	2	0	5	2	6	1	2	0	6	72	329	8	0	4	0
7:30 AM	0	16	24	0	0	0	30	0	0	8	11	11	0	3	0	27	130	278	5	0	4	0
7:45 AM	0	8	28	1	0	0	22	1	0	4	4	3	0	1	0	10	82	160	1	0	0	0
8:00 AM	0	0	17	0	0	0	7	1	0	7	5	5	0	1	0	2	45	83	1	0	1	0
8:15 AM	0	0	4	0	0	0	5	0	0	1	1	2	0	4	0	4	21		0	0	0	0
8:30 AM	0	1	5	0	0	0	3	1	0	0	1	0	0	1	0	0	12		0	0	0	0
8:45 AM	0	0	1	0	0	0	3	0	0	0	0	1	0	0	0	0	5		0	0	0	0

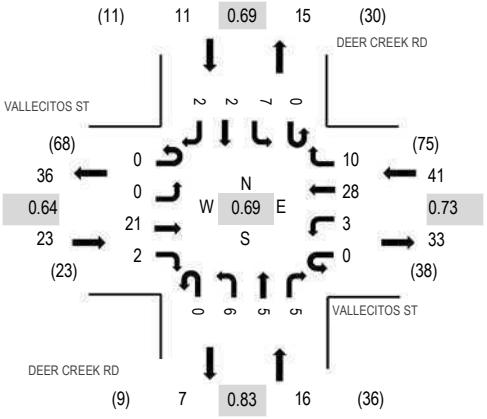
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Lights	0	31	79	1	0	0	85	4	0	23	20	24	0	7	0	43	317
Mediums	0	1	4	0	0	0	0	0	0	1	2	1	1	0	0	1	11
Total	0	32	83	1	0	0	85	4	0	24	22	25	1	7	0	45	329

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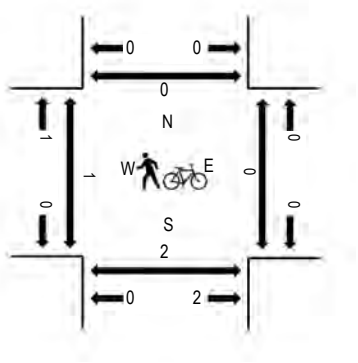
Location: 48 DEER CREEK RD & VALLECITOS ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	VALLECITOS ST Eastbound				VALLECITOS ST Westbound				DEER CREEK RD Northbound				DEER CREEK RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	4	1	0	0	4	5	0	2	0	0	0	1	0	1	18	91	0	0	0	0
4:15 PM	0	0	9	0	0	1	10	3	0	2	4	2	0	1	1	0	33	85	0	0	0	0
4:30 PM	0	0	5	0	0	2	7	1	0	1	0	2	0	3	1	0	22	68	1	0	0	0
4:45 PM	0	0	3	1	0	0	7	1	0	1	1	1	0	2	0	1	18	65	0	0	0	0
5:00 PM	0	0	0	0	0	2	3	3	0	2	2	0	0	0	0	0	12	54	0	0	0	0
5:15 PM	0	0	0	0	0	0	9	1	0	2	3	1	0	0	0	0	16		0	0	1	0
5:30 PM	0	0	0	0	0	0	9	4	0	3	1	2	0	0	0	0	19		0	0	0	0
5:45 PM	0	0	0	0	0	0	3	0	0	1	1	2	0	0	0	0	7		0	0	0	0

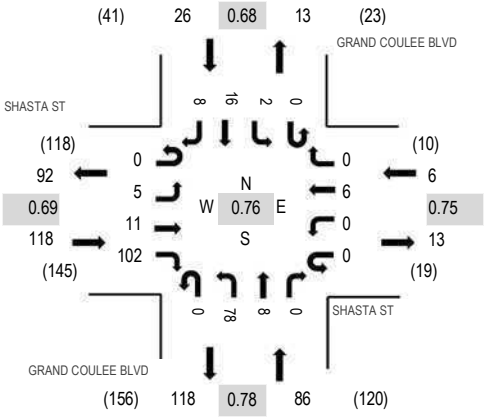
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	21	2	0	3	27	10	0	6	5	5	0	7	2	2	90
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	0	21	2	0	3	28	10	0	6	5	5	0	7	2	2	91

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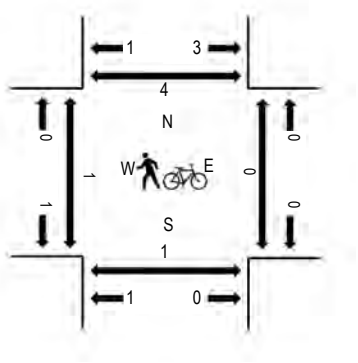
Location: 49 GRAND COULEE BLVD & SHASTA ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA ST Eastbound				SHASTA ST Westbound				GRAND COULEE BLVD Northbound				GRAND COULEE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	2	2	0	0	0	1	0	13	0	0	0	0	2	0	20	224	0	0	0	1
7:15 AM	0	1	2	18	0	0	2	0	0	24	5	0	0	0	1	2	55	236	1	0	1	3
7:30 AM	0	3	1	39	0	0	2	0	0	26	0	0	0	0	3	4	78	203	0	0	0	1
7:45 AM	0	1	6	31	0	0	1	0	0	21	1	0	0	1	8	1	71	145	0	0	0	0
8:00 AM	0	0	2	14	0	0	1	0	0	7	2	0	0	1	4	1	32	92	0	0	0	0
8:15 AM	0	0	1	12	0	0	0	0	0	2	2	1	0	0	4	0	22		0	0	0	0
8:30 AM	0	0	2	4	0	0	0	1	0	4	2	0	0	0	6	1	20		0	0	0	0
8:45 AM	0	0	0	4	0	2	0	0	0	6	4	0	0	0	2	0	18		0	0	0	0

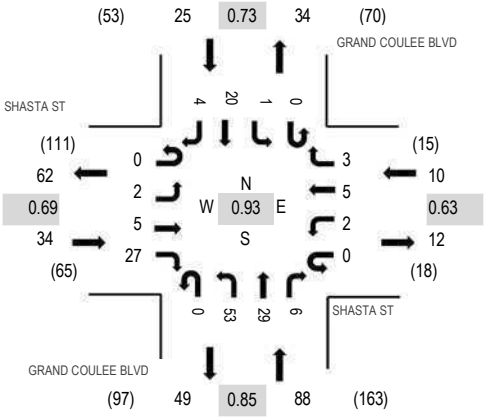
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	4	11	97	0	0	6	0	0	78	8	0	0	2	13	8	227
Mediums	0	1	0	5	0	0	0	0	0	0	0	0	0	0	3	0	9
Total	0	5	11	102	0	0	6	0	0	78	8	0	0	2	16	8	236

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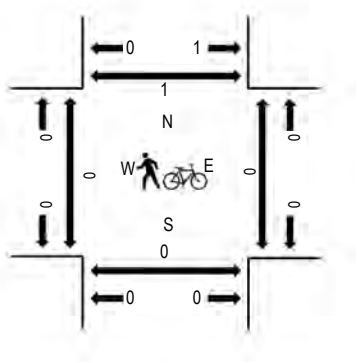
Location: 49 GRAND COULEE BLVD & SHASTA ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA ST Eastbound				SHASTA ST Westbound				GRAND COULEE BLVD Northbound				GRAND COULEE BLVD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	3	4	0	0	2	1	0	12	10	0	0	0	8	2	42	157	0	0	0	0
4:15 PM	0	0	0	4	0	1	1	2	0	19	7	0	0	0	4	1	39	150	0	0	0	0
4:30 PM	0	0	1	12	0	1	1	0	0	10	5	0	0	0	5	0	35	144	0	0	0	0
4:45 PM	0	2	1	7	0	0	1	0	0	12	7	6	0	1	3	1	41	148	0	0	0	0
5:00 PM	0	0	1	4	0	0	2	0	0	7	10	1	0	0	8	2	35	139	0	0	0	0
5:15 PM	0	1	0	7	0	0	0	0	0	13	3	0	1	0	6	2	33		0	0	1	0
5:30 PM	0	0	0	9	0	0	2	0	0	12	11	1	0	0	3	1	39		0	0	0	0
5:45 PM	0	0	1	8	0	0	1	0	0	6	10	1	0	1	3	1	32		0	0	0	0

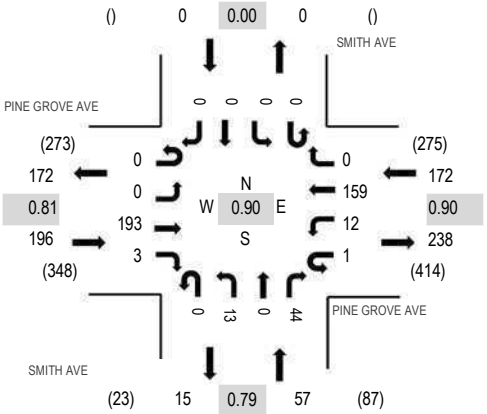
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	5	27	0	2	5	3	0	52	28	6	0	1	20	4	155
Mediums	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Total	0	2	5	27	0	2	5	3	0	53	29	6	0	1	20	4	157

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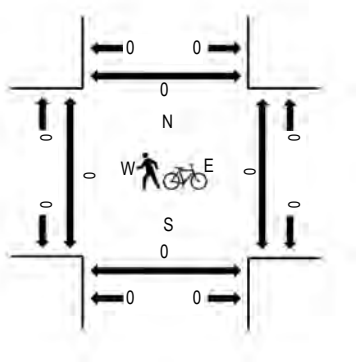
Location: 50 SMITH AVE & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				SMITH AVE Northbound				SMITH AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	37	0	0	0	13	0	0	0	0	8	0	0	0	0	58	383	0	0	0	0
7:15 AM	0	0	42	1	0	1	37	0	0	1	0	8	0	0	0	0	90	425	0	0	0	0
7:30 AM	0	0	61	2	1	3	37	0	0	2	0	11	0	0	0	0	117	425	0	0	0	0
7:45 AM	0	0	52	0	0	3	45	0	0	4	0	14	0	0	0	0	118	382	0	0	0	0
8:00 AM	0	0	38	0	0	5	40	0	0	6	0	11	0	0	0	0	100	327	0	0	0	0
8:15 AM	0	0	49	3	0	3	26	0	0	1	0	8	0	0	0	0	90		0	0	0	0
8:30 AM	0	0	40	0	0	1	27	0	0	1	0	5	0	0	0	0	74		0	0	0	0
8:45 AM	0	0	22	1	1	0	32	0	0	1	0	6	0	0	0	0	63		0	0	0	0

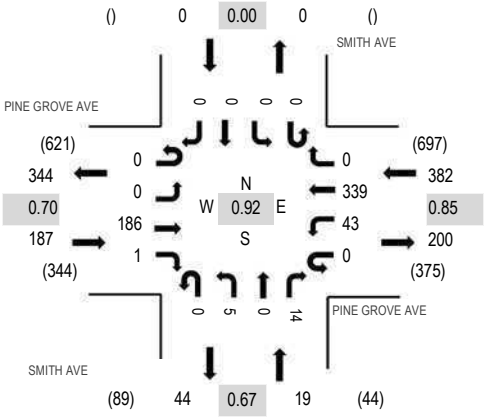
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13
Lights	0	0	179	3	1	11	151	0	0	13	0	43	0	0	0	0	401
Mediums	0	0	7	0	0	1	2	0	0	0	0	1	0	0	0	0	11
Total	0	0	193	3	1	12	159	0	0	13	0	44	0	0	0	0	425

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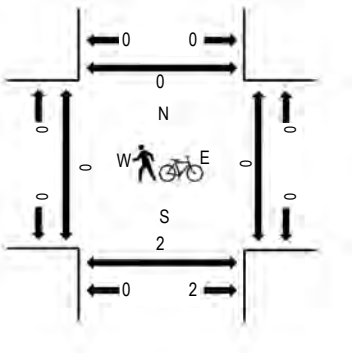
Location: 50 SMITH AVE & PINE GROVE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				SMITH AVE Northbound				SMITH AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	44	3	0	13	49	0	0	1	0	6	0	0	0	0	116	522	0	0	0	0
4:15 PM	0	0	45	0	0	8	58	0	0	0	0	4	0	0	0	0	115	565	0	0	0	0
4:30 PM	0	0	37	0	0	9	104	0	0	0	0	6	0	0	0	0	156	588	0	0	0	0
4:45 PM	0	0	41	0	0	9	82	0	0	1	0	2	0	0	0	0	135	569	0	0	2	0
5:00 PM	0	0	68	0	0	13	74	0	0	3	0	1	0	0	0	0	159	563	0	0	0	0
5:15 PM	0	0	40	1	0	12	79	0	0	1	0	5	0	0	0	0	138		0	0	0	0
5:30 PM	0	0	38	0	0	12	82	0	0	1	0	4	0	0	0	0	137		0	0	0	0
5:45 PM	0	0	26	1	0	8	85	0	0	1	0	8	0	0	0	0	129		0	0	0	0

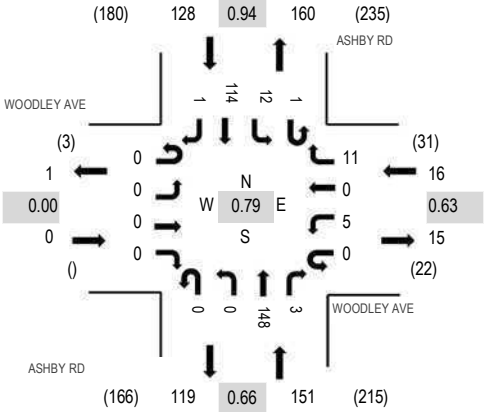
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Lights	0	0	183	1	0	43	336	0	0	5	0	14	0	0	0	0	582
Mediums	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4
Total	0	0	186	1	0	43	339	0	0	5	0	14	0	0	0	0	588

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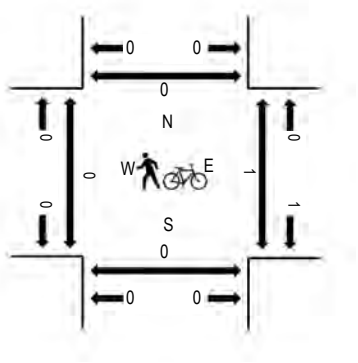
Location: 51 ASHBY RD & WOODLEY AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	WOODLEY AVE Eastbound				WOODLEY AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	1	0	0	0	0	14	1	0	1	11	0	28	219	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	8	0	0	24	0	0	1	17	0	50	284	0	1	0	0
7:30 AM	0	0	0	0	0	2	0	4	0	0	26	1	0	4	30	0	67	295	0	0	0	0
7:45 AM	0	0	0	0	0	2	0	2	0	0	39	0	0	4	27	0	74	252	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	1	0	0	57	0	1	1	32	0	93	207	0	1	0	0
8:15 AM	0	0	0	0	0	0	0	4	0	0	26	2	0	3	25	1	61		0	0	0	0
8:30 AM	0	0	0	0	0	1	0	1	0	0	9	1	0	2	8	2	24		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	4	0	0	15	0	0	1	9	0	29		0	0	0	0

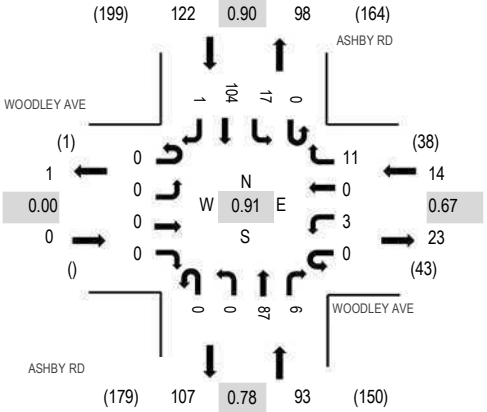
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
Lights	0	0	0	0	0	4	0	10	0	0	141	2	0	12	106	0	275
Mediums	0	0	0	0	0	1	0	1	0	0	7	1	0	0	8	0	18
Total	0	0	0	0	0	5	0	11	0	0	148	3	1	12	114	1	295

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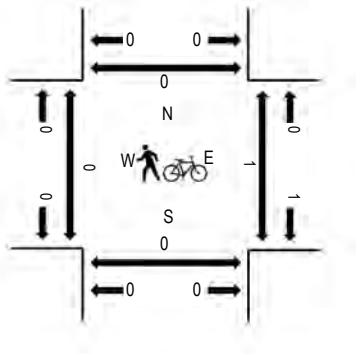
Location: 51 ASHBY RD & WOODLEY AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	WOODLEY AVE Eastbound				WOODLEY AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	0	0	2	0	0	23	0	0	6	28	0	59	229	0	1	0	0
4:15 PM	0	0	0	0	0	3	0	1	0	0	23	1	0	4	22	0	54	229	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	6	0	0	15	1	0	3	27	1	53	212	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	2	0	0	26	4	0	4	27	0	63	189	0	0	0	0
5:00 PM	0	0	0	0	0	2	0	7	0	0	17	4	0	5	24	0	59	158	0	0	0	0
5:15 PM	0	0	0	0	0	2	0	2	0	0	9	0	0	4	20	0	37		0	0	0	0
5:30 PM	0	0	0	0	0	1	0	4	0	0	12	2	0	1	10	0	30		0	0	0	0
5:45 PM	0	0	0	0	0	4	0	2	0	0	13	0	0	4	9	0	32		0	0	0	0

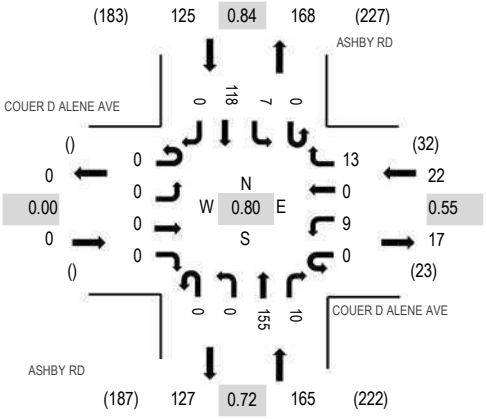
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Lights	0	0	0	0	0	3	0	11	0	0	86	6	0	17	104	0	227
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	0	11	0	0	87	6	0	17	104	1	229

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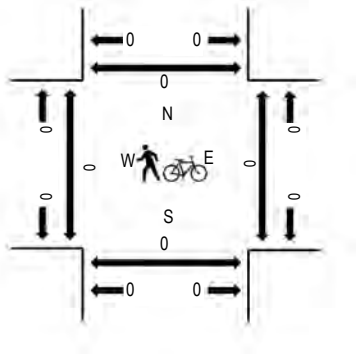
Location: 52 ASHBY RD & COUER D ALENE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	COUER D ALENE AVE Eastbound				COUER D ALENE AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	3	0	2	0	0	15	1	0	0	12	0	33	224	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	1	0	0	19	1	0	2	15	0	39	289	0	1	0	0
7:30 AM	0	0	0	0	0	4	0	7	0	0	43	2	0	1	27	0	84	312	0	0	0	0
7:45 AM	0	0	0	0	0	2	0	4	0	0	34	2	0	4	22	0	68	253	0	0	0	0
8:00 AM	0	0	0	0	0	3	0	1	0	0	56	1	0	1	36	0	98	213	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	22	5	0	1	33	0	62		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	11	1	0	0	12	0	25		0	0	0	0
8:45 AM	0	0	0	0	0	1	0	1	0	0	9	0	0	1	16	0	28		0	0	0	0

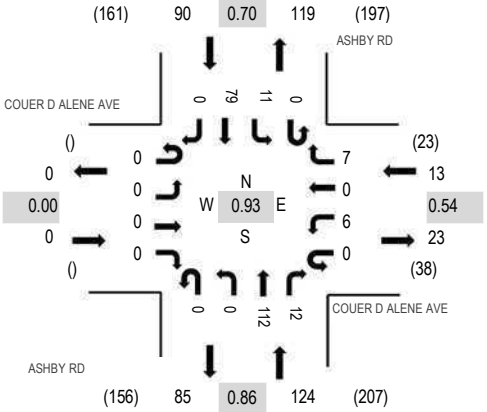
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4
Lights	0	0	0	0	0	9	0	13	0	0	148	10	0	7	109	0	296
Mediums	0	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	12
Total	0	0	0	0	0	9	0	13	0	0	155	10	0	7	118	0	312

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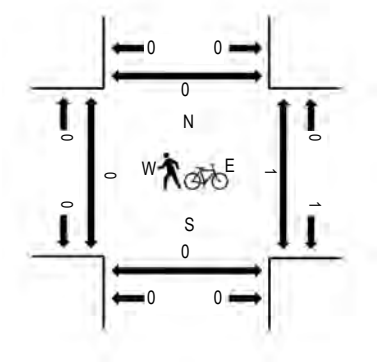
Location: 52 ASHBY RD & COUER D ALENE AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	COUER D ALENE AVE Eastbound				COUER D ALENE AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	3	0	3	0	0	20	3	0	3	29	0	61	227	0	0	0	0
4:15 PM	0	0	0	0	0	2	0	2	0	0	32	2	0	3	11	0	52	204	0	1	0	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	29	2	0	3	23	0	58	194	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	2	0	0	31	5	0	2	16	0	56	179	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	17	2	0	1	17	0	38	164	0	0	0	0
5:15 PM	0	0	0	0	0	2	0	0	0	0	21	3	0	0	16	0	42		0	0	0	0
5:30 PM	0	0	0	0	0	3	0	0	0	0	22	2	0	4	12	0	43		0	0	0	0
5:45 PM	0	0	0	0	0	3	0	1	0	0	16	0	0	3	18	0	41		0	0	0	0

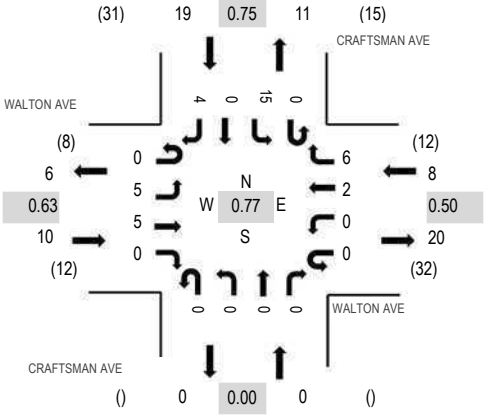
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	6	0	7	0	0	112	12	0	11	76	0	224
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Total	0	0	0	0	0	6	0	7	0	0	112	12	0	11	79	0	227

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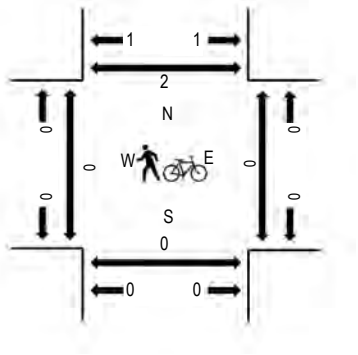
Location: 53 CRAFTSMAN AVE & WALTON AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	WALTON AVE Eastbound				WALTON AVE Westbound				CRAFTSMAN AVE Northbound				CRAFTSMAN AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	1	0	0	0	1	1	0	0	0	0	0	2	0	1	7	37	0	0	0	2
7:15 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	4	0	0	7	35	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	4	0	0	0	0	0	6	0	1	12	33	0	0	0	0
7:45 AM	0	2	2	0	0	0	1	1	0	0	0	0	0	3	0	2	11	26	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	5	18	0	0	0	0
8:15 AM	0	1	0	0	0	0	1	1	0	0	0	0	0	2	0	0	5		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	4	0	0	5		0	0	0	0
8:45 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	3		0	0	0	0

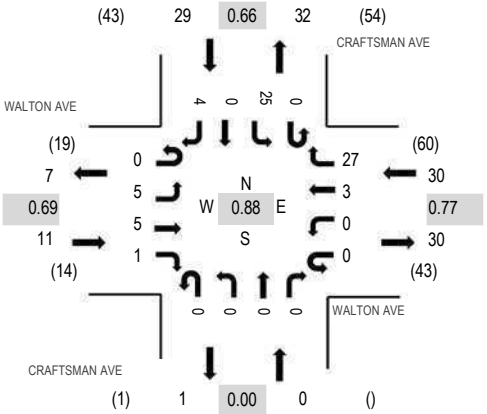
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	5	5	0	0	0	2	6	0	0	0	0	0	15	0	4	37
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	5	5	0	0	0	2	6	0	0	0	0	0	15	0	4	37

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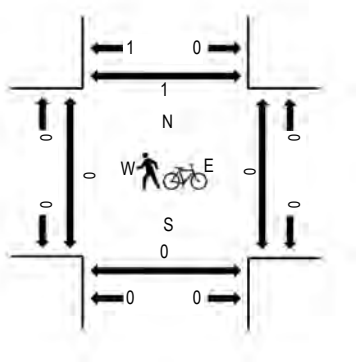
Location: 53 CRAFTSMAN AVE & WALTON AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	WALTON AVE Eastbound				WALTON AVE Westbound				CRAFTSMAN AVE Northbound				CRAFTSMAN AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	2	1	0	0	0	0	6	0	0	0	0	0	6	0	2	17	70	0	0	0	0
4:15 PM	0	1	2	1	0	0	1	8	0	0	0	0	0	7	0	0	20	64	0	0	0	0
4:30 PM	0	2	0	0	0	0	1	6	0	0	0	0	0	9	0	2	20	60	0	0	0	1
4:45 PM	0	0	2	0	0	0	1	7	0	0	0	0	0	3	0	0	13	51	0	0	0	0
5:00 PM	0	1	0	0	0	0	1	4	0	0	0	0	0	5	0	0	11	47	0	0	0	0
5:15 PM	0	0	0	0	0	0	5	6	0	0	0	0	0	4	0	1	16		0	0	0	0
5:30 PM	0	1	0	0	0	0	3	7	0	0	0	0	0	0	0	0	11		0	0	0	0
5:45 PM	0	1	0	0	0	0	2	2	0	0	0	0	0	4	0	0	9		0	0	0	0

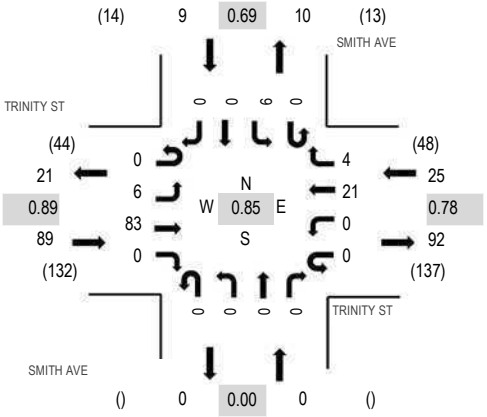
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	5	5	1	0	0	3	27	0	0	0	0	0	25	0	4	70
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	5	5	1	0	0	3	27	0	0	0	0	0	25	0	4	70

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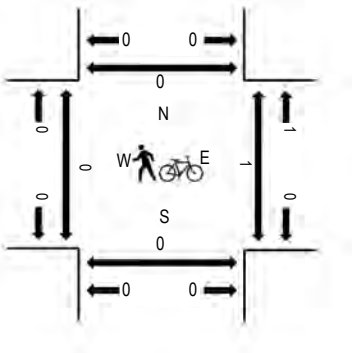
Location: 54 SMITH AVE & TRINITY ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				SMITH AVE Northbound				SMITH AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	9	0	0	0	4	0	0	0	0	0	0	1	0	0	14	116	0	0	0	1
7:15 AM	0	0	25	0	0	0	3	1	0	0	0	0	0	2	0	0	31	123	0	0	0	0
7:30 AM	0	1	23	0	0	0	8	0	0	0	0	0	0	3	0	0	35	107	0	1	0	0
7:45 AM	0	3	22	0	0	0	6	2	0	0	0	0	0	3	0	0	36	93	0	0	0	0
8:00 AM	0	2	13	0	0	0	4	1	0	0	0	0	0	1	0	0	21	78	0	0	0	0
8:15 AM	0	0	8	0	0	0	2	1	0	0	0	0	0	2	0	2	15		0	0	0	0
8:30 AM	0	1	13	0	0	0	6	1	0	0	0	0	0	0	0	0	21		0	0	0	0
8:45 AM	0	0	12	0	0	0	9	0	0	0	0	0	0	0	0	0	21		0	0	0	1

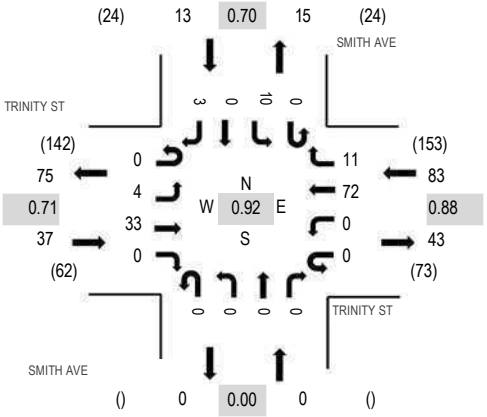
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	6	83	0	0	0	20	4	0	0	0	0	0	9	0	0	122
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	6	83	0	0	0	21	4	0	0	0	0	0	9	0	0	123

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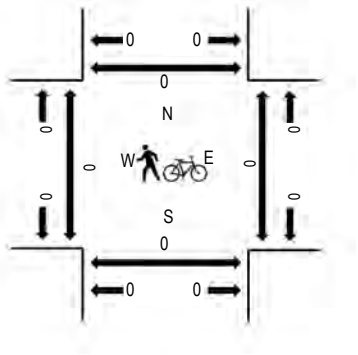
Location: 54 SMITH AVE & TRINITY ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				SMITH AVE Northbound				SMITH AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	11	0	0	0	16	0	0	0	0	0	0	2	0	1	30	107	0	0	0	0
4:15 PM	0	3	4	0	0	0	18	3	0	0	0	0	0	1	0	0	29	112	0	0	0	0
4:30 PM	0	0	5	0	0	0	11	1	0	0	0	0	0	1	0	1	19	119	0	0	0	0
4:45 PM	0	2	10	0	0	0	12	1	0	0	0	0	0	2	0	2	29	133	0	0	0	0
5:00 PM	0	1	12	0	0	0	19	2	0	0	0	0	0	1	0	0	35	132	0	0	0	0
5:15 PM	0	1	5	0	0	0	20	6	0	0	0	0	0	4	0	0	36		0	0	0	0
5:30 PM	0	0	6	0	0	0	21	2	0	0	0	0	0	3	0	1	33		0	0	0	0
5:45 PM	0	0	2	0	0	0	19	2	0	0	0	0	0	4	0	1	28		0	0	0	0

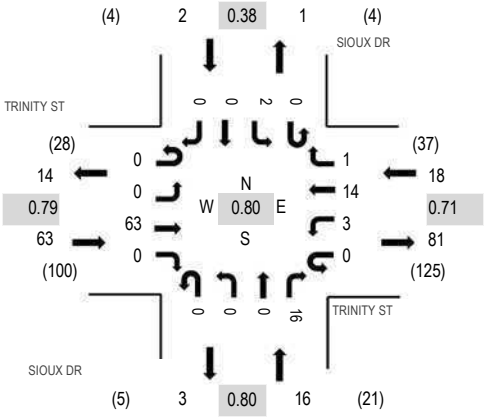
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	4	33	0	0	0	72	11	0	0	0	0	0	10	0	3	133
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	33	0	0	0	72	11	0	0	0	0	0	10	0	3	133

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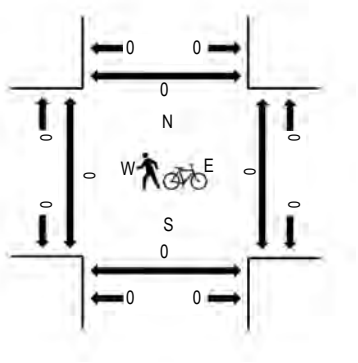
Location: 55 SIOUX DR & TRINITY ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				SIOUX DR Northbound				SIOUX DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	7	0	0	0	0	2	0	0	0	0	0	1	0	0	10	92	0	0	0	0
7:15 AM	0	0	18	0	0	1	1	1	0	0	0	5	0	0	0	0	26	99	0	0	0	0
7:30 AM	0	0	14	0	0	1	5	0	0	0	0	3	0	2	0	0	25	85	0	0	0	0
7:45 AM	0	0	20	0	0	1	5	0	0	0	0	5	0	0	0	0	31	81	0	0	0	0
8:00 AM	0	0	11	0	0	0	3	0	0	0	0	3	0	0	0	0	17	70	0	0	0	0
8:15 AM	0	0	7	0	0	1	3	0	0	0	0	1	0	0	0	0	12		0	0	0	0
8:30 AM	0	0	12	0	0	0	5	1	0	0	0	2	0	1	0	0	21		0	0	0	0
8:45 AM	0	0	11	0	0	1	6	0	0	0	0	2	0	0	0	0	20		1	0	0	1

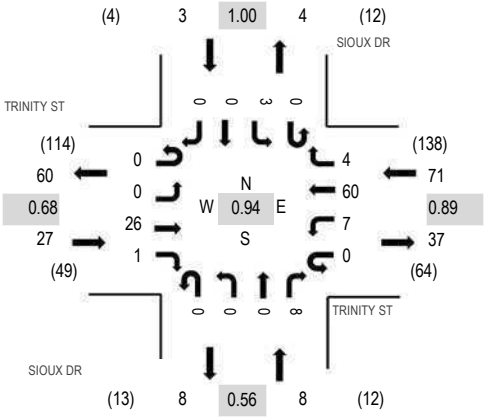
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	63	0	0	3	13	1	0	0	0	16	0	2	0	0	98
Mediums	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	0	63	0	0	3	14	1	0	0	0	16	0	2	0	0	99

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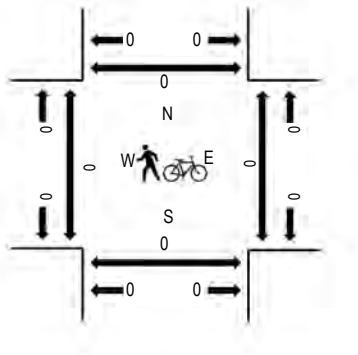
Location: 55 SIOUX DR & TRINITY ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				SIOUX DR Northbound				SIOUX DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	10	0	0	2	13	2	0	0	0	1	0	0	0	0	28	95	0	0	1	2
4:15 PM	0	0	6	0	0	0	15	0	0	0	0	3	0	0	0	0	24	95	0	0	2	0
4:30 PM	0	0	4	0	0	2	7	5	0	0	0	0	0	1	0	0	19	100	0	0	1	0
4:45 PM	0	0	5	0	0	2	10	2	0	0	0	4	0	1	0	0	24	109	0	0	0	0
5:00 PM	0	0	10	0	0	1	13	1	0	0	0	2	0	1	0	0	28	108	0	0	0	0
5:15 PM	0	0	5	0	0	4	17	1	0	0	0	1	0	1	0	0	29		0	0	0	0
5:30 PM	0	0	6	1	0	0	20	0	0	0	0	1	0	0	0	0	28		0	0	0	0
5:45 PM	0	0	2	0	0	1	19	1	0	0	0	0	0	0	0	0	23		0	0	0	0

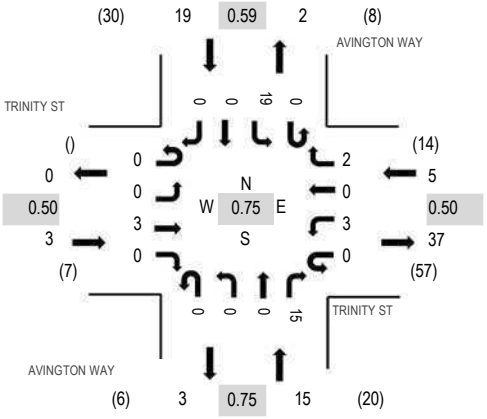
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	26	1	0	7	60	4	0	0	0	8	0	3	0	0	109
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	26	1	0	7	60	4	0	0	0	8	0	3	0	0	109

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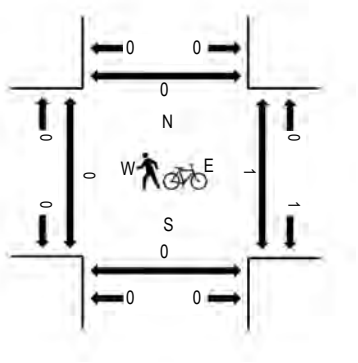
Location: 56 AVINGTON WAY & TRINITY ST AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				AVINGTON WAY Northbound				AVINGTON WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	1	0	0	0	0	1	0	0	0	1	0	2	0	0	5	41	0	0	0	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	1	0	8	0	0	11	42	0	0	0	0
7:30 AM	0	0	1	0	0	2	0	1	0	0	0	5	0	5	0	0	14	39	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	1	0	0	0	5	0	4	0	0	11	32	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	2	0	0	6	30	0	1	0	0
8:15 AM	0	0	0	0	0	1	0	2	0	0	0	1	0	4	0	0	8		0	1	0	0
8:30 AM	0	0	2	0	0	0	0	1	0	0	0	2	0	2	0	0	7		0	0	0	0
8:45 AM	0	0	1	0	0	2	0	2	0	0	0	1	0	3	0	0	9		0	0	0	0

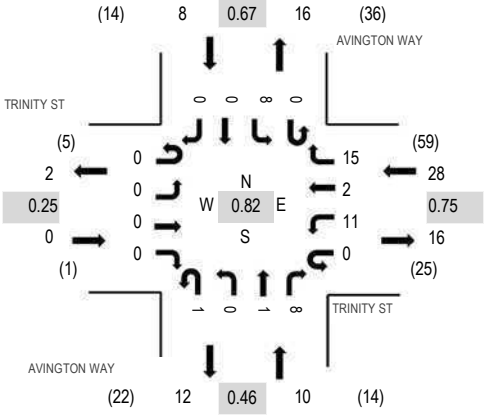
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	3	0	0	2	0	2	0	0	0	15	0	19	0	0	41
Mediums	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	3	0	0	3	0	2	0	0	0	15	0	19	0	0	42

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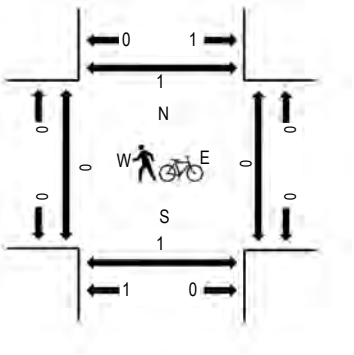
Location: 56 AVINGTON WAY & TRINITY ST PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TRINITY ST Eastbound				TRINITY ST Westbound				AVINGTON WAY Northbound				AVINGTON WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	2	1	7	0	0	1	0	0	3	0	0	14	43	0	0	0	0
4:15 PM	0	0	1	0	0	3	1	5	0	0	0	2	0	0	0	0	12	37	1	0	0	0
4:30 PM	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	4	39	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	4	0	0	1	5	0	2	0	0	13	46	0	0	1	0
5:00 PM	0	0	0	0	0	3	1	1	0	0	0	2	0	1	0	0	8	45	0	0	0	0
5:15 PM	0	0	0	0	0	4	1	6	1	0	0	0	0	2	0	0	14		0	0	0	0
5:30 PM	0	0	0	0	0	3	0	4	0	0	0	1	0	3	0	0	11		0	0	0	0
5:45 PM	0	0	0	0	0	4	0	6	0	0	0	0	0	2	0	0	12		0	3	0	0

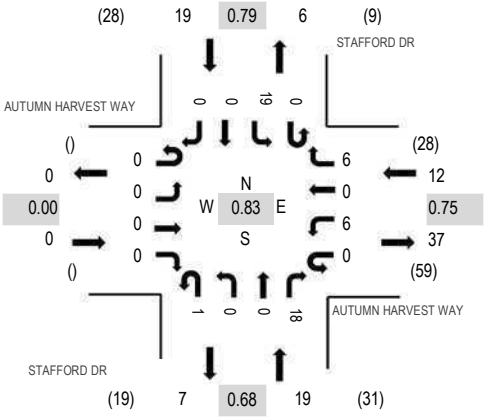
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	11	2	15	1	0	1	8	0	8	0	0	46
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	11	2	15	1	0	1	8	0	8	0	0	46

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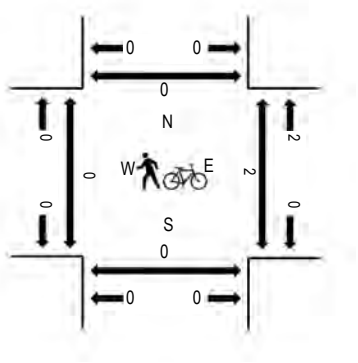
Location: 57 STAFFORD DR & AUTUMN HARVEST WAY AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	AUTUMN HARVEST WAY Eastbound				AUTUMN HARVEST WAY Westbound				STAFFORD DR Northbound				STAFFORD DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	3	0	6	0	0	10	50	0	0	0	0
7:15 AM	0	0	0	0	0	3	0	0	1	0	0	6	0	2	0	0	12	49	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	2	0	0	0	5	0	5	0	0	13	49	0	2	0	0
7:45 AM	0	0	0	0	0	2	0	3	0	0	0	4	0	6	0	0	15	39	0	0	0	0
8:00 AM	0	0	0	0	0	5	0	1	0	0	0	1	0	2	0	0	9	37	0	0	0	0
8:15 AM	0	0	0	0	0	3	0	1	0	0	1	5	0	2	0	0	12		0	1	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	3		0	0	0	0
8:45 AM	0	0	0	0	2	3	0	0	0	0	0	4	0	4	0	0	13		0	0	0	0

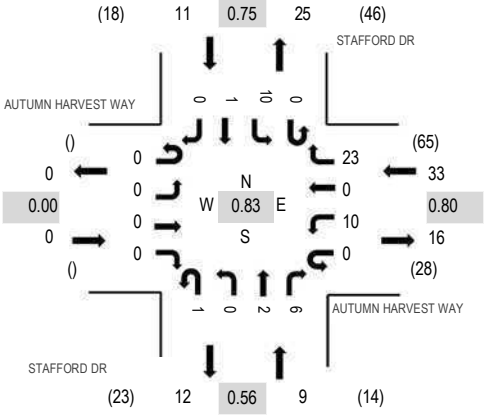
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	5	0	6	1	0	0	18	0	18	0	0	48
Mediums	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
Total	0	0	0	0	0	6	0	6	1	0	0	18	0	19	0	0	50

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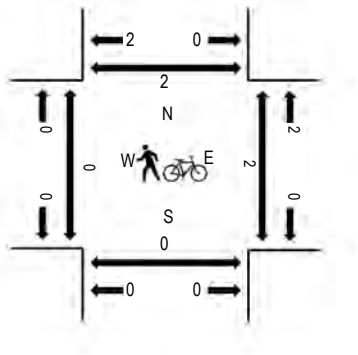
Location: 57 STAFFORD DR & AUTUMN HARVEST WAY PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	AUTUMN HARVEST WAY Eastbound				AUTUMN HARVEST WAY Westbound				STAFFORD DR Northbound				STAFFORD DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	2	0	6	0	0	0	1	0	2	0	0	11	48	0	0	0	0
4:15 PM	0	0	0	0	0	2	0	7	0	0	1	0	0	3	0	0	13	53	0	0	0	0
4:30 PM	0	0	0	0	0	2	0	5	1	0	0	2	0	3	0	0	13	48	0	0	0	2
4:45 PM	0	0	0	0	0	2	0	4	0	0	0	1	0	3	1	0	11	50	0	1	0	0
5:00 PM	0	0	0	0	0	4	0	7	0	0	1	3	0	1	0	0	16	49	0	0	0	0
5:15 PM	0	0	0	0	1	2	0	3	0	0	0	0	0	2	0	0	8		0	4	0	0
5:30 PM	0	0	0	0	0	3	0	7	0	0	1	2	0	2	0	0	15		0	0	0	0
5:45 PM	0	0	0	0	0	4	0	4	0	0	0	1	0	1	0	0	10		0	0	0	0

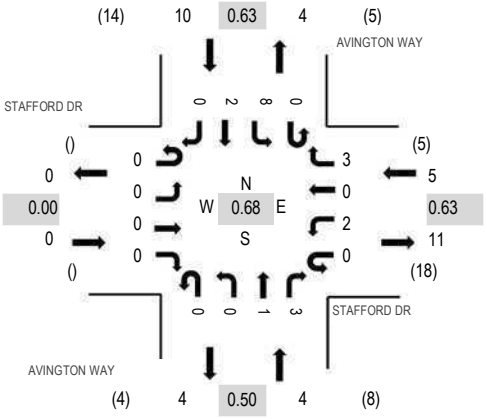
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	10	0	23	1	0	1	6	0	9	1	0	51
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2
Total	0	0	0	0	0	10	0	23	1	0	2	6	0	10	1	0	53

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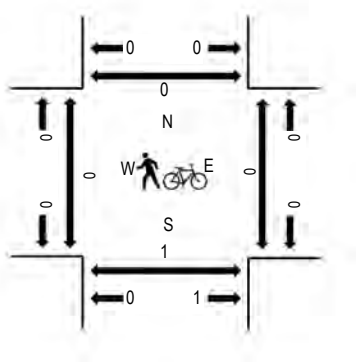
Location: 58 AVINGTON WAY & STAFFORD DR AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	STAFFORD DR Eastbound				STAFFORD DR Westbound				AVINGTON WAY Northbound				AVINGTON WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	2	0	2	0	0	5	19	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	0	3	1	0	7	17	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	1	0	0	0	1	0	3	1	0	7	11	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	8	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1		0	1	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1		0	0	1	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	4		0	1	0	0

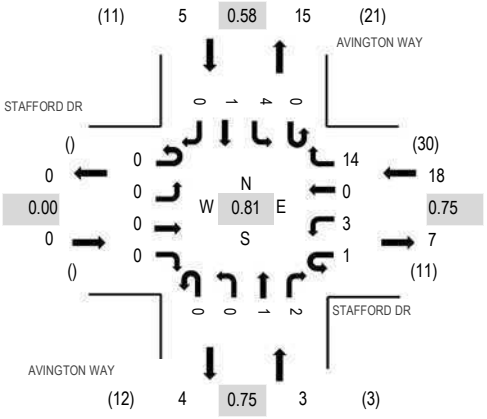
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	2	0	3	0	0	1	3	0	7	2	0	18
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	2	0	3	0	0	1	3	0	8	2	0	19

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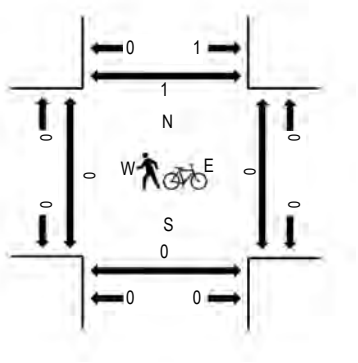
Location: 58 AVINGTON WAY & STAFFORD DR PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	STAFFORD DR Eastbound				STAFFORD DR Westbound				AVINGTON WAY Northbound				AVINGTON WAY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	1	0	6	25	0	0	0	0
4:15 PM	0	0	0	0	1	1	0	4	0	0	0	1	0	0	1	0	8	26	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	4	22	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	5	0	0	0	1	0	1	0	0	7	23	0	0	0	0
5:00 PM	0	0	0	0	0	2	0	3	0	0	1	0	0	1	0	0	7	19	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	2	1	0	4		0	0	0	0
5:30 PM	0	0	0	0	1	2	0	1	0	0	0	0	0	0	1	0	5		0	0	0	0
5:45 PM	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	3		0	0	0	0

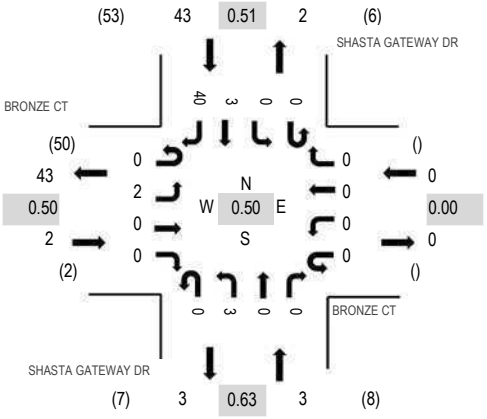
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	3	0	14	0	0	1	2	0	4	1	0	25
Mediums	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	3	0	14	0	0	1	2	0	4	1	0	26

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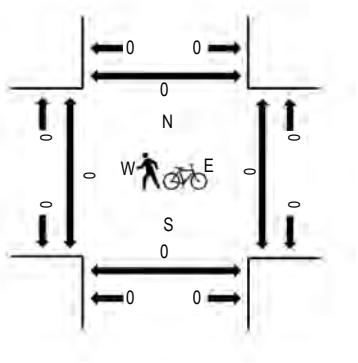
Location: 59 SHASTA GATEWAY DR & BRONZE CT AM
Date: Wednesday, December 9, 2020
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BRONZE CT Eastbound				BRONZE CT Westbound				SHASTA GATEWAY DR Northbound				SHASTA GATEWAY DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	15	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	1	6	17	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	2	5	20	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	26	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	48	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	7	9		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10	11		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	20	24		0	0	0	0

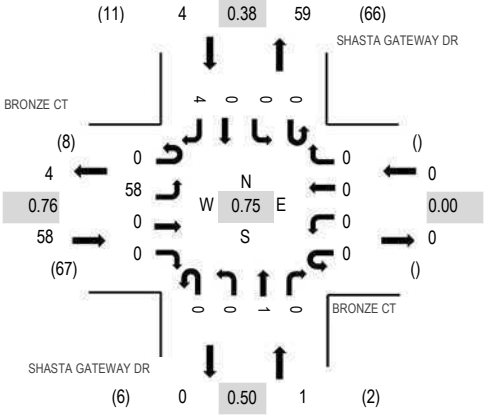
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	0	0	0	0	0	0	0	3	0	0	0	0	3	40	48
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	0	0	0	3	0	0	0	0	3	40	48

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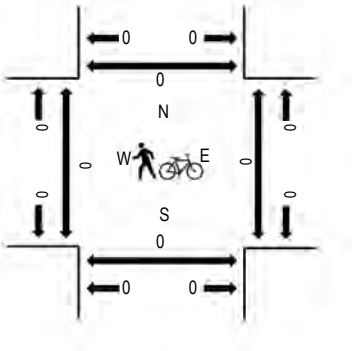
Location: 59 SHASTA GATEWAY DR & BRONZE CT PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BRONZE CT Eastbound				BRONZE CT Westbound				SHASTA GATEWAY DR Northbound				SHASTA GATEWAY DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	0	4	0	0	0	0	0	0	0	0	1	0	2	3	11	38	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	44	0	0	0	0
4:30 PM	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	52	0	0	0	0
4:45 PM	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	2	21	63	0	0	0	0
5:00 PM	0	15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	17	42	0	0	0	0
5:15 PM	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9		0	0	0	0
5:30 PM	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0

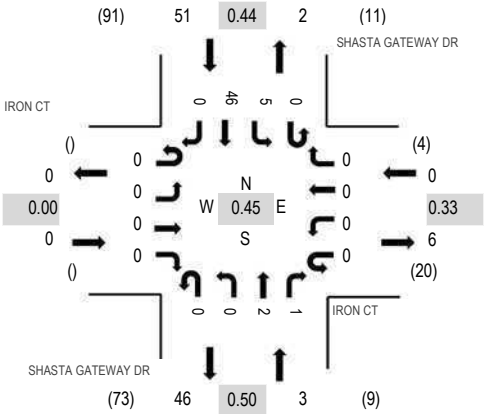
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	57	0	0	0	0	0	0	0	0	1	0	0	0	0	4	62
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	58	0	0	0	0	0	0	0	0	1	0	0	0	0	4	63

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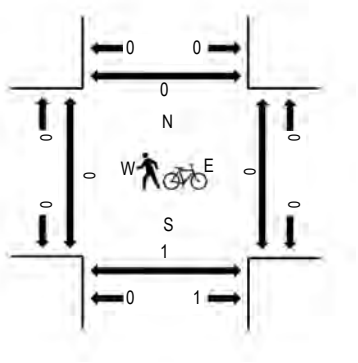
Location: 60 SHASTA GATEWAY DR & IRON CT AM
Date: Wednesday, December 9, 2020
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	IRON CT Eastbound				IRON CT Westbound				SHASTA GATEWAY DR Northbound				SHASTA GATEWAY DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	3	6	0	12	50	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	14	0	17	44	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	3	0	0	0	1	0	1	4	0	9	33	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	0	12	36	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0	6	54	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	6		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	12		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	4	25	0	30		0	0	1	0

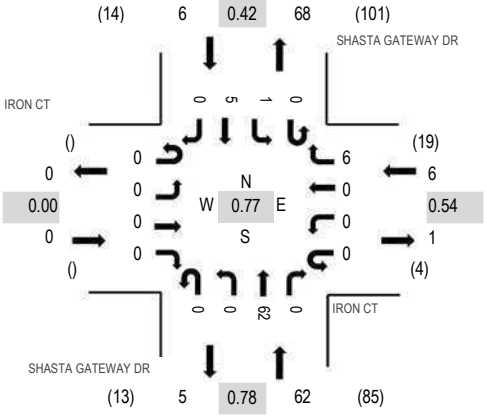
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	0	0	0	0	0	2	1	0	5	46	0	54
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	2	1	0	5	46	0	54

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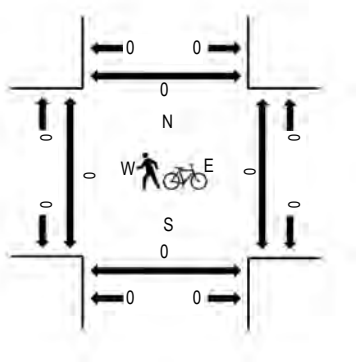
Location: 60 SHASTA GATEWAY DR & IRON CT PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	IRON CT Eastbound				IRON CT Westbound				SHASTA GATEWAY DR Northbound				SHASTA GATEWAY DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	1	0	2	0	0	9	2	0	0	6	0	20	66	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	7	0	0	3	0	0	1	1	0	12	70	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	3	0	0	8	0	0	0	0	0	11	65	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	20	0	0	0	2	0	23	74	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	4	0	0	19	0	0	0	1	0	24	52	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	0	0	3	0	0	1	2	0	7		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	20		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1		0	0	0	0

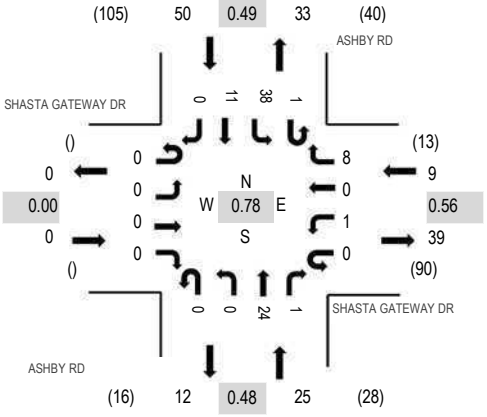
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Lights	0	0	0	0	0	0	0	6	0	0	61	0	0	1	5	0	73
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	6	0	0	62	0	0	1	5	0	74

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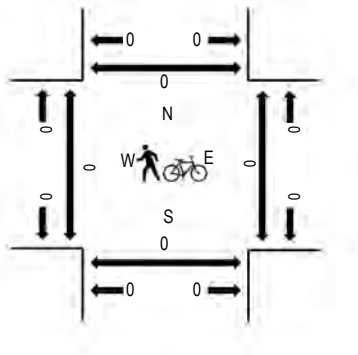
Location: 61 ASHBY RD & SHASTA GATEWAY DR AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA GATEWAY DR Eastbound				SHASTA GATEWAY DR Westbound				ASHBY RD Northbound				ASHBY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	1	0	3	0	0	13	0	0	7	3	0	27	84	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	2	0	0	4	0	0	14	5	0	25	64	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	3	0	0	4	1	1	7	1	0	17	49	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	10	2	0	15	47	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	5	0	0	7	62	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	0	7	0	0	10		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	0	15		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	26	2	0	30		0	0	0	0

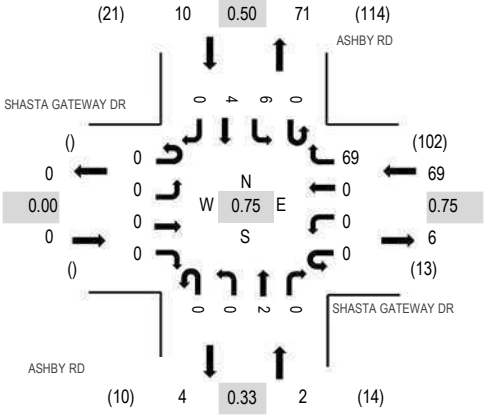
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Lights	0	0	0	0	0	1	0	7	0	0	24	1	1	38	10	0	82
Mediums	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	8	0	0	24	1	1	38	11	0	84

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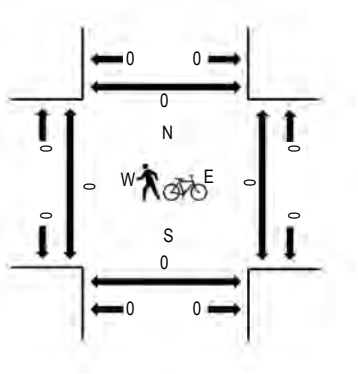
Location: 61 ASHBY RD & SHASTA GATEWAY DR PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA GATEWAY DR Eastbound				SHASTA GATEWAY DR Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	0	0	11	0	0	8	1	0	4	3	0	27	79	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	9	0	0	2	0	0	2	2	0	15	79	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	12	0	0	1	0	0	0	0	0	14	73	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	20	0	0	0	0	0	2	1	0	23	81	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	23	0	0	2	0	0	1	1	0	27	58	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	5	0	0	0	0	0	3	1	0	9		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	21	0	0	0	0	0	0	1	0	22		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0

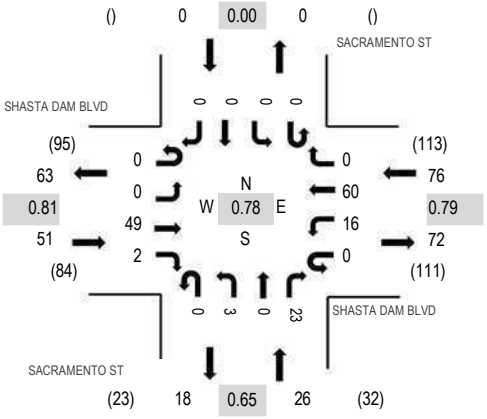
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Lights	0	0	0	0	0	0	0	68	0	0	2	0	0	6	4	0	80
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	69	0	0	2	0	0	6	4	0	81

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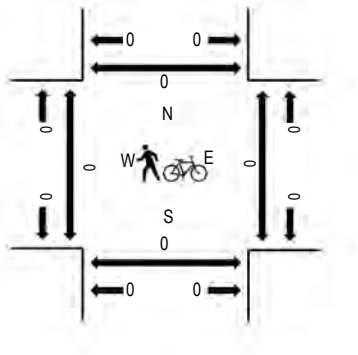
Location: 62 SACRAMENTO ST & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				SACRAMENTO ST Northbound				SACRAMENTO ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	5	0	0	1	12	0	0	0	0	1	0	0	0	0	19	149	0	0	0	0
7:15 AM	0	0	9	1	0	2	14	0	0	0	0	6	0	0	0	0	32	153	0	0	0	0
7:30 AM	0	0	14	0	0	4	21	0	0	0	0	10	0	0	0	0	49	145	0	0	0	0
7:45 AM	0	0	16	1	0	9	16	0	0	2	0	5	0	0	0	0	49	116	0	0	0	0
8:00 AM	0	0	10	0	0	1	9	0	0	1	0	2	0	0	0	0	23	80	0	0	0	0
8:15 AM	0	0	14	0	0	0	9	0	0	0	0	1	0	0	0	0	24		0	0	0	0
8:30 AM	0	0	8	0	0	3	7	0	0	0	0	2	0	0	0	0	20		0	0	0	0
8:45 AM	0	0	6	0	0	1	4	0	0	0	0	2	0	0	0	0	13		0	0	0	0

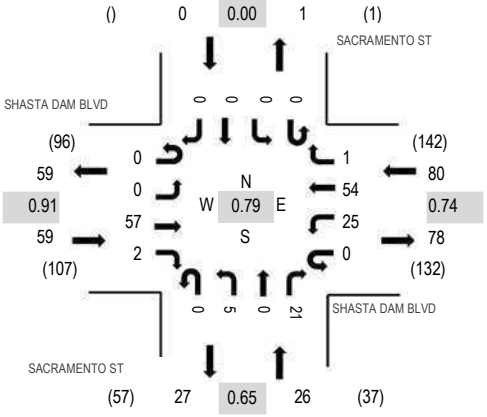
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	0	45	2	0	16	57	0	0	3	0	22	0	0	0	0	145
Mediums	0	0	3	0	0	0	3	0	0	0	0	1	0	0	0	0	7
Total	0	0	49	2	0	16	60	0	0	3	0	23	0	0	0	0	153

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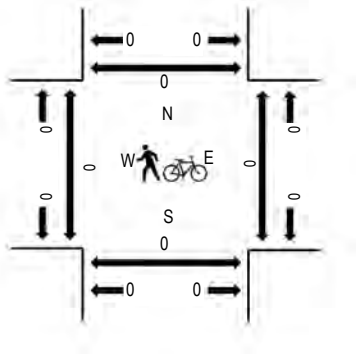
Location: 62 SACRAMENTO ST & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				SACRAMENTO ST Northbound				SACRAMENTO ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	15	0	0	6	13	0	0	0	0	1	0	0	0	0	35	155	0	0	0	0
4:15 PM	0	0	15	0	0	9	17	1	0	2	0	8	0	0	0	0	52	165	0	0	0	0
4:30 PM	0	0	16	1	0	8	8	0	0	1	0	4	0	0	0	0	38	139	0	0	0	0
4:45 PM	0	0	15	0	0	4	8	0	0	0	0	3	0	0	0	0	30	132	0	0	0	0
5:00 PM	0	0	11	1	0	4	21	0	0	2	0	6	0	0	0	0	45	131	0	0	0	0
5:15 PM	0	0	7	1	0	4	8	0	0	1	0	5	0	0	0	0	26		0	0	0	0
5:30 PM	0	0	11	2	0	11	7	0	0	0	0	0	0	0	0	0	31		0	0	0	0
5:45 PM	0	0	12	0	0	6	7	0	0	1	0	3	0	0	0	0	29		0	0	0	0

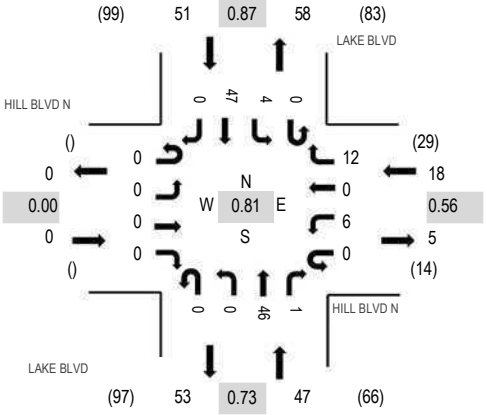
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	56	2	0	24	54	1	0	5	0	20	0	0	0	0	162
Mediums	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	3
Total	0	0	57	2	0	25	54	1	0	5	0	21	0	0	0	0	165

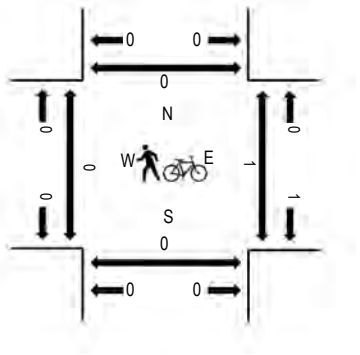
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Location: 63 LAKE BLVD & HILL BLVD N AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	HILL BLVD N Eastbound				HILL BLVD N Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	9	0	12	98	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	4	0	0	12	0	0	0	6	0	23	116	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	9	0	0	1	16	0	27	116	0	0	0	0
7:45 AM	0	0	0	0	0	4	0	4	0	0	16	0	0	1	11	0	36	114	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	3	0	0	9	1	0	2	14	0	30	96	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	2	0	0	6	1	0	3	11	0	23		0	0	0	0
8:30 AM	0	0	0	0	0	2	0	2	0	0	7	0	0	2	12	0	25		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	3	0	0	4	1	0	1	9	0	18		0	0	0	0

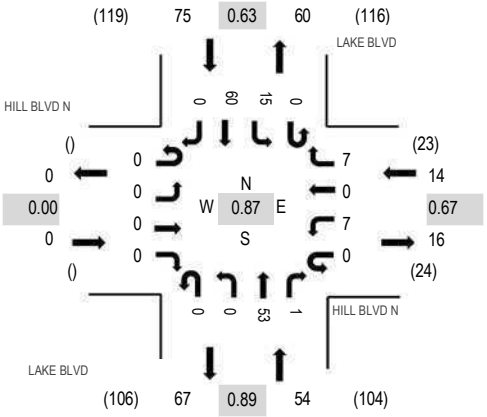
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	6	0	10	0	0	45	1	0	4	44	0	110
Mediums	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3	0	6
Total	0	0	0	0	0	6	0	12	0	0	46	1	0	4	47	0	116

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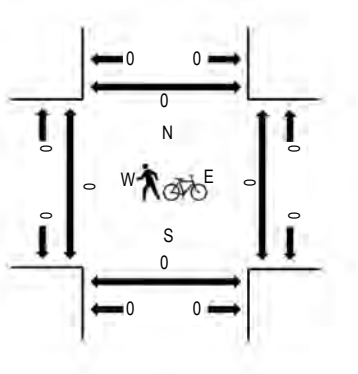
Location: 63 LAKE BLVD & HILL BLVD N PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	HILL BLVD N Eastbound				HILL BLVD N Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	0	0	3	0	0	13	0	0	2	16	0	34	136	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	2	0	0	13	0	0	5	14	0	35	143	0	0	0	0
4:30 PM	0	0	0	0	0	3	0	3	0	0	15	0	0	2	14	0	37	133	0	0	0	0
4:45 PM	0	0	0	0	0	3	0	1	0	0	15	1	0	2	8	0	30	118	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	10	0	0	6	24	0	41	110	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	3	0	0	11	1	0	1	9	0	25		0	0	0	1
5:30 PM	0	0	0	0	0	0	0	2	0	0	9	1	0	1	9	0	22		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	1	0	0	14	1	0	1	5	0	22		0	0	0	0

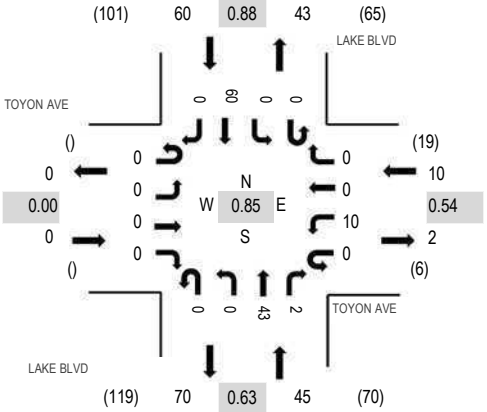
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	7	0	6	0	0	53	1	0	15	60	0	142
Mediums	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	7	0	7	0	0	53	1	0	15	60	0	143

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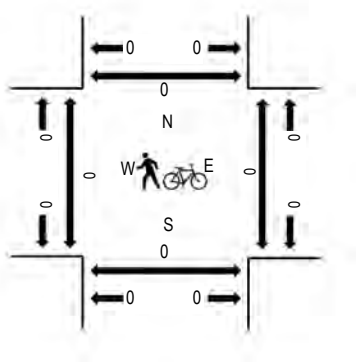
Location: 64 LAKE BLVD & TOYON AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TOYON AVE Eastbound				TOYON AVE Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	7	86	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	0	0	0	7	0	0	0	11	0	20	107	0	0	0	0
7:30 AM	0	0	0	0	0	4	0	0	0	0	7	0	0	0	14	0	25	110	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	18	0	0	0	16	0	34	115	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	0	0	0	10	0	0	0	17	0	28	104	0	0	0	0
8:15 AM	0	0	0	0	0	3	0	0	0	0	8	1	0	0	11	0	23		0	0	0	0
8:30 AM	0	0	0	0	0	6	0	0	0	0	7	1	0	0	16	0	30		0	0	0	0
8:45 AM	0	0	0	0	0	3	0	0	0	0	6	3	0	1	10	0	23		0	0	0	0

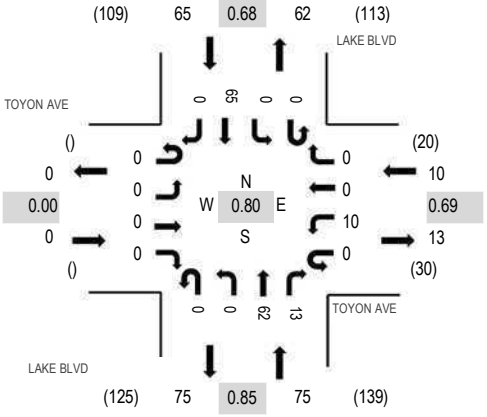
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	10	0	0	0	0	43	2	0	0	57	0	112
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Total	0	0	0	0	0	10	0	0	0	0	43	2	0	0	60	0	115

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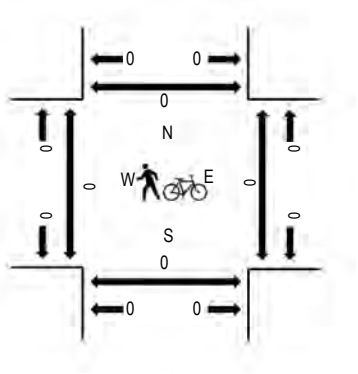
Location: 64 LAKE BLVD & TOYON AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	TOYON AVE Eastbound				TOYON AVE Westbound				LAKE BLVD Northbound				LAKE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	3	0	0	0	0	11	2	0	1	16	0	33	134	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	12	3	0	1	8	0	26	147	0	0	0	0
4:30 PM	0	0	0	0	0	4	0	0	0	0	17	5	0	0	21	0	47	150	0	0	0	0
4:45 PM	0	0	0	0	0	2	0	0	0	0	15	0	0	0	11	0	28	135	0	0	0	0
5:00 PM	0	0	0	0	0	2	0	0	0	0	14	6	0	0	24	0	46	134	0	0	0	0
5:15 PM	0	0	0	0	0	2	0	0	0	0	16	2	0	0	9	0	29		0	0	0	0
5:30 PM	0	0	0	0	0	1	0	1	0	0	10	7	0	0	13	0	32		0	0	0	0
5:45 PM	0	0	0	0	0	3	0	0	0	0	16	3	0	0	5	0	27		0	0	0	0

Peak Rolling Hour Flow Rates

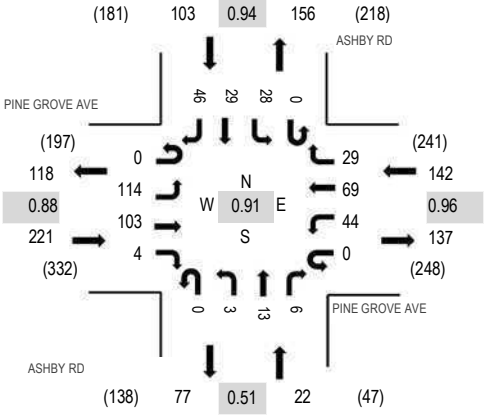
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	0	0	0	10	0	0	0	0	62	13	0	0	65	0	150
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	10	0	0	0	0	62	13	0	0	65	0	150

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Location: 65 ASHBY RD & PINE GROVE AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

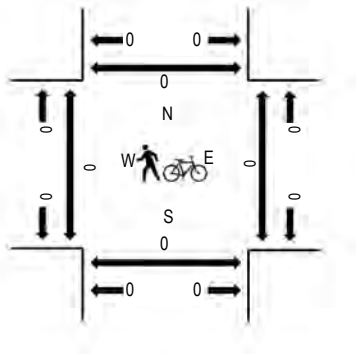
AM COUNTS SHOWN IN REPORT IS MORE CONSERVATIVE COUNTS TAKEN IN DECEMBER 2018

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	5	16	2	0	4	7	1	0	4	9	5	0	4	4	9	70	424	0	0	0	0
7:15 AM	0	8	36	1	0	11	19	7	0	1	6	1	0	3	3	10	106	488	0	0	0	0
7:30 AM	0	34	28	1	0	10	13	8	0	1	3	2	0	8	8	14	130	475	0	0	0	0
7:45 AM	0	25	23	2	0	11	20	6	0	0	3	2	0	10	6	10	118	412	0	0	0	0
8:00 AM	0	47	16	0	0	12	17	8	0	1	1	1	0	7	12	12	134	377	0	0	0	0
8:15 AM	0	15	13	1	0	11	11	9	0	0	2	1	0	13	9	8	93		0	0	0	0
8:30 AM	0	5	20	3	0	8	10	7	0	0	0	1	0	4	3	6	67		0	0	0	0
8:45 AM	0	2	28	1	0	9	16	6	0	0	1	2	0	4	6	8	83		0	0	0	0

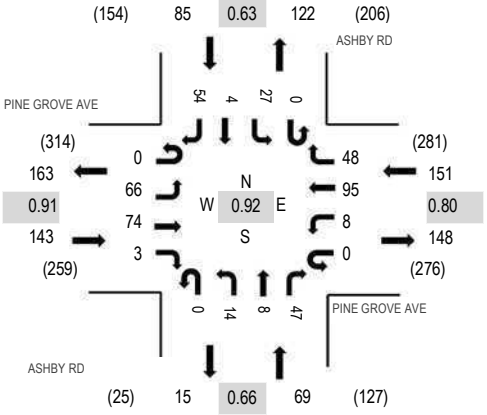
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	2	0	1	0	0	0	2	0	0	0	0	5
Lights	0	114	101	4	0	42	65	28	0	3	10	4	0	25	27	44	467
Mediums	0	0	2	0	0	0	4	0	0	0	3	0	0	3	2	2	16
Total	0	114	103	4	0	44	69	29	0	3	13	6	0	28	29	46	488

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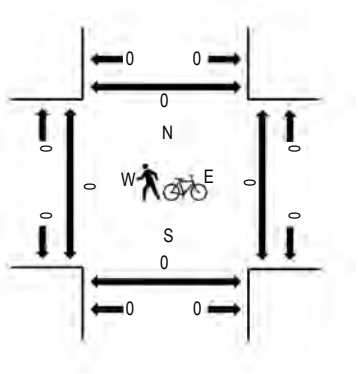
Location: 65 ASHBY RD & PINE GROVE AVE PM
Date: Tuesday, December 1, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PINE GROVE AVE Eastbound				PINE GROVE AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	7	19	1	0	2	26	12	0	4	2	15	0	10	3	21	122	448	0	0	0	0
4:15 PM	0	17	22	2	0	2	24	15	0	4	2	6	0	3	0	9	106	432	0	0	0	0
4:30 PM	0	18	21	0	0	2	18	9	0	4	2	7	0	7	0	15	103	427	0	0	0	0
4:45 PM	0	24	12	0	0	2	27	12	0	2	2	19	0	7	1	9	117	424	0	0	0	0
5:00 PM	0	6	28	0	0	2	13	10	0	3	4	22	0	4	2	12	106	373	0	0	0	0
5:15 PM	0	15	12	1	0	3	37	8	0	1	0	6	0	3	0	15	101		0	0	0	0
5:30 PM	0	16	15	0	0	2	29	8	0	2	2	13	0	3	0	10	100		0	0	0	0
5:45 PM	0	10	13	0	0	0	14	4	0	1	0	4	1	5	0	14	66		0	0	0	0

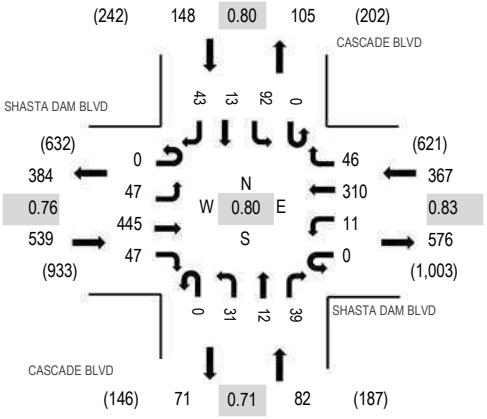
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	2	1	0	0	0	0	2	0	0	0	0	5
Lights	0	66	73	3	0	6	94	48	0	14	8	45	0	26	4	52	439
Mediums	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	4
Total	0	66	74	3	0	8	95	48	0	14	8	47	0	27	4	54	448

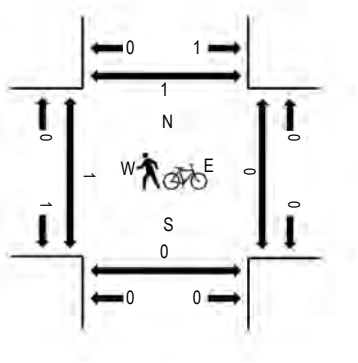
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Location: 66 CASCADE BLVD & SHASTA DAM BLVD AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	4	85	3	0	2	44	7	0	6	4	10	1	17	2	3	188	1,089	0	0	0	0
7:15 AM	0	10	112	6	0	1	69	11	0	7	4	8	0	21	4	11	264	1,136	1	0	0	0
7:30 AM	0	15	152	11	0	1	100	10	0	6	3	9	0	31	3	12	353	1,097	0	0	0	0
7:45 AM	0	9	93	10	0	7	90	11	0	11	1	12	0	24	4	12	284	979	0	0	0	1
8:00 AM	0	13	88	20	0	2	51	14	0	7	4	10	0	16	2	8	235	894	0	0	0	0
8:15 AM	0	10	79	17	0	5	48	9	0	13	9	16	0	10	4	5	225		0	0	0	0
8:30 AM	0	9	90	9	0	7	50	14	0	9	4	12	0	19	5	7	235		0	0	0	0
8:45 AM	0	9	67	12	0	5	48	15	0	10	2	10	0	12	4	5	199		0	0	0	0

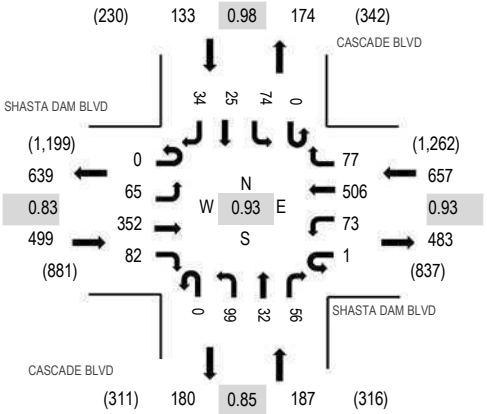
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	10	0	0	3	12	1	0	0	0	1	0	5	0	0	32
Lights	0	47	429	46	0	8	291	44	0	30	12	37	0	87	13	43	1,087
Mediums	0	0	6	1	0	0	7	1	0	1	0	1	0	0	0	0	17
Total	0	47	445	47	0	11	310	46	0	31	12	39	0	92	13	43	1,136

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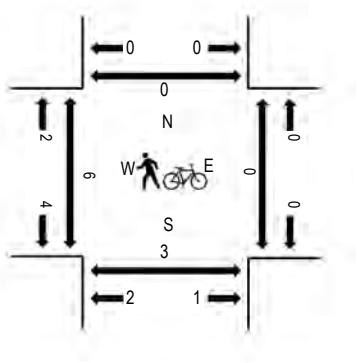
Location: 66 CASCADE BLVD & SHASTA DAM BLVD PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SHASTA DAM BLVD Eastbound				SHASTA DAM BLVD Westbound				CASCADE BLVD Northbound				CASCADE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	13	108	29	1	21	127	19	0	18	4	14	0	21	5	8	388	1,476	1	0	1	0
4:15 PM	0	13	74	16	0	14	125	16	0	28	13	15	0	19	5	7	345	1,464	1	0	0	0
4:30 PM	0	17	104	18	0	21	136	21	0	24	7	16	0	20	6	8	398	1,455	1	0	2	0
4:45 PM	0	22	66	19	0	17	118	21	0	29	8	11	0	14	9	11	345	1,328	3	0	0	0
5:00 PM	0	20	87	16	0	19	136	33	0	19	8	13	0	8	6	11	376	1,213	0	0	0	0
5:15 PM	0	10	66	19	0	17	138	25	0	20	4	7	0	14	2	14	336		0	0	0	0
5:30 PM	0	14	61	14	0	7	104	17	0	12	3	17	0	10	6	6	271		1	0	2	0
5:45 PM	1	11	52	11	0	8	84	17	0	10	6	10	0	9	6	5	230		2	0	0	1

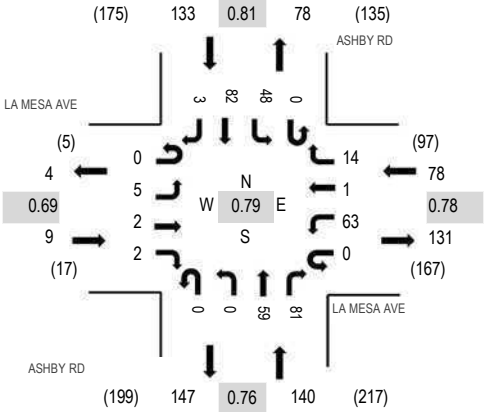
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	1	0	0	1	0	0	0	0	1	0	1	0	0	8
Lights	0	65	347	80	1	73	503	76	0	99	32	55	0	72	25	34	1,462
Mediums	0	0	1	1	0	0	2	1	0	0	0	0	0	1	0	0	6
Total	0	65	352	82	1	73	506	77	0	99	32	56	0	74	25	34	1,476

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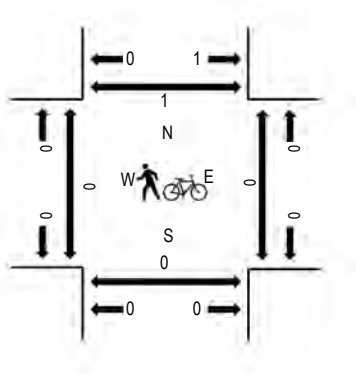
Location: 67 ASHBY RD & LA MESA AVE AM
Date: Wednesday, December 9, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	LA MESA AVE Eastbound				LA MESA AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	0	0	0	2	0	0	0	1	9	5	0	3	6	0	28	258	0	0	0	0
7:15 AM	0	0	0	0	0	8	0	1	0	0	17	13	0	3	12	0	54	344	1	0	0	1
7:30 AM	0	2	0	0	0	16	0	4	0	0	7	20	0	9	20	1	79	360	0	0	0	0
7:45 AM	0	0	2	0	0	16	0	3	0	0	17	21	0	14	23	1	97	308	0	0	0	0
8:00 AM	0	1	0	0	0	20	1	4	0	0	22	25	0	17	23	1	114	248	0	0	0	1
8:15 AM	0	2	0	2	0	11	0	3	0	0	13	15	0	8	16	0	70		0	0	0	0
8:30 AM	0	3	0	0	0	6	0	0	0	0	7	4	1	1	5	0	27		0	0	0	0
8:45 AM	0	1	0	2	0	1	0	1	0	0	15	6	0	1	10	0	37		0	0	0	0

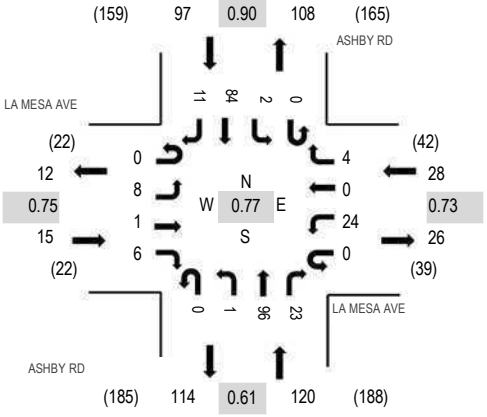
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	4	0	0	0	10	0	14
Lights	0	5	2	2	0	59	1	13	0	0	53	81	0	47	69	3	335
Mediums	0	0	0	0	0	4	0	1	0	0	2	0	0	1	3	0	11
Total	0	5	2	2	0	63	1	14	0	0	59	81	0	48	82	3	360

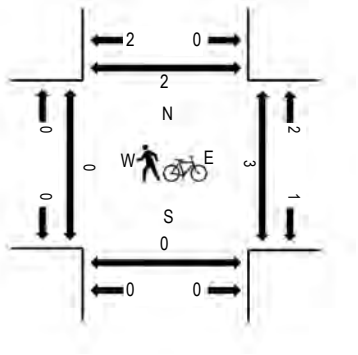
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 67 ASHBY RD & LA MESA AVE PM
Date: Wednesday, December 9, 2020
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	LA MESA AVE Eastbound				LA MESA AVE Westbound				ASHBY RD Northbound				ASHBY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	2	0	2	0	2	0	2	0	1	39	9	0	0	25	2	84	260	0	2	0	2
4:15 PM	0	1	0	2	0	6	0	1	0	0	14	5	0	1	17	4	51	227	0	0	0	0
4:30 PM	0	3	0	2	0	6	0	1	0	0	23	6	0	1	19	2	63	210	0	0	0	0
4:45 PM	0	2	1	0	0	10	0	0	0	0	20	3	0	0	23	3	62	182	0	1	0	0
5:00 PM	0	0	1	2	0	5	0	0	0	2	17	3	0	1	19	1	51	151	0	0	0	0
5:15 PM	0	2	0	1	0	3	0	1	0	1	9	1	0	1	15	0	34		0	0	0	0
5:30 PM	0	0	0	0	0	2	0	1	0	2	13	5	0	1	10	1	35		0	0	0	0
5:45 PM	0	0	0	1	0	2	0	0	0	1	14	0	0	0	11	2	31		0	0	0	0

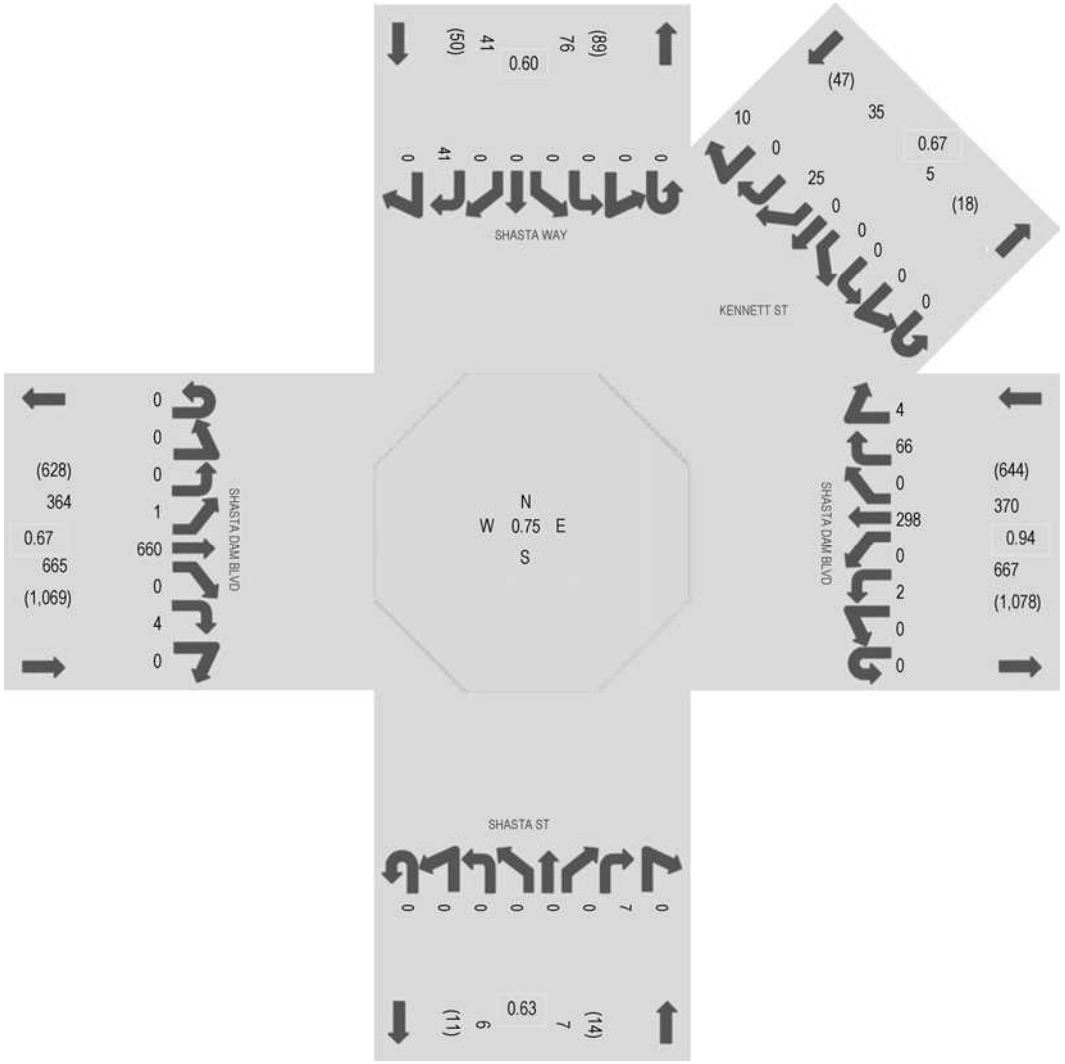
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	8
Lights	0	8	1	6	0	24	0	4	0	1	90	23	0	2	81	11	251
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	8	1	6	0	24	0	4	0	1	96	23	0	2	84	11	260

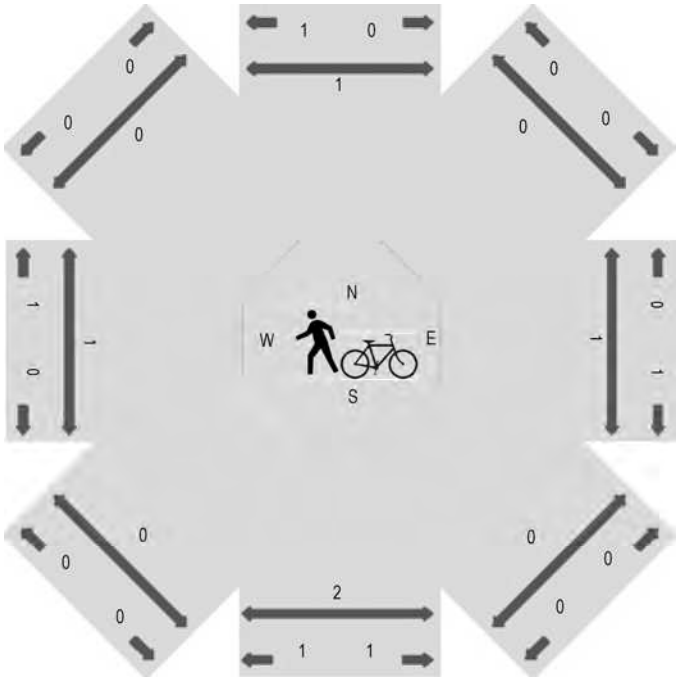
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Location: 4 SHASTA ST & SHASTA DAM BLVD AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
7:00 AM	0	0	0	0	69	0	13	0									0	0	0	0	0	0	1	0								
7:15 AM	0	0	2	0	74	0	17	0									0	0	0	0	0	0	1	0								
7:30 AM	0	0	0	0	71	0	24	2									0	0	0	0	0	0	2	0								
7:45 AM	0	0	0	0	84	0	12	2									0	0	0	0	0	0	3	0								
8:00 AM	0	0	1	0	61	0	6	6									0	0	0	0	0	0	4	0								
8:15 AM	0	0	1	0	71	0	1	2									0	0	0	0	0	0	1	0								
8:30 AM	1	0	2	0	48	0	3	4									0	0	0	0	0	0	0	0								
8:45 AM	0	0	0	0	65	0	2	0									0	0	0	0	0	0	2	0								
Count Total	1	0	6	0	543	0	78	16									0	0	0	0	0	0	14	0								
Peak Hour	0	0	2	0	298	0	66	4									0	0	0	0	0	0	7	0								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR		
7:00 AM	0	0	0	0	123	0	1	0									0	0	0	0	0	0	6	0	0	0	0	0	0	5	0	0	218	1,118
7:15 AM	0	0	0	0	164	0	1	0									0	0	0	0	0	0	17	0	0	0	0	0	0	4	0	3	283	1,091
7:30 AM	0	0	0	1	245	0	1	0									0	0	0	0	0	0	12	0	0	0	0	0	0	7	0	6	371	987
7:45 AM	0	0	0	0	128	0	1	0									0	0	0	0	0	0	6	0	0	0	0	0	0	9	0	1	246	796
8:00 AM	0	0	0	0	105	0	0	0									0	0	0	0	0	0	6	0	0	0	0	0	0	2	0	0	191	706
8:15 AM	0	0	0	0	96	0	0	0									0	0	0	0	0	0	1	0	0	0	0	0	0	5	0	1	179	
8:30 AM	0	0	0	0	122	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	180	
8:45 AM	0	0	0	0	80	0	1	0									0	0	0	0	0	0	2	0	1	0	0	0	0	3	0	0	156	
Count Total	0	0	0	1	1,063	0	5	0									0	0	0	0	0	0	50	0	1	0	0	0	0	35	0	11	1,824	
Peak Hour	0	0	0	1	660	0	4	0									0	0	0	0	0	0	41	0	0	0	0	0	0	25	0	10	1,118	

Peak Rolling Hour Flow Rates

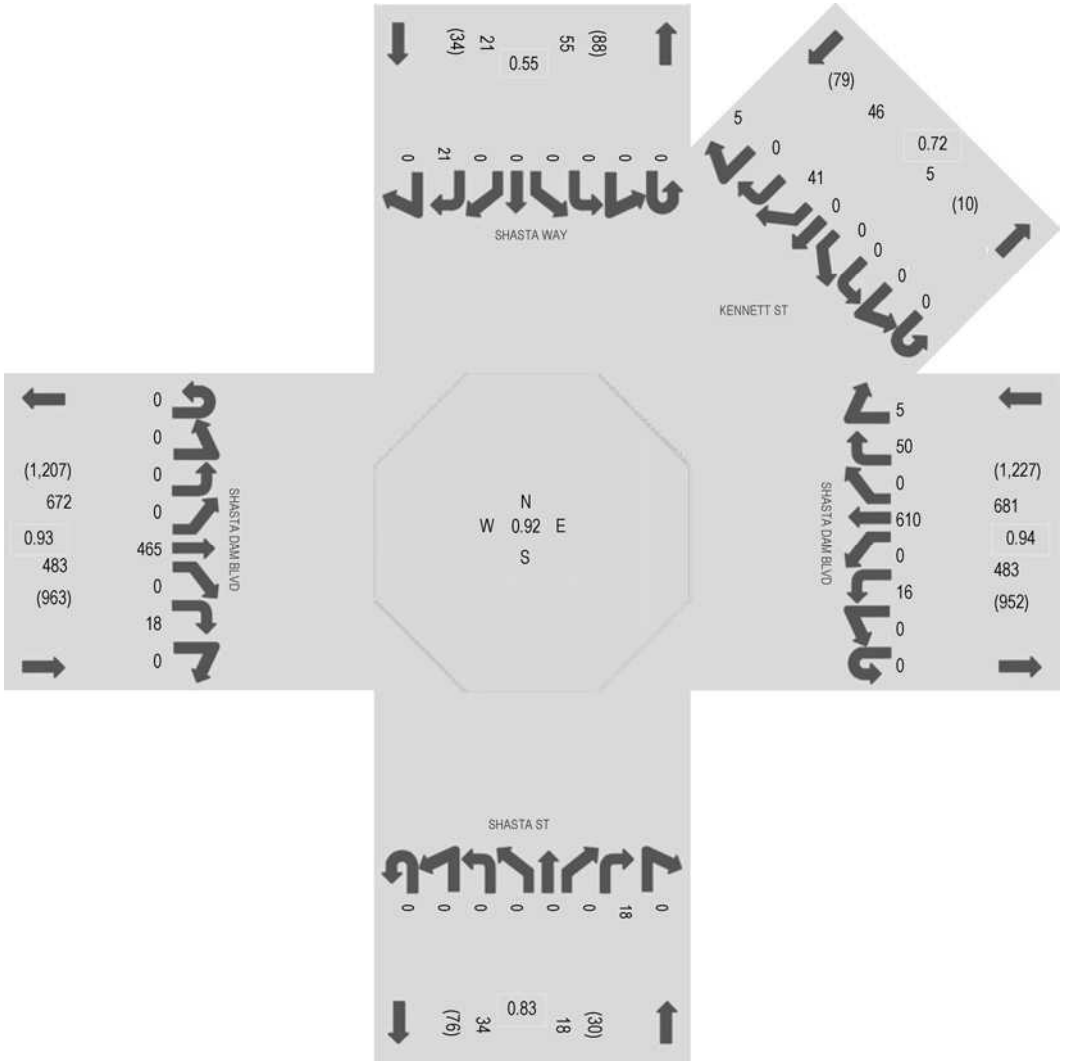
Vehicle Type	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
Articulated Trucks	0	0	0	0	7	0	0	2									0	0	0	0	0	0	0	0								
Lights	0	0	2	0	281	0	64	2									0	0	0	0	0	0	7	0								
Mediums	0	0	0	0	10	0	2	0									0	0	0	0	0	0	0	0								
Count Total	0	0	2	0	298	0	66	4									0	0	0	0	0	0	7	0								

Vehicle Type	Eastbound								Southeastbound								Southbound								Southwestbound								
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	Total
Articulated Trucks	0	0	0	0	2	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Lights	0	0	0	1	650	0	4	0									0	0	0	0	0	0	36	0	0	0	0	0	0	23	0	10	1,080
Mediums	0	0	0	0	8	0	0	0									0	0	0	0	0	0	5	0	0	0	0	0	0	2	0	0	27
Count Total	0	0	0	1	660	0	4	0									0	0	0	0	0	0	41	0	0	0	0	0	0	25	0	10	1,118

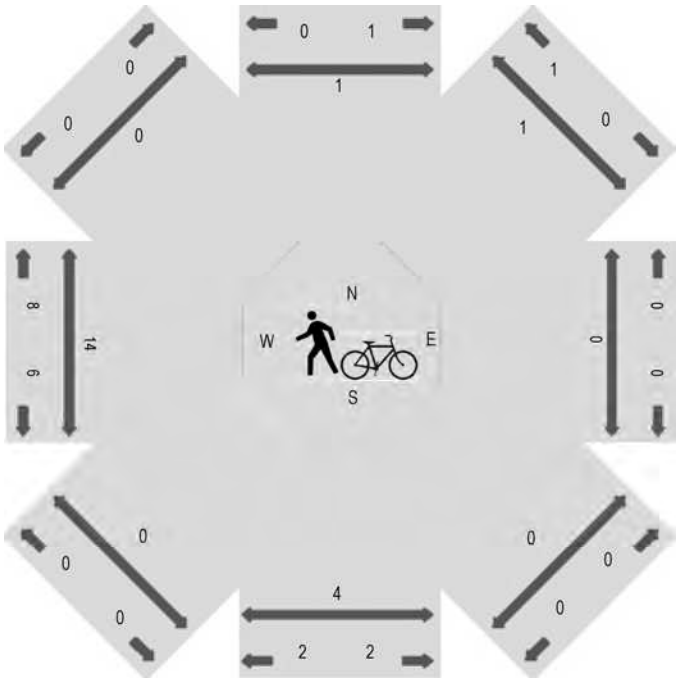
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Location: 4 SHASTA ST & SHASTA DAM BLVD PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
4:00 PM	0	0	4	0	153	0	6	2									0	0	0	0	0	0	1	0								
4:15 PM	0	0	6	0	137	0	7	1									0	0	0	0	1	0	1	0								
4:30 PM	0	0	3	0	97	0	9	1									0	0	0	0	0	0	6	0								
4:45 PM	0	0	4	0	164	0	11	2									0	0	0	0	0	0	3	0								
5:00 PM	0	0	7	0	152	0	15	0									0	0	0	0	0	0	5	0								
5:15 PM	0	0	2	0	159	0	14	3									0	0	0	0	0	0	6	0								
5:30 PM	0	0	3	0	135	0	10	0									0	0	0	0	0	0	4	0								
5:45 PM	0	0	7	0	107	0	5	1									0	0	0	0	0	0	3	0								
Count Total	0	0	36	0	1,104	0	77	10									0	0	0	0	1	0	29	0								
Peak Hour	0	0	16	0	610	0	50	5									0	0	0	0	0	0	18	0								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR		
4:00 PM	0	0	0	0	122	0	4	0									0	0	0	0	0	0	3	0	0	0	0	0	0	4	0	1	300	1,161
4:15 PM	0	0	0	0	133	0	5	0									0	0	0	0	0	0	2	0	0	0	0	0	0	5	0	1	299	1,185
4:30 PM	0	0	0	0	114	0	4	0									0	0	0	0	0	0	2	0	0	0	0	0	0	10	0	1	247	1,225
4:45 PM	0	0	0	0	118	0	5	0									0	0	0	0	0	0	3	0	0	0	0	0	0	5	0	0	315	1,249
5:00 PM	0	0	0	0	127	0	5	0									0	0	0	0	0	0	3	0	0	0	0	0	0	10	0	0	324	1,172
5:15 PM	0	0	0	0	119	0	7	0									0	0	0	0	0	0	11	0	0	0	0	0	0	15	0	3	339	
5:30 PM	0	0	0	0	101	0	1	0									0	0	0	0	0	0	4	0	0	0	0	0	0	11	0	2	271	
5:45 PM	0	0	0	0	89	0	9	0									0	0	0	0	0	0	6	0	0	0	0	0	0	9	0	2	238	
Count Total	0	0	0	0	923	0	40	0									0	0	0	0	0	0	34	0	0	0	0	0	0	69	0	10	2,333	
Peak Hour	0	0	0	0	465	0	18	0									0	0	0	0	0	0	21	0	0	0	0	0	0	41	0	5	1,249	

Peak Rolling Hour Flow Rates

Vehicle Type	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
Articulated Trucks	0	0	0	0	2	0	0	0									0	0	0	0	0	0	0	0								
Lights	0	0	16	0	607	0	50	5									0	0	0	0	0	0	18	0								
Mediums	0	0	0	0	1	0	0	0									0	0	0	0	0	0	0	0								
Count Total	0	0	16	0	610	0	50	5									0	0	0	0	0	0	18	0								

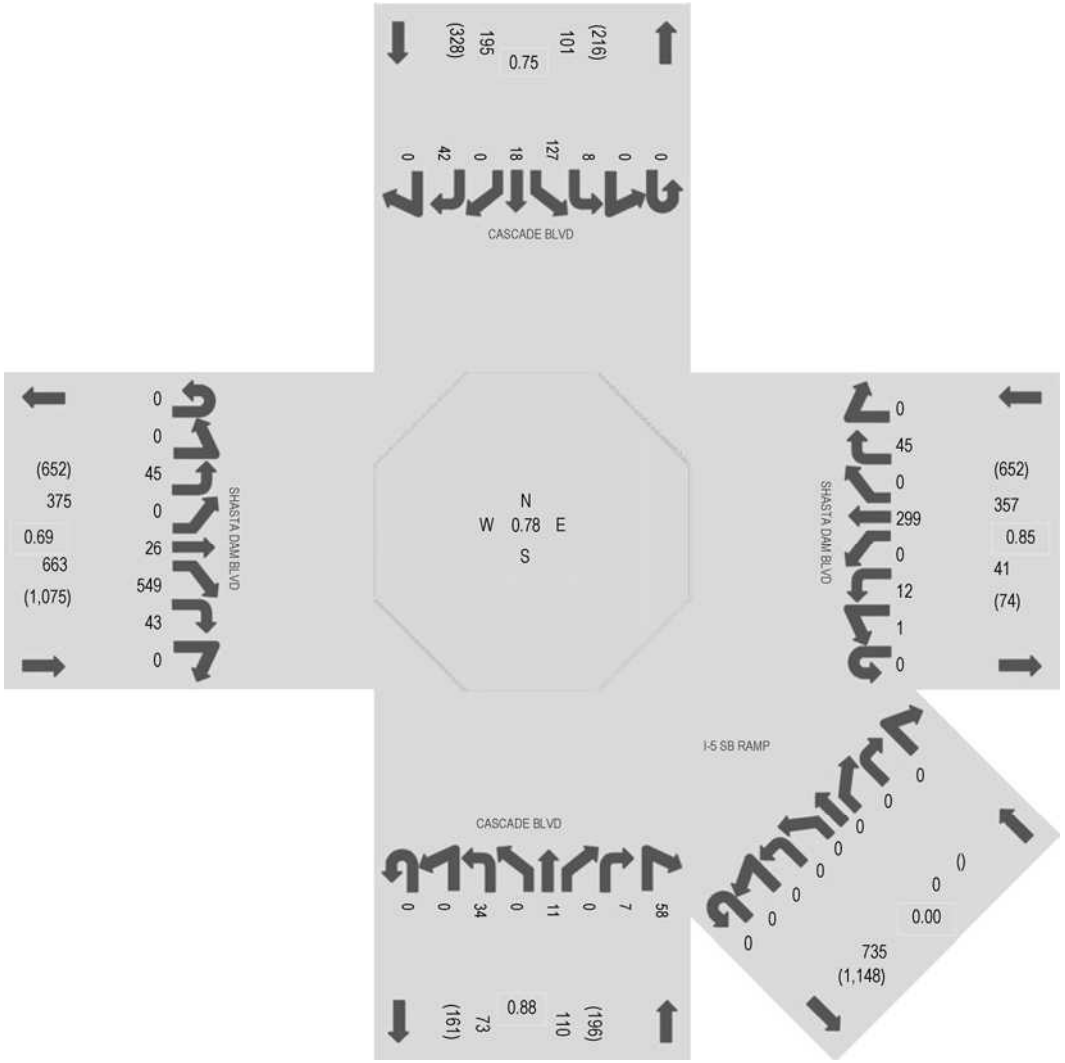
Vehicle Type	Eastbound								Southeastbound								Southbound								Southwestbound								
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	Total
Articulated Trucks	0	0	0	0	1	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Lights	0	0	0	0	459	0	18	0									0	0	0	0	0	0	21	0	0	0	0	0	0	41	0	5	1,240
Mediums	0	0	0	0	5	0	0	0									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Count Total	0	0	0	0	465	0	18	0									0	0	0	0	0	0	21	0	0	0	0	0	0	41	0	5	1,249

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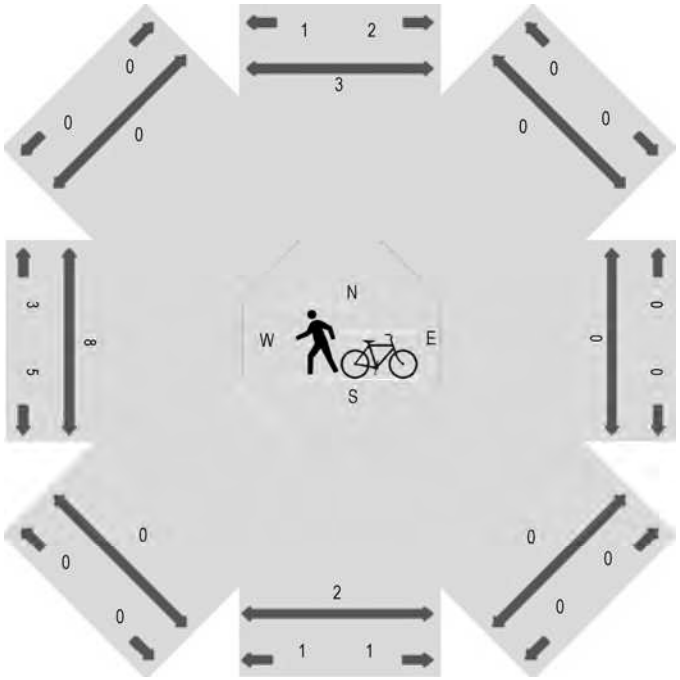
Location: 5 CASCADE BLVD & SHASTA DAM BLVD AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

NEWER TRAFFIC COUNTS AVAILABLE AT THIS INTERSECTION

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

NEWER TRAFFIC COUNTS AVAIABLE AT
THIS INTERSECTION

Traffic Counts - Motorized Vehicles

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
7:00 AM	0	1	1	0	66	0	11	0	0	0	0	0	0	0	0	0	0	0	5	0	3	0	0	11								
7:15 AM	0	0	2	0	75	0	6	0	0	0	0	0	0	0	0	0	0	0	8	0	4	0	1	14								
7:30 AM	0	0	4	0	72	0	14	0	0	0	0	0	0	0	0	0	0	0	11	0	2	0	3	16								
7:45 AM	0	0	5	0	86	0	14	0	0	0	0	0	0	0	0	0	0	0	10	0	2	0	3	17								
8:00 AM	0	0	7	0	53	0	12	0	0	0	0	0	0	0	0	0	0	0	11	0	3	0	1	7								
8:15 AM	0	0	4	0	56	0	13	0	0	0	0	0	0	0	0	0	0	0	14	0	3	0	2	6								
8:30 AM	0	0	12	0	43	0	16	0	0	0	0	0	0	0	0	0	0	0	7	0	2	0	0	7								
8:45 AM	0	0	8	0	54	0	17	0	0	0	0	0	0	0	0	0	0	0	7	0	3	0	0	13								
Count Total	0	1	43	0	505	0	103	0	0	0	0	0	0	0	0	0	0	0	73	0	22	0	10	91								
Peak Hour	0	1	12	0	299	0	45	0	0	0	0	0	0	0	0	0	0	0	34	0	11	0	7	58								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR		
7:00 AM	0	0	7	0	3	111	3	0									0	0	2	14	4	0	11	0									253	1,325
7:15 AM	0	0	7	0	10	138	10	0									0	0	3	29	8	0	12	0									327	1,313
7:30 AM	0	0	20	0	5	194	20	0									0	0	1	49	5	0	11	0									427	1,208
7:45 AM	0	0	11	0	8	106	10	0									0	0	2	35	1	0	8	0									318	1,020
8:00 AM	0	0	9	0	3	89	12	0									0	0	2	17	5	0	10	0									241	926
8:15 AM	0	0	7	0	6	75	9	0									0	0	3	11	5	0	8	0									222	
8:30 AM	0	0	16	0	4	94	5	0									0	0	4	14	9	0	6	0									239	
8:45 AM	0	0	14	0	2	61	6	0									0	0	6	19	6	0	8	0									224	
Count Total	0	0	91	0	41	868	75	0									0	0	23	188	43	0	74	0									2,251	
Peak Hour	0	0	45	0	26	549	43	0									0	0	8	127	18	0	42	0									1,325	

NEWER TRAFFIC COUNTS AVAIABLE AT THIS INTERSECTION

Peak Rolling Hour Flow Rates

Vehicle Type	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
Articulated Trucks	0	0	0	0	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Lights	0	1	12	0	286	0	43	0	0	0	0	0	0	0	0	0	0	0	29	0	11	0	7	57								
Mediums	0	0	0	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1								
Count Total	0	1	12	0	299	0	45	0	0	0	0	0	0	0	0	0	0	0	34	0	11	0	7	58								

Vehicle Type	Eastbound								Southeastbound								Southbound								Southwestbound								
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	Total
Articulated Trucks	0	0	0	0	0	0	0	0									0	0	0	1	0	0	0	0									10
Lights	0	0	43	0	22	547	42	0									0	0	8	125	17	0	41	0									1,291
Mediums	0	0	2	0	4	2	1	0									0	0	0	1	1	0	1	0									24
Count Total	0	0	45	0	26	549	43	0									0	0	8	127	18	0	42	0									1,325

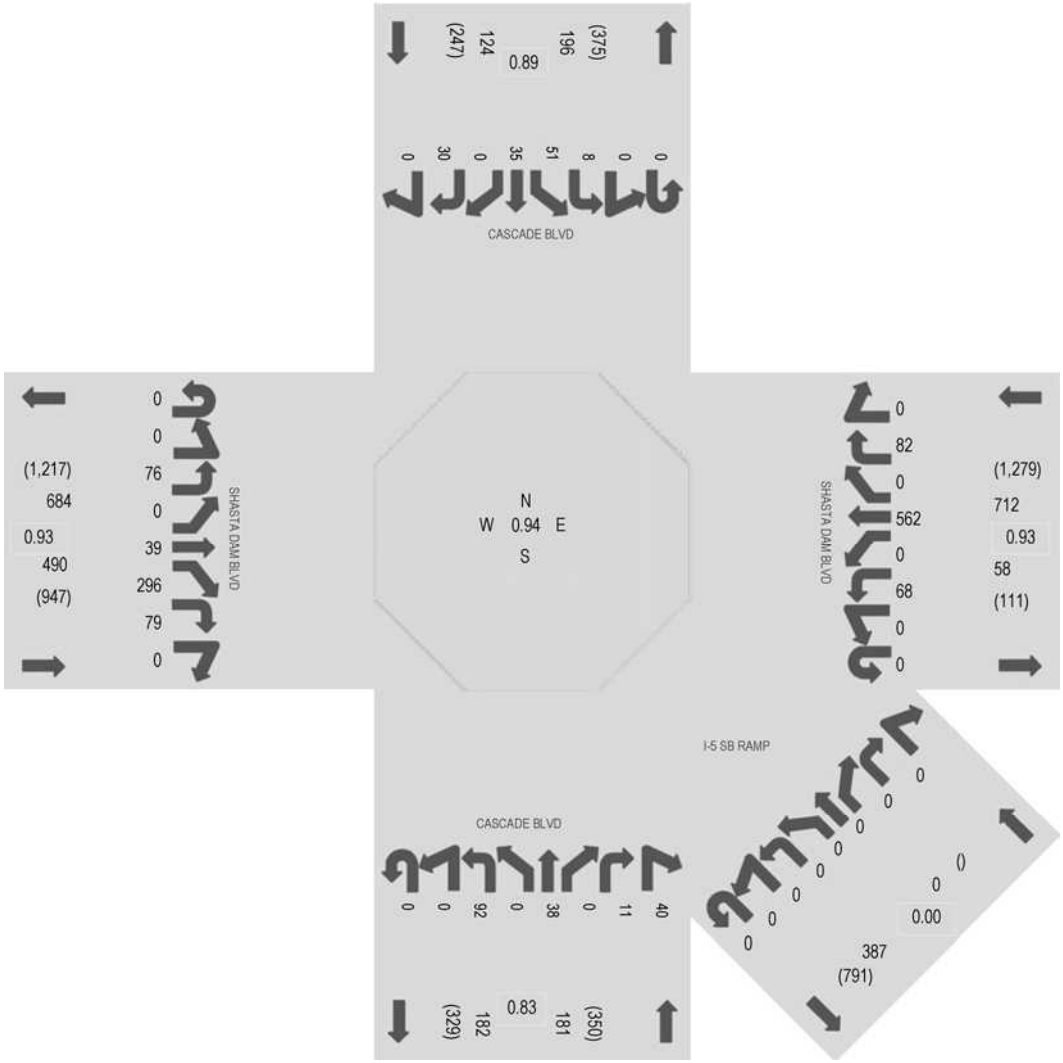
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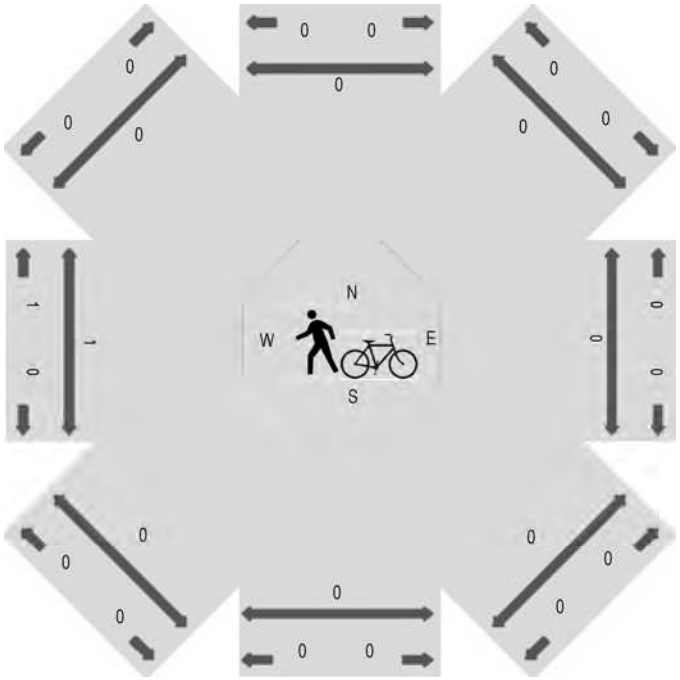
Location: 5 CASCADE BLVD & SHASTA DAM BLVD PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

NEWER TRAFFIC COUNTS AVAIABLE AT THIS INTERSECTION

Peak Hour - Motorized Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

NEWER TRAFFIC COUNTS AVAIABLE AT THIS INTERSECTION

Traffic Counts - Motorized Vehicles

Interval Start Time	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
4:00 PM	0	0	13	0	115	0	17	0	0	0	0	0	0	0	0	0	0	0	23	0	4	0	2	21								
4:15 PM	0	0	23	0	126	0	18	0	0	0	0	0	0	0	0	0	0	0	16	0	7	0	2	17								
4:30 PM	0	0	17	0	89	0	28	0	0	0	0	0	0	0	0	0	0	0	14	0	10	0	3	10								
4:45 PM	0	0	18	0	152	0	22	0	0	0	0	0	0	0	0	0	0	0	20	0	7	0	2	9								
5:00 PM	0	0	15	0	148	0	24	0	0	0	0	0	0	0	0	0	0	0	23	0	7	0	6	8								
5:15 PM	0	0	21	0	140	0	18	0	0	0	0	0	0	0	0	0	0	0	22	0	8	0	2	12								
5:30 PM	0	0	14	0	122	0	18	0	0	0	0	0	0	0	0	0	0	0	27	0	16	0	1	11								
5:45 PM	0	0	10	0	92	0	19	0	0	0	0	0	0	0	0	0	0	0	18	0	10	0	1	11								
Count Total	0	0	131	0	984	0	164	0	0	0	0	0	0	0	0	0	0	0	163	0	69	0	19	99								
Peak Hour	0	0	68	0	562	0	82	0	0	0	0	0	0	0	0	0	0	0	92	0	38	0	11	40								

Interval Start Time	Eastbound								Southeastbound								Southbound								Southwestbound								Total	Rolling Hour
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR		
4:00 PM	0	0	14	0	6	84	20	0									0	0	3	9	4	0	14	0									349	1,414
4:15 PM	0	0	23	0	15	79	15	0									0	0	3	15	8	0	7	0									374	1,466
4:30 PM	0	0	14	0	11	81	11	0									0	0	0	7	5	0	10	0									310	1,473
4:45 PM	0	0	13	0	10	83	18	0									0	0	3	12	5	0	7	0									381	1,507
5:00 PM	0	0	24	0	9	83	21	0									0	0	2	12	13	0	6	0									401	1,409
5:15 PM	0	0	20	0	10	73	22	0									0	0	0	14	8	0	11	0									381	
5:30 PM	0	0	19	0	10	57	18	0									0	0	3	13	9	0	6	0									344	
5:45 PM	0	0	15	0	2	54	13	0									0	0	5	16	8	0	9	0									283	
Count Total	0	0	142	0	73	594	138	0									0	0	19	98	60	0	70	0									2,823	
Peak Hour	0	0	76	0	39	296	79	0									0	0	8	51	35	0	30	0									1,507	

NEWER TRAFFIC COUNTS AVAIABLE AT THIS INTERSECTION

Peak Rolling Hour Flow Rates

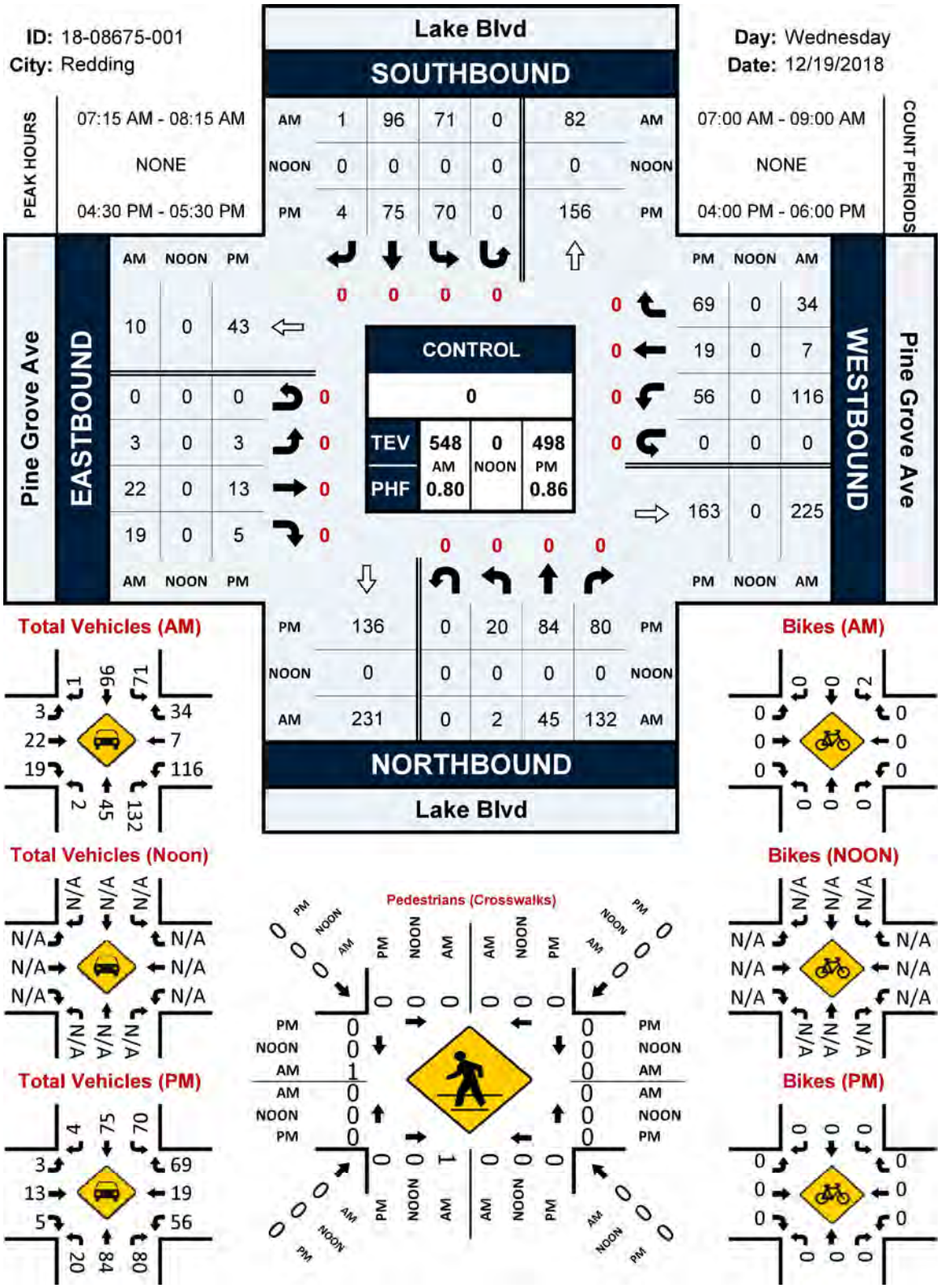
Vehicle Type	Westbound								Northwestbound								Northbound								Northeastbound							
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR
Articulated Trucks	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Lights	0	0	67	0	558	0	82	0	0	0	0	0	0	0	0	0	0	0	92	0	37	0	11	39								
Mediums	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1								
Count Total	0	0	68	0	562	0	82	0	0	0	0	0	0	0	0	0	0	0	92	0	38	0	11	40								

Vehicle Type	Eastbound								Southeastbound								Southbound								Southwestbound								
	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	U	HL	L	BL	T	BR	R	HR	Total
Articulated Trucks	0	0	0	0	0	1	0	0									0	0	0	0	0	0	0	0									4
Lights	0	0	76	0	39	291	77	0									0	0	7	51	35	0	30	0									1,492
Mediums	0	0	0	0	0	4	2	0									0	0	1	0	0	0	0	0									11
Count Total	0	0	76	0	39	296	79	0									0	0	8	51	35	0	30	0									1,507

Prepared by National Data & Surveying Services

Lake Blvd & Pine Grove Ave

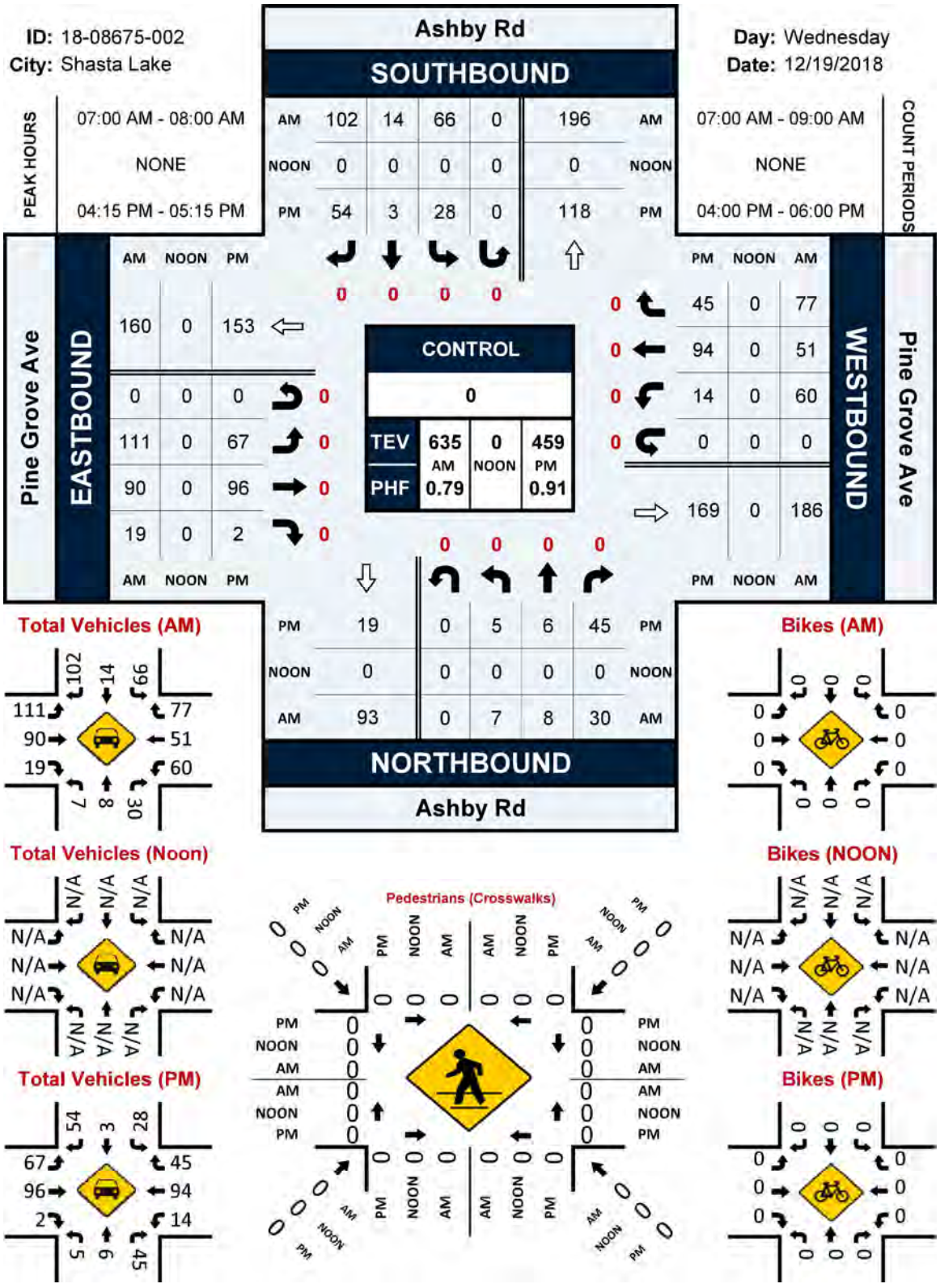
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

Ashby Rd & Pine Grove Ave

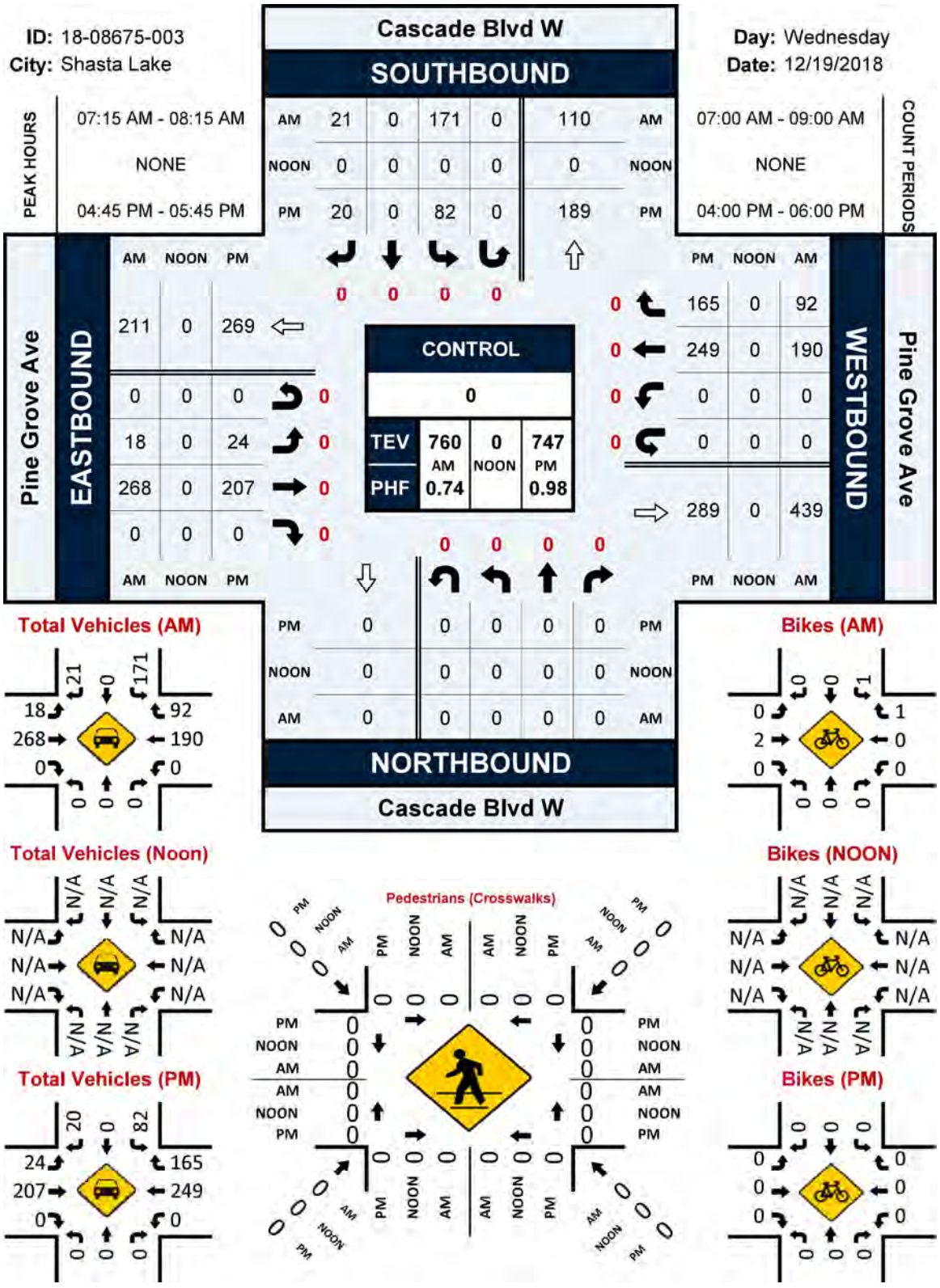
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

Cascade Blvd W & Pine Grove Ave

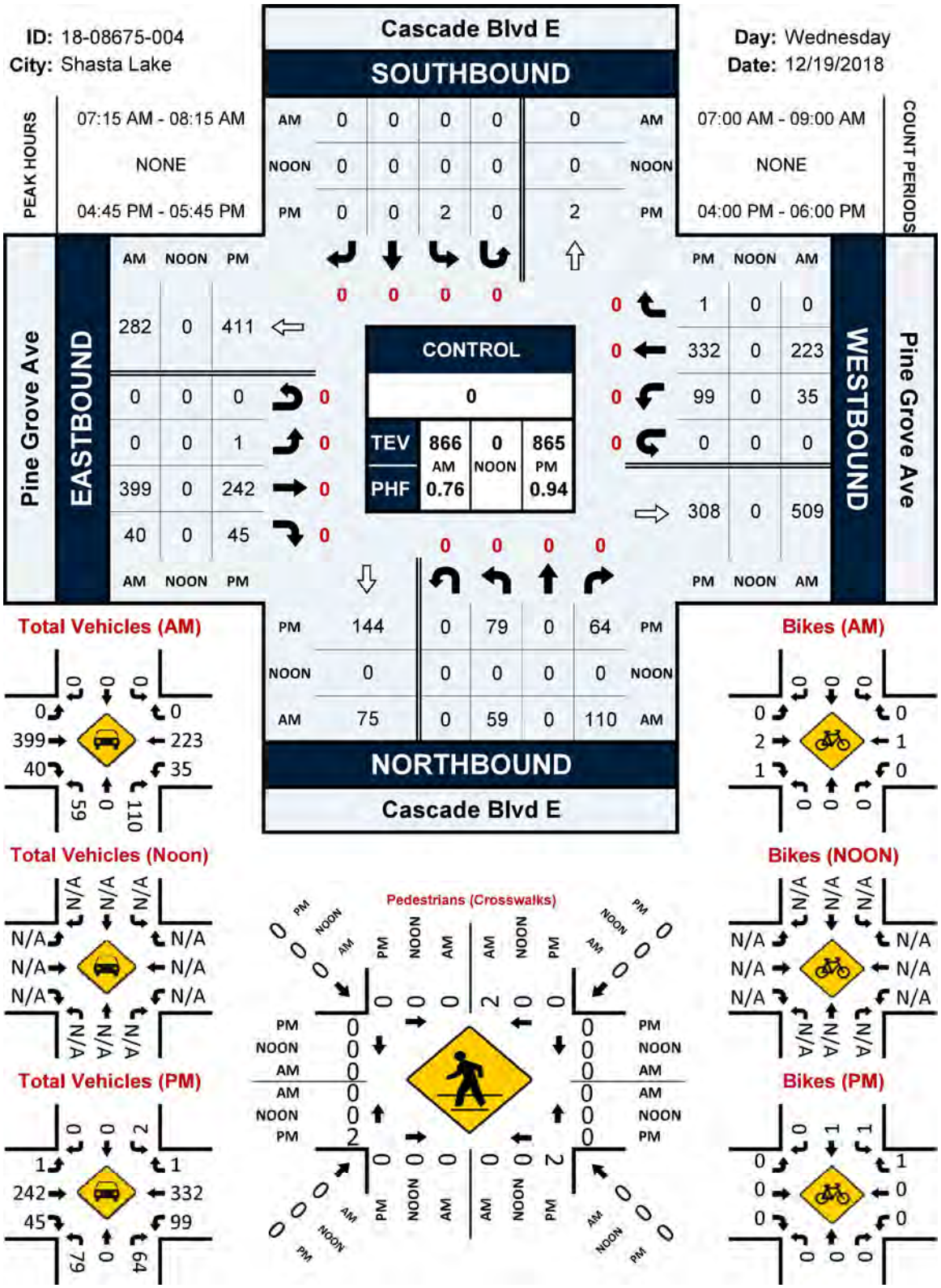
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

Cascade Blvd E & Pine Grove Ave

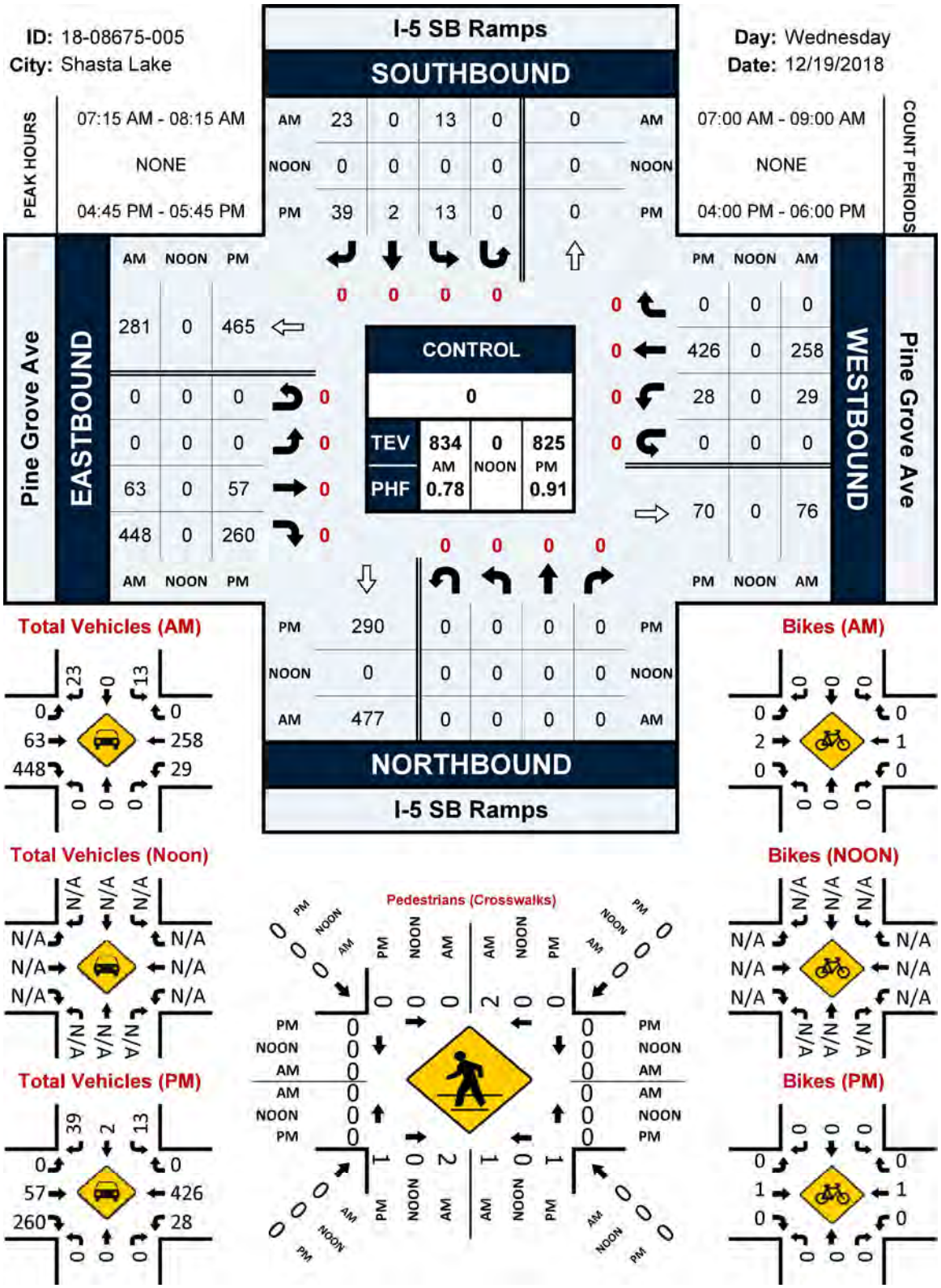
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

I-5 SB Ramps & Pine Grove Ave

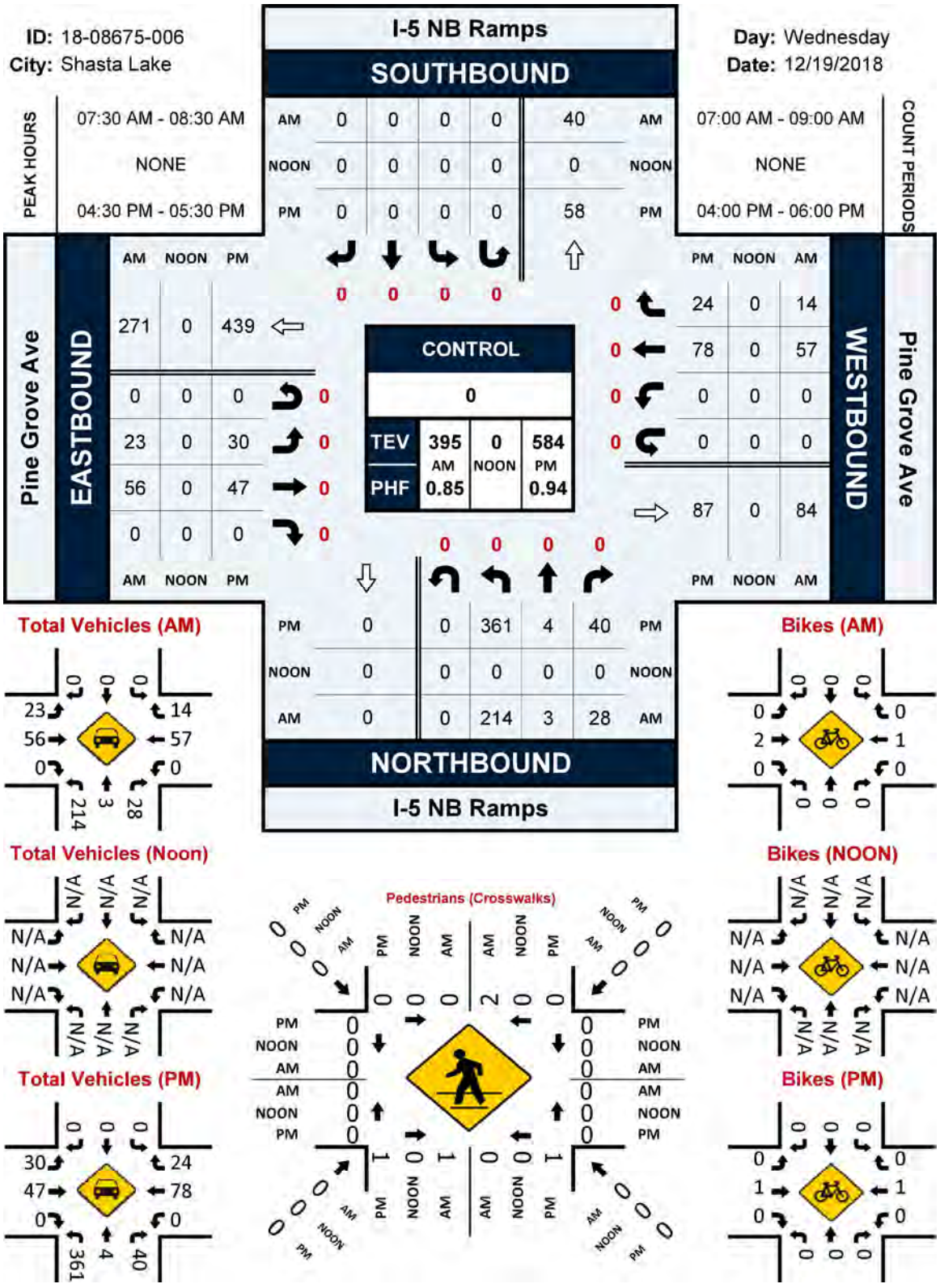
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

I-5 NB Ramps & Pine Grove Ave

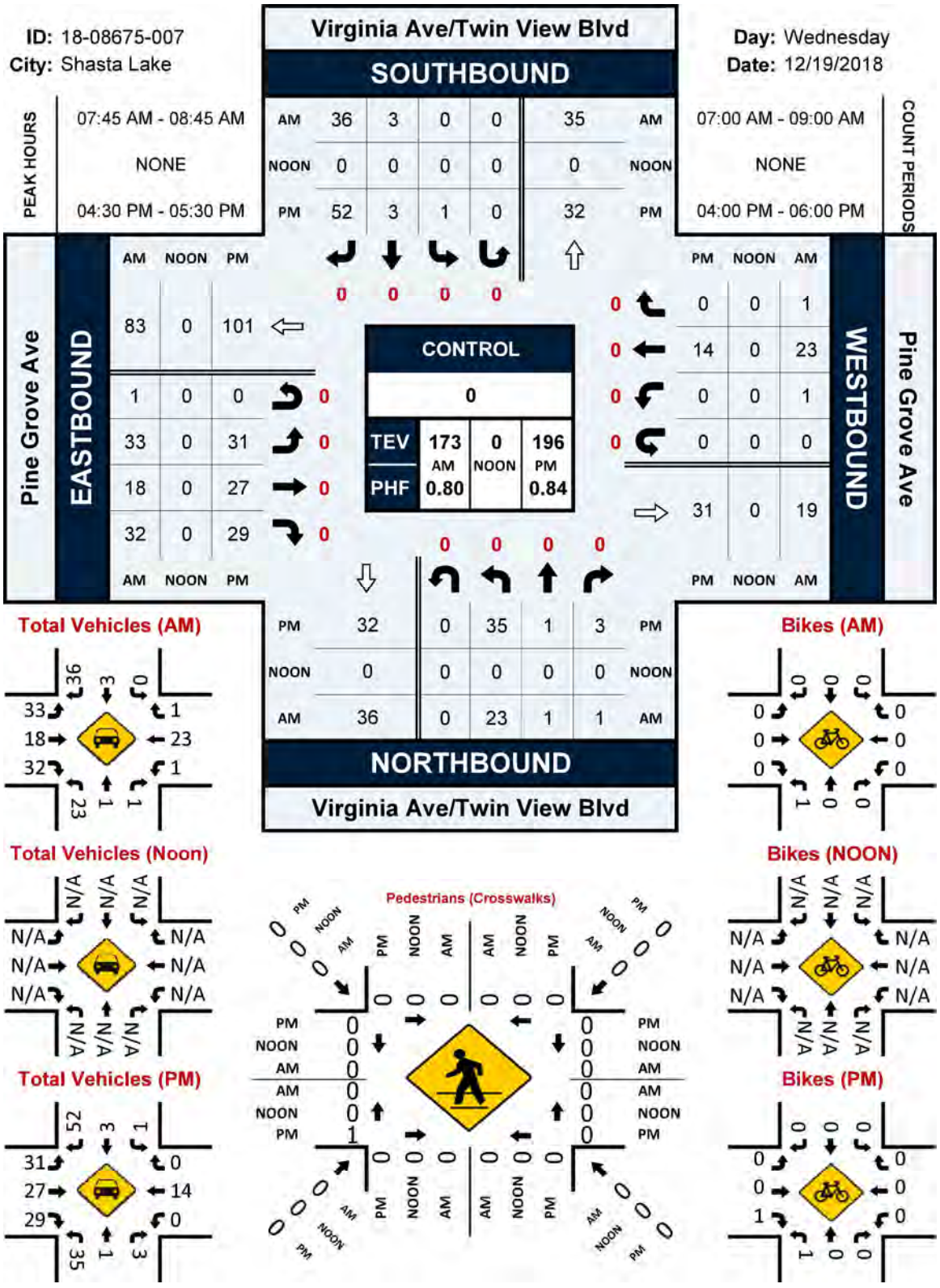
Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

Virginia Ave/Twin View Blvd & Pine Grove Ave

Peak Hour Turning Movement Count



Legend

ADT

City Limit

RED BUD

RUBY

DUVAL

HOMER

1030 21

1473 1

SHASTA DAM BLVD

MONTEGO

BUCKEYE

KIRKLE

ROSE

PARK

PIT

SACRAMENTO

TOYON

22 1833

FIG

OAK

BEACON

HILL

SHASTA

LEISURE

NELLIE BELL

RANCHERA

KOKANEE

23 2531

FLANAGAN

24.1 2634

MOCCASIN

LAKE BLVD

24.2 2667

YELLOW PINE

BELTLINE

24.3 2755

14.1 3689

FARGO

TERRA ROSA

PRESS

WILLIAMSON

CHARTERS

SPIKE

NEWTOWN

WAVERLY

LAKE

HOLLY

OAK

FIRST

SECOND

THIRD

FIFTH

LINDA

WHITE

MILLER

SHASTA PARK

403

LAKEVIEW

TWIN LAKE

POPLAR

PARK

HAZEL

OURAY

ALTUS ALTUS

CREEKSIDE

OLIVE

RED

FOREST

CENTRAL

LASSEN

OLIVER

JOHNSON

101 6

RED BLUFF

LOCUST

GRAY PINE

2.1 4124

28 344

MAIN

8 163

25 2832

FLOWER

1048 29

26 2422

LOS GATOS

10 681

LA MESA

EL CAJON

MONTANA

CHURCH

DURRETT

WILLAMETTE

11 587

VALLECITO

BURSELL

RIO MONTE

HARDENBROOK

27 2265

WOODLEY

BLOOMSBURY

CRAFTSMAN

WALTON

13 392

ARLENE

COEUR D'ALENE

D'ALENE

PAGE

FARM HILL

CANA

KIMMIE

IDAHO

2257

15 3734

14.3 3789

14.4 3763

IRONHORSE

TIBBITTS

SHASTA GATEWAY

723

IRON

BRONZE

ASHBY

16 4805

PINE GROVE AVE

DEER CREEK

RISSTAY

KENSINGTON

TRINITY

20 1120

PEMBROKE

AVINGTON

WANDSWORTH

DARTFORD

EPPING

IMPRESSION

BUTTERFLY

SIOUX

210

1579

CASCADE

AUTUMN HARVEST

TWIN VIEW

INDIAN

RIDDLE

45 2998

48 429

TOMAHAWK

ARROWHEAD

WINTUN

LOCH

ORKNEY

HUMBOLDT

OAK

PORTY

47

639

LARKIN

VIRGINIA

506

18

ALPINE

2641

17 4937

44 2953

SMITH

OSTLING

COTTAGE

IVY

43 2897

1104 46

MARILYN

LEONA

WEBSTER

AKRICH PARK

19 537

AKRICH

BOCA

PENSACOLA

248 30

WASHINGTON

MUSSEL SHOALS

KOCH

TANYA

NICHOLE

KEVIN

EUGENE

DYKE

SHASTA

7 309

CHICO

GRAND RIVER

MEDIAN

9 211

260 31

FRONT

681

34 SHASTA DAM

1181

32 690

MEADE

FORT PECK

STANTON

CABELLO

LOCUST

35 745

GRAND

36 812

OREGON

NELL ORR

BUENA VISTA

41 2025

39 728

3 11796

KENNETT

4 13039

37 759

FORT PECK

40 620

42 4042

CASCADE

12808 5

38 687

OREGON

BONNEVILLE

1701

BOULDER

SHASTA

WASHINGTON

GRAND COULEE

482 33

BONNEVILLE

DEER CREEK

SOUTH

447

VALLECITO

12 1028

ELLEN

PARKER

PARKER

INTERSTATE 5

Paper Size ANSI B

0 0.09 0.18 0.27 0.36

Miles

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 2011
Grid: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US

N

GHD

CITY OF SHASTA LAKE
TRAFFIC COUNT REPORT

AVERAGE DAILY TRAFFIC (ADT)
AT STUDY LOCATIONS

Project No. 11220836
Revision No. -
Date 02/23/2021

FIGURE 2.1

N:\US\San Luis Obispo\Projects\561\11220836\GIS\Maps\Working\SLTCR_ADT.mxd
Print date: 23 Feb 2021 - 08:11

Data source: . Created by: edarke

APPENDIX B

TRAFFIC MODEL POST-PROCESSING FORECASTING CALCULATIONS

Object ID	ID	N/S	E/W	Node	Existing (2020) Model AM												Future (2040) Model AM												Delta (Future-Existing)											
					NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	CNT	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	CNT	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	CNT	Sum
1	1	Lake Blvd	SR-151	8032	-	-	11	-	-	-	-	-	-	18	-	-	***2***	-	1	17	3	-	-	-	-	-	17	-	3	5	-	1	6	3	-	-	-	-	-	(1)	-	3	3	12
16	2	Shasta Park Rd	SR-151	8040	1	-	-	-	-	-	-	48	-	-	15	-	***3***	6	-	-	-	-	-	-	62	4	-	20	-	4	5	-	-	-	-	-	-	14	4	-	5	-	1	28
3	3	Front St/Ashby Rd	Shasta Dam Blvd	7512	12	-	39	-	38	48	-	232	8	-	-	-	6	13	-	31	-	20	56	-	293	18	-	-	-	6	1	-	(8)	-	(18)	8	-	61	10	-	-	-	-	54
29	4	Montana Ave	Front St/Shasta Dam WB	7517	10	5	-	-	24	8	-	-	-	1	68	18	7	3	7	-	-	23	5	-	-	-	3	68	14	7	(7)	2	-	-	(1)	(3)	-	-	-	2	-	(4)	-	***(11)***
30	5	Montana Ave	Shasta Dam Blvd EB	7513	-	11	22	24	1	-	4	259	8	-	-	-	7	-	3	34	23	3	-	7	312	5	-	-	-	7	-	(8)	12	(1)	2	-	3	53	(3)	-	-	-	-	58
6	6	Median Ave	Shasta Dam Blvd	8076	-	-	-	43	-	10	6	352	-	-	113	7	6	-	-	-	42	-	10	6	432	-	-	106	8	6	-	-	-	(1)	-	-	-	80	-	-	(7)	1	-	73
8	7	Mussel Shoals Ave	Red Bluff Ave	8064	4	1	-	-	6	-	1	-	37	-	-	-	5	9	2	-	-	3	2	-	-	39	-	-	-	5	5	1	-	-	(3)	2	(1)	-	2	-	-	-	-	6
28	8	Mussel Shoals Ave	Main St	8068	5	5	-	-	43	-	-	-	31	-	-	-	4	3	11	-	-	42	-	-	1	27	-	-	-	5	(2)	6	-	-	(1)	-	-	1	(4)	-	-	-	1	-
4	9	Mussel Shoals Ave/Grand Coulee Blvd	Shasta Dam Blvd	8082	10	2	1	67	1	6	1	415	14	-	118	7	11	17	2	-	66	-	3	1	486	22	-	114	10	9	7	-	(1)	(1)	(1)	(3)	0	71	8	-	(4)	3	***(2)***	79
27	10	Shasta Way	Front St	8043	-	4	7	2	32	-	-	-	-	8	-	1	6	-	12	10	2	52	-	-	-	-	6	-	3	6	-	8	3	-	20	-	-	-	-	(2)	-	2	-	31
19	11	Shasta Way	Shasta Dam Blvd	8086	-	2	41	30	5	5	6	513	-	18	122	3	10	-	5	44	51	4	3	6	594	-	26	131	11	10	-	3	3	21	(1)	(2)	-	81	-	8	9	8	-	130
14	12	Cascade Blvd	Shasta Dam Blvd	8098	-	4	29	97	3	27	15	568	1	3	116	30	11	13	3	68	112	5	17	7	677	6	7	137	58	12	13	(1)	39	15	2	(10)	(8)	109	5	4	21	28	1	217
26	13	I-5 SB Off/On Ramps	Shasta Dam Blvd	3538	-	-	-	-	-	17	-	7	687	-	132	-	4	-	-	-	-	-	24	-	14	842	-	178	-	4	-	-	-	-	-	7	-	7	155	-	46	-	-	215
18	14	Ashby Rd	Pine Grove Ave	8142	2	3	7	27	4	24	28	87	25	89	13	13	12	4	6	24	22	6	27	37	114	37	150	27	17	12	2	3	17	(5)	2	3	9	27	12	61	14	4	-	149
21	15	Cascade Blvd	Pine Grove Ave N	10094	-	-	-	142	-	1	4	182	-	-	121	36	6	-	-	-	212	-	2	2	245	-	-	202	63	6	-	-	-	70	-	1	(2)	63	-	-	81	27	-	240
25	16	I-5 SB Off/On Ramps	Pine Grove Ave	8153	-	-	-	99	-	19	-	61	289	45	148	-	6	-	-	-	111	-	24	-	77	396	64	251	-	6	-	-	-	12	-	5	-	16	107	19	103	-	-	262
24	17	I-5 NB Off/On Ramps	Pine Grove Ave	8159	116	-	10	-	-	-	16	144	-	-	77	35	6	210	-	95	-	-	-	11	177	-	-	105	49	6	94	-	85	-	-	-	(5)	33	-	-	28	14	-	250
23	18	Virginia Ave/Twin View Blvd	Pine Grove Ave	8154	14	2	1	-	4	53	96	16	42	1	45	-	10	27	3	-	-	14	73	148	28	96	2	54	-	9	13	1	(1)	-	10	20	52	12	54	1	9	-	***(1)***	171
22	19	Cascade Blvd	Pine Grove Ave S	8152	12	-	31	-	-	-	-	319	5	22	145	-	6	18	-	28	-	-	-	-	445	12	28	247	-	6	6	-	(3)	-	-	-	-	126	7	6	102	-	-	244
2	20	McConnel Ave	Shasta Dam Blvd	7514	-	-	-	14	-	4	9	344	-	-	84	12	6	-	-	-	15	-	1	8	425	-	-	85	3	6	-	-	-	1	-	(3)	(1)	81	-	-	1	(9)	-	70
5	21	Coeur D'Alene Ave	Pine Grove Ave	8160	-	-	-	73	-	-	-	121	-	-	115	16	4	-	-	-	94	-	-	-	160	-	-	194	18	4	-	-	-	21	-	-	-	39	-	-	79	2	-	141
7	22	Cabello St	Vallecito St	8105	-	-	-	17	-	1	2	62	-	-	14	14	6	-	-	-	10	-	5	4	66	-	-	18	11	6	-	-	-	(7)	-	4	2	4	-	-	4	(3)	-	4
9	23	Lake Blvd	Hill Blvd	8126	-	4	6	-	18	-	-	-	-	84	-	-	4	-	7	13	-	27	-	-	-	-	94	-	-	4	-	3	7	-	9	-	-	-	-	10	-	-	-	29
10	24	Lake Blvd	Pine Grove Ave/Walker Mine Rd	8140	2	7	50	60	41	1	-	30	6	25	11	3	11	6	7	68	74	45	2	1	46	17	33	13	12	12	4	-	18	14	4	1	1	16	11	8	2	9	1	88
11	25	Ashby Rd	La Mesa Ave	8112	-	37	14	-	26	-	-	-	-	16	-	1	5	-	35	19	2	29	-	-	-	-	8	-	1	6	-	(2)	5	2	3	-	-	-	-	(8)	-	-	1	0
12	26	Cascade Blvd	Trinity St	8180	-	7	-	-	4	23	36	-	-	-	-	-	4	-	8	-	-	11	23	35	-	-	-	-	-	4	-	1	-	-	7	-	(1)	-	-	-	-	-	-	7
13	27	Autumn Harvest Way	Cascade Blvd	7504	94	7	-	-	4	-	-	-	239	-	-	-	4	95	8	-	-	11	-	-	-	239	-	-	-	4	1	1	-	-	7	-	-	-	(0)	-	-	-	-	9
15	28	Cascade Blvd	Riddle Rd	5629	17	92	-	-	240	3	9	-	29	-	-	-	6	29	95	-	-	237	13	8	-	40	-	-	-	6	12	3	-	-	(3)	10	(1)	-	11	-	-	-	-	32
17	29	Montana Ave	Vallecito St	8113	-	25	46	-	13	-	-	-	-	15	-	-	4	-	12	45	-	14	-	-	-	-	21	-	-	4	-	(13)	(1)	-	1	-	-	-	-	6	-	-	-	***(7)***
20	30	Cascade Blvd	Grand Coulee Blvd	8116	20	18	-	-	47	-	-	-	72	-	-	-	4	26	27	-	-	79	-	-	-	88	-	-	-	4	6	9	-	-	32	-	-	-	15	-	-	-	-	62
31	31	Virginia Ave	Akrich St	8156	-	-	98	-	-	-	-	-	-	57	-	-	***2***	-	-	151	-	-	-	-	-	-	87	-	-	***2***	-	-	53	-	-	-	-	-	-	30	-	-	-	83
32	32	Wonderland Blvd	Old Oregon Trail	8014	-	-	-	100	-	-	-	-	-	-	-	69	***2***	-	-	34	99	3	-	-	-	-	52	-	67	5	-	-	34	(1)	3	-	-	-	-	52	-	(2)	3	86
33	33	I-5 SB Off/On Ramps	Old Oregon Trail	8090	-	-	-	2	-	-	-	4	96	-	69	-	4	-	-	-	2	-	1	-	5	128	-	118	-	5	-	-	-	-	-	1	-	1	32	-	49	-	1	83
34	34	I-5 NB Off/On Ramps	Old Oregon Trail	3544	67	-	-	-	-	-	-	6	-	-	2	-	***3***	111	-	-	-	-	-	1	6	-	-	7	-	4	44	-	-	-	-	-	1	-	-	-	5	-	1	50
35	35	Hardenbrook Ave	Shasta Dam Blvd WB	8071	2	15	-	-	33	11	-	-	-	1	74	13	7	4	9	-	-	34	9	-	-	-	-	72	14	6	2	(6)	-	-	1	(2)	-	-	-	(1)	(2)	1	***(1)***	***(7)***
36	36	Hardenbrook Ave	Shasta Dam Blvd EB	8072	-	5	38	32	2	-	12	283	10	-	-	-	7	-	7	47	34	-	-	6	352	11	-	-	-	6	-	2	9	2	(2)	-	(6)	69	1	-	-	-	***(1)***	75
37	37	Hardenbrook Ave	Red Bluff Ave	5319	-	-	8	-	-	-	-	-	-	8	2	-	***3***	-	-	5	-	-	-	-	-	-	6	-	-	***2***	-	-	(3)	-	-	-	-	-	-	(2)	(2)	-	***(1)***	***(7)***

Object ID	ID	N/S	E/W	Node	Existing (2020) Model PM												Future (2040) Model PM												Delta (Future-Existing)											
					NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	CNT	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	CNT	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	CNT	Sum
1	1	Lake Blvd	SR-151	8032	-	-	57	1	-	-	-	-	-	42	-	2	4	-	1	50	8	2	-	-	-	-	35	-	5	6	-	1	(7)	7	2	-	-	-	-	(7)	-	3	2	***(1)***
16	2	Shasta Park Rd	SR-151	8040	7	-	-	-	-	-	-	60	3	-	59	-	4	7	-	1	-	-	-	-	70	10	1	71	-	6	-	-	1	-	-	-	-	10	7	1	13	-	2	32
3	3	Front St/Ashby Rd	Shasta Dam Blvd	7512	25	-	52	-	63	202	-	140	30	-	-	-	6	31	-	63	-	73	274	-	200	17	-	-	-	6	6	-	11	-	10	72	-	60	(13)	-	-	-	-	147
29	4	Montana Ave	Front St	7517	8	16	-	-	26	17	-	-	-	4	240	42	7	9	31	-	-	40	19	-	-	-	2	319	49	7	1	15	-	-	14	2	-	-	-	(2)	79	7	-	116
30	5	Montana Ave	Shasta Dam Blvd	7513	-	12	23	22	8	-	12	169	11	-	-	-	7	-	15	21	33	9	-	25	223	15	-	-	-	7	-	3	(2)	11	1	-	13	54	4	-	-	-	-	84
6	6	Median Ave	Shasta Dam Blvd	8076	-	-	-	25	-	18	13	237	-	-	387	42	6	-	-	-	24	-	13	20	302	-	-	448	48	6	-	-	-	(1)	-	(5)	7	65	-	-	61	6	-	133
8	7	Mussel Shoals Ave	Red Bluff Ave	8064	36	6	-	-	11	1	2	-	19	-	-	-	6	42	20	-	-	15	1	2	-	17	-	-	-	6	6	14	-	-	4	-	-	-	(2)	-	-	-	-	22
28	8	Mussel Shoals Ave	Main St	8068	31	42	-	2	28	-	-	1	11	-	2	-	7	24	57	-	5	27	-	-	1	12	-	3	5	8	(7)	15	-	3	(1)	-	-	-	1	-	1	5	1	17
4	9	Mussel Shoals Ave/Grand Coulee Blvd	Shasta Dam Blvd	8082	35	2	-	26	2	11	6	230	33	-	443	65	10	42	3	1	19	5	14	20	292	40	1	496	55	12	7	1	1	(7)	3	3	14	62	7	1	53	(10)	2	135
27	10	Shasta Way	Front St	8043	-	26	18	-	17	-	-	-	-	11	-	4	5	-	51	22	6	42	-	-	-	-	18	3	3	7	-	25	4	6	25	-	-	-	-	7	3	(1)	2	69
19	11	Shasta Way	Shasta Dam Blvd	8086	-	3	24	15	6	7	15	242	-	36	526	26	10	-	8	38	33	11	16	18	300	-	47	564	47	10	-	5	13	18	5	9	3	58	-	11	38	21	-	182
14	12	Cascade Blvd	Shasta Dam Blvd	8098	18	13	38	66	14	50	32	237	12	57	520	112	12	28	15	36	92	12	31	31	318	21	86	600	122	12	10	1	(2)	26	(2)	(19)	(0)	81	9	29	79	10	-	223
26	13	I-5 SB Off/On Ramps	Shasta Dam Blvd	3538	-	-	-	-	-	27	-	14	327	-	662	-	4	-	-	-	-	-	37	-	29	417	-	770	-	4	-	-	-	-	-	10	-	15	90	-	108	-	-	223
18	14	Ashby Rd	Pine Grove Ave	8142	15	5	75	16	6	40	63	54	10	16	99	29	12	12	5	115	20	6	41	84	71	14	19	100	37	12	(3)	-	40	4	0	1	21	17	4	3	1	8	-	96
21	15	Cascade Blvd	Pine Grove Ave	10094	-	-	-	89	-	-	4	167	-	-	188	171	5	-	-	-	132	-	6	14	238	-	-	240	246	6	-	-	-	43	-	6	10	71	-	-	52	75	1	257
25	16	I-5 SB Off/On Ramps	Pine Grove Ave	8153	-	-	-	93	-	33	-	106	189	23	355	-	6	-	-	-	119	-	58	-	150	281	115	488	-	6	-	-	-	26	-	25	-	44	92	92	133	-	-	412
24	17	I-5 NB Off/On Ramps	Pine Grove Ave	8159	291	-	49	-	-	-	32	167	-	-	87	129	6	398	-	81	-	-	-	49	220	-	-	205	149	6	107	-	32	-	-	-	17	53	-	-	118	20	-	347
23	18	Virginia Ave/Twin View Blvd	Pine Grove Ave	8154	56	7	1	-	7	129	110	46	60	7	31	-	10	125	25	2	-	19	182	150	52	99	9	47	-	10	69	18	1	-	12	53	40	6	39	2	16	-	-	256
22	19	Cascade Blvd	Pine Grove Ave	8152	22	-	55	-	-	-	-	240	16	51	337	-	6	23	-	72	-	-	-	-	359	11	83	463	-	6	1	-	17	-	-	-	-	119	(5)	32	126	-	-	290
2	*20*	McConnel Ave	Shasta Dam Blvd	7514	-	-	-	13	-	11	11	232	-	-	295	33	6	-	-	-	21	-	9	15	291	-	-	372	26	6	-	-	-	8	-	(2)	4	59	-	-	77	(7)	-	139
5	*21*	Coeur D'Alene Ave	Pine Grove Ave	8160	-	-	-	42	-	-	-	145	-	-	144	59	4	-	-	-	56	-	-	-	206	-	-	156	106	4	-	-	-	14	-	-	-	61	-	-	12	47	-	134
7	*22*	Cabello St	Vallecito St	8105	-	-	-	21	-	8	7	33	-	-	72	14	6	-	-	-	14	-	6	7	54	-	-	102	11	6	-	-	-	(7)	-	(2)	-	21	-	-	30	(3)	-	39
9	*23*	Hill Blvd	Lake Blvd	8126	-	38	86	-	15	-	-	-	-	44	-	-	4	-	26	90	-	14	-	-	-	-	51	-	-	4	-	(13)	4	-	(1)	-	-	-	-	7	-	-	-	***(3)***
10	*24*	Lake Blvd	Pine Grove Ave/Walker Mine Rd	8140	7	49	71	31	26	2	2	25	8	56	25	73	12	17	50	82	36	29	-	5	51	11	44	49	60	11	10	0	11	5	3	(2)	3	26	3	(12)	24	(13)	***(1)***	59
11	*25*	Ashby Rd	La Mesa Ave	8112	-	78	29	7	47	-	-	-	-	19	-	1	6	-	116	30	4	45	-	-	-	-	26	-	-	5	-	38	1	(3)	(2)	-	-	-	-	7	-	(1)	***(1)***	40
12	*26*	Cascade Blvd	Trinity St	8180	-	10	-	-	12	51	68	-	-	-	-	-	4	-	16	-	-	10	73	70	-	-	-	-	-	4	-	6	-	-	(2)	22	2	-	-	-	-	-	-	-	28
13	*27*	Autumn Harvest Way	Cascade Blvd	7504	236	10	-	-	12	-	-	-	174	-	-	-	4	249	16	-	-	10	-	-	-	171	-	-	-	4	13	6	-	-	(2)	-	-	-	(3)	-	-	-	-	14
15	*28*	Cascade Blvd	Riddle Rd	5629	25	237	-	-	173	13	9	-	24	-	-	-	6	41	251	-	-	172	9	14	-	39	-	-	-	6	16	14	-	-	(1)	(4)	5	-	15	-	-	-	-	45
17	*29*	Montana Ave	Vallecito St	8113	-	19	38	-	28	-	-	-	-	59	-	-	4	-	26	58	-	41	-	-	-	-	80	-	-	4	-	7	20	-	13	-	-	-	-	21	-	-	-	61
20	*30*	Cascade Blvd	Grand Coulee Blvd	8116	86	77	-	-	34	-	-	-	39	-	-	-	4	113	83	-	-	43	-	-	-	58	-	-	-	4	27	6	-	-	9	-	-	-	19	-	-	-	-	61
31	*31*	Virginia Ave/Twin View Blvd	Akrich St	8156	-	-	117	-	-	-	-	-	-	136	-	-	***2***	-	-	175	-	-	-	-	-	-	201	-	-	***2***	-	-	58	-	-	-	-	-	-	65	-	-	-	123
32	*32*	Wonderland Blvd	Old Oregon Trail	8014	-	-	-	90	-	-	-	-	-	-	-	83	***2***	-	2	54	96	3	-	-	-	-	51	-	80	6	-	2	54	6	3	-	-	-	-	51	-	(3)	4	113
33	*33*	I-5 SB Off/On Ramps	Old Oregon Trail	8090	-	-	-	2	-	-	-	5	85	-	83	-	4	-	-	-	-	-	-	-	9	141	-	131	-	***3***	-	-	-	(2)	-	-	-	4	56	-	48	-	***(1)***	106
34	*34*	I-5 NB Off/On Ramps	Old Oregon Trail	3544	78	-	-	-	-	-	-	7	-	-	5	1	4	120	-	-	-	-	-	1	8	-	-	11	1	5	42	-	-	-	-	-	1	1	-	-	6	-	1	50
35	*35*	Hardenbrook Ave	Shasta Dam Blvd	8071	10	24	-	-	29	16	-	-	-	2	260	44	7	20	29	-	-	37	18	-	-	-	-	332	49	6	10	5	-	-	8	2	-	-	-	(2)	72	5	***(1)***	100
36	*36*	Hardenbrook Ave	Shasta Dam Blvd	8072	-	16	47	20	11	-	18	176	20	-	-	-	7	-	25	44	31	6	-	24	231	22	-	-	-	7	-	9	(3)	11	(5)	-	6	55	2	-	-	-	-	75
37	*37*	Hardenbrook Ave	Red Bluff Ave	5319	-	-	20	-	-	-	-	-	-	19	-	-	***2***	-	-	12	-	-	-	-	-	-	8	-	-	***2***	-	-	(8)	-	-	-	-	-	-	(11)	-	-	-	***(19)***

Model Delta Growth AM

MODEL ID	NS STREET	EW STREET	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
1	Lake Blvd	SR-151	0	1	6	3	0	0	0	0	0	10	0	3	12
2	Shasta Park Rd	SR-151	5	0	0	0	0	0	0	14	4	0	5	0	28
3	Front St/Ashby Rd	Shasta Dam Blvd	1	0	10	0	10	8	0	61	10	0	0	0	54
4	Montana Ave	Front St/Shasta Dam WB	10	2	0	0	10	10	0	0	0	2	0	10	-11
5	Montana Ave	Shasta Dam Blvd EB	0	10	12	10	2	0	3	53	10	0	0	0	58
6	Median Ave	Shasta Dam Blvd	0	0	0	10	0	0	0	80	0	0	10	1	73
7	Mussel Shoals Ave	Red Bluff Ave	5	1	0	0	10	2	10	0	2	0	0	0	6
8	Mussel Shoals Ave	Main St	10	6	0	0	10	0	0	1	10	0	0	0	0
9	Mussel Shoals Ave/Grand Coulee Blvd	Shasta Dam Blvd	7	0	10	10	10	10	0	71	8	0	10	3	79
10	Shasta Way	Front St	0	8	3	0	20	0	0	0	0	10	0	2	31
11	Shasta Way	Shasta Dam Blvd	0	3	3	21	10	10	0	81	0	8	9	8	130
12	Cascade Blvd	Shasta Dam Blvd	13	10	39	15	2	10	10	109	5	4	21	28	217
13	I-5 SB Off/On Ramps	Shasta Dam Blvd	0	0	0	0	0	7	0	7	155	0	46	0	215
14	Ashby Rd	Pine Grove Ave	2	3	17	10	2	3	9	27	12	61	14	4	149
15	Cascade Blvd	Pine Grove Ave N	0	0	0	70	0	1	10	63	0	0	81	27	240
16	I-5 SB Off/On Ramps	Pine Grove Ave	0	0	0	12	0	5	0	16	107	19	103	0	262
17	I-5 NB Off/On Ramps	Pine Grove Ave	94	0	85	0	0	0	10	33	0	0	28	14	250
18	Virginia Ave/Twin View Blvd	Pine Grove Ave	13	1	10	0	10	20	52	12	54	1	9	0	171
19	Cascade Blvd	Pine Grove Ave S	6	0	10	0	0	0	0	126	7	6	102	0	244
20	McConnel Ave	Shasta Dam Blvd	0	0	0	1	0	10	10	81	0	0	1	10	70
21	Coeur D'Alene Ave	Pine Grove Ave	0	0	0	21	0	0	0	39	0	0	79	2	141
22	Cabello St	Vallecito St	0	0	0	10	0	4	2	4	0	0	4	10	4
23	Lake Blvd	Hill Blvd	0	3	7	0	9	0	0	0	0	10	0	0	29
24	Lake Blvd	Pine Grove Ave/Walker Mine Rd	4	0	18	14	4	1	1	16	11	8	2	9	88
25	Ashby Rd	La Mesa Ave	0	10	5	2	3	0	0	0	0	10	0	0	0
26	Cascade Blvd	Trinity St	0	1	0	0	7	0	10	0	0	0	0	0	7
27	Autumn Harvest Way	Cascade Blvd	1	1	0	0	7	0	0	0	0	0	0	0	9
28	Cascade Blvd	Riddle Rd	12	3	0	0	10	10	10	0	11	0	0	0	32
29	Montana Ave	Vallecito St	0	10	10	0	1	0	0	0	0	6	0	0	-7
30	Cascade Blvd	Grand Coulee Blvd	6	9	0	0	32	0	0	0	15	0	0	0	62
31	Virginia Ave	Akrich St	0	0	53	0	0	0	0	0	0	30	0	0	83
32	Wonderland Blvd	Old Oregon Trail	0	0	34	10	3	0	0	0	0	52	0	10	86
33	I-5 SB Off/On Ramps	Old Oregon Trail	0	0	0	0	0	1	0	1	32	0	49	0	83
34	I-5 NB Off/On Ramps	Old Oregon Trail	44	0	0	0	0	0	1	0	0	0	5	0	50
35	Hardenbrook Ave	Shasta Dam Blvd WB	2	10	0	0	1	10	0	0	0	10	10	1	-7
36	Hardenbrook Ave	Shasta Dam Blvd EB	0	2	9	2	10	0	10	69	1	0	0	0	75
37	Hardenbrook Ave	Red Bluff Ave	0	0	10	0	0	0	0	0	0	10	10	0	-7

Model Delta Growth PM

MODEL ID	NS STREET	EW STREET	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
1	Lake Blvd	SR-151	0	1	10	7	2	0	0	0	0	10	0	3	-1
2	Shasta Park Rd	SR-151	0	0	1	0	0	0	0	10	7	1	13	0	32
3	Front St/Ashby Rd	Shasta Dam Blvd	6	0	11	0	10	72	0	60	10	0	0	0	147
4	Montana Ave	Front St/Shasta Dam WB	1	15	0	0	14	2	0	0	0	10	79	7	116
5	Montana Ave	Shasta Dam Blvd EB	0	3	10	11	1	0	13	54	4	0	0	0	84
6	Median Ave	Shasta Dam Blvd	0	0	0	10	0	10	7	65	0	0	61	6	133
7	Mussel Shoals Ave	Red Bluff Ave	6	14	0	0	4	0	0	0	10	0	0	0	22
8	Mussel Shoals Ave	Main St	10	15	0	3	10	0	0	0	1	0	1	5	17
9	Mussel Shoals Ave/Grand Coulee Blvd	Shasta Dam Blvd	7	1	1	10	3	3	14	62	7	1	53	10	135
10	Shasta Way	Front St	0	25	4	6	25	0	0	0	0	7	3	10	69
11	Shasta Way	Shasta Dam Blvd	0	5	13	18	5	9	3	58	0	11	38	21	182
12	Cascade Blvd	Shasta Dam Blvd	10	1	10	26	10	10	0	81	9	29	79	10	223
13	I-5 SB Off/On Ramps	Shasta Dam Blvd	0	0	0	0	0	10	0	15	90	0	108	0	223
14	Ashby Rd	Pine Grove Ave	10	0	40	4	0	1	21	17	4	3	1	8	96
15	Cascade Blvd	Pine Grove Ave N	0	0	0	43	0	6	10	71	0	0	52	75	257
16	I-5 SB Off/On Ramps	Pine Grove Ave	0	0	0	26	0	25	0	44	92	92	133	0	412
17	I-5 NB Off/On Ramps	Pine Grove Ave	107	0	32	0	0	0	17	53	0	0	118	20	347
18	Virginia Ave/Twin View Blvd	Pine Grove Ave	69	18	1	0	12	53	40	6	39	2	16	0	256
19	Cascade Blvd	Pine Grove Ave S	1	0	17	0	0	0	0	119	10	32	126	0	290
20	McConnel Ave	Shasta Dam Blvd	0	0	0	8	0	10	4	59	0	0	77	10	139
21	Coeur D'Alene Ave	Pine Grove Ave	0	0	0	14	0	0	0	61	0	0	12	47	134
22	Cabello St	Vallecito St	0	0	0	10	0	10	0	21	0	0	30	10	39
23	Lake Blvd	Hill Blvd	0	10	4	0	10	0	0	0	0	7	0	0	-3
24	Lake Blvd	Pine Grove Ave/Walker Mine Rd	10	0	11	5	3	10	3	26	3	10	24	10	59
25	Ashby Rd	La Mesa Ave	0	38	1	10	10	0	0	0	0	7	0	10	40
26	Cascade Blvd	Trinity St	0	6	0	0	10	22	2	0	0	0	0	0	28
27	Autumn Harvest Way	Cascade Blvd	13	6	0	0	10	0	0	0	10	0	0	0	14
28	Cascade Blvd	Riddle Rd	16	14	0	0	10	10	5	0	15	0	0	0	45
29	Montana Ave	Vallecito St	0	7	20	0	13	0	0	0	0	21	0	0	61
30	Cascade Blvd	Grand Coulee Blvd	27	6	0	0	9	0	0	0	19	0	0	0	61
31	Virginia Ave	Akrich St	0	0	58	0	0	0	0	0	0	65	0	0	123
32	Wonderland Blvd	Old Oregon Trail	0	2	54	6	3	0	0	0	0	51	0	10	113
33	I-5 SB Off/On Ramps	Old Oregon Trail	0	0	0	10	0	0	0	4	56	0	48	0	106
34	I-5 NB Off/On Ramps	Old Oregon Trail	42	0	0	0	0	0	1	1	0	0	6	0	50
35	Hardenbrook Ave	Shasta Dam Blvd WB	10	5	0	0	8	2	0	0	0	10	72	5	100
36	Hardenbrook Ave	Shasta Dam Blvd EB	0	9	10	11	10	0	6	55	2	0	0	0	75
37	Hardenbrook Ave	Red Bluff Ave	0	0	10	0	0	0	0	0	0	10	0	0	-19

2022 Baseline AM Adjusted

MODEL ID	NS STREET	EW STREET	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
1	Lake	Shasta Dam	3	11	2	10	20	1	1	2	5	24	7	16	102
2	Shasta Park	Shasta Dam	1	1	12	14	1	3	2	69	1	6	72	13	195
3	Ashby	Shasta Dam	17	0	119	0	0	0	0	197	39	156	101	0	629
4	Montana	Shasta Dam WB	10	10	0	0	21	7	0	0	0	30	227	20	325
5	Montana	Shasta Dam EB	0	11	63	27	22	0	6	262	8	0	0	0	399
6	Median	Shasta Dam	0	0	0	32	0	11	11	485	0	0	306	28	873
7	Mussel Shoals	Red Bluff	7	3	1	1	9	2	1	13	18	2	8	1	66
8	Mussel Shoals	Main	1	9	2	2	32	1	1	7	3	1	4	1	64
9	Grand Coulee	Shasta Dam	21	1	7	32	1	10	12	592	16	7	348	13	1060
10	Shasta	Front	1	63	3	1	69	18	11	5	1	1	1	1	175
11	Shasta	Shasta Dam	0	0	7	0	0	78	1	673	4	2	304	71	1140
12	Cascade	Shasta Dam	35	11	68	140	19	44	47	598	45	14	311	47	1379
13	I-5 SB Off-Ramp	Shasta Dam	0	0	0	0	0	65	0	433	373	0	297	0	1168
14	Ashby	Pine Grove	7	8	32	70	15	108	118	95	20	64	54	82	673
15	Cascade	Pine Grove N	0	0	0	181	0	22	19	284	0	0	201	98	805
16	I-5 SB Ramps	Pine Grove	0	0	0	14	0	24	0	67	475	31	273	0	884
17	I-5 NB Ramps	Pine Grove	227	0	33	0	0	0	24	59	0	0	60	15	418
18	Twin View	Pine Grove	24	1	1	1	3	38	36	19	34	1	24	1	183
19	Cascade	Pine Grove S	63	0	117	1	1	0	0	423	42	37	236	1	921
20	McConnell	Shasta Dam	0	0	0	11	0	3	1	392	0	0	316	10	733
21	Couer D Alene	Pine Grove	0	0	0	61	0	3	3	136	0	0	140	18	361
22	Cabello	Vallecito	1	1	1	11	47	6	8	43	51	61	72	35	337
23	Lake	Hill S	0	48	8	1	67	0	0	0	0	42	0	3	169
24	Lake	Pine Grove	2	48	140	75	102	1	3	23	20	123	7	36	580
25	Ashby	La Mesa	1	60	83	49	84	3	5	2	2	64	1	14	368
26	Cascade	Trinity	10	55	0	0	36	29	89	0	16	0	0	0	235
27	Cascade	Autumn Harvest	24	48	0	0	45	9	13	0	93	0	0	0	232
28	Cascade	Riddle	5	79	0	0	132	3	5	0	10	0	0	0	234
29	Montana	Vallecito	0	10	9	70	2	0	0	0	0	1	0	64	156
30	Cascade	Grand Coulee	82	31	0	0	22	10	3	0	114	0	0	0	262
31	Virginia	Akrich	1	1	11	1	1	1	1	1	1	21	1	1	42
32	Wonderland	Old Oregon Trail	0	1	1	77	1	0	0	0	0	2	0	64	146
33	I-5 SB Ramps	Old Oregon Trail	0	0	0	1	3	6	0	32	57	73	52	0	224
34	I-5 NB Ramps	Old Oregon Trail	52	2	67	0	0	0	11	10	0	0	73	10	225
35	Hardenbrook	Shasta Dam WB	3	6	0	0	27	14	0	0	0	18	287	13	368
36	Hardenbrook	Shasta Dam EB	0	3	20	24	19	0	6	348	2	0	0	0	422
37	Hardenbrook	Red Bluff	1	5	4	1	9	1	2	5	6	7	7	1	49

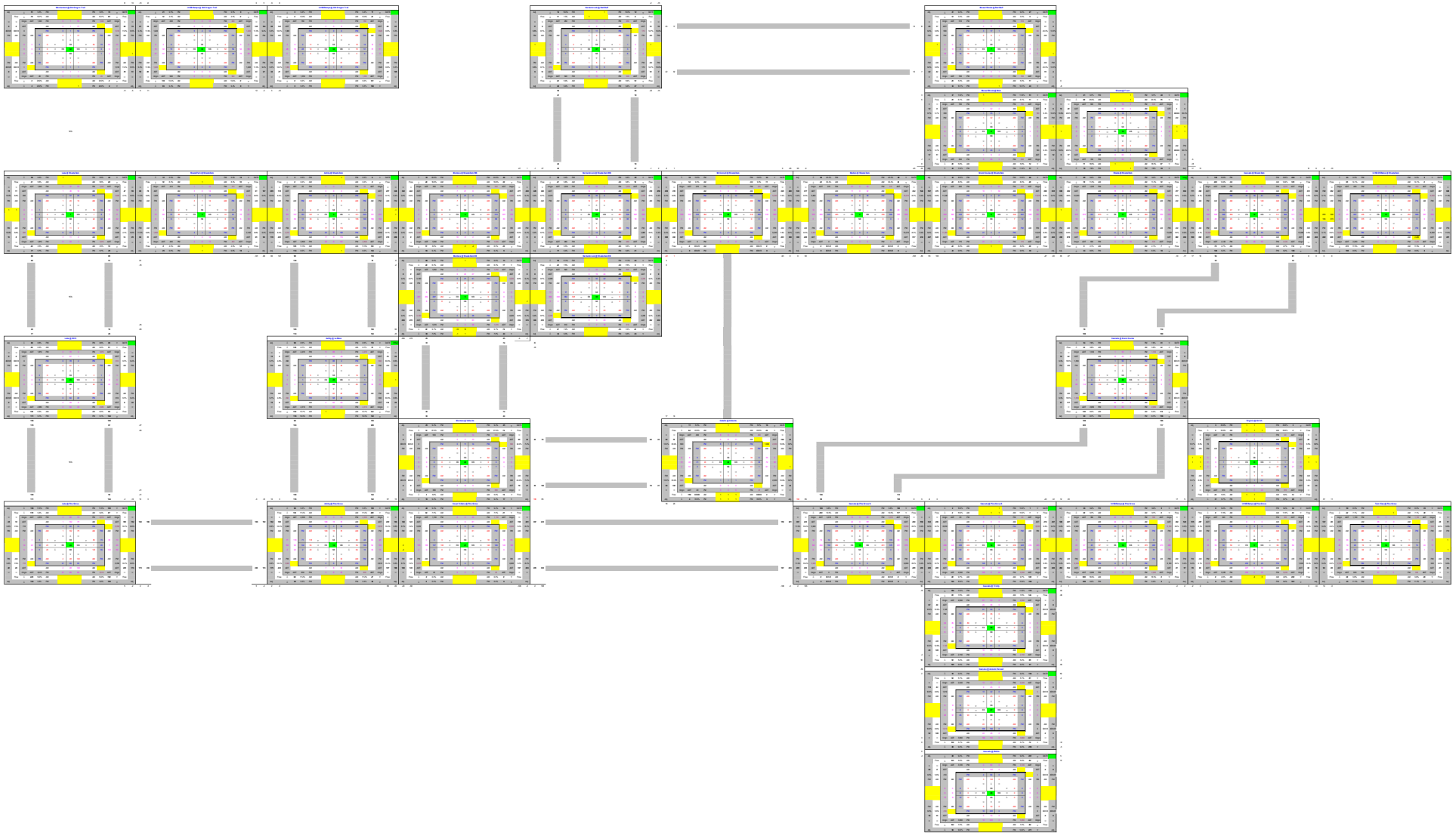
2022 Baseline PM Adjusted

MODEL ID	NS STREET	EW STREET	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
1	Lake	Shasta Dam	6	22	1	20	37	1	1	4	8	32	8	19	159
2	Shasta Park	Shasta Dam	4	1	13	10	1	1	3	73	6	18	81	8	219
3	Ashby	Shasta Dam	22	0	102	0	0	0	0	167	11	103	243	0	648
4	Montana	Shasta Dam WB	5	4	0	0	27	8	0	0	0	66	319	45	474
5	Montana	Shasta Dam EB	0	6	38	51	37	0	7	287	2	0	0	0	428
6	Median	Shasta Dam	0	0	0	39	0	27	13	375	0	0	509	35	998
7	Mussel Shoals	Red Bluff	20	22	1	1	17	3	4	2	16	1	2	1	90
8	Mussel Shoals	Main	8	46	3	1	35	1	4	8	5	2	3	1	117
9	Grand Coulee	Shasta Dam	21	4	5	21	4	9	6	434	27	12	567	56	1166
10	Shasta	Front	5	33	1	1	16	4	6	1	2	1	1	1	72
11	Shasta	Shasta Dam	0	0	18	0	0	68	1	474	18	16	622	56	1273
12	Cascade	Shasta Dam	96	40	53	61	36	31	79	348	82	71	584	85	1566
13	I-5 SB Off-Ramp	Shasta Dam	0	0	0	0	0	43	0	267	195	0	689	0	1194
14	Ashby	Pine Grove	5	6	48	30	3	57	71	102	2	15	100	48	487
15	Cascade	Pine Grove N	0	0	0	90	0	19	12	193	0	0	378	174	866
16	I-5 SB Ramps	Pine Grove	0	0	0	12	0	24	0	45	245	35	485	0	846
17	I-5 NB Ramps	Pine Grove	456	0	45	0	0	0	21	34	0	0	59	11	626
18	Twin View	Pine Grove	37	1	3	1	3	55	33	29	31	1	15	1	210
19	Cascade	Pine Grove S	120	0	49	1	1	0	0	236	50	73	423	1	954
20	McConnell	Shasta Dam	0	0	0	12	0	6	4	376	0	0	450	30	878
21	Couer D Alene	Pine Grove	0	0	0	46	0	2	3	157	0	0	146	55	409
22	Cabello	Vallecito	1	1	1	2	1	8	6	31	2	1	30	9	93
23	Lake	Hill S	0	84	40	2	78	0	0	0	0	33	0	1	238
24	Lake	Pine Grove	21	89	85	74	80	4	3	14	5	59	20	73	527
25	Ashby	La Mesa	1	98	23	2	86	11	8	1	6	24	1	4	265
26	Cascade	Trinity	16	81	0	0	99	81	34	0	6	0	0	0	317
27	Cascade	Autumn Harvest	106	150	0	0	42	13	6	0	46	0	0	0	363
28	Cascade	Riddle	16	255	0	0	84	4	6	0	12	0	0	0	377
29	Montana	Vallecito	0	10	7	14	11	0	0	0	0	7	0	15	64
30	Cascade	Grand Coulee	78	80	0	0	53	1	1	0	46	0	0	0	259
31	Virginia	Akrich	5	1	22	1	1	1	1	1	2	28	1	1	65
32	Wonderland	Old Oregon Trail	0	1	1	50	1	0	0	0	0	1	0	73	127
33	I-5 SB Ramps	Old Oregon Trail	0	0	0	12	4	5	0	15	41	48	56	0	181
34	I-5 NB Ramps	Old Oregon Trail	48	1	77	0	0	0	2	28	0	0	51	14	221
35	Hardenbrook	Shasta Dam WB	7	14	0	0	35	24	0	0	0	36	398	24	538
36	Hardenbrook	Shasta Dam EB	0	7	16	22	32	0	17	364	2	0	0	0	460
37	Hardenbrook	Red Bluff	12	10	5	1	11	2	1	1	7	6	3	1	60

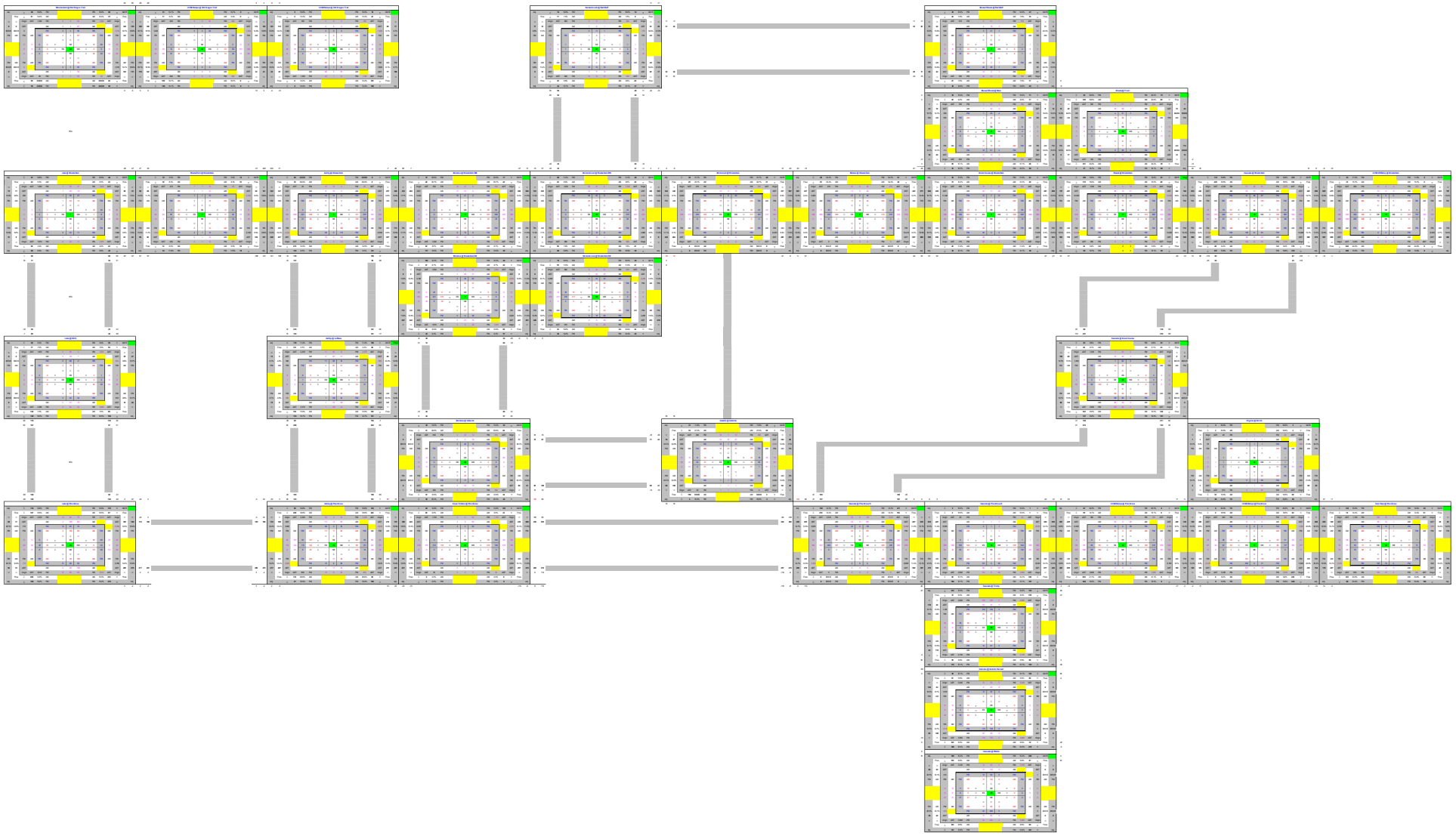
			2040 Baseline AM												
MODEL ID	**NS STREET**	**EW STREET**	**NL**	**NT**	**NR**	**SL**	**ST**	**SR**	**EL**	**ET**	**ER**	**WL**	**WT**	**WR**	**TOTAL**	**Growth %**
1	Lake	Shasta Dam	3	12	8	13	20	1	1	2	5	34	7	19	125	22.5%
2	Shasta Park	Shasta Dam	6	1	12	14	1	3	2	83	5	6	77	13	223	14.4%
3	Ashby	Shasta Dam	18	0	129	0	10	8	0	258	49	156	101	0	729	15.9%
4	Montana	Shasta Dam WB	20	12	0	0	31	17	0	0	0	32	227	30	369	13.5%
5	Montana	Shasta Dam EB	0	21	75	37	24	0	9	315	18	0	0	0	499	25.1%
6	Median	Shasta Dam	0	0	0	42	0	11	11	565	0	0	316	29	974	11.6%
7	Mussel Shoals	Red Bluff	12	4	1	1	19	4	11	13	20	2	8	1	96	45.5%
8	Mussel Shoals	Main	11	15	2	2	42	1	1	8	13	1	4	1	101	57.8%
9	Grand Coulee	Shasta Dam	28	1	17	42	11	20	12	663	24	7	358	16	1199	13.1%
10	Shasta	Front	1	71	6	1	89	18	11	5	1	11	1	3	218	24.6%
11	Shasta	Shasta Dam	0	3	10	21	10	88	1	754	4	10	313	79	1293	13.4%
12	Cascade	Shasta Dam	48	21	107	155	21	54	57	707	50	18	332	75	1645	19.3%
13	I-5 SB Off-Ramp	Shasta Dam	0	0	0	0	0	72	0	440	528	0	343	0	1383	18.4%
14	Ashby	Pine Grove	9	11	49	80	17	111	127	122	32	125	68	86	837	24.4%
15	Cascade	Pine Grove N	0	0	0	251	0	23	29	347	0	0	282	125	1057	31.3%
16	I-5 SB Ramps	Pine Grove	0	0	0	26	0	29	0	83	582	50	376	0	1146	29.6%
17	I-5 NB Ramps	Pine Grove	321	0	118	0	0	0	34	92	0	0	88	29	682	63.2%
18	Twin View	Pine Grove	37	2	11	1	13	58	88	31	88	2	33	1	365	99.5%
19	Cascade	Pine Grove S	69	0	127	1	1	0	0	549	49	43	338	1	1178	27.9%
20	McConnell	Shasta Dam	0	0	0	12	0	13	11	473	0	0	317	20	846	15.4%
21	Couer D Alene	Pine Grove	0	0	0	82	0	3	3	175	0	0	219	20	502	39.1%
22	Cabello	Vallecito	1	1	1	21	47	10	10	47	51	61	76	45	371	10.1%
23	Lake	Hill S	0	51	15	1	76	0	0	0	0	52	0	3	198	17.2%
24	Lake	Pine Grove	6	48	158	89	106	2	4	39	31	131	9	45	668	15.2%
25	Ashby	La Mesa	1	70	88	51	87	3	5	2	2	74	1	14	398	8.2%
26	Cascade	Trinity	10	56	0	0	43	29	99	0	16	0	0	0	253	7.7%
27	Cascade	Autumn Harvest	25	49	0	0	52	9	13	0	93	0	0	0	241	3.9%
28	Cascade	Riddle	17	82	0	0	142	13	15	0	21	0	0	0	290	23.9%
29	Montana	Vallecito	0	20	19	70	3	0	0	0	0	7	0	64	183	17.3%
30	Cascade	Grand Coulee	88	40	0	0	54	10	3	0	129	0	0	0	324	23.7%
31	Virginia	Akrich	1	1	64	1	1	1	1	1	1	51	1	1	125	197.6%
32	Wonderland	Old Oregon Trail	0	1	35	87	4	0	0	0	0	54	0	74	255	74.7%
33	I-5 SB Ramps	Old Oregon Trail	0	0	0	1	3	7	0	33	89	73	101	0	307	37.1%
34	I-5 NB Ramps	Old Oregon Trail	96	2	67	0	0	0	12	10	0	0	78	10	275	22.2%
35	Hardenbrook	Shasta Dam WB	5	16	0	0	28	24	0	0	0	28	297	14	412	12.0%
36	Hardenbrook	Shasta Dam EB	0	5	29	26	29	0	16	417	3	0	0	0	525	24.4%
37	Hardenbrook	Red Bluff	1	5	14	1	9	1	2	5	6	17	17	1	79	61.2%

			2040 Baseline PM												
MODEL ID	**NS STREET**	**EW STREET**	**NL**	**NT**	**NR**	**SL**	**ST**	**SR**	**EL**	**ET**	**ER**	**WL**	**WT**	**WR**	**TOTAL**	**Growth %**
1	Lake	Shasta Dam	6	23	11	27	39	1	1	4	8	42	8	22	192	20.8%
2	Shasta Park	Shasta Dam	4	1	14	10	1	1	3	83	13	19	94	8	251	14.6%
3	Ashby	Shasta Dam	28	0	113	0	10	72	0	227	21	103	243	0	817	26.1%
4	Montana	Shasta Dam WB	6	19	0	0	41	10	0	0	0	76	398	52	602	27.0%
5	Montana	Shasta Dam EB	0	9	48	62	38	0	20	341	6	0	0	0	524	22.4%
6	Median	Shasta Dam	0	0	0	49	0	37	20	440	0	0	570	41	1157	15.9%
7	Mussel Shoals	Red Bluff	26	36	1	1	21	3	4	2	26	1	2	1	124	37.8%
8	Mussel Shoals	Main	18	61	3	4	45	1	4	8	6	2	4	6	162	38.5%
9	Grand Coulee	Shasta Dam	28	5	6	31	7	12	20	496	34	13	620	66	1338	14.8%
10	Shasta	Front	5	58	5	7	41	4	6	1	2	8	4	11	152	111.1%
11	Shasta	Shasta Dam	0	5	31	18	5	77	4	532	18	27	660	77	1454	14.2%
12	Cascade	Shasta Dam	106	41	63	87	46	41	79	429	91	100	663	95	1841	17.6%
13	I-5 SB Off-Ramp	Shasta Dam	0	0	0	0	0	53	0	282	285	0	797	0	1417	18.7%
14	Ashby	Pine Grove	15	6	88	34	3	58	92	119	6	18	101	56	596	22.4%
15	Cascade	Pine Grove N	0	0	0	133	0	25	22	264	0	0	430	249	1123	29.7%
16	I-5 SB Ramps	Pine Grove	0	0	0	38	0	49	0	89	337	127	618	0	1258	48.7%
17	I-5 NB Ramps	Pine Grove	563	0	77	0	0	0	38	87	0	0	177	31	973	55.4%
18	Twin View	Pine Grove	106	19	4	1	15	108	73	35	70	3	31	1	466	121.9%
19	Cascade	Pine Grove S	121	0	66	1	1	0	0	355	60	105	549	1	1259	32.0%
20	McConnell	Shasta Dam	0	0	0	20	0	16	8	435	0	0	527	40	1046	19.1%
21	Couer D Alene	Pine Grove	0	0	0	60	0	2	3	218	0	0	158	102	543	32.8%
22	Cabello	Vallecito	1	1	1	12	1	18	6	52	2	1	60	19	174	87.1%
23	Lake	Hill S	0	94	44	2	88	0	0	0	0	40	0	1	269	13.0%
24	Lake	Pine Grove	31	89	96	79	83	14	6	40	8	69	44	83	642	21.8%
25	Ashby	La Mesa	1	136	24	12	96	11	8	1	6	31	1	14	341	28.7%
26	Cascade	Trinity	16	87	0	0	109	103	36	0	6	0	0	0	357	12.6%
27	Cascade	Autumn Harvest	119	156	0	0	52	13	6	0	56	0	0	0	402	10.7%
28	Cascade	Riddle	32	269	0	0	94	14	11	0	27	0	0	0	447	18.6%
29	Montana	Vallecito	0	17	27	14	24	0	0	0	0	28	0	15	125	95.3%
30	Cascade	Grand Coulee	105	86	0	0	62	1	1	0	65	0	0	0	320	23.6%
31	Virginia	Akrich	5	1	80	1	1	1	1	1	2	93	1	1	188	189.2%
32	Wonderland	Old Oregon Trail	0	3	55	56	4	0	0	0	0	52	0	83	253	99.2%
33	I-5 SB Ramps	Old Oregon Trail	0	0	0	22	4	5	0	19	97	48	104	0	299	65.2%
34	I-5 NB Ramps	Old Oregon Trail	90	1	77	0	0	0	3	29	0	0	57	14	271	22.6%
35	Hardenbrook	Shasta Dam WB	17	19	0	0	43	26	0	0	0	46	470	29	650	20.8%
36	Hardenbrook	Shasta Dam EB	0	16	26	33	42	0	23	419	4	0	0	0	563	22.4%
37	Hardenbrook	Red Bluff	12	10	15	1	11	2	1	1	7	16	3	1	80	33.3%

2022 Baseline Intersection Traffic Volumes



2040 Baseline Intersection Traffic Volumes



ID	Street Name	Limit 1	Limit 2	Existing (2020) Daily Vol	Future (2040) Daily Vol	Delta (Future-Existing)	Delta %	2020 ADT	Minimum Model Growth	Final Model Growth	2022 Growth Factor	2022 ADT	2040 ADT	Final % Growth
1	**Shasta Dam Blvd**	Lake Blvd	Sacramento St	9,499	10,534	1,035	11%	1473	5%	1035	2%	1502	2537	69%
2	**Shasta Dam Blvd**	North Blvd	Lassen Ave	10,623	12,173	1,550	15%	4124	5%	1550	2%	4206	5756	37%
3	**Shasta Dam Blvd**	Nell Orr St	Shasta Way	4,150	5,119	969	23%	11796	5%	969	2%	12032	13001	8%
4	**Shasta Dam Blvd**	Shasta Way	Cascade Blvd	4,150	5,119	969	23%	13039	5%	969	2%	13300	14269	7%
5	**I-5 NB Off/On Ramp**	Shasta Dam Blvd	E of Cascade Blvd	12,366	14,804	2,438	20%	12808	5%	2438	2%	13064	15502	19%
6	**Red Bluff St**	Montana Ave	Locust Ave	575	715	140	24%	101	5%	140	2%	103	243	136%
7	**Red Bluff St**	Grand River Ave	Washington Ave	15	11	(4)	-27%	309	5%	15	2%	315	330	5%
8	**Main St**	Montana Ave	Locust Ave	127	147	20	16%	163	5%	20	2%	166	186	12%
9	**Main St**	Grand River Ave	Washington Ave	82	77	(5)	-6%	211	5%	11	2%	215	226	5%
10	**La Mesa Ave**	Lassen Ave	San Gorgonio Ave	575	579	4	1%	681	5%	34	2%	695	729	5%
11	**Vallecito St**	Montana Ave	Hardenbrook Ave	1,547	2,067	520	34%	587	5%	520	2%	599	1119	87%
12	**Vallecito St**	Ellen Dr	Washington Ave	937	1,236	299	32%	1028	5%	299	2%	1049	1348	29%
13	**Coeur D'Alene Ave**	Ashby Rd	D'Alene Ave	571	647	76	13%	392	5%	76	2%	400	476	19%
14	**Pine Grove Ave**	Newton Rd	Shasta Lake City Limit	4,233	6,000	1,767	42%	3789	5%	1767	2%	3865	5632	46%
15	**Pine Grove Ave**	Ashby Rd	Coeur D'Alene Ave	2,628	3,420	792	30%	3734	5%	792	2%	3809	4601	21%
16	**Pine Grove Ave**	Coeur D'Alene Ave	Smith Ave (S)	6,456	9,487	3,031	47%	4805	5%	3031	2%	4901	7932	62%
17	**Pine Grove Ave**	Smith Ave	Cascade Blvd (N)	2,628	3,420	792	30%	4937	5%	792	2%	5036	5828	16%
18	**Pine Grove Ave**	Virginia Ave	Marilyn Ave	2,628	3,420	792	30%	506	5%	792	2%	516	1308	153%
19	**Akrich St**	Virginia Ave	Marilyn Ave	2,351	3,746	1,395	59%	537	5%	1395	2%	548	1943	255%
20	**Trinity St**	Butterfly Ln	Sioux Dr	1,327	1,659	332	25%	1120	5%	332	2%	1142	1474	29%
21	**Lake Blvd**	Mason Dr	Duval Dr	1,653	1,955	302	18%	1030	5%	302	2%	1051	1353	29%
22	**Lake Blvd**	Buckeye St	Hill Blvd	1,642	1,950	308	19%	1833	5%	308	2%	1870	2178	16%
23	**Lake Blvd**	Hill Blvd	Flanagan Rd	954	1,049	95	10%	2531	5%	127	2%	2582	2709	5%
24	**Lake Blvd**	Shasta Lake City Limit	Construction Way	771	883	112	15%	2755	5%	138	2%	2810	2948	5%
25	**Ashby Rd**	S of Shasta Dam Blvd	Flower St	1,729	1,928	199	12%	2832	5%	199	2%	2889	3088	7%
26	**Ashby Rd**	Los Gatos Ave	San Gorgonio Ave	1,962	2,368	406	21%	2422	5%	406	2%	2470	2876	16%
27	**Ashby Rd**	Arlene Ct	Coeur D'Alene Ave	1,669	1,883	214	13%	2265	5%	214	2%	2310	2524	9%
28	**Montana Ave**	Main St	Front St	291	318	27	9%	344	5%	27	2%	351	378	8%
29	**Montana Ave**	Shasta Dam Blvd	La Mesa Ave	1,079	1,127	48	4%	1048	5%	52	2%	1069	1121	5%
30	**Black Canyon Rd**	Arrow Rock St	Pensacola St	688	751	63	9%	248	5%	63	2%	253	316	25%
31	**McConnell Ave**	Main St	Front St	70	73	3	4%	260	5%	13	2%	265	278	5%
32	**Cabello St**	Shasta Dam Blvd	La Mesa Ave	383	403	20	5%	690	5%	35	2%	704	739	5%
33	**Cabello St**	Bonneville St	Vallecito St	1,010	1,042	32	3%	482	5%	32	2%	492	524	7%
34	**Median Ave**	Front St	Shasta Dam Blvd	929	956	27	3%	1181	5%	59	2%	1205	1264	5%
35	**Mussel Shoals Ave**	Chico St	Main St	1,029	1,232	203	20%	745	5%	203	2%	760	963	27%
36	**Mussel Shoals Ave**	Front St	Shasta Dam Blvd	666	874	208	31%	812	5%	208	2%	828	1036	25%
37	**Grand Coulee Blvd**	Shasta Dam Blvd	Fort Peck St	148	269	121	82%	759	5%	121	2%	774	895	16%
38	**Grand Coulee Blvd**	Fort Peck St	Boulder St	642	773	131	20%	687	5%	131	2%	701	832	19%
39	**Shasta Way**	Front St	Shast Dam Blvd	663	1,329	666	100%	728	5%	666	2%	743	1409	90%
40	**Shasta St**	Shasta Dam Blvd	Fort Peck St	986	1,183	197	20%	620	5%	197	2%	632	829	31%
41	**Cascade Blvd**	Kennett St	Shasta Dam Blvd	2,776	3,148	372	13%	2025	5%	372	2%	2066	2438	18%
42	**Cascade Blvd**	Shasta Dam Blvd	Second St	2,230	3,152	922	41%	4042	5%	922	2%	4123	5045	22%
43	**Cascade Blvd**	Fell St	Cottage Ave	2,230	3,152	922	41%	2897	5%	922	2%	2955	3877	31%
44	**Cascade Blvd**	Cottage Ave	Pine Grove Ave	2,607	4,032	1,425	55%	2953	5%	1425	2%	3012	4437	47%
45	**Cascade Blvd**	Riddle Rd	Arrowhead Rd	4,968	5,146	178	4%	2998	5%	178	2%	3058	3236	6%
46	**Viriginia Ave**	Akrich St	Pine Grove Ave	2,351	3,746	1,395	59%	1104	5%	1395	2%	1126	2521	124%
47	**Twin View Blvd**	Virginia Ave	Poppy Ln	1,670	1,389	(281)	-17%	639	5%	32	2%	652	684	5%
48	**Twin View Blvd**	Mendocino St	Shasta Lake City Limit	1,156	2,629	1,473	127%	429	5%	1473	2%	438	1911	336%

APPENDIX C

INTERSECTION LEVEL OF SERVICE ANALYSIS WORKSHEETS

EXISTING 2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	2	5	24	7	16	3	11	2	10	20	1
Future Volume (vph)	1	2	5	24	7	16	3	11	2	10	20	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.916			0.955				0.850		0.996	
Flt Protected		0.994			0.975			0.990			0.984	
Satd. Flow (prot)	0	1696	0	0	1734	0	0	1844	1583	0	1826	0
Flt Permitted		0.994			0.975			0.990			0.984	
Satd. Flow (perm)	0	1696	0	0	1734	0	0	1844	1583	0	1826	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			3245			1275			1105	
Travel Time (s)		16.1			73.8			29.0			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	5	26	8	17	3	12	2	11	22	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	51	0	0	15	2	0	34	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

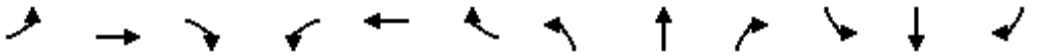
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	2	5	24	7	16	3	11	2	10	20	1
Future Vol, veh/h	1	2	5	24	7	16	3	11	2	10	20	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	5	26	8	17	3	12	2	11	22	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	6.8	7.2	7.5	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	0%	12%	51%	32%
Vol Thru, %	79%	0%	25%	15%	65%
Vol Right, %	0%	100%	62%	34%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	2	8	47	31
LT Vol	3	0	1	24	10
Through Vol	11	0	2	7	20
RT Vol	0	2	5	16	1
Lane Flow Rate	15	2	9	51	34
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.02	0.002	0.009	0.056	0.039
Departure Headway (Hd)	4.763	3.955	3.711	3.927	4.197
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	751	904	960	910	852
Service Time	2.492	1.684	1.749	1.957	2.226
HCM Lane V/C Ratio	0.02	0.002	0.009	0.056	0.04
HCM Control Delay	7.6	6.7	6.8	7.2	7.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0.2	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	69	1	6	72	13	1	1	12	14	1	3
Future Volume (vph)	2	69	1	6	72	13	1	1	12	14	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	300		0	0		0	0		50
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	60			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.977			0.883				0.850
Flt Protected	0.950			0.950				0.997			0.955	
Satd. Flow (prot)	1770	1859	0	1770	1820	0	0	1640	0	0	1779	1583
Flt Permitted	0.950			0.950				0.997			0.955	
Satd. Flow (perm)	1770	1859	0	1770	1820	0	0	1640	0	0	1779	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3245			555			514			456	
Travel Time (s)		73.8			12.6			11.7			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	75	1	7	78	14	1	1	13	15	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	76	0	7	92	0	0	15	0	0	16	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	69	1	6	72	13	1	1	12	14	1	3
Future Vol, veh/h	2	69	1	6	72	13	1	1	12	14	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	300	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	75	1	7	78	14	1	1	13	15	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	92	0	0	76	0	0	181	186	76	186	179	85
Stage 1	-	-	-	-	-	-	80	80	-	99	99	-
Stage 2	-	-	-	-	-	-	101	106	-	87	80	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1503	-	-	1523	-	-	781	708	985	775	715	974
Stage 1	-	-	-	-	-	-	929	828	-	907	813	-
Stage 2	-	-	-	-	-	-	905	807	-	921	828	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1503	-	-	1523	-	-	774	704	985	760	711	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	774	704	-	760	711	-
Stage 1	-	-	-	-	-	-	928	827	-	906	809	-
Stage 2	-	-	-	-	-	-	897	803	-	906	827	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	8.9	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	940	1503	-	-	1523	-	-	757	974
HCM Lane V/C Ratio	0.016	0.001	-	-	0.004	-	-	0.022	0.003
HCM Control Delay (s)	8.9	7.4	-	-	7.4	-	-	9.9	8.7
HCM Lane LOS	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	NBR2	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	197	39	156	101	17	0	119	0	0
Future Volume (vph)	197	39	156	101	17	0	119	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	165		55	0		187	0
Storage Lanes		1	1		1	1		0	0
Taper Length (ft)			70		70			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850		
Flt Protected			0.950		0.950				
Satd. Flow (prot)	1863	1583	1770	1863	1770	0	1583	0	0
Flt Permitted			0.950		0.950				
Satd. Flow (perm)	1863	1583	1770	1863	1770	0	1583	0	0
Link Speed (mph)	40			30	30			40	
Link Distance (ft)	572			398	787			427	
Travel Time (s)	9.8			9.0	17.9			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	42	170	110	18	0	129	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	214	42	170	110	18	0	129	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	0			12	12			12	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane					Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9	9	15	9
Sign Control	Free			Free	Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			

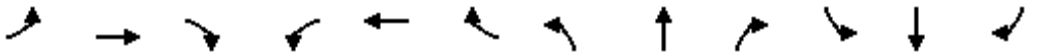
Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR	NWL	NWR
Lane Configurations								
Traffic Vol, veh/h	197	39	156	101	17	0	0	0
Future Vol, veh/h	197	39	156	101	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	-	-	None	-	-	-	None
Storage Length	-	50	165	-	55	0	-	-
Veh in Median Storage, #	0	-	-	0	0	-	16965	-
Grade, %	0	-	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	214	42	170	110	18	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	256	0	664	214
Stage 1	-	-	-	-	214	-
Stage 2	-	-	-	-	450	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1309	-	426	826
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1309	-	371	826
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	371	826	-	-	1309	-
HCM Lane V/C Ratio	0.05	0.157	-	-	0.13	-
HCM Control Delay (s)	15.2	10.2	-	-	8.2	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.6	-	-	0.4	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	30	227	20	10	10	0	0	21	7
Future Volume (vph)	0	0	0	30	227	20	10	10	0	0	21	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			85			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.988						0.965	
Flt Protected				0.950				0.976				
Satd. Flow (prot)	0	0	0	1770	1840	0	0	1818	0	0	1798	0
Flt Permitted				0.950				0.976				
Satd. Flow (perm)	0	0	0	1770	1840	0	0	1818	0	0	1798	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		398			761			118			339	
Travel Time (s)		6.8			13.0			2.7			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	33	247	22	11	11	0	0	23	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	33	269	0	0	22	0	0	31	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.6%		ICU Level of Service A	
Analysis Period (min) 15			

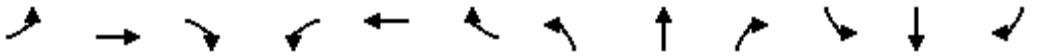
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	30	227	20	10	10	0	0	21	7
Future Vol, veh/h	0	0	0	30	227	20	10	10	0	0	21	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	70	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	33	247	22	11	11	0	0	23	8

Major/Minor	Major2			Minor1			Minor2			
Conflicting Flow All	0	0	0	340	335	-	-	324	258	
Stage 1	-	-	-	0	0	-	-	324	-	
Stage 2	-	-	-	340	335	-	-	0	-	
Critical Hdwy	4.12	-	-	7.12	6.52	-	-	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-	
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	
Follow-up Hdwy	2.218	-	-	3.518	4.018	-	-	4.018	3.318	
Pot Cap-1 Maneuver	-	-	-	614	585	0	0	594	781	
Stage 1	-	-	-	-	-	0	0	650	-	
Stage 2	-	-	-	675	643	0	0	-	-	
Platoon blocked, %		-	-							
Mov Cap-1 Maneuver	-	-	-	590	585	-	-	594	781	
Mov Cap-2 Maneuver	-	-	-	590	585	-	-	594	-	
Stage 1	-	-	-	-	-	-	-	650	-	
Stage 2	-	-	-	645	643	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s		11.4	11
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	587	-	-	-	632
HCM Lane V/C Ratio	0.037	-	-	-	0.048
HCM Control Delay (s)	11.4	-	-	-	11
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	262	8	0	0	0	0	11	63	27	22	0
Future Volume (vph)	6	262	8	0	0	0	0	11	63	27	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	140			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995						0.885				
Flt Protected	0.950										0.973	
Satd. Flow (prot)	1770	1853	0	0	0	0	0	1649	0	0	1812	0
Flt Permitted	0.950										0.973	
Satd. Flow (perm)	1770	1853	0	0	0	0	0	1649	0	0	1812	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		427			1196			599			118	
Travel Time (s)		9.7			27.2			13.6			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	285	9	0	0	0	0	12	68	29	24	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	294	0	0	0	0	0	80	0	0	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			16	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.3%		ICU Level of Service A	
Analysis Period (min) 15			

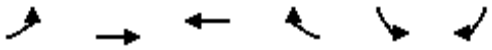
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	262	8	0	0	0	0	11	63	27	22	0
Future Vol, veh/h	6	262	8	0	0	0	0	11	63	27	22	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	285	9	0	0	0	0	12	68	29	24	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	304	290	344	308	-
Stage 1	-	-	-	-	304	-	0	0	-
Stage 2	-	-	-	-	0	-	344	308	-
Critical Hdwy	4.12	-	-	-	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	-	-	-	0	609	749	610	606	0
Stage 1	-	-	-	0	663	-	-	-	0
Stage 2	-	-	-	0	-	-	671	660	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	609	749	546	606	-
Mov Cap-2 Maneuver	-	-	-	-	609	-	546	606	-
Stage 1	-	-	-	-	663	-	-	-	-
Stage 2	-	-	-	-	-	-	599	660	-

Approach	EB	NB	SB
HCM Control Delay, s		10.6	12
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	724	-	-	-	571
HCM Lane V/C Ratio	0.111	-	-	-	0.093
HCM Control Delay (s)	10.6	-	-	-	12
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.3



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	485	306	28	32	11
Future Volume (vph)	11	485	306	28	32	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			100	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.966	
Flt Protected	0.950				0.964	
Satd. Flow (prot)	1770	1863	1863	1583	1735	0
Flt Permitted	0.950				0.964	
Satd. Flow (perm)	1770	1863	1863	1583	1735	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		763	1469		346	
Travel Time (s)		13.0	25.0		7.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	527	333	30	35	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	527	333	30	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.5%		ICU Level of Service A	
Analysis Period (min) 15			

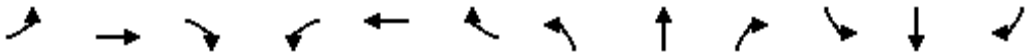
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	485	306	28	32	11
Future Vol, veh/h	11	485	306	28	32	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	527	333	30	35	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	363	0	-	0	884	333
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	551	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1196	-	-	-	316	709
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1196	-	-	-	313	709
Mov Cap-2 Maneuver	-	-	-	-	428	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	577	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1196	-	-	-	476
HCM Lane V/C Ratio	0.01	-	-	-	0.098
HCM Control Delay (s)	8	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	13	18	2	8	1	7	3	1	1	9	2
Future Volume (vph)	1	13	18	2	8	1	7	3	1	1	9	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.923			0.989			0.989			0.979	
Flt Protected		0.999			0.992			0.968			0.996	
Satd. Flow (prot)	0	1718	0	0	1828	0	0	1783	0	0	1816	0
Flt Permitted		0.999			0.992			0.968			0.996	
Satd. Flow (perm)	0	1718	0	0	1828	0	0	1783	0	0	1816	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			558			692			322	
Travel Time (s)		11.2			12.7			15.7			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	14	20	2	9	1	8	3	1	1	10	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	12	0	0	12	0	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

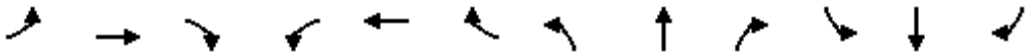
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	13	18	2	8	1	7	3	1	1	9	2
Future Vol, veh/h	1	13	18	2	8	1	7	3	1	1	9	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	14	20	2	9	1	8	3	1	1	10	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.8	7.1	7.2	7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	64%	3%	18%	8%
Vol Thru, %	27%	41%	73%	75%
Vol Right, %	9%	56%	9%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	11	32	11	12
LT Vol	7	1	2	1
Through Vol	3	13	8	9
RT Vol	1	18	1	2
Lane Flow Rate	12	35	12	13
Geometry Grp	1	1	1	1
Degree of Util (X)	0.014	0.035	0.013	0.014
Departure Headway (Hd)	4.099	3.657	3.987	3.942
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	875	982	900	910
Service Time	2.113	1.668	2	1.956
HCM Lane V/C Ratio	0.014	0.036	0.013	0.014
HCM Control Delay	7.2	6.8	7.1	7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	7	3	1	4	1	1	9	2	2	32	1
Future Volume (vph)	1	7	3	1	4	1	1	9	2	2	32	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.977			0.979			0.996	
Flt Protected		0.996			0.992			0.996			0.997	
Satd. Flow (prot)	0	1792	0	0	1805	0	0	1816	0	0	1850	0
Flt Permitted		0.996			0.992			0.996			0.997	
Satd. Flow (perm)	0	1792	0	0	1805	0	0	1816	0	0	1850	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		544			979			655			692	
Travel Time (s)		12.4			22.3			14.9			15.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	8	3	1	4	1	1	10	2	2	35	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	6	0	0	13	0	0	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	7	3	1	4	1	1	9	2	2	32	1
Future Vol, veh/h	1	7	3	1	4	1	1	9	2	2	32	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	8	3	1	4	1	1	10	2	2	35	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	7	7	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	9%	17%	6%
Vol Thru, %	75%	64%	67%	91%
Vol Right, %	17%	27%	17%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	11	6	35
LT Vol	1	1	1	2
Through Vol	9	7	4	32
RT Vol	2	3	1	1
Lane Flow Rate	13	12	7	38
Geometry Grp	1	1	1	1
Degree of Util (X)	0.014	0.013	0.007	0.042
Departure Headway (Hd)	3.912	3.883	3.967	3.972
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	917	922	903	905
Service Time	1.925	1.904	1.988	1.979
HCM Lane V/C Ratio	0.014	0.013	0.008	0.042
HCM Control Delay	7	7	7	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	592	16	7	348	13	21	1	7	32	1	10
Future Volume (vph)	12	592	16	7	348	13	21	1	7	32	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		75	50		184	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.954			0.954	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1777	1583	0	1777	1583
Flt Permitted	0.950			0.950				0.954			0.954	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1777	1583	0	1777	1583
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1469			1081			343			655	
Travel Time (s)		25.0			18.4			7.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	643	17	8	378	14	23	1	8	35	1	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	643	17	8	378	14	0	24	8	0	36	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	592	16	7	348	13	21	1	7	32	1	10
Future Vol, veh/h	12	592	16	7	348	13	21	1	7	32	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	75	50	-	184	-	-	25	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	643	17	8	378	14	23	1	8	35	1	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	392	0	0	660	0	0	1076	1077	643	1076	1080	378
Stage 1	-	-	-	-	-	-	669	669	-	394	394	-
Stage 2	-	-	-	-	-	-	407	408	-	682	686	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1167	-	-	928	-	-	197	219	473	197	218	669
Stage 1	-	-	-	-	-	-	447	456	-	631	605	-
Stage 2	-	-	-	-	-	-	621	597	-	440	448	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1167	-	-	928	-	-	190	215	473	190	214	669
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	215	-	190	214	-
Stage 1	-	-	-	-	-	-	442	451	-	624	600	-
Stage 2	-	-	-	-	-	-	605	592	-	427	443	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	23.2	24.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	191	473	1167	-	-	928	-	-	191	669
HCM Lane V/C Ratio	0.125	0.016	0.011	-	-	0.008	-	-	0.188	0.016
HCM Control Delay (s)	26.5	12.7	8.1	-	-	8.9	-	-	28.2	10.5
HCM Lane LOS	D	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.4	0	0	-	-	0	-	-	0.7	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	5	1	1	1	1	1	63	3	1	69	18
Future Volume (vph)	11	5	1	1	1	1	1	63	3	1	69	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.955			0.994			0.972	
Flt Protected		0.968			0.984			0.999			0.999	
Satd. Flow (prot)	0	1789	0	0	1750	0	0	1850	0	0	1809	0
Flt Permitted		0.968			0.984			0.999			0.999	
Satd. Flow (perm)	0	1789	0	0	1750	0	0	1850	0	0	1809	0
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		359			384			333			367	
Travel Time (s)		8.2			8.7			9.1			10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	5	1	1	1	1	1	68	3	1	75	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	3	0	0	72	0	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.3%		ICU Level of Service A	
Analysis Period (min) 15			

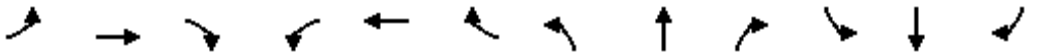
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	5	1	1	1	1	1	63	3	1	69	18
Future Vol, veh/h	11	5	1	1	1	1	1	63	3	1	69	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	5	1	1	1	1	1	68	3	1	75	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	160	160	85	162	169	70	95	0	0	71	0	0
Stage 1	87	87	-	72	72	-	-	-	-	-	-	-
Stage 2	73	73	-	90	97	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	806	732	974	803	724	993	1499	-	-	1529	-	-
Stage 1	921	823	-	938	835	-	-	-	-	-	-	-
Stage 2	937	834	-	917	815	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	803	731	974	797	723	993	1499	-	-	1529	-	-
Mov Cap-2 Maneuver	803	731	-	797	723	-	-	-	-	-	-	-
Stage 1	920	822	-	937	834	-	-	-	-	-	-	-
Stage 2	934	833	-	909	814	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.4	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1499	-	-	788	823	1529	-	-
HCM Lane V/C Ratio	0.001	-	-	0.023	0.004	0.001	-	-
HCM Control Delay (s)	7.4	0	-	9.7	9.4	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	673	4	2	304	71	0	0	7	0	0	78
Future Volume (vph)	1	673	4	2	304	71	0	0	7	0	0	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		100	130		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	1863	1583	1770	3440	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	1863	1583	1770	3440	0	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		640			390			248			333	
Travel Time (s)		10.9			6.6			5.6			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	732	4	2	330	77	0	0	8	0	0	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	732	4	2	407	0	0	0	8	0	0	85
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.4%		ICU Level of Service A	
Analysis Period (min) 15			

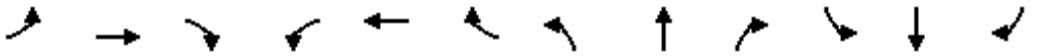
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	673	4	2	304	71	0	0	7	0	0	78
Future Vol, veh/h	1	673	4	2	304	71	0	0	7	0	0	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	130	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	732	4	2	330	77	0	0	8	0	0	85

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	407	0	0	736	0	0	-	-	732	-	-	204
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	1150	-	-	867	-	-	0	0	420	0	0	803
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1150	-	-	867	-	-	-	-	420	-	-	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	13.7	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	420	1150	-	-	867	-	-	803
HCM Lane V/C Ratio	0.018	0.001	-	-	0.003	-	-	0.106
HCM Control Delay (s)	13.7	8.1	-	-	9.2	-	-	10
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

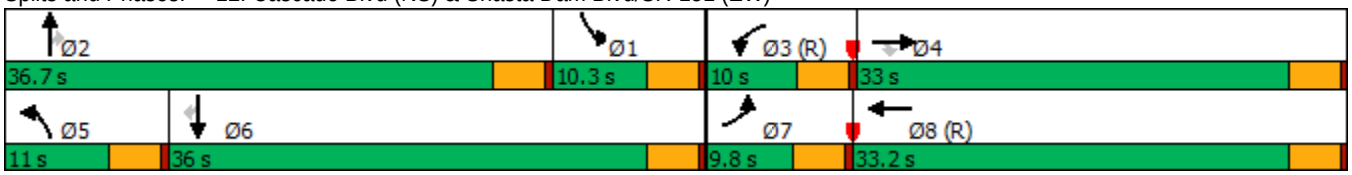


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	598	45	14	311	47	35	11	68	140	19	44
Future Volume (vph)	47	598	45	14	311	47	35	11	68	140	19	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		120	170		0	50		100	55		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			80			50			55		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.980				0.850			0.850
Flt Protected	*0.918			*0.918			*0.918			*0.918		
Satd. Flow (prot)	1710	3539	1583	1710	3468	0	1710	1863	1583	1710	1863	1583
Flt Permitted	0.918			0.918			0.918			0.918		
Satd. Flow (perm)	1710	3539	1583	1710	3468	0	1710	1863	1583	1710	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158		20				109			109
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		390			475			345			436	
Travel Time (s)		6.6			8.1			7.8			9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	650	49	15	338	51	38	12	74	152	21	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	650	49	15	389	0	38	12	74	152	21	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	33.0	33.0	9.5	33.0		9.5	22.5	22.5	9.5	36.0	36.0
Total Split (s)	9.8	33.0	33.0	10.0	33.2		11.0	36.7	36.7	10.3	36.0	36.0
Total Split (%)	10.9%	36.7%	36.7%	11.1%	36.9%		12.2%	40.8%	40.8%	11.4%	40.0%	40.0%
Maximum Green (s)	5.8	29.0	29.0	6.0	29.2		7.0	32.7	32.7	6.3	32.0	32.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0						7.0	7.0
Flash Dont Walk (s)		22.0	22.0		22.0						25.0	25.0
Pedestrian Calls (#/hr)		5	5		5						5	5
Act Effct Green (s)	5.7	29.0	29.0	6.0	33.1		6.6	32.7	32.7	6.3	36.4	36.4
Actuated g/C Ratio	0.06	0.32	0.32	0.07	0.37		0.07	0.36	0.36	0.07	0.40	0.40
v/c Ratio	0.47	0.57	0.08	0.13	0.30		0.30	0.02	0.11	1.28	0.03	0.07
Control Delay	55.1	27.7	0.2	43.1	20.1		46.0	18.5	2.1	211.7	18.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	27.7	0.2	43.1	20.1		46.0	18.5	2.1	211.7	18.9	0.2
LOS	E	C	A	D	C		D	B	A	F	B	A
Approach Delay		27.8			21.0			17.2			147.4	
Approach LOS		C			C			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 3:WBL and 8:WBT, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 42.7		Intersection LOS: D	
Intersection Capacity Utilization 45.1%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 12: Cascade Blvd (NS) & Shasta Dam Blvd/SR-151 (EW)



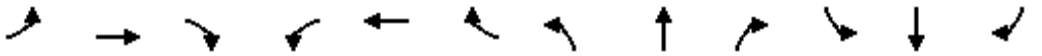


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	650	49	15	389	38	12	74	152	21	48
v/c Ratio	0.47	0.57	0.08	0.13	0.30	0.30	0.02	0.11	1.28	0.03	0.07
Control Delay	55.1	27.7	0.2	43.1	20.1	46.0	18.5	2.1	211.7	18.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	27.7	0.2	43.1	20.1	46.0	18.5	2.1	211.7	18.9	0.2
Queue Length 50th (ft)	29	160	0	8	82	21	4	0	~110	8	0
Queue Length 95th (ft)	#68	216	0	28	121	52	16	14	#230	23	0
Internal Link Dist (ft)		310			395		265			356	
Turn Bay Length (ft)	180		120	170		50		100	55		110
Base Capacity (vph)	110	1140	617	114	1288	133	676	644	119	753	705
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.57	0.08	0.13	0.30	0.29	0.02	0.11	1.28	0.03	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

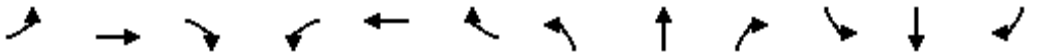
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	598	45	14	311	47	35	11	68	140	19	44
Future Volume (veh/h)	47	598	45	14	311	47	35	11	68	140	19	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	650	49	15	338	51	38	12	74	152	21	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	1233	550	74	1082	162	61	680	576	125	747	633
Arrive On Green	0.04	0.35	0.35	0.01	0.12	0.12	0.03	0.36	0.36	0.07	0.40	0.40
Sat Flow, veh/h	1781	3554	1585	1781	3100	463	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	51	650	49	15	192	197	38	12	74	152	21	48
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1787	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.5	13.2	1.9	0.7	8.9	9.1	1.9	0.4	2.2	6.3	0.6	1.7
Cycle Q Clear(g_c), s	2.5	13.2	1.9	0.7	8.9	9.1	1.9	0.4	2.2	6.3	0.6	1.7
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	71	1233	550	74	620	623	61	680	576	125	747	633
V/C Ratio(X)	0.72	0.53	0.09	0.20	0.31	0.32	0.63	0.02	0.13	1.22	0.03	0.08
Avail Cap(c_a), veh/h	115	1233	550	119	620	623	139	680	576	125	747	633
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	23.5	19.8	42.9	29.9	30.0	42.9	18.4	12.1	41.8	16.4	16.7
Incr Delay (d2), s/veh	12.5	0.4	0.1	1.3	1.3	1.3	10.1	0.0	0.5	151.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	5.2	0.7	0.3	4.2	4.3	1.0	0.2	1.0	8.0	0.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.2	23.9	19.9	44.2	31.2	31.3	53.0	18.4	12.5	192.8	16.5	17.0
LnGrp LOS	E	C	B	D	C	C	D	B	B	F	B	B
Approach Vol, veh/h		750			404			124			221	
Approach Delay, s/veh		25.8			31.7			25.5			137.9	
Approach LOS		C			C			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	36.7	7.8	35.2	7.1	39.9	7.6	35.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.3	32.7	6.0	29.0	7.0	32.0	5.8	29.2
Max Q Clear Time (g_c+I1), s	8.3	4.2	2.7	15.2	3.9	3.7	4.5	11.1
Green Ext Time (p_c), s	0.0	0.3	0.0	3.6	0.0	0.2	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	43.9
HCM 6th LOS	D



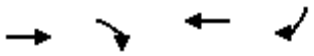
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	433	373	0	297	0	0	0	0	0	0	65
Future Volume (vph)	0	433	373	0	297	0	0	0	0	0	0	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.865
Flt Protected												
Satd. Flow (prot)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			378									580
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		475			758			535			509	
Travel Time (s)		8.1			12.9			12.2			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	471	405	0	323	0	0	0	0	0	0	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	471	405	0	323	0	0	0	0	0	0	71
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2							1
Detector Template		Thru	Right		Thru							Right
Leading Detector (ft)		100	20		100							20
Trailing Detector (ft)		0	0		0							0
Detector 1 Position(ft)		0	0		0							0
Detector 1 Size(ft)		6	20		6							20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex							Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0							0.0
Detector 1 Queue (s)		0.0	0.0		0.0							0.0
Detector 1 Delay (s)		0.0	0.0		0.0							0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Free		NA							Prot
Protected Phases		4			8							1
Permitted Phases			Free									
Detector Phase		4			8							1
Switch Phase												
Minimum Initial (s)		5.0			5.0							5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		22.5			22.5							9.5
Total Split (s)		63.0			63.0							27.0
Total Split (%)		70.0%			70.0%							30.0%
Maximum Green (s)		59.0			59.0							23.0
Yellow Time (s)		3.5			3.5							3.5
All-Red Time (s)		0.5			0.5							0.5
Lost Time Adjust (s)		0.0			0.0							0.0
Total Lost Time (s)		4.0			4.0							4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							3.0
Recall Mode		None			C-Max							None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		11.0			11.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)		79.2	90.0		79.2							5.5
Actuated g/C Ratio		0.88	1.00		0.88							0.06
v/c Ratio		0.29	0.26		0.10							0.11
Control Delay		0.7	0.7		1.1							0.4
Queue Delay		0.1	0.0		0.0							0.0
Total Delay		0.9	0.7		1.1							0.4
LOS		A	A		A							A
Approach Delay		0.8			1.1						0.4	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 0.8		Intersection LOS: A	
Intersection Capacity Utilization 26.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Shasta Dam Blvd/SR-151 (EW) & I-5 SB Off-Ramp (NS)

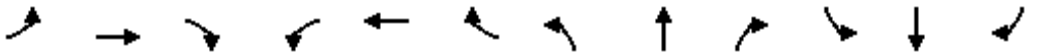




Lane Group	EBT	EBR	WBT	SBR
Lane Group Flow (vph)	471	405	323	71
v/c Ratio	0.29	0.26	0.10	0.11
Control Delay	0.7	0.7	1.1	0.4
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	0.9	0.7	1.1	0.4
Queue Length 50th (ft)	5	5	10	0
Queue Length 95th (ft)	m7	m2	14	0
Internal Link Dist (ft)	395		678	
Turn Bay Length (ft)				
Base Capacity (vph)	1639	1583	3114	843
Starvation Cap Reductn	354	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.26	0.10	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



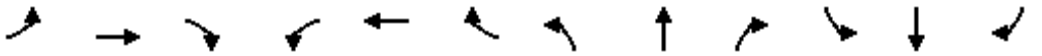
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	433	373	0	297	0	0	0	0	0	0	65
Future Volume (veh/h)	0	433	373	0	297	0	0	0	0	0	0	65
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				0	0	1870
Adj Flow Rate, veh/h	0	471	0	0	323	0				0	0	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	0				0	0	2
Cap, veh/h	0	1226		0	2330	0				0	0	0
Arrive On Green	0.00	0.66	0.00	0.00	0.66	0.00				0.00	0.00	0.00
Sat Flow, veh/h	0	1870	1585	0	3741	0					0	
Grp Volume(v), veh/h	0	471	0	0	323	0					0.0	
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1777	0						
Q Serve(g_s), s	0.0	10.4	0.0	0.0	3.1	0.0						
Cycle Q Clear(g_c), s	0.0	10.4	0.0	0.0	3.1	0.0						
Prop In Lane	0.00		1.00	0.00		0.00						
Lane Grp Cap(c), veh/h	0	1226		0	2330	0						
V/C Ratio(X)	0.00	0.38		0.00	0.14	0.00						
Avail Cap(c_a), veh/h	0	1226		0	2330	0						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.00	0.71	0.00	0.00	1.00	0.00						
Uniform Delay (d), s/veh	0.0	7.1	0.0	0.0	5.9	0.0						
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.0	3.4	0.0	0.0	1.0	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.3	0.0	0.0	6.0	0.0						
LnGrp LOS	A	A		A	A	A						
Approach Vol, veh/h		471	A		323							
Approach Delay, s/veh		7.3			6.0							
Approach LOS		A			A							

Timer - Assigned Phs				4				8				
Phs Duration (G+Y+Rc), s				63.0				63.0				
Change Period (Y+Rc), s				4.0				4.0				
Max Green Setting (Gmax), s				59.0				59.0				
Max Q Clear Time (g_c+I1), s				12.4				5.1				
Green Ext Time (p_c), s				3.1				2.1				

Intersection Summary												
HCM 6th Ctrl Delay			6.8									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	95	20	64	54	82	7	8	32	70	15	108
Future Volume (vph)	118	95	20	64	54	82	7	8	32	70	15	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	345		90	120		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			80			90			65		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974				0.850		0.881			0.868	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1814	0	1770	1863	1583	1770	1641	0	1770	1617	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1814	0	1770	1863	1583	1770	1641	0	1770	1617	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1395			1895			1288			1162	
Travel Time (s)		23.8			32.3			29.3			26.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	103	22	70	59	89	8	9	35	76	16	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	125	0	70	59	89	8	44	0	76	133	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.4%		ICU Level of Service A	
Analysis Period (min) 15			

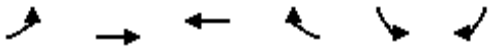
Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	95	20	64	54	82	7	8	32	70	15	108
Future Vol, veh/h	118	95	20	64	54	82	7	8	32	70	15	108
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	345	-	90	120	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	103	22	70	59	89	8	9	35	76	16	117

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	148	0	0	125	0	0	680	658	114	591	580	59
Stage 1	-	-	-	-	-	-	370	370	-	199	199	-
Stage 2	-	-	-	-	-	-	310	288	-	392	381	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1434	-	-	1462	-	-	365	384	939	419	426	1007
Stage 1	-	-	-	-	-	-	650	620	-	803	736	-
Stage 2	-	-	-	-	-	-	700	674	-	633	613	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1462	-	-	280	333	939	355	369	1007
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	333	-	355	369	-
Stage 1	-	-	-	-	-	-	592	565	-	732	701	-
Stage 2	-	-	-	-	-	-	575	642	-	547	558	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.9	2.4	11.7	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	280	688	1434	-	-	1462	-	-	355	832
HCM Lane V/C Ratio	0.027	0.063	0.089	-	-	0.048	-	-	0.214	0.161
HCM Control Delay (s)	18.2	10.6	7.8	-	-	7.6	-	-	17.9	10.2
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0.2	0.3	-	-	0.1	-	-	0.8	0.6

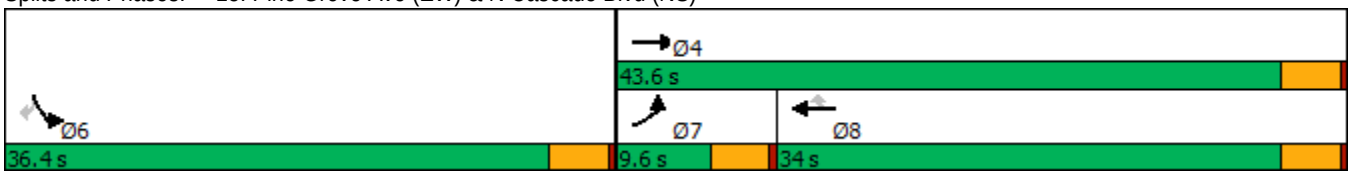


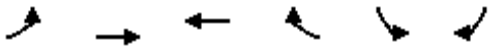
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	284	201	98	181	22
Future Volume (vph)	19	284	201	98	181	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275			0	110	0
Storage Lanes	1			1	1	1
Taper Length (ft)	135				110	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	*0.918				*0.918	
Satd. Flow (prot)	1661	3438	1810	1538	1661	1538
Flt Permitted	0.918				0.918	
Satd. Flow (perm)	1661	3438	1810	1538	1661	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				107		24
Link Speed (mph)		40	40		30	
Link Distance (ft)		609	338		516	
Travel Time (s)		10.4	5.8		11.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	21	309	218	107	197	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	309	218	107	197	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	34.0	34.0	36.0	36.0
Total Split (s)	9.6	43.6	34.0	34.0	36.4	36.4
Total Split (%)	12.0%	54.5%	42.5%	42.5%	45.5%	45.5%
Maximum Green (s)	5.6	39.6	30.0	30.0	32.4	32.4
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	Max	Max
Walk Time (s)			7.0	7.0	7.0	7.0
Flash Dont Walk (s)			23.0	23.0	25.0	25.0
Pedestrian Calls (#/hr)			5	5	5	5
Act Effct Green (s)	5.8	15.2	13.9	13.9	33.5	33.5
Actuated g/C Ratio	0.10	0.27	0.24	0.24	0.59	0.59
v/c Ratio	0.13	0.34	0.50	0.24	0.20	0.03
Control Delay	30.4	16.5	22.2	5.4	9.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	16.5	22.2	5.4	9.3	5.2
LOS	C	B	C	A	A	A
Approach Delay		17.3	16.7		8.8	
Approach LOS		B	B		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 57			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 14.9		Intersection LOS: B	
Intersection Capacity Utilization 32.5%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

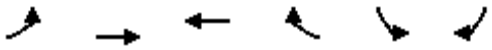
Splits and Phases: 15: Pine Grove Ave (EW) & N Cascade Blvd (NS)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	21	309	218	107	197	24
v/c Ratio	0.13	0.34	0.50	0.24	0.20	0.03
Control Delay	30.4	16.5	22.2	5.4	9.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	16.5	22.2	5.4	9.3	5.2
Queue Length 50th (ft)	6	42	59	0	21	0
Queue Length 95th (ft)	32	65	129	30	113	14
Internal Link Dist (ft)		529	258		436	
Turn Bay Length (ft)	275				110	
Base Capacity (vph)	168	2469	984	885	976	913
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.13	0.22	0.12	0.20	0.03

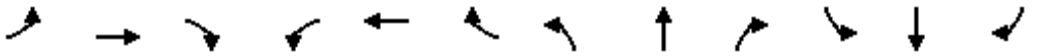
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	284	201	98	181	22
Future Volume (veh/h)	19	284	201	98	181	22
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	21	309	218	107	197	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	43	941	318	269	1017	905
Arrive On Green	0.02	0.27	0.17	0.17	0.58	0.58
Sat Flow, veh/h	1739	3561	1826	1547	1739	1547
Grp Volume(v), veh/h	21	309	218	107	197	24
Grp Sat Flow(s),veh/h/ln	1739	1735	1826	1547	1739	1547
Q Serve(g_s), s	0.7	4.0	6.2	3.4	2.9	0.4
Cycle Q Clear(g_c), s	0.7	4.0	6.2	3.4	2.9	0.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	43	941	318	269	1017	905
V/C Ratio(X)	0.48	0.33	0.69	0.40	0.19	0.03
Avail Cap(c_a), veh/h	176	2479	988	838	1017	905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	16.2	21.5	20.3	5.4	4.9
Incr Delay (d2), s/veh	8.2	0.2	2.6	0.9	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.4	2.5	1.1	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.8	16.4	24.1	21.3	5.8	4.9
LnGrp LOS	C	B	C	C	A	A
Approach Vol, veh/h		330	325		221	
Approach Delay, s/veh		17.5	23.2		5.7	
Approach LOS		B	C		A	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	19.0	36.4	5.4	13.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	39.6	32.4	5.6	30.0
Max Q Clear Time (g_c+I1), s	6.0	4.9	2.7	8.2
Green Ext Time (p_c), s	2.0	0.6	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	67	475	31	273	0	0	0	0	14	0	24
Future Volume (vph)	0	67	475	31	273	0	0	0	0	14	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	155		0	0		0	0		50
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		225			446			656			388	
Travel Time (s)		3.8			7.6			14.9			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	73	516	34	297	0	0	0	0	15	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	73	516	34	297	0	0	0	0	0	15	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

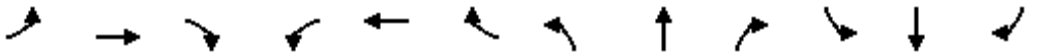
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	67	475	31	273	0	0	0	0	14	0	24
Future Vol, veh/h	0	67	475	31	273	0	0	0	0	14	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	155	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	73	516	34	297	0	0	0	0	15	0	26

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	589	0	0			696	954	297
Stage 1	-	-	-	-	-	-			365	365	-
Stage 2	-	-	-	-	-	-			331	589	-
Critical Hdwy	-	-	-	4.15	-	-			6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-			5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.45	5.55	-
Follow-up Hdwy	-	-	-	2.245	-	-			3.545	4.045	3.345
Pot Cap-1 Maneuver	0	-	-	972	-	0			403	256	735
Stage 1	0	-	-	-	-	0			696	618	-
Stage 2	0	-	-	-	-	0			721	491	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	972	-	-			389	0	735
Mov Cap-2 Maneuver	-	-	-	-	-	-			389	0	-
Stage 1	-	-	-	-	-	-			672	0	-
Stage 2	-	-	-	-	-	-			721	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.9	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	972	-	389	735
HCM Lane V/C Ratio	-	-	0.035	-	0.039	0.035
HCM Control Delay (s)	-	-	8.8	-	14.6	10.1
HCM Lane LOS	-	-	A	-	B	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.1	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	59	0	0	60	15	227	0	33	0	0	0
Future Volume (vph)	24	59	0	0	60	15	227	0	33	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	0		0	0		50	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		446			181			589			428	
Travel Time (s)		7.6			3.1			13.4			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	26	64	0	0	65	16	247	0	36	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	64	0	0	65	16	0	247	36	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	59	0	0	60	15	227	0	33	0	0	0
Future Vol, veh/h	24	59	0	0	60	15	227	0	33	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	26	64	0	0	65	16	247	0	36	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	81	0	-	-	-	0	189	197	64
Stage 1	-	-	-	-	-	-	116	116	-
Stage 2	-	-	-	-	-	-	73	81	-
Critical Hdwy	4.15	-	-	-	-	-	6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.45	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345
Pot Cap-1 Maneuver	1498	-	0	0	-	-	793	693	992
Stage 1	-	-	0	0	-	-	902	794	-
Stage 2	-	-	0	0	-	-	942	822	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1498	-	-	-	-	-	780	0	992
Mov Cap-2 Maneuver	-	-	-	-	-	-	780	0	-
Stage 1	-	-	-	-	-	-	887	0	-
Stage 2	-	-	-	-	-	-	942	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.2	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	780	992	1498	-	-	-
HCM Lane V/C Ratio	0.316	0.036	0.017	-	-	-
HCM Control Delay (s)	11.7	8.8	7.4	-	-	-
HCM Lane LOS	B	A	A	-	-	-
HCM 95th %tile Q(veh)	1.4	0.1	0.1	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	19	34	1	24	1	24	1	1	1	3	38
Future Volume (vph)	36	19	34	1	24	1	24	1	1	1	3	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.949			0.995			0.995			0.877	
Flt Protected		0.980			0.998			0.956			0.999	
Satd. Flow (prot)	0	1732	0	0	1850	0	0	1772	0	0	1632	0
Flt Permitted		0.980			0.998			0.956			0.999	
Satd. Flow (perm)	0	1732	0	0	1850	0	0	1772	0	0	1632	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		181			285			397			451	
Travel Time (s)		3.1			4.9			9.0			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	21	37	1	26	1	26	1	1	1	3	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	0	0	28	0	0	28	0	0	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.5%		ICU Level of Service A	
Analysis Period (min) 15			

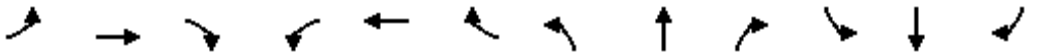
Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	36	19	34	1	24	1	24	1	1	1	3	38
Future Vol, veh/h	36	19	34	1	24	1	24	1	1	1	3	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	21	37	1	26	1	26	1	1	1	3	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	27	0	0	58	0	0	169	147	40	148	165	27
Stage 1	-	-	-	-	-	-	118	118	-	29	29	-
Stage 2	-	-	-	-	-	-	51	29	-	119	136	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1587	-	-	1546	-	-	795	744	1031	820	728	1048
Stage 1	-	-	-	-	-	-	887	798	-	988	871	-
Stage 2	-	-	-	-	-	-	962	871	-	885	784	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1587	-	-	1546	-	-	746	725	1031	802	709	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	746	725	-	802	709	-
Stage 1	-	-	-	-	-	-	865	778	-	963	870	-
Stage 2	-	-	-	-	-	-	920	870	-	861	764	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.3	10	8.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	753	1587	-	-	1546	-	-	1006
HCM Lane V/C Ratio	0.038	0.025	-	-	0.001	-	-	0.045
HCM Control Delay (s)	10	7.3	0	-	7.3	0	-	8.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	423	42	37	236	1	63	0	117	1	1	0
Future Volume (vph)	0	423	42	37	236	1	63	0	117	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	80		0	0		55	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	70			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.999				0.850			
Flt Protected				0.950			0.950				0.976	
Satd. Flow (prot)	1810	3390	0	1719	1808	0	1719	0	1538	0	1766	0
Flt Permitted				0.950			0.950				0.976	
Satd. Flow (perm)	1810	3390	0	1719	1808	0	1719	0	1538	0	1766	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		338			225			390			203	
Travel Time (s)		5.8			3.8			8.9			4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	460	46	40	257	1	68	0	127	1	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	506	0	40	258	0	68	0	127	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.6%		ICU Level of Service A	
Analysis Period (min) 15			

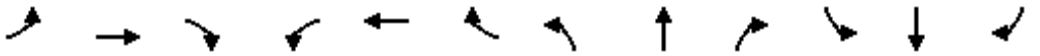
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	423	42	37	236	1	63	0	117	1	1	0
Future Vol, veh/h	0	423	42	37	236	1	63	0	117	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	80	-	-	0	-	55	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	460	46	40	257	1	68	0	127	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	258	0	0	506	0	0	821	-	253	568	844	258
Stage 1	-	-	-	-	-	-	483	-	-	338	338	-
Stage 2	-	-	-	-	-	-	338	-	-	230	506	-
Critical Hdwy	4.175	-	-	4.175	-	-	7.375	-	6.975	7.375	6.575	6.275
Critical Hdwy Stg 1	-	-	-	-	-	-	6.575	-	-	6.175	5.575	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.175	-	-	6.575	5.575	-
Follow-up Hdwy	2.2475	-	-	2.2475	-	-	3.5475	-	3.3475	3.5475	4.0475	3.3475
Pot Cap-1 Maneuver	1286	-	-	1039	-	-	275	0	739	414	295	771
Stage 1	-	-	-	-	-	-	528	0	-	668	633	-
Stage 2	-	-	-	-	-	-	668	0	-	745	533	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1286	-	-	1039	-	-	266	-	739	333	284	771
Mov Cap-2 Maneuver	-	-	-	-	-	-	266	-	-	333	284	-
Stage 1	-	-	-	-	-	-	528	-	-	668	609	-
Stage 2	-	-	-	-	-	-	641	-	-	617	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	15.2	16.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	266	739	1286	-	-	1039	-	-	307
HCM Lane V/C Ratio	0.257	0.172	-	-	-	0.039	-	-	0.007
HCM Control Delay (s)	23.2	10.9	0	-	-	8.6	-	-	16.8
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1	0.6	0	-	-	0.1	-	-	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	8	32	8	19	6	22	1	20	37	1
Future Volume (vph)	1	4	8	32	8	19	6	22	1	20	37	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.913			0.956				0.850		0.998	
Flt Protected		0.996			0.974			0.989			0.983	
Satd. Flow (prot)	0	1694	0	0	1734	0	0	1842	1583	0	1827	0
Flt Permitted		0.996			0.974			0.989			0.983	
Satd. Flow (perm)	0	1694	0	0	1734	0	0	1842	1583	0	1827	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			3245			1275			1105	
Travel Time (s)		16.1			73.8			29.0			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	4	9	35	9	21	7	24	1	22	40	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	65	0	0	31	1	0	63	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

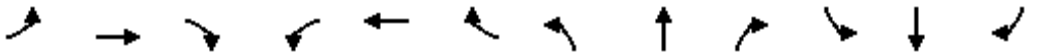
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	4	8	32	8	19	6	22	1	20	37	1
Future Vol, veh/h	1	4	8	32	8	19	6	22	1	20	37	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	4	9	35	9	21	7	24	1	22	40	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	6.9	7.4	7.8	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	0%	8%	54%	34%
Vol Thru, %	79%	0%	31%	14%	64%
Vol Right, %	0%	100%	62%	32%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	1	13	59	58
LT Vol	6	0	1	32	20
Through Vol	22	0	4	8	37
RT Vol	0	1	8	19	1
Lane Flow Rate	30	1	14	64	63
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.041	0.001	0.015	0.072	0.074
Departure Headway (Hd)	4.812	4.003	3.791	4.022	4.254
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	742	889	931	882	838
Service Time	2.557	1.748	1.866	2.085	2.3
HCM Lane V/C Ratio	0.04	0.001	0.015	0.073	0.075
HCM Control Delay	7.8	6.8	6.9	7.4	7.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0.2	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	73	6	18	81	8	4	1	13	10	1	1
Future Volume (vph)	3	73	6	18	81	8	4	1	13	10	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	300		0	0		0	0		50
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	60			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.986			0.901				0.850
Flt Protected	0.950			0.950				0.990			0.956	
Satd. Flow (prot)	1770	1840	0	1770	1837	0	0	1662	0	0	1781	1583
Flt Permitted	0.950			0.950				0.990			0.956	
Satd. Flow (perm)	1770	1840	0	1770	1837	0	0	1662	0	0	1781	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3245			555			514			456	
Travel Time (s)		73.8			12.6			11.7			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	79	7	20	88	9	4	1	14	11	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	86	0	20	97	0	0	19	0	0	12	1
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	73	6	18	81	8	4	1	13	10	1	1
Future Vol, veh/h	3	73	6	18	81	8	4	1	13	10	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	300	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	79	7	20	88	9	4	1	14	11	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	86	0	0	223	226	83	229	225	93
Stage 1	-	-	-	-	-	-	89	89	-	133	133	-
Stage 2	-	-	-	-	-	-	134	137	-	96	92	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1496	-	-	1510	-	-	733	673	976	726	674	964
Stage 1	-	-	-	-	-	-	918	821	-	870	786	-
Stage 2	-	-	-	-	-	-	869	783	-	911	819	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1496	-	-	1510	-	-	723	663	976	706	664	964
Mov Cap-2 Maneuver	-	-	-	-	-	-	723	663	-	706	664	-
Stage 1	-	-	-	-	-	-	916	819	-	868	776	-
Stage 2	-	-	-	-	-	-	855	773	-	895	817	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.2	9.2	10.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	884	1496	-	-	1510	-	-	702	964
HCM Lane V/C Ratio	0.022	0.002	-	-	0.013	-	-	0.017	0.001
HCM Control Delay (s)	9.2	7.4	-	-	7.4	-	-	10.2	8.7
HCM Lane LOS	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	NBR2	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	167	11	103	243	22	0	102	0	0
Future Volume (vph)	167	11	103	243	22	0	102	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	165		55	0		187	0
Storage Lanes		1	1		1	1		0	0
Taper Length (ft)			70		70			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850		
Flt Protected			0.950		0.950				
Satd. Flow (prot)	1863	1583	1770	1863	1770	0	1583	0	0
Flt Permitted			0.950		0.950				
Satd. Flow (perm)	1863	1583	1770	1863	1770	0	1583	0	0
Link Speed (mph)	40			30	30			40	
Link Distance (ft)	572			398	787			427	
Travel Time (s)	9.8			9.0	17.9			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	182	12	112	264	24	0	111	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	182	12	112	264	24	0	111	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	0			12	12			12	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane					Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9	9	15	9
Sign Control	Free			Free	Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.8%		ICU Level of Service A	
Analysis Period (min) 15			

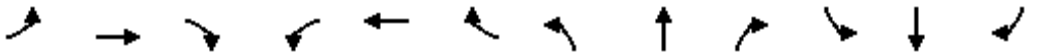
Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR	NWL	NWR
Lane Configurations								
Traffic Vol, veh/h	167	11	103	243	22	0	0	0
Future Vol, veh/h	167	11	103	243	22	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	-	-	None	-	-	-	None
Storage Length	-	50	165	-	55	0	-	-
Veh in Median Storage, #	0	-	-	0	0	-	16965	-
Grade, %	0	-	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	182	12	112	264	24	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	194	0	670	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1379	-	422	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1379	-	388	861
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	388	861	-	-	1379	-
HCM Lane V/C Ratio	0.062	0.129	-	-	0.081	-
HCM Control Delay (s)	14.9	9.8	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0.3	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	66	319	45	5	4	0	0	27	8
Future Volume (vph)	0	0	0	66	319	45	5	4	0	0	27	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			85			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.981						0.968	
Flt Protected				0.950				0.973				
Satd. Flow (prot)	0	0	0	1770	1827	0	0	1812	0	0	1803	0
Flt Permitted				0.950				0.973				
Satd. Flow (perm)	0	0	0	1770	1827	0	0	1812	0	0	1803	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		398			761			118			339	
Travel Time (s)		6.8			13.0			2.7			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	72	347	49	5	4	0	0	29	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	72	396	0	0	9	0	0	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%		ICU Level of Service A	
Analysis Period (min) 15			

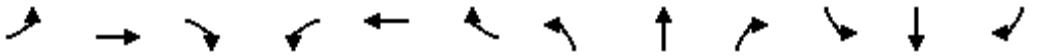
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	66	319	45	5	4	0	0	27	8
Future Vol, veh/h	0	0	0	66	319	45	5	4	0	0	27	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	70	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	72	347	49	5	4	0	0	29	9

Major/Minor	Major2			Minor1			Minor2			
Conflicting Flow All	0	0	0	535	540	-	-	516	372	
Stage 1	-	-	-	0	0	-	-	516	-	
Stage 2	-	-	-	535	540	-	-	0	-	
Critical Hdwy	4.12	-	-	7.12	6.52	-	-	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-	
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	
Follow-up Hdwy	2.218	-	-	3.518	4.018	-	-	4.018	3.318	
Pot Cap-1 Maneuver	-	-	-	456	449	0	0	463	674	
Stage 1	-	-	-	-	-	0	0	534	-	
Stage 2	-	-	-	529	521	0	0	-	-	
Platoon blocked, %		-	-							
Mov Cap-1 Maneuver	-	-	-	428	449	-	-	463	674	
Mov Cap-2 Maneuver	-	-	-	428	449	-	-	463	-	
Stage 1	-	-	-	-	-	-	-	534	-	
Stage 2	-	-	-	493	521	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s		13.4	12.8
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	437	-	-	-	499
HCM Lane V/C Ratio	0.022	-	-	-	0.076
HCM Control Delay (s)	13.4	-	-	-	12.8
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	287	2	0	0	0	0	6	38	51	37	0
Future Volume (vph)	7	287	2	0	0	0	0	6	38	51	37	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	140			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.885				
Flt Protected	0.950										0.972	
Satd. Flow (prot)	1770	1861	0	0	0	0	0	1649	0	0	1811	0
Flt Permitted	0.950										0.972	
Satd. Flow (perm)	1770	1861	0	0	0	0	0	1649	0	0	1811	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		427			1196			599			118	
Travel Time (s)		9.7			27.2			13.6			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	312	2	0	0	0	0	7	41	55	40	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	314	0	0	0	0	0	48	0	0	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			16	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.3%		ICU Level of Service A	
Analysis Period (min) 15			

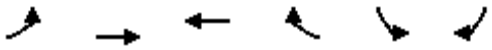
Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	287	2	0	0	0	0	6	38	51	37	0
Future Vol, veh/h	7	287	2	0	0	0	0	6	38	51	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	312	2	0	0	0	0	7	41	55	40	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	329	313	353	330	-
Stage 1	-	-	-	-	329	-	0	0	-
Stage 2	-	-	-	-	0	-	353	330	-
Critical Hdwy	4.12	-	-	-	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	-	-	-	0	590	727	602	589	0
Stage 1	-	-	-	0	646	-	-	-	0
Stage 2	-	-	-	0	-	-	664	646	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	590	727	563	589	-
Mov Cap-2 Maneuver	-	-	-	-	590	-	563	589	-
Stage 1	-	-	-	-	646	-	-	-	-
Stage 2	-	-	-	-	-	-	620	646	-

Approach	EB	NB	SB
HCM Control Delay, s		10.5	12.5
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	705	-	-	-	574
HCM Lane V/C Ratio	0.068	-	-	-	0.167
HCM Control Delay (s)	10.5	-	-	-	12.5
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	375	509	35	39	27
Future Volume (vph)	13	375	509	35	39	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			100	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.945	
Flt Protected	0.950				0.971	
Satd. Flow (prot)	1770	1863	1863	1583	1709	0
Flt Permitted	0.950				0.971	
Satd. Flow (perm)	1770	1863	1863	1583	1709	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		763	1469		346	
Travel Time (s)		13.0	25.0		7.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	408	553	38	42	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	408	553	38	71	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.3%		ICU Level of Service A	
Analysis Period (min) 15			

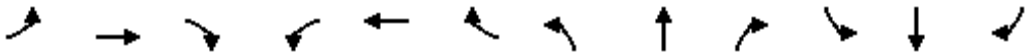
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	375	509	35	39	27
Future Vol, veh/h	13	375	509	35	39	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	408	553	38	42	29

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	591	0	-	0	989	553			
Stage 1	-	-	-	-	553	-			
Stage 2	-	-	-	-	436	-			
Critical Hdwy	4.12	-	-	-	6.42	6.22			
Critical Hdwy Stg 1	-	-	-	-	5.42	-			
Critical Hdwy Stg 2	-	-	-	-	5.42	-			
Follow-up Hdwy	2.218	-	-	-	3.518	3.318			
Pot Cap-1 Maneuver	985	-	-	-	274	533			
Stage 1	-	-	-	-	576	-			
Stage 2	-	-	-	-	652	-			
Platoon blocked, %		-	-	-					
Mov Cap-1 Maneuver	985	-	-	-	270	533			
Mov Cap-2 Maneuver	-	-	-	-	397	-			
Stage 1	-	-	-	-	568	-			
Stage 2	-	-	-	-	652	-			

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	985	-	-	-	443
HCM Lane V/C Ratio	0.014	-	-	-	0.162
HCM Control Delay (s)	8.7	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	16	1	2	1	20	22	1	1	17	3
Future Volume (vph)	4	2	16	1	2	1	20	22	1	1	17	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.900			0.966			0.997			0.982	
Flt Protected		0.991			0.988			0.977			0.998	
Satd. Flow (prot)	0	1661	0	0	1778	0	0	1814	0	0	1826	0
Flt Permitted		0.991			0.988			0.977			0.998	
Satd. Flow (perm)	0	1661	0	0	1778	0	0	1814	0	0	1826	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			558			692			322	
Travel Time (s)		11.2			12.7			15.7			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2	17	1	2	1	22	24	1	1	18	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	4	0	0	47	0	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

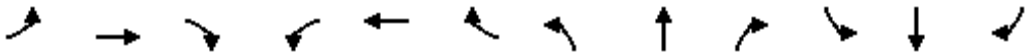
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	2	16	1	2	1	20	22	1	1	17	3
Future Vol, veh/h	4	2	16	1	2	1	20	22	1	1	17	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	2	17	1	2	1	22	24	1	1	18	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.8	7	7.3	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	18%	25%	5%
Vol Thru, %	51%	9%	50%	81%
Vol Right, %	2%	73%	25%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	22	4	21
LT Vol	20	4	1	1
Through Vol	22	2	2	17
RT Vol	1	16	1	3
Lane Flow Rate	47	24	4	23
Geometry Grp	1	1	1	1
Degree of Util (X)	0.053	0.024	0.005	0.025
Departure Headway (Hd)	4.079	3.658	3.973	3.942
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	881	976	898	910
Service Time	2.091	1.69	2.007	1.959
HCM Lane V/C Ratio	0.053	0.025	0.004	0.025
HCM Control Delay	7.3	6.8	7	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	8	5	2	3	1	8	46	3	1	35	1
Future Volume (vph)	4	8	5	2	3	1	8	46	3	1	35	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.977			0.993			0.997	
Flt Protected		0.989			0.984			0.993			0.999	
Satd. Flow (prot)	0	1772	0	0	1791	0	0	1837	0	0	1855	0
Flt Permitted		0.989			0.984			0.993			0.999	
Satd. Flow (perm)	0	1772	0	0	1791	0	0	1837	0	0	1855	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		544			979			655			692	
Travel Time (s)		12.4			22.3			14.9			15.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	9	5	2	3	1	9	50	3	1	38	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	6	0	0	62	0	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

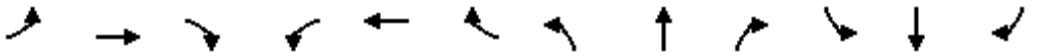
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	8	5	2	3	1	8	46	3	1	35	1
Future Vol, veh/h	4	8	5	2	3	1	8	46	3	1	35	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	9	5	2	3	1	9	50	3	1	38	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7.2	7.3	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	24%	33%	3%
Vol Thru, %	81%	47%	50%	95%
Vol Right, %	5%	29%	17%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	17	6	37
LT Vol	8	4	2	1
Through Vol	46	8	3	35
RT Vol	3	5	1	1
Lane Flow Rate	62	18	7	40
Geometry Grp	1	1	1	1
Degree of Util (X)	0.069	0.02	0.007	0.045
Departure Headway (Hd)	4.004	3.987	4.092	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	897	893	870	893
Service Time	2.021	2.032	2.14	2.034
HCM Lane V/C Ratio	0.069	0.02	0.008	0.045
HCM Control Delay	7.3	7.1	7.2	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	434	27	12	567	56	21	4	5	21	4	9
Future Volume (vph)	6	434	27	12	567	56	21	4	5	21	4	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		75	50		184	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.959			0.959	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1786	1583	0	1786	1583
Flt Permitted	0.950			0.950				0.959			0.959	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1786	1583	0	1786	1583
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1469			1081			343			655	
Travel Time (s)		25.0			18.4			7.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	472	29	13	616	61	23	4	5	23	4	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	472	29	13	616	61	0	27	5	0	27	10
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	434	27	12	567	56	21	4	5	21	4	9
Future Vol, veh/h	6	434	27	12	567	56	21	4	5	21	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	75	50	-	184	-	-	25	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	472	29	13	616	61	23	4	5	23	4	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	677	0	0	501	0	0	1166	1189	472	1147	1157	616
Stage 1	-	-	-	-	-	-	486	486	-	642	642	-
Stage 2	-	-	-	-	-	-	680	703	-	505	515	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	915	-	-	1063	-	-	171	188	592	176	196	491
Stage 1	-	-	-	-	-	-	563	551	-	463	469	-
Stage 2	-	-	-	-	-	-	441	440	-	549	535	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	915	-	-	1063	-	-	162	184	592	169	192	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	184	-	169	192	-
Stage 1	-	-	-	-	-	-	558	547	-	459	463	-
Stage 2	-	-	-	-	-	-	423	435	-	536	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	27.8	25.2
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	165	592	915	-	-	1063	-	-	172	491
HCM Lane V/C Ratio	0.165	0.009	0.007	-	-	0.012	-	-	0.158	0.02
HCM Control Delay (s)	31.1	11.1	9	-	-	8.4	-	-	29.8	12.5
HCM Lane LOS	D	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.6	0	0	-	-	0	-	-	0.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	1	1	1	5	33	1	1	16	4
Future Volume (vph)	6	1	2	1	1	1	5	33	1	1	16	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.955			0.997			0.975	
Flt Protected		0.966			0.984			0.994			0.998	
Satd. Flow (prot)	0	1751	0	0	1750	0	0	1846	0	0	1813	0
Flt Permitted		0.966			0.984			0.994			0.998	
Satd. Flow (perm)	0	1751	0	0	1750	0	0	1846	0	0	1813	0
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		359			384			333			367	
Travel Time (s)		8.2			8.7			9.1			10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1	2	1	1	1	5	36	1	1	17	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	3	0	0	42	0	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.7%		ICU Level of Service A	
Analysis Period (min) 15			

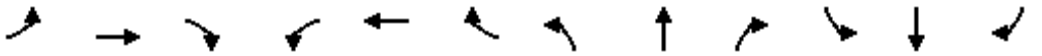
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	1	2	1	1	1	5	33	1	1	16	4
Future Vol, veh/h	6	1	2	1	1	1	5	33	1	1	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	2	1	1	1	5	36	1	1	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	69	68	19	70	70	37	21	0	0	37	0	0
Stage 1	21	21	-	47	47	-	-	-	-	-	-	-
Stage 2	48	47	-	23	23	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	923	823	1059	922	821	1035	1595	-	-	1574	-	-
Stage 1	998	878	-	967	856	-	-	-	-	-	-	-
Stage 2	965	856	-	995	876	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	918	820	1059	916	818	1035	1595	-	-	1574	-	-
Mov Cap-2 Maneuver	918	820	-	916	818	-	-	-	-	-	-	-
Stage 1	995	877	-	964	853	-	-	-	-	-	-	-
Stage 2	960	853	-	991	875	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	8.9	0.9	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1595	-	-	933	915	1574	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.004	0.001	-	-
HCM Control Delay (s)	7.3	0	-	8.9	8.9	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	474	18	16	622	56	0	0	18	0	0	68
Future Volume (vph)	1	474	18	16	622	56	0	0	18	0	0	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		100	130		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.988				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	1863	1583	1770	3497	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	1863	1583	1770	3497	0	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		640			390			248			333	
Travel Time (s)		10.9			6.6			5.6			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	515	20	17	676	61	0	0	20	0	0	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	515	20	17	737	0	0	0	20	0	0	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.9%		ICU Level of Service A	
Analysis Period (min) 15			

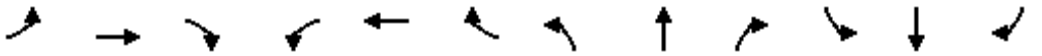
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	474	18	16	622	56	0	0	18	0	0	68
Future Vol, veh/h	1	474	18	16	622	56	0	0	18	0	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	130	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	515	20	17	676	61	0	0	20	0	0	74

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	737	0	0	535	0	0	-	-	515	-	-	369
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	867	-	-	1031	-	-	0	0	559	0	0	629
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	867	-	-	1031	-	-	-	-	559	-	-	629
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.7	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	559	867	-	-	1031	-	-	629
HCM Lane V/C Ratio	0.035	0.001	-	-	0.017	-	-	0.118
HCM Control Delay (s)	11.7	9.2	-	-	8.6	-	-	11.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.4

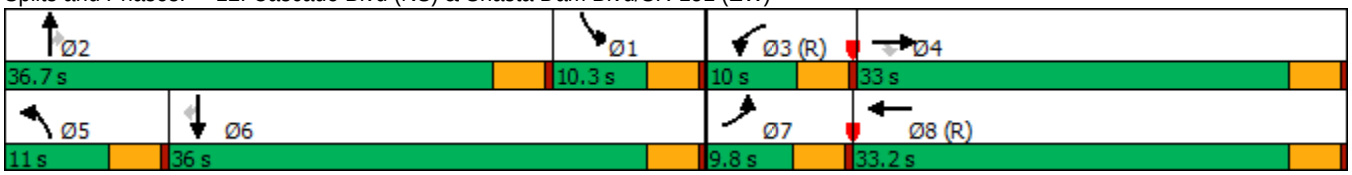


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	348	82	71	584	85	96	40	53	61	36	31
Future Volume (vph)	79	348	82	71	584	85	96	40	53	61	36	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		120	170		0	50		100	55		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			80			50			55		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981				0.850			0.850
Flt Protected	*0.918			*0.918			*0.918			*0.918		
Satd. Flow (prot)	1710	3539	1583	1710	3472	0	1710	1863	1583	1710	1863	1583
Flt Permitted	0.918			0.918			0.918			0.918		
Satd. Flow (perm)	1710	3539	1583	1710	3472	0	1710	1863	1583	1710	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158		19				109			109
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		390			475			345			436	
Travel Time (s)		6.6			8.1			7.8			9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	378	89	77	635	92	104	43	58	66	39	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	378	89	77	727	0	104	43	58	66	39	34
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	33.0	33.0	9.5	33.0		9.5	22.5	22.5	9.5	36.0	36.0
Total Split (s)	9.8	33.0	33.0	10.0	33.2		11.0	36.7	36.7	10.3	36.0	36.0
Total Split (%)	10.9%	36.7%	36.7%	11.1%	36.9%		12.2%	40.8%	40.8%	11.4%	40.0%	40.0%
Maximum Green (s)	5.8	29.0	29.0	6.0	29.2		7.0	32.7	32.7	6.3	32.0	32.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0						7.0	7.0
Flash Dont Walk (s)		22.0	22.0		22.0						25.0	25.0
Pedestrian Calls (#/hr)		5	5		5						5	5
Act Effct Green (s)	5.8	29.0	29.0	6.0	29.2		7.0	34.8	34.8	6.2	32.0	32.0
Actuated g/C Ratio	0.06	0.32	0.32	0.07	0.32		0.08	0.39	0.39	0.07	0.36	0.36
v/c Ratio	0.78	0.33	0.14	0.68	0.64		0.78	0.06	0.09	0.57	0.06	0.05
Control Delay	85.4	24.2	0.8	69.7	27.4		78.7	19.1	0.9	60.3	19.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.4	24.2	0.8	69.7	27.4		78.7	19.1	0.9	60.3	19.5	0.2
LOS	F	C	A	E	C		E	B	A	E	B	A
Approach Delay		29.9			31.4			44.2			34.2	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 3:WBL and 8:WBT, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 45.2%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 12: Cascade Blvd (NS) & Shasta Dam Blvd/SR-151 (EW)

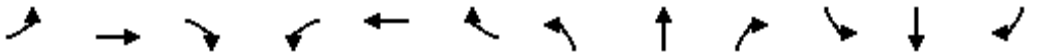




Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	378	89	77	727	104	43	58	66	39	34
v/c Ratio	0.78	0.33	0.14	0.68	0.64	0.78	0.06	0.09	0.57	0.06	0.05
Control Delay	85.4	24.2	0.8	69.7	27.4	78.7	19.1	0.9	60.3	19.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.4	24.2	0.8	69.7	27.4	78.7	19.1	0.9	60.3	19.5	0.2
Queue Length 50th (ft)	49	85	0	44	178	59	16	0	37	14	0
Queue Length 95th (ft)	#130	123	4	#116	240	#146	38	5	#91	36	0
Internal Link Dist (ft)		310			395		265			356	
Turn Bay Length (ft)	180		120	170		50		100	55		110
Base Capacity (vph)	110	1140	617	114	1139	133	719	678	119	662	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.33	0.14	0.68	0.64	0.78	0.06	0.09	0.55	0.06	0.05

Intersection Summary

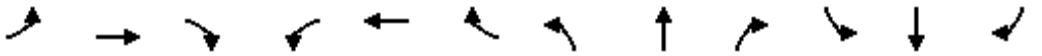
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	348	82	71	584	85	96	40	53	61	36	31
Future Volume (veh/h)	79	348	82	71	584	85	96	40	53	61	36	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	378	89	77	635	92	104	43	58	66	39	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	1174	524	111	1032	149	131	680	576	117	665	564
Arrive On Green	0.06	0.33	0.33	0.02	0.11	0.11	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	1781	3115	451	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	86	378	89	77	362	365	104	43	58	66	39	34
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1789	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.3	7.2	3.6	3.9	17.5	17.5	5.2	1.3	1.7	3.2	1.2	1.3
Cycle Q Clear(g_c), s	4.3	7.2	3.6	3.9	17.5	17.5	5.2	1.3	1.7	3.2	1.2	1.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	1174	524	111	589	593	131	680	576	117	665	564
V/C Ratio(X)	0.78	0.32	0.17	0.69	0.61	0.62	0.79	0.06	0.10	0.56	0.06	0.06
Avail Cap(c_a), veh/h	115	1174	524	119	589	593	139	680	576	125	665	564
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	22.6	21.4	43.2	34.6	34.6	41.0	18.7	11.0	40.8	19.1	19.1
Incr Delay (d2), s/veh	27.9	0.2	0.2	14.5	4.7	4.7	25.0	0.2	0.3	5.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.9	1.3	2.1	9.0	9.1	3.2	0.6	0.8	1.6	0.6	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	22.7	21.5	57.7	39.3	39.3	66.0	18.8	11.4	45.8	19.3	19.3
LnGrp LOS	E	C	C	E	D	D	E	B	B	D	B	B
Approach Vol, veh/h		553			804			205			139	
Approach Delay, s/veh		29.8			41.0			40.7			31.9	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	36.7	9.6	33.7	10.6	36.0	9.6	33.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.3	32.7	6.0	29.0	7.0	32.0	5.8	29.2
Max Q Clear Time (g_c+I1), s	5.2	3.7	5.9	9.2	7.2	3.3	6.3	19.5
Green Ext Time (p_c), s	0.0	0.4	0.0	2.5	0.0	0.3	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	36.6
HCM 6th LOS	D



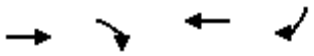
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	267	195	0	689	0	0	0	0	0	0	43
Future Volume (vph)	0	267	195	0	689	0	0	0	0	0	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.865
Flt Protected												
Satd. Flow (prot)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			212									246
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		475			758			535			509	
Travel Time (s)		8.1			12.9			12.2			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	290	212	0	749	0	0	0	0	0	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	290	212	0	749	0	0	0	0	0	0	47
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2							1
Detector Template		Thru	Right		Thru							Right
Leading Detector (ft)		100	20		100							20
Trailing Detector (ft)		0	0		0							0
Detector 1 Position(ft)		0	0		0							0
Detector 1 Size(ft)		6	20		6							20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex							Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0							0.0
Detector 1 Queue (s)		0.0	0.0		0.0							0.0
Detector 1 Delay (s)		0.0	0.0		0.0							0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Free		NA							Prot
Protected Phases		4			8							1
Permitted Phases			Free									
Detector Phase		4			8							1
Switch Phase												
Minimum Initial (s)		5.0			5.0							5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		22.5			22.5							9.5
Total Split (s)		63.0			63.0							27.0
Total Split (%)		70.0%			70.0%							30.0%
Maximum Green (s)		59.0			59.0							23.0
Yellow Time (s)		3.5			3.5							3.5
All-Red Time (s)		0.5			0.5							0.5
Lost Time Adjust (s)		0.0			0.0							0.0
Total Lost Time (s)		4.0			4.0							4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							3.0
Recall Mode		None			C-Max							None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		11.0			11.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)		81.9	90.0		81.9							5.5
Actuated g/C Ratio		0.91	1.00		0.91							0.06
v/c Ratio		0.17	0.13		0.23							0.14
Control Delay		0.7	0.2		1.1							0.9
Queue Delay		0.0	0.0		0.0							0.0
Total Delay		0.7	0.2		1.1							0.9
LOS		A	A		A							A
Approach Delay		0.5			1.1						0.9	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.23			
Intersection Signal Delay: 0.8		Intersection LOS: A	
Intersection Capacity Utilization 29.9%		ICU Level of Service A	
Analysis Period (min) 15			

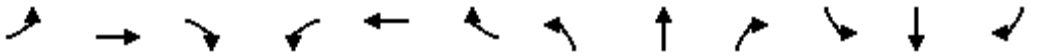
Splits and Phases: 13: Shasta Dam Blvd/SR-151 (EW) & I-5 SB Off-Ramp (NS)





Lane Group	EBT	EBR	WBT	SBR
Lane Group Flow (vph)	290	212	749	47
v/c Ratio	0.17	0.13	0.23	0.14
Control Delay	0.7	0.2	1.1	0.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.7	0.2	1.1	0.9
Queue Length 50th (ft)	2	0	26	0
Queue Length 95th (ft)	11	3	34	0
Internal Link Dist (ft)	395		678	
Turn Bay Length (ft)				
Base Capacity (vph)	1695	1583	3220	594
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.23	0.08

Intersection Summary



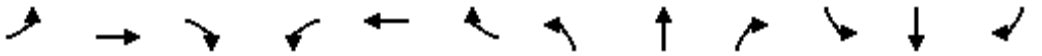
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑↑							↱
Traffic Volume (veh/h)	0	267	195	0	689	0	0	0	0	0	0	43
Future Volume (veh/h)	0	267	195	0	689	0	0	0	0	0	0	43
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				0	0	1870
Adj Flow Rate, veh/h	0	290	0	0	749	0				0	0	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	0				0	0	2
Cap, veh/h	0	1226		0	2330	0				0	0	0
Arrive On Green	0.00	0.66	0.00	0.00	0.66	0.00				0.00	0.00	0.00
Sat Flow, veh/h	0	1870	1585	0	3741	0					0	
Grp Volume(v), veh/h	0	290	0	0	749	0					0.0	
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1777	0						
Q Serve(g_s), s	0.0	5.7	0.0	0.0	8.3	0.0						
Cycle Q Clear(g_c), s	0.0	5.7	0.0	0.0	8.3	0.0						
Prop In Lane	0.00		1.00	0.00		0.00						
Lane Grp Cap(c), veh/h	0	1226		0	2330	0						
V/C Ratio(X)	0.00	0.24		0.00	0.32	0.00						
Avail Cap(c_a), veh/h	0	1226		0	2330	0						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.00	0.95	0.00	0.00	1.00	0.00						
Uniform Delay (d), s/veh	0.0	6.3	0.0	0.0	6.8	0.0						
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.4	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.0	1.8	0.0	0.0	2.6	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.4	0.0	0.0	7.1	0.0						
LnGrp LOS	A	A		A	A	A						
Approach Vol, veh/h		290	A		749							
Approach Delay, s/veh		6.4			7.1							
Approach LOS		A			A							

Timer - Assigned Phs				4				8				
Phs Duration (G+Y+Rc), s				63.0				63.0				
Change Period (Y+Rc), s				4.0				4.0				
Max Green Setting (Gmax), s				59.0				59.0				
Max Q Clear Time (g_c+I1), s				7.7				10.3				
Green Ext Time (p_c), s				1.7				5.7				

Intersection Summary												
HCM 6th Ctrl Delay			6.9									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	102	2	15	100	48	5	6	48	30	3	57
Future Volume (vph)	71	102	2	15	100	48	5	6	48	30	3	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	345		90	120		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			80			90			65		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850		0.868			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1857	0	1770	1863	1583	1770	1617	0	1770	1596	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1857	0	1770	1863	1583	1770	1617	0	1770	1596	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1395			1895			1288			1162	
Travel Time (s)		23.8			32.3			29.3			26.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	111	2	16	109	52	5	7	52	33	3	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	113	0	16	109	52	5	59	0	33	65	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.6%		ICU Level of Service A	
Analysis Period (min) 15			

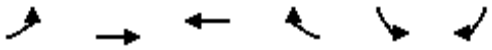
Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	102	2	15	100	48	5	6	48	30	3	57
Future Vol, veh/h	71	102	2	15	100	48	5	6	48	30	3	57
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	345	-	90	120	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	77	111	2	16	109	52	5	7	52	33	3	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	161	0	0	113	0	0	466	459	112	437	408	109
Stage 1	-	-	-	-	-	-	266	266	-	141	141	-
Stage 2	-	-	-	-	-	-	200	193	-	296	267	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1418	-	-	1476	-	-	507	499	941	530	533	945
Stage 1	-	-	-	-	-	-	739	689	-	862	780	-
Stage 2	-	-	-	-	-	-	802	741	-	712	688	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1418	-	-	1476	-	-	448	467	941	471	499	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	467	-	471	499	-
Stage 1	-	-	-	-	-	-	699	652	-	815	771	-
Stage 2	-	-	-	-	-	-	738	733	-	630	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.7	9.9	10.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	448	846	1418	-	-	1476	-	-	471	905
HCM Lane V/C Ratio	0.012	0.069	0.054	-	-	0.011	-	-	0.069	0.072
HCM Control Delay (s)	13.1	9.6	7.7	-	-	7.5	-	-	13.2	9.3
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0	0.2	0.2	-	-	0	-	-	0.2	0.2

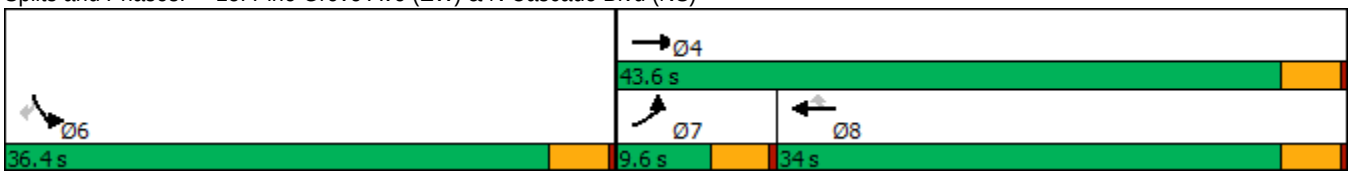


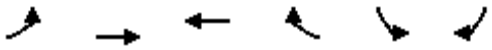
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	193	378	174	90	19
Future Volume (vph)	12	193	378	174	90	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275			0	110	0
Storage Lanes	1			1	1	1
Taper Length (ft)	135				110	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	*0.918				*0.918	
Satd. Flow (prot)	1661	3438	1810	1538	1661	1538
Flt Permitted	0.918				0.918	
Satd. Flow (perm)	1661	3438	1810	1538	1661	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				189		21
Link Speed (mph)		40	40		30	
Link Distance (ft)		609	338		516	
Travel Time (s)		10.4	5.8		11.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	13	210	411	189	98	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	210	411	189	98	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	34.0	34.0	36.0	36.0
Total Split (s)	9.6	43.6	34.0	34.0	36.4	36.4
Total Split (%)	12.0%	54.5%	42.5%	42.5%	45.5%	45.5%
Maximum Green (s)	5.6	39.6	30.0	30.0	32.4	32.4
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	Max	Max
Walk Time (s)			7.0	7.0	7.0	7.0
Flash Dont Walk (s)			23.0	23.0	25.0	25.0
Pedestrian Calls (#/hr)			5	5	5	5
Act Effct Green (s)	5.7	20.9	19.4	19.4	33.1	33.1
Actuated g/C Ratio	0.09	0.34	0.31	0.31	0.53	0.53
v/c Ratio	0.09	0.18	0.73	0.31	0.11	0.03
Control Delay	32.2	13.8	27.2	4.3	10.7	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	13.8	27.2	4.3	10.7	5.8
LOS	C	B	C	A	B	A
Approach Delay		14.9	20.0		9.9	
Approach LOS		B	C		A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 62.2			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 31.5%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

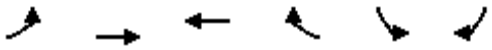
Splits and Phases: 15: Pine Grove Ave (EW) & N Cascade Blvd (NS)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	13	210	411	189	98	21
v/c Ratio	0.09	0.18	0.73	0.31	0.11	0.03
Control Delay	32.2	13.8	27.2	4.3	10.7	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	13.8	27.2	4.3	10.7	5.8
Queue Length 50th (ft)	4	27	127	0	15	0
Queue Length 95th (ft)	24	46	256	39	61	13
Internal Link Dist (ft)		529	258		436	
Turn Bay Length (ft)	275				110	
Base Capacity (vph)	152	2236	891	853	883	828
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.46	0.22	0.11	0.03

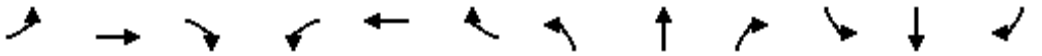
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	193	378	174	90	19
Future Volume (veh/h)	12	193	378	174	90	19
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	13	210	411	189	98	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	28	1253	515	436	891	793
Arrive On Green	0.02	0.36	0.28	0.28	0.51	0.51
Sat Flow, veh/h	1739	3561	1826	1547	1739	1547
Grp Volume(v), veh/h	13	210	411	189	98	21
Grp Sat Flow(s),veh/h/ln	1739	1735	1826	1547	1739	1547
Q Serve(g_s), s	0.5	2.6	13.2	6.3	1.8	0.4
Cycle Q Clear(g_c), s	0.5	2.6	13.2	6.3	1.8	0.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	28	1253	515	436	891	793
V/C Ratio(X)	0.46	0.17	0.80	0.43	0.11	0.03
Avail Cap(c_a), veh/h	154	2172	866	734	891	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	13.7	21.0	18.6	8.0	7.6
Incr Delay (d2), s/veh	11.4	0.1	2.9	0.7	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.9	5.3	2.1	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.3	13.8	23.9	19.3	8.2	7.7
LnGrp LOS	D	B	C	B	A	A
Approach Vol, veh/h		223	600		119	
Approach Delay, s/veh		15.5	22.5		8.1	
Approach LOS		B	C		A	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	26.8	36.4	5.0	21.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	39.6	32.4	5.6	30.0
Max Q Clear Time (g_c+I1), s	4.6	3.8	2.5	15.2
Green Ext Time (p_c), s	1.3	0.3	0.0	2.6

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	45	245	35	485	0	0	0	0	12	0	24
Future Volume (vph)	0	45	245	35	485	0	0	0	0	12	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	155		0	0		0	0		50
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		225			446			656			388	
Travel Time (s)		3.8			7.6			14.9			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	49	266	38	527	0	0	0	0	13	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	266	38	527	0	0	0	0	0	13	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			

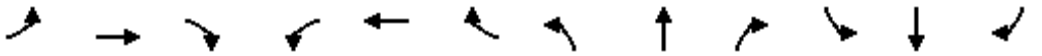
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	45	245	35	485	0	0	0	0	12	0	24
Future Vol, veh/h	0	45	245	35	485	0	0	0	0	12	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	155	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	49	266	38	527	0	0	0	0	13	0	26

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	315	0	0			785	918	527
Stage 1	-	-	-	-	-	-			603	603	-
Stage 2	-	-	-	-	-	-			182	315	-
Critical Hdwy	-	-	-	4.15	-	-			6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-			5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.45	5.55	-
Follow-up Hdwy	-	-	-	2.245	-	-			3.545	4.045	3.345
Pot Cap-1 Maneuver	0	-	-	1228	-	0			357	268	545
Stage 1	0	-	-	-	-	0			541	484	-
Stage 2	0	-	-	-	-	0			842	650	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1228	-	-			346	0	545
Mov Cap-2 Maneuver	-	-	-	-	-	-			346	0	-
Stage 1	-	-	-	-	-	-			524	0	-
Stage 2	-	-	-	-	-	-			842	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1228	-	346	545
HCM Lane V/C Ratio	-	-	0.031	-	0.038	0.048
HCM Control Delay (s)	-	-	8	-	15.8	11.9
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.1	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	34	0	0	59	11	456	0	45	0	0	0
Future Volume (vph)	21	34	0	0	59	11	456	0	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	0		0	0		50	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		446			181			589			428	
Travel Time (s)		7.6			3.1			13.4			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	37	0	0	64	12	496	0	49	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	37	0	0	64	12	0	496	49	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	12.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	34	0	0	59	11	456	0	45	0	0	0
Future Vol, veh/h	21	34	0	0	59	11	456	0	45	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	23	37	0	0	64	12	496	0	49	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	76	0	-	-	-	0	153	159	37
Stage 1	-	-	-	-	-	-	83	83	-
Stage 2	-	-	-	-	-	-	70	76	-
Critical Hdwy	4.15	-	-	-	-	-	6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.45	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345
Pot Cap-1 Maneuver	1504	-	0	0	-	-	832	728	1027
Stage 1	-	-	0	0	-	-	933	820	-
Stage 2	-	-	0	0	-	-	945	826	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1504	-	-	-	-	-	820	0	1027
Mov Cap-2 Maneuver	-	-	-	-	-	-	820	0	-
Stage 1	-	-	-	-	-	-	919	0	-
Stage 2	-	-	-	-	-	-	945	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.8	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	820	1027	1504	-	-	-
HCM Lane V/C Ratio	0.604	0.048	0.015	-	-	-
HCM Control Delay (s)	15.9	8.7	7.4	-	-	-
HCM Lane LOS	C	A	A	-	-	-
HCM 95th %tile Q(veh)	4.2	0.1	0	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	29	31	1	15	1	37	1	3	1	3	55
Future Volume (vph)	33	29	31	1	15	1	37	1	3	1	3	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.992			0.991			0.873	
Flt Protected		0.983			0.997			0.957			0.999	
Satd. Flow (prot)	0	1749	0	0	1842	0	0	1767	0	0	1625	0
Flt Permitted		0.983			0.997			0.957			0.999	
Satd. Flow (perm)	0	1749	0	0	1842	0	0	1767	0	0	1625	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		181			285			397			451	
Travel Time (s)		3.1			4.9			9.0			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	32	34	1	16	1	40	1	3	1	3	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	102	0	0	18	0	0	44	0	0	64	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.5%		ICU Level of Service A	
Analysis Period (min) 15			

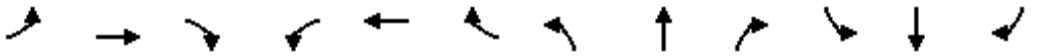
Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	33	29	31	1	15	1	37	1	3	1	3	55
Future Vol, veh/h	33	29	31	1	15	1	37	1	3	1	3	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	32	34	1	16	1	40	1	3	1	3	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	17	0	0	66	0	0	171	140	49	142	157	17
Stage 1	-	-	-	-	-	-	121	121	-	19	19	-
Stage 2	-	-	-	-	-	-	50	19	-	123	138	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1600	-	-	1536	-	-	792	751	1020	828	735	1062
Stage 1	-	-	-	-	-	-	883	796	-	1000	880	-
Stage 2	-	-	-	-	-	-	963	880	-	881	782	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1600	-	-	1536	-	-	731	733	1020	809	717	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	731	733	-	809	717	-
Stage 1	-	-	-	-	-	-	863	778	-	977	879	-
Stage 2	-	-	-	-	-	-	905	879	-	857	764	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.4	10.1	8.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	747	1600	-	-	1536	-	-	1031
HCM Lane V/C Ratio	0.06	0.022	-	-	0.001	-	-	0.062
HCM Control Delay (s)	10.1	7.3	0	-	7.3	0	-	8.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	236	50	73	423	1	120	0	49	1	1	0
Future Volume (vph)	0	236	50	73	423	1	120	0	49	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	80		0	0		55	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	70			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974							0.850			
Flt Protected				0.950			0.950				0.976	
Satd. Flow (prot)	1810	3349	0	1719	1810	0	1719	0	1538	0	1766	0
Flt Permitted				0.950			0.950				0.976	
Satd. Flow (perm)	1810	3349	0	1719	1810	0	1719	0	1538	0	1766	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		338			225			390			203	
Travel Time (s)		5.8			3.8			8.9			4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	257	54	79	460	1	130	0	53	1	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	311	0	79	461	0	130	0	53	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	236	50	73	423	1	120	0	49	1	1	0
Future Vol, veh/h	0	236	50	73	423	1	120	0	49	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	80	-	-	0	-	55	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	257	54	79	460	1	130	0	53	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	461	0	0	311	0	0	903	-	156	748	930	461
Stage 1	-	-	-	-	-	-	284	-	-	619	619	-
Stage 2	-	-	-	-	-	-	619	-	-	129	311	-
Critical Hdwy	4.175	-	-	4.175	-	-	7.375	-	6.975	7.375	6.575	6.275
Critical Hdwy Stg 1	-	-	-	-	-	-	6.575	-	-	6.175	5.575	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.175	-	-	6.575	5.575	-
Follow-up Hdwy	2.2475	-	-	2.2475	-	-	3.5475	-	3.3475	3.5475	4.0475	3.3475
Pot Cap-1 Maneuver	1080	-	-	1229	-	-	241	0	854	310	262	592
Stage 1	-	-	-	-	-	-	693	0	-	469	473	-
Stage 2	-	-	-	-	-	-	469	0	-	854	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1080	-	-	1229	-	-	228	-	854	277	245	592
Mov Cap-2 Maneuver	-	-	-	-	-	-	228	-	-	277	245	-
Stage 1	-	-	-	-	-	-	693	-	-	469	443	-
Stage 2	-	-	-	-	-	-	438	-	-	801	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	31.2	19
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	854	1080	-	-	1229	-	-	260
HCM Lane V/C Ratio	0.572	0.062	-	-	-	0.065	-	-	0.008
HCM Control Delay (s)	40	9.5	0	-	-	8.1	-	-	19
HCM Lane LOS	E	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	3.2	0.2	0	-	-	0.2	-	-	0

GENERAL PLAN BUILDOUT 2040

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	2	5	34	7	19	3	12	8	13	20	1
Future Volume (vph)	1	2	5	34	7	19	3	12	8	13	20	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.916			0.957				0.850		0.996	
Flt Protected		0.994			0.973			0.991			0.981	
Satd. Flow (prot)	0	1696	0	0	1735	0	0	1846	1583	0	1820	0
Flt Permitted		0.994			0.973			0.991			0.981	
Satd. Flow (perm)	0	1696	0	0	1735	0	0	1846	1583	0	1820	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			3245			1275			1105	
Travel Time (s)		16.1			73.8			29.0			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	5	37	8	21	3	13	9	14	22	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	66	0	0	16	9	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

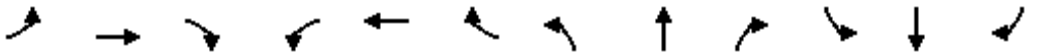
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	2	5	34	7	19	3	12	8	13	20	1
Future Vol, veh/h	1	2	5	34	7	19	3	12	8	13	20	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	5	37	8	21	3	13	9	14	22	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	6.8	7.3	7.3	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	0%	12%	57%	38%
Vol Thru, %	80%	0%	25%	12%	59%
Vol Right, %	0%	100%	62%	32%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	8	8	60	34
LT Vol	3	0	1	34	13
Through Vol	12	0	2	7	20
RT Vol	0	8	5	19	1
Lane Flow Rate	16	9	9	65	37
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.022	0.01	0.009	0.072	0.044
Departure Headway (Hd)	4.783	3.982	3.739	3.97	4.242
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	747	896	949	899	841
Service Time	2.52	1.718	1.792	2.011	2.28
HCM Lane V/C Ratio	0.021	0.01	0.009	0.072	0.044
HCM Control Delay	7.6	6.8	6.8	7.3	7.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0.2	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	83	5	6	77	13	6	1	12	14	1	3
Future Volume (vph)	2	83	5	6	77	13	6	1	12	14	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	300		0	0		0	0		50
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	60			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.979			0.916				0.850
Flt Protected	0.950			0.950				0.984			0.955	
Satd. Flow (prot)	1770	1848	0	1770	1824	0	0	1679	0	0	1779	1583
Flt Permitted	0.950			0.950				0.984			0.955	
Satd. Flow (perm)	1770	1848	0	1770	1824	0	0	1679	0	0	1779	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3245			555			514			456	
Travel Time (s)		73.8			12.6			11.7			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	90	5	7	84	14	7	1	13	15	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	95	0	7	98	0	0	21	0	0	16	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	83	5	6	77	13	6	1	12	14	1	3
Future Vol, veh/h	2	83	5	6	77	13	6	1	12	14	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	300	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	90	5	7	84	14	7	1	13	15	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	98	0	0	95	0	0	204	209	93	209	204	91
Stage 1	-	-	-	-	-	-	97	97	-	105	105	-
Stage 2	-	-	-	-	-	-	107	112	-	104	99	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1495	-	-	1499	-	-	754	688	964	748	692	967
Stage 1	-	-	-	-	-	-	910	815	-	901	808	-
Stage 2	-	-	-	-	-	-	898	803	-	902	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1495	-	-	1499	-	-	747	684	964	734	688	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	747	684	-	734	688	-
Stage 1	-	-	-	-	-	-	909	814	-	900	804	-
Stage 2	-	-	-	-	-	-	890	799	-	887	812	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	9.3	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	866	1495	-	-	1499	-	-	731	967
HCM Lane V/C Ratio	0.024	0.001	-	-	0.004	-	-	0.022	0.003
HCM Control Delay (s)	9.3	7.4	-	-	7.4	-	-	10	8.7
HCM Lane LOS	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	NBR2	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	258	49	156	101	18	0	129	0	0
Future Volume (vph)	258	49	156	101	18	0	129	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	165		55	0		187	0
Storage Lanes		1	1		1	1		0	0
Taper Length (ft)			70		70			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850		
Flt Protected			0.950		0.950				
Satd. Flow (prot)	1863	1583	1770	1863	1770	0	1583	0	0
Flt Permitted			0.950		0.950				
Satd. Flow (perm)	1863	1583	1770	1863	1770	0	1583	0	0
Link Speed (mph)	40			30	30			40	
Link Distance (ft)	572			398	787			427	
Travel Time (s)	9.8			9.0	17.9			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	280	53	170	110	20	0	140	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	280	53	170	110	20	0	140	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	0			12	12			12	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane					Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9	9	15	9
Sign Control	Free			Free	Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.6%		ICU Level of Service A	
Analysis Period (min) 15			

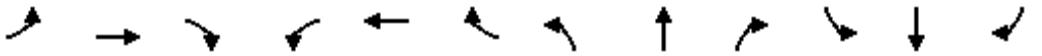
Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR	NWL	NWR
Lane Configurations								
Traffic Vol, veh/h	258	49	156	101	18	0	0	0
Future Vol, veh/h	258	49	156	101	18	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	-	-	None	-	-	-	None
Storage Length	-	50	165	-	55	0	-	-
Veh in Median Storage, #	0	-	-	0	0	-	16965	-
Grade, %	0	-	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	280	53	170	110	20	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	333	0	730	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	450	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1226	-	389	759
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1226	-	335	759
Mov Cap-2 Maneuver	-	-	-	-	335	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.1	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	335	759	-	-	1226	-
HCM Lane V/C Ratio	0.058	0.185	-	-	0.138	-
HCM Control Delay (s)	16.4	10.8	-	-	8.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.7	-	-	0.5	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	32	227	30	20	12	0	0	31	17
Future Volume (vph)	0	0	0	32	227	30	20	12	0	0	31	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			85			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.982						0.953	
Flt Protected				0.950				0.970				
Satd. Flow (prot)	0	0	0	1770	1829	0	0	1807	0	0	1775	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	0	0	0	1770	1829	0	0	1807	0	0	1775	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		398			761			118			339	
Travel Time (s)		6.8			13.0			2.7			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	35	247	33	22	13	0	0	34	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	35	280	0	0	35	0	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.8%		ICU Level of Service A	
Analysis Period (min) 15			

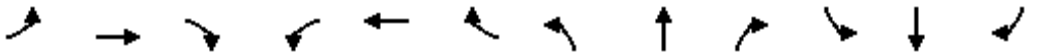
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	32	227	30	20	12	0	0	31	17
Future Vol, veh/h	0	0	0	32	227	30	20	12	0	0	31	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	70	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	35	247	33	22	13	0	0	34	18

Major/Minor	Major2			Minor1			Minor2			
Conflicting Flow All	0	0	0	360	350	-	-	334	264	
Stage 1	-	-	-	0	0	-	-	334	-	
Stage 2	-	-	-	360	350	-	-	0	-	
Critical Hdwy	4.12	-	-	7.12	6.52	-	-	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-	
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	
Follow-up Hdwy	2.218	-	-	3.518	4.018	-	-	4.018	3.318	
Pot Cap-1 Maneuver	-	-	-	596	574	0	0	586	775	
Stage 1	-	-	-	-	-	0	0	643	-	
Stage 2	-	-	-	658	633	0	0	-	-	
Platoon blocked, %		-	-							
Mov Cap-1 Maneuver	-	-	-	556	574	-	-	586	775	
Mov Cap-2 Maneuver	-	-	-	556	574	-	-	586	-	
Stage 1	-	-	-	-	-	-	-	643	-	
Stage 2	-	-	-	609	633	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s		11.8	11.1
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	563	-	-	-	641
HCM Lane V/C Ratio	0.062	-	-	-	0.081
HCM Control Delay (s)	11.8	-	-	-	11.1
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	315	18	0	0	0	0	21	75	37	24	0
Future Volume (vph)	9	315	18	0	0	0	0	21	75	37	24	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	140			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992						0.895				
Flt Protected	0.950										0.971	
Satd. Flow (prot)	1770	1848	0	0	0	0	0	1667	0	0	1809	0
Flt Permitted	0.950										0.971	
Satd. Flow (perm)	1770	1848	0	0	0	0	0	1667	0	0	1809	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		427			1196			599			118	
Travel Time (s)		9.7			27.2			13.6			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	342	20	0	0	0	0	23	82	40	26	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	362	0	0	0	0	0	105	0	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			16	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.3%		ICU Level of Service A	
Analysis Period (min) 15			

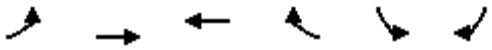
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	315	18	0	0	0	0	21	75	37	24	0
Future Vol, veh/h	9	315	18	0	0	0	0	21	75	37	24	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	342	20	0	0	0	0	23	82	40	26	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	372	352	425	382	-
Stage 1	-	-	-	-	372	-	0	0	-
Stage 2	-	-	-	-	0	-	425	382	-
Critical Hdwy	4.12	-	-	-	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	-	-	-	0	558	692	540	551	0
Stage 1	-	-	-	0	619	-	-	-	0
Stage 2	-	-	-	0	-	-	607	613	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	558	692	462	551	-
Mov Cap-2 Maneuver	-	-	-	-	558	-	462	551	-
Stage 1	-	-	-	-	619	-	-	-	-
Stage 2	-	-	-	-	-	-	516	613	-

Approach	EB	NB	SB
HCM Control Delay, s		11.5	13.4
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	657	-	-	-	493
HCM Lane V/C Ratio	0.159	-	-	-	0.134
HCM Control Delay (s)	11.5	-	-	-	13.4
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.5



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	565	316	29	42	11
Future Volume (vph)	11	565	316	29	42	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			100	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.972	
Flt Protected	0.950				0.962	
Satd. Flow (prot)	1770	1863	1863	1583	1742	0
Flt Permitted	0.950				0.962	
Satd. Flow (perm)	1770	1863	1863	1583	1742	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		763	1469		346	
Travel Time (s)		13.0	25.0		7.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	614	343	32	46	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	614	343	32	58	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.7%		ICU Level of Service A	
Analysis Period (min) 15			

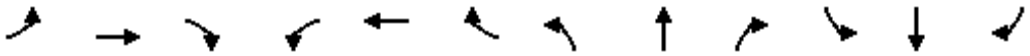
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	565	316	29	42	11
Future Vol, veh/h	11	565	316	29	42	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	614	343	32	46	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	375	0	-	0	981	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1183	-	-	-	277	700
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1183	-	-	-	274	700
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1183	-	-	-	431
HCM Lane V/C Ratio	0.01	-	-	-	0.134
HCM Control Delay (s)	8.1	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	13	20	2	8	1	12	4	1	1	19	4
Future Volume (vph)	11	13	20	2	8	1	12	4	1	1	19	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.938			0.989			0.992			0.979	
Flt Protected		0.988			0.992			0.965			0.998	
Satd. Flow (prot)	0	1726	0	0	1828	0	0	1783	0	0	1820	0
Flt Permitted		0.988			0.992			0.965			0.998	
Satd. Flow (perm)	0	1726	0	0	1828	0	0	1783	0	0	1820	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			558			692			322	
Travel Time (s)		11.2			12.7			15.7			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	14	22	2	9	1	13	4	1	1	21	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	12	0	0	18	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	13	20	2	8	1	12	4	1	1	19	4
Future Vol, veh/h	11	13	20	2	8	1	12	4	1	1	19	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	14	22	2	9	1	13	4	1	1	21	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	7.1	7.3	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	71%	25%	18%	4%
Vol Thru, %	24%	30%	73%	79%
Vol Right, %	6%	45%	9%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	44	11	24
LT Vol	12	11	2	1
Through Vol	4	13	8	19
RT Vol	1	20	1	4
Lane Flow Rate	18	48	12	26
Geometry Grp	1	1	1	1
Degree of Util (X)	0.021	0.05	0.013	0.029
Departure Headway (Hd)	4.165	3.797	4.029	3.961
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	860	943	888	904
Service Time	2.188	1.82	2.056	1.983
HCM Lane V/C Ratio	0.021	0.051	0.014	0.029
HCM Control Delay	7.3	7	7.1	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	8	13	1	4	1	11	15	2	2	42	1
Future Volume (vph)	1	8	13	1	4	1	11	15	2	2	42	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.921			0.977			0.991			0.997	
Flt Protected		0.998			0.992			0.980			0.998	
Satd. Flow (prot)	0	1712	0	0	1805	0	0	1809	0	0	1853	0
Flt Permitted		0.998			0.992			0.980			0.998	
Satd. Flow (perm)	0	1712	0	0	1805	0	0	1809	0	0	1853	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		544			979			655			692	
Travel Time (s)		12.4			22.3			14.9			15.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	9	14	1	4	1	12	16	2	2	46	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	6	0	0	30	0	0	49	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

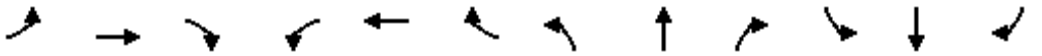
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	8	13	1	4	1	11	15	2	2	42	1
Future Vol, veh/h	1	8	13	1	4	1	11	15	2	2	42	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	9	14	1	4	1	12	16	2	2	46	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.9	7.1	7.2	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	5%	17%	4%
Vol Thru, %	54%	36%	67%	93%
Vol Right, %	7%	59%	17%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	22	6	45
LT Vol	11	1	1	2
Through Vol	15	8	4	42
RT Vol	2	13	1	1
Lane Flow Rate	30	24	7	49
Geometry Grp	1	1	1	1
Degree of Util (X)	0.034	0.025	0.007	0.054
Departure Headway (Hd)	4.059	3.73	4.022	4.005
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	883	957	887	896
Service Time	2.078	1.765	2.06	2.021
HCM Lane V/C Ratio	0.034	0.025	0.008	0.055
HCM Control Delay	7.2	6.9	7.1	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	663	24	7	358	16	28	1	17	42	11	20
Future Volume (vph)	12	663	24	7	358	16	28	1	17	42	11	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		75	50		184	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.954			0.962	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1777	1583	0	1792	1583
Flt Permitted	0.950			0.950				0.954			0.962	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1777	1583	0	1792	1583
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1469			1081			343			655	
Travel Time (s)		25.0			18.4			7.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	721	26	8	389	17	30	1	18	46	12	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	721	26	8	389	17	0	31	18	0	58	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	663	24	7	358	16	28	1	17	42	11	20
Future Vol, veh/h	12	663	24	7	358	16	28	1	17	42	11	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	75	50	-	184	-	-	25	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	721	26	8	389	17	30	1	18	46	12	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	406	0	0	747	0	0	1178	1169	721	1175	1178	389
Stage 1	-	-	-	-	-	-	747	747	-	405	405	-
Stage 2	-	-	-	-	-	-	431	422	-	770	773	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1153	-	-	861	-	-	168	193	427	168	191	659
Stage 1	-	-	-	-	-	-	405	420	-	622	598	-
Stage 2	-	-	-	-	-	-	603	588	-	393	409	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1153	-	-	861	-	-	152	189	427	158	187	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	189	-	158	187	-
Stage 1	-	-	-	-	-	-	401	415	-	615	593	-
Stage 2	-	-	-	-	-	-	566	583	-	371	405	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	26.9	31
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	153	427	1153	-	-	861	-	-	163	659
HCM Lane V/C Ratio	0.206	0.043	0.011	-	-	0.009	-	-	0.353	0.033
HCM Control Delay (s)	34.5	13.8	8.2	-	-	9.2	-	-	38.7	10.6
HCM Lane LOS	D	B	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.7	0.1	0	-	-	0	-	-	1.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	5	1	11	1	3	1	71	6	1	89	18
Future Volume (vph)	11	5	1	11	1	3	1	71	6	1	89	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.975			0.989			0.977	
Flt Protected		0.968			0.964			0.999				
Satd. Flow (prot)	0	1789	0	0	1751	0	0	1840	0	0	1820	0
Flt Permitted		0.968			0.964			0.999				
Satd. Flow (perm)	0	1789	0	0	1751	0	0	1840	0	0	1820	0
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		359			384			333			367	
Travel Time (s)		8.2			8.7			9.1			10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	5	1	12	1	3	1	77	7	1	97	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	16	0	0	85	0	0	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.4%		ICU Level of Service A	
Analysis Period (min) 15			

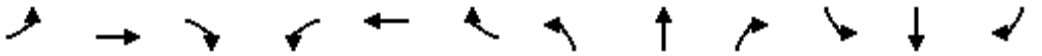
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	5	1	11	1	3	1	71	6	1	89	18
Future Vol, veh/h	11	5	1	11	1	3	1	71	6	1	89	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	5	1	12	1	3	1	77	7	1	97	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	194	195	107	195	202	81	117	0	0	84	0	0
Stage 1	109	109	-	83	83	-	-	-	-	-	-	-
Stage 2	85	86	-	112	119	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	765	700	947	764	694	979	1471	-	-	1513	-	-
Stage 1	896	805	-	925	826	-	-	-	-	-	-	-
Stage 2	923	824	-	893	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	760	699	947	757	693	979	1471	-	-	1513	-	-
Mov Cap-2 Maneuver	760	699	-	757	693	-	-	-	-	-	-	-
Stage 1	895	804	-	924	825	-	-	-	-	-	-	-
Stage 2	918	823	-	885	796	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.7	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1471	-	-	749	788	1513	-	-
HCM Lane V/C Ratio	0.001	-	-	0.025	0.021	0.001	-	-
HCM Control Delay (s)	7.4	0	-	9.9	9.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	754	4	10	313	79	0	0	13	21	10	88
Future Volume (vph)	1	754	4	10	313	79	0	0	13	21	10	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		100	130		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.970				0.865			0.865
Flt Protected	0.950			0.950							0.967	
Satd. Flow (prot)	1770	1863	1583	1770	3433	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950							0.967	
Satd. Flow (perm)	1770	1863	1583	1770	3433	0	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		640			390			248			333	
Travel Time (s)		10.9			6.6			5.6			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	820	4	11	340	86	0	0	14	23	11	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	820	4	11	426	0	0	0	14	0	34	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

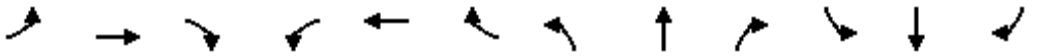
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	754	4	10	313	79	0	0	13	21	10	88
Future Vol, veh/h	1	754	4	10	313	79	0	0	13	21	10	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	130	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	820	4	11	340	86	0	0	14	23	11	96

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	426	0	0	824	0	0	-	-	820	1236	1231	213
Stage 1	-	-	-	-	-	-	-	-	-	405	405	-
Stage 2	-	-	-	-	-	-	-	-	-	831	826	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1132	-	-	804	-	-	0	0	374	142	177	793
Stage 1	-	-	-	-	-	-	0	0	-	594	598	-
Stage 2	-	-	-	-	-	-	0	0	-	363	386	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1132	-	-	804	-	-	-	-	374	135	174	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	135	174	-
Stage 1	-	-	-	-	-	-	-	-	-	593	590	-
Stage 2	-	-	-	-	-	-	-	-	-	349	386	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	15	10.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	374	1132	-	-	804	-	-	793
HCM Lane V/C Ratio	0.038	0.001	-	-	0.014	-	-	0.121
HCM Control Delay (s)	15	8.2	-	-	9.5	-	-	10.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

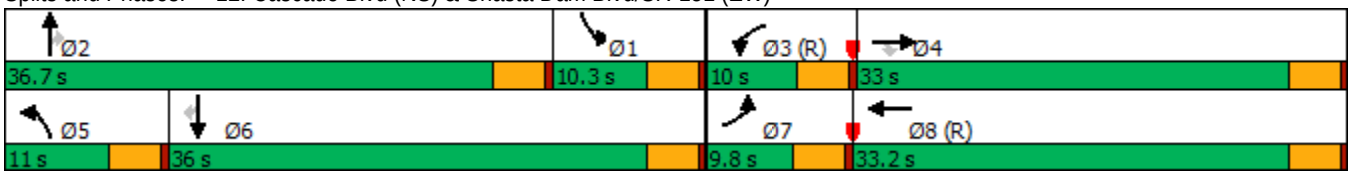


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	707	50	18	332	75	48	21	107	155	21	54
Future Volume (vph)	57	707	50	18	332	75	48	21	107	155	21	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		120	170		0	50		100	55		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			80			50			55		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972				0.850			0.850
Flt Protected	*0.918			*0.918			*0.918			*0.918		
Satd. Flow (prot)	1710	3539	1583	1710	3440	0	1710	1863	1583	1710	1863	1583
Flt Permitted	0.918			0.918			0.918			0.918		
Satd. Flow (perm)	1710	3539	1583	1710	3440	0	1710	1863	1583	1710	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158		32				116			109
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		390			475			345			436	
Travel Time (s)		6.6			8.1			7.8			9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	768	54	20	361	82	52	23	116	168	23	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	768	54	20	443	0	52	23	116	168	23	59
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	33.0	33.0	9.5	33.0		9.5	22.5	22.5	9.5	36.0	36.0
Total Split (s)	9.8	33.0	33.0	10.0	33.2		11.0	36.7	36.7	10.3	36.0	36.0
Total Split (%)	10.9%	36.7%	36.7%	11.1%	36.9%		12.2%	40.8%	40.8%	11.4%	40.0%	40.0%
Maximum Green (s)	5.8	29.0	29.0	6.0	29.2		7.0	32.7	32.7	6.3	32.0	32.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0						7.0	7.0
Flash Dont Walk (s)		22.0	22.0		22.0						25.0	25.0
Pedestrian Calls (#/hr)		5	5		5						5	5
Act Effct Green (s)	5.8	29.0	29.0	6.0	31.2		6.7	32.7	32.7	6.3	36.4	36.4
Actuated g/C Ratio	0.06	0.32	0.32	0.07	0.35		0.07	0.36	0.36	0.07	0.40	0.40
v/c Ratio	0.56	0.67	0.09	0.18	0.37		0.41	0.03	0.18	1.41	0.03	0.08
Control Delay	61.8	30.0	0.3	43.5	21.2		49.7	18.8	4.7	261.7	18.9	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.8	30.0	0.3	43.5	21.2		49.7	18.8	4.7	261.7	18.9	1.0
LOS	E	C	A	D	C		D	B	A	F	B	A
Approach Delay		30.4			22.2			18.6			177.8	
Approach LOS		C			C			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 3:WBL and 8:WBT, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.41			
Intersection Signal Delay: 47.6		Intersection LOS: D	
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 12: Cascade Blvd (NS) & Shasta Dam Blvd/SR-151 (EW)



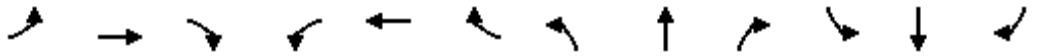


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	768	54	20	443	52	23	116	168	23	59
v/c Ratio	0.56	0.67	0.09	0.18	0.37	0.41	0.03	0.18	1.41	0.03	0.08
Control Delay	61.8	30.0	0.3	43.5	21.2	49.7	18.8	4.7	261.7	18.9	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.8	30.0	0.3	43.5	21.2	49.7	18.8	4.7	261.7	18.9	1.0
Queue Length 50th (ft)	35	197	0	11	93	29	8	0	~129	8	0
Queue Length 95th (ft)	#90	261	0	34	135	65	24	34	#255	25	6
Internal Link Dist (ft)		310			395		265			356	
Turn Bay Length (ft)	180		120	170		50		100	55		110
Base Capacity (vph)	110	1140	617	114	1211	133	676	649	119	753	705
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.67	0.09	0.18	0.37	0.39	0.03	0.18	1.41	0.03	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

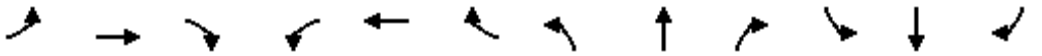
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	707	50	18	332	75	48	21	107	155	21	54
Future Volume (veh/h)	57	707	50	18	332	75	48	21	107	155	21	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	768	54	20	361	82	52	23	116	168	23	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	1234	550	74	992	223	72	680	576	125	735	623
Arrive On Green	0.04	0.35	0.35	0.01	0.11	0.11	0.04	0.36	0.36	0.07	0.39	0.39
Sat Flow, veh/h	1781	3554	1585	1781	2883	647	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	62	768	54	20	221	222	52	23	116	168	23	59
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1754	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.1	16.2	2.1	1.0	10.3	10.5	2.6	0.7	3.6	6.3	0.7	2.1
Cycle Q Clear(g_c), s	3.1	16.2	2.1	1.0	10.3	10.5	2.6	0.7	3.6	6.3	0.7	2.1
Prop In Lane	1.00		1.00	1.00		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	1234	550	74	612	604	72	680	576	125	735	623
V/C Ratio(X)	0.78	0.62	0.10	0.27	0.36	0.37	0.72	0.03	0.20	1.35	0.03	0.09
Avail Cap(c_a), veh/h	115	1234	550	119	612	604	139	680	576	125	735	623
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	24.5	19.8	43.0	30.7	30.8	42.7	18.5	12.4	41.8	16.8	17.2
Incr Delay (d2), s/veh	18.7	1.0	0.1	1.9	1.7	1.7	12.8	0.1	0.8	200.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	6.5	0.7	0.5	5.0	5.0	1.4	0.3	1.7	9.7	0.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.2	25.4	19.9	45.0	32.4	32.6	55.4	18.6	13.2	241.9	16.9	17.5
LnGrp LOS	E	C	B	D	C	C	E	B	B	F	B	B
Approach Vol, veh/h		884			463			191			250	
Approach Delay, s/veh		27.6			33.0			25.4			168.2	
Approach LOS		C			C			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	36.7	7.7	35.3	7.6	39.4	8.0	35.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.3	32.7	6.0	29.0	7.0	32.0	5.8	29.2
Max Q Clear Time (g_c+I1), s	8.3	5.6	3.0	18.2	4.6	4.1	5.1	12.5
Green Ext Time (p_c), s	0.0	0.5	0.0	3.8	0.0	0.3	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	48.4
HCM 6th LOS	D



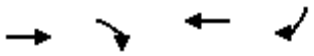
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	440	528	0	343	0	0	0	0	0	0	72
Future Volume (vph)	0	440	528	0	343	0	0	0	0	0	0	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.865
Flt Protected												
Satd. Flow (prot)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			528									525
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		475			758			535			509	
Travel Time (s)		8.1			12.9			12.2			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	478	574	0	373	0	0	0	0	0	0	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	478	574	0	373	0	0	0	0	0	0	78
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2							1
Detector Template		Thru	Right		Thru							Right
Leading Detector (ft)		100	20		100							20
Trailing Detector (ft)		0	0		0							0
Detector 1 Position(ft)		0	0		0							0
Detector 1 Size(ft)		6	20		6							20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex							Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0							0.0
Detector 1 Queue (s)		0.0	0.0		0.0							0.0
Detector 1 Delay (s)		0.0	0.0		0.0							0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Free		NA							Prot
Protected Phases		4			8							1
Permitted Phases			Free									
Detector Phase		4			8							1
Switch Phase												
Minimum Initial (s)		5.0			5.0							5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		22.5			22.5							9.5
Total Split (s)		63.0			63.0							27.0
Total Split (%)		70.0%			70.0%							30.0%
Maximum Green (s)		59.0			59.0							23.0
Yellow Time (s)		3.5			3.5							3.5
All-Red Time (s)		0.5			0.5							0.5
Lost Time Adjust (s)		0.0			0.0							0.0
Total Lost Time (s)		4.0			4.0							4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							3.0
Recall Mode		None			C-Max							None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		11.0			11.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)		79.2	90.0		79.2							5.5
Actuated g/C Ratio		0.88	1.00		0.88							0.06
v/c Ratio		0.29	0.36		0.12							0.13
Control Delay		0.5	2.2		1.1							0.5
Queue Delay		0.1	0.0		0.0							0.0
Total Delay		0.7	2.2		1.1							0.5
LOS		A	A		A							A
Approach Delay		1.5			1.1						0.5	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 1.4		Intersection LOS: A	
Intersection Capacity Utilization 26.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Shasta Dam Blvd/SR-151 (EW) & I-5 SB Off-Ramp (NS)

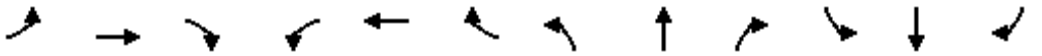




Lane Group	EBT	EBR	WBT	SBR
Lane Group Flow (vph)	478	574	373	78
v/c Ratio	0.29	0.36	0.12	0.13
Control Delay	0.5	2.2	1.1	0.5
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	0.7	2.2	1.1	0.5
Queue Length 50th (ft)	3	42	11	0
Queue Length 95th (ft)	m15	m38	16	0
Internal Link Dist (ft)	395		678	
Turn Bay Length (ft)				
Base Capacity (vph)	1639	1583	3114	802
Starvation Cap Reductn	422	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.36	0.12	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑↑							↱
Traffic Volume (veh/h)	0	440	528	0	343	0	0	0	0	0	0	72
Future Volume (veh/h)	0	440	528	0	343	0	0	0	0	0	0	72
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				0	0	1870
Adj Flow Rate, veh/h	0	478	0	0	373	0				0	0	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	0				0	0	2
Cap, veh/h	0	1226		0	2330	0				0	0	0
Arrive On Green	0.00	0.66	0.00	0.00	0.66	0.00				0.00	0.00	0.00
Sat Flow, veh/h	0	1870	1585	0	3741	0					0	
Grp Volume(v), veh/h	0	478	0	0	373	0					0.0	
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1777	0						
Q Serve(g_s), s	0.0	10.6	0.0	0.0	3.6	0.0						
Cycle Q Clear(g_c), s	0.0	10.6	0.0	0.0	3.6	0.0						
Prop In Lane	0.00		1.00	0.00		0.00						
Lane Grp Cap(c), veh/h	0	1226		0	2330	0						
V/C Ratio(X)	0.00	0.39		0.00	0.16	0.00						
Avail Cap(c_a), veh/h	0	1226		0	2330	0						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.00	0.60	0.00	0.00	1.00	0.00						
Uniform Delay (d), s/veh	0.0	7.2	0.0	0.0	6.0	0.0						
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.0	3.4	0.0	0.0	1.1	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.3	0.0	0.0	6.1	0.0						
LnGrp LOS	A	A		A	A	A						
Approach Vol, veh/h		478	A		373							
Approach Delay, s/veh		7.3			6.1							
Approach LOS		A			A							

Timer - Assigned Phs				4				8				
Phs Duration (G+Y+Rc), s				63.0				63.0				
Change Period (Y+Rc), s				4.0				4.0				
Max Green Setting (Gmax), s				59.0				59.0				
Max Q Clear Time (g_c+I1), s				12.6				5.6				
Green Ext Time (p_c), s				3.1				2.5				

Intersection Summary												
HCM 6th Ctrl Delay			6.8									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	122	32	125	68	86	9	11	49	80	17	111
Future Volume (vph)	127	122	32	125	68	86	9	11	49	80	17	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	345		90	120		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			80			90			65		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969				0.850		0.878			0.869	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1805	0	1770	1863	1583	1770	1635	0	1770	1619	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1805	0	1770	1863	1583	1770	1635	0	1770	1619	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1395			1895			1288			1162	
Travel Time (s)		23.8			32.3			29.3			26.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	133	35	136	74	93	10	12	53	87	18	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	168	0	136	74	93	10	65	0	87	139	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.4%		ICU Level of Service A	
Analysis Period (min) 15			

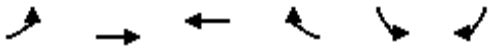
Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	122	32	125	68	86	9	11	49	80	17	111
Future Vol, veh/h	127	122	32	125	68	86	9	11	49	80	17	111
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	345	-	90	120	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	138	133	35	136	74	93	10	12	53	87	18	121

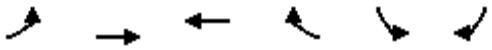
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	168	0	0	889	866	151	805	790	74
Stage 1	-	-	-	-	-	-	427	427	-	346	346	-
Stage 2	-	-	-	-	-	-	462	439	-	459	444	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	-	1410	-	-	264	291	895	301	322	988
Stage 1	-	-	-	-	-	-	606	585	-	670	635	-
Stage 2	-	-	-	-	-	-	580	578	-	582	575	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1410	-	-	188	237	895	234	262	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	237	-	234	262	-
Stage 1	-	-	-	-	-	-	547	528	-	604	574	-
Stage 2	-	-	-	-	-	-	445	523	-	483	519	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	3.5	13.5	18.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	188	593	1411	-	-	1410	-	-	234	722
HCM Lane V/C Ratio	0.052	0.11	0.098	-	-	0.096	-	-	0.372	0.193
HCM Control Delay (s)	25.2	11.8	7.8	-	-	7.8	-	-	29.2	11.2
HCM Lane LOS	D	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0.4	0.3	-	-	0.3	-	-	1.6	0.7



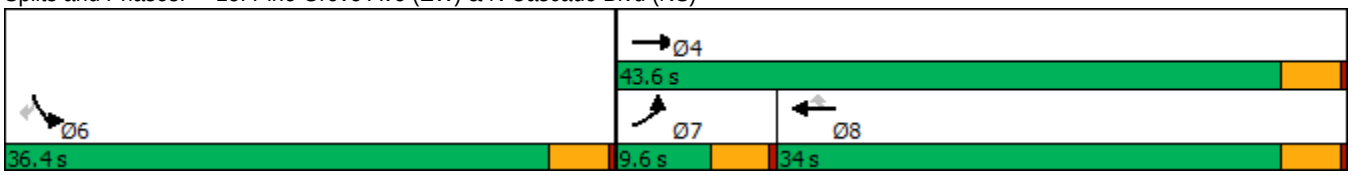
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	29	347	282	125	251	23
Future Volume (vph)	29	347	282	125	251	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275			0	110	0
Storage Lanes	1			1	1	1
Taper Length (ft)	135				110	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	*0.918				*0.918	
Satd. Flow (prot)	1661	3438	1810	1538	1661	1538
Flt Permitted	0.918				0.918	
Satd. Flow (perm)	1661	3438	1810	1538	1661	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				136		25
Link Speed (mph)		40	40		30	
Link Distance (ft)		609	338		516	
Travel Time (s)		10.4	5.8		11.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	32	377	307	136	273	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	377	307	136	273	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	

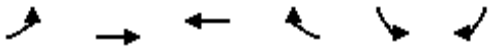


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	34.0	34.0	36.0	36.0
Total Split (s)	9.6	43.6	34.0	34.0	36.4	36.4
Total Split (%)	12.0%	54.5%	42.5%	42.5%	45.5%	45.5%
Maximum Green (s)	5.6	39.6	30.0	30.0	32.4	32.4
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	Max	Max
Walk Time (s)			7.0	7.0	7.0	7.0
Flash Dont Walk (s)			23.0	23.0	25.0	25.0
Pedestrian Calls (#/hr)			5	5	5	5
Act Effct Green (s)	5.8	19.6	16.5	16.5	33.5	33.5
Actuated g/C Ratio	0.09	0.32	0.27	0.27	0.55	0.55
v/c Ratio	0.21	0.34	0.63	0.27	0.30	0.03
Control Delay	34.3	15.5	26.1	5.1	12.0	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	15.5	26.1	5.1	12.0	5.9
LOS	C	B	C	A	B	A
Approach Delay		16.9	19.7		11.5	
Approach LOS		B	B		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 61.4			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

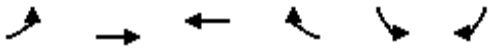
Splits and Phases: 15: Pine Grove Ave (EW) & N Cascade Blvd (NS)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	32	377	307	136	273	25
v/c Ratio	0.21	0.34	0.63	0.27	0.30	0.03
Control Delay	34.3	15.5	26.1	5.1	12.0	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	15.5	26.1	5.1	12.0	5.9
Queue Length 50th (ft)	10	53	88	0	37	0
Queue Length 95th (ft)	43	78	183	34	157	14
Internal Link Dist (ft)		529	258		436	
Turn Bay Length (ft)	275				110	
Base Capacity (vph)	156	2291	914	843	905	850
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.16	0.34	0.16	0.30	0.03

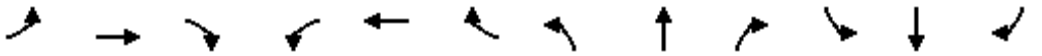
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	347	282	125	251	23
Future Volume (veh/h)	29	347	282	125	251	23
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	32	377	307	136	273	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	60	1128	408	346	941	838
Arrive On Green	0.03	0.33	0.22	0.22	0.54	0.54
Sat Flow, veh/h	1739	3561	1826	1547	1739	1547
Grp Volume(v), veh/h	32	377	307	136	273	25
Grp Sat Flow(s),veh/h/ln	1739	1735	1826	1547	1739	1547
Q Serve(g_s), s	1.1	4.9	9.4	4.5	5.1	0.5
Cycle Q Clear(g_c), s	1.1	4.9	9.4	4.5	5.1	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	60	1128	408	346	941	838
V/C Ratio(X)	0.53	0.33	0.75	0.39	0.29	0.03
Avail Cap(c_a), veh/h	163	2295	915	776	941	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	15.3	21.7	19.8	7.5	6.4
Incr Delay (d2), s/veh	7.2	0.2	2.8	0.7	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.7	3.8	1.5	1.7	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	35.6	15.5	24.5	20.5	8.2	6.5
LnGrp LOS	D	B	C	C	A	A
Approach Vol, veh/h		409	443		298	
Approach Delay, s/veh		17.0	23.3		8.1	
Approach LOS		B	C		A	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			23.5		36.4	6.1	17.4
Change Period (Y+Rc), s			4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s			39.6		32.4	5.6	30.0
Max Q Clear Time (g_c+I1), s			6.9		7.1	3.1	11.4
Green Ext Time (p_c), s			2.4		0.9	0.0	2.0

Intersection Summary		
HCM 6th Ctrl Delay	17.1	
HCM 6th LOS	B	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	83	582	50	376	0	0	0	0	26	0	29
Future Volume (vph)	0	83	582	50	376	0	0	0	0	26	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	155		0	0		0	0		50
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		225			446			656			388	
Travel Time (s)		3.8			7.6			14.9			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	90	633	54	409	0	0	0	0	28	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	90	633	54	409	0	0	0	0	0	28	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

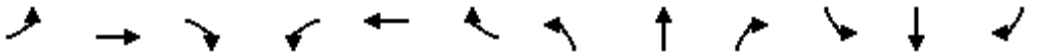
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	83	582	50	376	0	0	0	0	26	0	29
Future Vol, veh/h	0	83	582	50	376	0	0	0	0	26	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	155	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	90	633	54	409	0	0	0	0	28	0	32

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	723	0	0			924	1240	409
Stage 1	-	-	-	-	-	-			517	517	-
Stage 2	-	-	-	-	-	-			407	723	-
Critical Hdwy	-	-	-	4.15	-	-			6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-			5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.45	5.55	-
Follow-up Hdwy	-	-	-	2.245	-	-			3.545	4.045	3.345
Pot Cap-1 Maneuver	0	-	-	866	-	0			295	173	636
Stage 1	0	-	-	-	-	0			592	529	-
Stage 2	0	-	-	-	-	0			666	426	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	866	-	-			277	0	636
Mov Cap-2 Maneuver	-	-	-	-	-	-			277	0	-
Stage 1	-	-	-	-	-	-			555	0	-
Stage 2	-	-	-	-	-	-			666	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.1	15
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	866	-	277	636
HCM Lane V/C Ratio	-	-	0.063	-	0.102	0.05
HCM Control Delay (s)	-	-	9.4	-	19.5	11
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.3	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	92	0	0	88	29	321	0	118	0	0	0
Future Volume (vph)	34	92	0	0	88	29	321	0	118	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	0		0	0		50	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		446			181			589			428	
Travel Time (s)		7.6			3.1			13.4			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	37	100	0	0	96	32	349	0	128	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	100	0	0	96	32	0	349	128	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

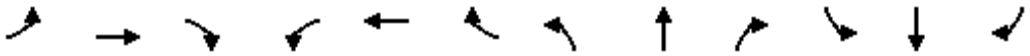
Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	92	0	0	88	29	321	0	118	0	0	0
Future Vol, veh/h	34	92	0	0	88	29	321	0	118	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	37	100	0	0	96	32	349	0	128	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	128	0	-	-	-	0	286	302	100
Stage 1	-	-	-	-	-	-	174	174	-
Stage 2	-	-	-	-	-	-	112	128	-
Critical Hdwy	4.15	-	-	-	-	-	6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.45	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345
Pot Cap-1 Maneuver	1440	-	0	0	-	-	698	606	947
Stage 1	-	-	0	0	-	-	849	749	-
Stage 2	-	-	0	0	-	-	905	784	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1440	-	-	-	-	-	680	0	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	680	0	-
Stage 1	-	-	-	-	-	-	827	0	-
Stage 2	-	-	-	-	-	-	905	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2	0	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	680	947	1440	-	-	-
HCM Lane V/C Ratio	0.513	0.135	0.026	-	-	-
HCM Control Delay (s)	15.7	9.4	7.6	-	-	-
HCM Lane LOS	C	A	A	-	-	-
HCM 95th %tile Q(veh)	3	0.5	0.1	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	31	88	2	33	1	37	2	11	1	13	58
Future Volume (vph)	88	31	88	2	33	1	37	2	11	1	13	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.943			0.997			0.970			0.891	
Flt Protected		0.979			0.997			0.964			0.999	
Satd. Flow (prot)	0	1720	0	0	1852	0	0	1742	0	0	1658	0
Flt Permitted		0.979			0.997			0.964			0.999	
Satd. Flow (perm)	0	1720	0	0	1852	0	0	1742	0	0	1658	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		181			285			397			451	
Travel Time (s)		3.1			4.9			9.0			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	34	96	2	36	1	40	2	12	1	14	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	0	0	39	0	0	54	0	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.7%		ICU Level of Service A	
Analysis Period (min) 15			

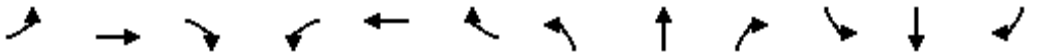
Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	88	31	88	2	33	1	37	2	11	1	13	58
Future Vol, veh/h	88	31	88	2	33	1	37	2	11	1	13	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	34	96	2	36	1	40	2	12	1	14	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	37	0	0	130	0	0	353	315	82	322	363	37
Stage 1	-	-	-	-	-	-	274	274	-	41	41	-
Stage 2	-	-	-	-	-	-	79	41	-	281	322	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1574	-	-	1455	-	-	602	601	978	631	565	1035
Stage 1	-	-	-	-	-	-	732	683	-	974	861	-
Stage 2	-	-	-	-	-	-	930	861	-	726	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1574	-	-	1455	-	-	526	561	978	589	527	1035
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	561	-	589	527	-
Stage 1	-	-	-	-	-	-	684	638	-	910	860	-
Stage 2	-	-	-	-	-	-	858	860	-	668	608	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	0.4	11.8	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	587	1574	-	-	1455	-	-	874
HCM Lane V/C Ratio	0.093	0.061	-	-	0.001	-	-	0.09
HCM Control Delay (s)	11.8	7.4	0	-	7.5	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	549	49	43	338	1	69	0	127	1	1	0
Future Volume (vph)	0	549	49	43	338	1	69	0	127	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	80		0	0		55	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	70			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988							0.850			
Flt Protected				0.950			0.950				0.976	
Satd. Flow (prot)	1810	3397	0	1719	1810	0	1719	0	1538	0	1766	0
Flt Permitted				0.950			0.950				0.976	
Satd. Flow (perm)	1810	3397	0	1719	1810	0	1719	0	1538	0	1766	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		338			225			390			203	
Travel Time (s)		5.8			3.8			8.9			4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	597	53	47	367	1	75	0	138	1	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	650	0	47	368	0	75	0	138	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%		ICU Level of Service A	
Analysis Period (min) 15			

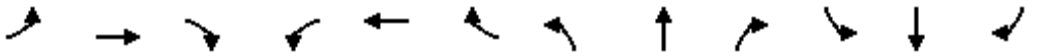
Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	549	49	43	338	1	69	0	127	1	1	0
Future Vol, veh/h	0	549	49	43	338	1	69	0	127	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	80	-	-	0	-	55	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	597	53	47	367	1	75	0	138	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	368	0	0	650	0	0	1086	-	325	761	1112	368
Stage 1	-	-	-	-	-	-	624	-	-	462	462	-
Stage 2	-	-	-	-	-	-	462	-	-	299	650	-
Critical Hdwy	4.175	-	-	4.175	-	-	7.375	-	6.975	7.375	6.575	6.275
Critical Hdwy Stg 1	-	-	-	-	-	-	6.575	-	-	6.175	5.575	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.175	-	-	6.575	5.575	-
Follow-up Hdwy	2.2475	-	-	2.2475	-	-	3.5475	-	3.3475	3.5475	4.0475	3.3475
Pot Cap-1 Maneuver	1170	-	-	917	-	-	179	0	664	303	204	669
Stage 1	-	-	-	-	-	-	435	0	-	572	558	-
Stage 2	-	-	-	-	-	-	572	0	-	679	458	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1170	-	-	917	-	-	171	-	664	231	194	669
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	-	-	231	194	-
Stage 1	-	-	-	-	-	-	435	-	-	572	530	-
Stage 2	-	-	-	-	-	-	542	-	-	538	458	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	22.3	22.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	664	1170	-	-	917	-	-	211
HCM Lane V/C Ratio	0.439	0.208	-	-	-	0.051	-	-	0.01
HCM Control Delay (s)	41.5	11.8	0	-	-	9.1	-	-	22.2
HCM Lane LOS	E	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2	0.8	0	-	-	0.2	-	-	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	8	42	8	22	6	23	11	27	39	1
Future Volume (vph)	1	4	8	42	8	22	6	23	11	27	39	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.913			0.959				0.850		0.998	
Flt Protected		0.996			0.972			0.989			0.980	
Satd. Flow (prot)	0	1694	0	0	1736	0	0	1842	1583	0	1822	0
Flt Permitted		0.996			0.972			0.989			0.980	
Satd. Flow (perm)	0	1694	0	0	1736	0	0	1842	1583	0	1822	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			3245			1275			1105	
Travel Time (s)		16.1			73.8			29.0			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	4	9	46	9	24	7	25	12	29	42	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	79	0	0	32	12	0	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

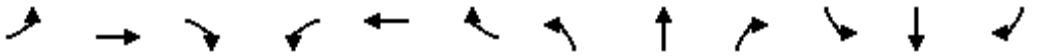
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	4	8	42	8	22	6	23	11	27	39	1
Future Vol, veh/h	1	4	8	42	8	22	6	23	11	27	39	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	4	9	46	9	24	7	25	12	29	42	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7	7.6	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	0%	8%	58%	40%
Vol Thru, %	79%	0%	31%	11%	58%
Vol Right, %	0%	100%	62%	31%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	11	13	72	67
LT Vol	6	0	1	42	27
Through Vol	23	0	4	8	39
RT Vol	0	11	8	22	1
Lane Flow Rate	32	12	14	78	73
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.042	0.013	0.015	0.089	0.087
Departure Headway (Hd)	4.84	4.034	3.84	4.078	4.302
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	736	880	916	869	827
Service Time	2.595	1.79	1.93	2.151	2.358
HCM Lane V/C Ratio	0.043	0.014	0.015	0.09	0.088
HCM Control Delay	7.8	6.8	7	7.6	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0.3	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	83	13	19	94	8	4	1	14	10	1	1
Future Volume (vph)	3	83	13	19	94	8	4	1	14	10	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	300		0	0		0	0		50
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	60			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.988			0.899				0.850
Flt Protected	0.950			0.950				0.990			0.956	
Satd. Flow (prot)	1770	1825	0	1770	1840	0	0	1658	0	0	1781	1583
Flt Permitted	0.950			0.950				0.990			0.956	
Satd. Flow (perm)	1770	1825	0	1770	1840	0	0	1658	0	0	1781	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3245			555			514			456	
Travel Time (s)		73.8			12.6			11.7			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	90	14	21	102	9	4	1	15	11	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	104	0	21	111	0	0	20	0	0	12	1
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	83	13	19	94	8	4	1	14	10	1	1
Future Vol, veh/h	3	83	13	19	94	8	4	1	14	10	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	300	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	90	14	21	102	9	4	1	15	11	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	104	0	0	253	256	97	260	259	107
Stage 1	-	-	-	-	-	-	103	103	-	149	149	-
Stage 2	-	-	-	-	-	-	150	153	-	111	110	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1488	-	-	700	648	959	693	645	947
Stage 1	-	-	-	-	-	-	903	810	-	854	774	-
Stage 2	-	-	-	-	-	-	853	771	-	894	804	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1488	-	-	690	638	959	673	635	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	690	638	-	673	635	-
Stage 1	-	-	-	-	-	-	901	808	-	852	763	-
Stage 2	-	-	-	-	-	-	839	760	-	877	802	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.2	9.3	10.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	865	1479	-	-	1488	-	-	669	947
HCM Lane V/C Ratio	0.024	0.002	-	-	0.014	-	-	0.018	0.001
HCM Control Delay (s)	9.3	7.4	-	-	7.5	-	-	10.5	8.8
HCM Lane LOS	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	NBR2	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	227	21	103	243	28	0	113	0	0
Future Volume (vph)	227	21	103	243	28	0	113	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	165		55	0		187	0
Storage Lanes		1	1		1	1		0	0
Taper Length (ft)			70		70			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850		
Flt Protected			0.950		0.950				
Satd. Flow (prot)	1863	1583	1770	1863	1770	0	1583	0	0
Flt Permitted			0.950		0.950				
Satd. Flow (perm)	1863	1583	1770	1863	1770	0	1583	0	0
Link Speed (mph)	40			30	30			40	
Link Distance (ft)	572			398	787			427	
Travel Time (s)	9.8			9.0	17.9			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	23	112	264	30	0	123	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	247	23	112	264	30	0	123	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	0			12	12			12	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane					Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9	9	15	9
Sign Control	Free			Free	Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.0%		ICU Level of Service A	
Analysis Period (min) 15			

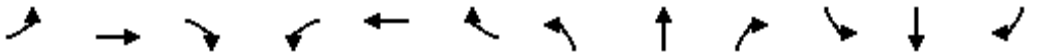
Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR	NWL	NWR
Lane Configurations								
Traffic Vol, veh/h	227	21	103	243	28	0	0	0
Future Vol, veh/h	227	21	103	243	28	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	-	-	None	-	-	-	None
Storage Length	-	50	165	-	55	0	-	-
Veh in Median Storage, #	0	-	-	0	0	-	16965	-
Grade, %	0	-	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	247	23	112	264	30	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	270	0	735	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1293	-	387	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	353	792
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	792	-	-	1293	-
HCM Lane V/C Ratio	0.086	0.155	-	-	0.087	-
HCM Control Delay (s)	16.2	10.4	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0.3	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	76	398	52	6	19	0	0	41	10
Future Volume (vph)	0	0	0	76	398	52	6	19	0	0	41	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			85			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.983						0.973	
Flt Protected				0.950				0.988				
Satd. Flow (prot)	0	0	0	1770	1831	0	0	1840	0	0	1812	0
Flt Permitted				0.950				0.988				
Satd. Flow (perm)	0	0	0	1770	1831	0	0	1840	0	0	1812	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		398			761			118			339	
Travel Time (s)		6.8			13.0			2.7			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	83	433	57	7	21	0	0	45	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	83	490	0	0	28	0	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.0%		ICU Level of Service A	
Analysis Period (min) 15			

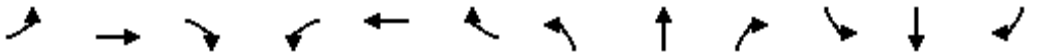
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	76	398	52	6	19	0	0	41	10
Future Vol, veh/h	0	0	0	76	398	52	6	19	0	0	41	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	70	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	83	433	57	7	21	0	0	45	11

Major/Minor	Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	656	656	-	-	628	462
Stage 1	-	-	-	0	0	-	-	628	-
Stage 2	-	-	-	656	656	-	-	0	-
Critical Hdwy	4.12	-	-	7.12	6.52	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	2.218	-	-	3.518	4.018	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	379	385	0	0	400	600
Stage 1	-	-	-	-	-	0	0	476	-
Stage 2	-	-	-	454	462	0	0	-	-
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	340	385	-	-	400	600
Mov Cap-2 Maneuver	-	-	-	340	385	-	-	400	-
Stage 1	-	-	-	-	-	-	-	476	-
Stage 2	-	-	-	404	462	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		15.4	14.7
HCM LOS		C	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	373	-	-	-	428
HCM Lane V/C Ratio	0.073	-	-	-	0.13
HCM Control Delay (s)	15.4	-	-	-	14.7
HCM Lane LOS	C	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	341	6	0	0	0	0	9	48	62	38	0
Future Volume (vph)	20	341	6	0	0	0	0	9	48	62	38	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	140			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997						0.887				
Flt Protected	0.950										0.970	
Satd. Flow (prot)	1770	1857	0	0	0	0	0	1652	0	0	1807	0
Flt Permitted	0.950										0.970	
Satd. Flow (perm)	1770	1857	0	0	0	0	0	1652	0	0	1807	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		427			1196			599			118	
Travel Time (s)		9.7			27.2			13.6			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	371	7	0	0	0	0	10	52	67	41	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	378	0	0	0	0	0	62	0	0	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			16	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.1%		ICU Level of Service A	
Analysis Period (min) 15			

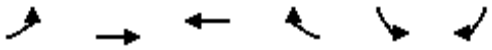
Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	341	6	0	0	0	0	9	48	62	38	0
Future Vol, veh/h	20	341	6	0	0	0	0	9	48	62	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	371	7	0	0	0	0	10	52	67	41	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	419	375	450	422	-
Stage 1	-	-	-	-	419	-	0	0	-
Stage 2	-	-	-	-	0	-	450	422	-
Critical Hdwy	4.12	-	-	-	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	-	-	-	0	525	671	519	523	0
Stage 1	-	-	-	0	590	-	-	-	0
Stage 2	-	-	-	0	-	-	589	588	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	525	671	472	523	-
Mov Cap-2 Maneuver	-	-	-	-	525	-	472	523	-
Stage 1	-	-	-	-	590	-	-	-	-
Stage 2	-	-	-	-	-	-	534	588	-

Approach	EB	NB	SB
HCM Control Delay, s		11.2	14.4
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	643	-	-	-	490
HCM Lane V/C Ratio	0.096	-	-	-	0.222
HCM Control Delay (s)	11.2	-	-	-	14.4
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	440	570	41	49	37
Future Volume (vph)	20	440	570	41	49	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			100	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1770	1863	1863	1583	1706	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1770	1863	1863	1583	1706	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		763	1469		346	
Travel Time (s)		13.0	25.0		7.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	478	620	45	53	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	478	620	45	93	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	440	570	41	49	37
Future Vol, veh/h	20	440	570	41	49	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	478	620	45	53	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	665	0	-	0	1142	620
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	924	-	-	-	222	488
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	924	-	-	-	217	488
Mov Cap-2 Maneuver	-	-	-	-	348	-
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	924	-	-	-	397
HCM Lane V/C Ratio	0.024	-	-	-	0.235
HCM Control Delay (s)	9	-	-	-	16.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	26	1	2	1	26	36	1	1	21	3
Future Volume (vph)	4	2	26	1	2	1	26	36	1	1	21	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.889			0.966			0.998			0.985	
Flt Protected		0.994			0.988			0.980			0.998	
Satd. Flow (prot)	0	1646	0	0	1778	0	0	1822	0	0	1831	0
Flt Permitted		0.994			0.988			0.980			0.998	
Satd. Flow (perm)	0	1646	0	0	1778	0	0	1822	0	0	1831	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			558			692			322	
Travel Time (s)		11.2			12.7			15.7			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2	28	1	2	1	28	39	1	1	23	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	4	0	0	68	0	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	2	26	1	2	1	26	36	1	1	21	3
Future Vol, veh/h	4	2	26	1	2	1	26	36	1	1	21	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	2	28	1	2	1	28	39	1	1	23	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.8	7.1	7.5	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	12%	25%	4%
Vol Thru, %	57%	6%	50%	84%
Vol Right, %	2%	81%	25%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	63	32	4	25
LT Vol	26	4	1	1
Through Vol	36	2	2	21
RT Vol	1	26	1	3
Lane Flow Rate	68	35	4	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.078	0.035	0.005	0.03
Departure Headway (Hd)	4.096	3.64	4.026	3.99
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	877	977	884	897
Service Time	2.111	1.685	2.075	2.015
HCM Lane V/C Ratio	0.078	0.036	0.005	0.03
HCM Control Delay	7.5	6.8	7.1	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	8	6	2	4	6	18	61	3	4	45	1
Future Volume (vph)	4	8	6	2	4	6	18	61	3	4	45	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953			0.927			0.995			0.997	
Flt Protected		0.990			0.992			0.989			0.996	
Satd. Flow (prot)	0	1757	0	0	1713	0	0	1833	0	0	1850	0
Flt Permitted		0.990			0.992			0.989			0.996	
Satd. Flow (perm)	0	1757	0	0	1713	0	0	1833	0	0	1850	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		544			979			655			692	
Travel Time (s)		12.4			22.3			14.9			15.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	9	7	2	4	7	20	66	3	4	49	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	13	0	0	89	0	0	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

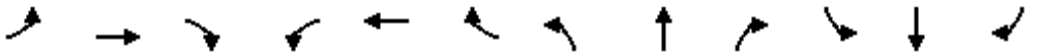
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	8	6	2	4	6	18	61	3	4	45	1
Future Vol, veh/h	4	8	6	2	4	6	18	61	3	4	45	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	9	7	2	4	7	20	66	3	4	49	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.1	7.5	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	22%	17%	8%
Vol Thru, %	74%	44%	33%	90%
Vol Right, %	4%	33%	50%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	82	18	12	50
LT Vol	18	4	2	4
Through Vol	61	8	4	45
RT Vol	3	6	6	1
Lane Flow Rate	89	20	13	54
Geometry Grp	1	1	1	1
Degree of Util (X)	0.1	0.022	0.014	0.061
Departure Headway (Hd)	4.053	4.035	3.928	4.062
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	884	878	901	880
Service Time	2.078	2.102	1.998	2.093
HCM Lane V/C Ratio	0.101	0.023	0.014	0.061
HCM Control Delay	7.5	7.2	7.1	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	496	34	13	620	66	28	5	6	31	7	12
Future Volume (vph)	20	496	34	13	620	66	28	5	6	31	7	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		75	50		184	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.959			0.961	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	1786	1583	0	1790	1583
Flt Permitted	0.950			0.950				0.959			0.961	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	1786	1583	0	1790	1583
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1469			1081			343			655	
Travel Time (s)		25.0			18.4			7.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	539	37	14	674	72	30	5	7	34	8	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	539	37	14	674	72	0	35	7	0	42	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	496	34	13	620	66	28	5	6	31	7	12
Future Vol, veh/h	20	496	34	13	620	66	28	5	6	31	7	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	75	50	-	184	-	-	25	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	539	37	14	674	72	30	5	7	34	8	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	746	0	0	576	0	0	1332	1357	539	1310	1322	674
Stage 1	-	-	-	-	-	-	583	583	-	702	702	-
Stage 2	-	-	-	-	-	-	749	774	-	608	620	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	862	-	-	997	-	-	131	149	542	136	156	455
Stage 1	-	-	-	-	-	-	498	499	-	429	440	-
Stage 2	-	-	-	-	-	-	404	408	-	483	480	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	862	-	-	997	-	-	119	143	542	127	150	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	143	-	127	150	-
Stage 1	-	-	-	-	-	-	485	486	-	418	434	-
Stage 2	-	-	-	-	-	-	380	402	-	460	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	41.1	37.1
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	122	542	862	-	-	997	-	-	131	455
HCM Lane V/C Ratio	0.294	0.012	0.025	-	-	0.014	-	-	0.315	0.029
HCM Control Delay (s)	46.4	11.7	9.3	-	-	8.7	-	-	44.7	13.1
HCM Lane LOS	E	B	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	1.1	0	0.1	-	-	0	-	-	1.2	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	8	4	11	5	58	5	7	41	4
Future Volume (vph)	6	1	2	8	4	11	5	58	5	7	41	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.935			0.991			0.991	
Flt Protected		0.966			0.982			0.997			0.993	
Satd. Flow (prot)	0	1751	0	0	1710	0	0	1840	0	0	1833	0
Flt Permitted		0.966			0.982			0.997			0.993	
Satd. Flow (perm)	0	1751	0	0	1710	0	0	1840	0	0	1833	0
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		359			384			333			367	
Travel Time (s)		8.2			8.7			9.1			10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1	2	9	4	12	5	63	5	8	45	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	25	0	0	73	0	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.4%		ICU Level of Service A	
Analysis Period (min) 15			

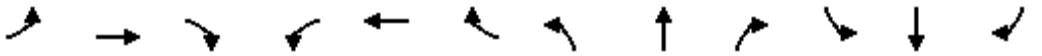
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	1	2	8	4	11	5	58	5	7	41	4
Future Vol, veh/h	6	1	2	8	4	11	5	58	5	7	41	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	2	9	4	12	5	63	5	8	45	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	147	141	47	141	141	66	49	0	0	68	0	0
Stage 1	63	63	-	76	76	-	-	-	-	-	-	-
Stage 2	84	78	-	65	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	821	750	1022	829	750	998	1558	-	-	1533	-	-
Stage 1	948	842	-	933	832	-	-	-	-	-	-	-
Stage 2	924	830	-	946	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	803	744	1022	822	744	998	1558	-	-	1533	-	-
Mov Cap-2 Maneuver	803	744	-	822	744	-	-	-	-	-	-	-
Stage 1	945	838	-	930	830	-	-	-	-	-	-	-
Stage 2	905	828	-	938	837	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	9.2	0.5	1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	835	880	1533	-	-
HCM Lane V/C Ratio	0.003	-	-	0.012	0.028	0.005	-	-
HCM Control Delay (s)	7.3	0	-	9.4	9.2	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	532	18	27	660	77	0	0	36	18	5	77
Future Volume (vph)	4	532	18	27	660	77	0	0	36	18	5	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		100	130		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.984				0.865			0.865
Flt Protected	0.950			0.950							0.962	
Satd. Flow (prot)	1770	1863	1583	1770	3483	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950							0.962	
Satd. Flow (perm)	1770	1863	1583	1770	3483	0	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		640			390			248			333	
Travel Time (s)		10.9			6.6			5.6			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	578	20	29	717	84	0	0	39	20	5	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	578	20	29	801	0	0	0	39	0	25	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

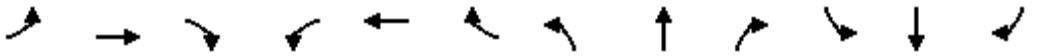
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	532	18	27	660	77	0	0	36	18	5	77
Future Vol, veh/h	4	532	18	27	660	77	0	0	36	18	5	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	130	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	578	20	29	717	84	0	0	39	20	5	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	801	0	0	598	0	0	-	-	578	1433	1423	401
Stage 1	-	-	-	-	-	-	-	-	-	817	817	-
Stage 2	-	-	-	-	-	-	-	-	-	616	606	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	820	-	-	977	-	-	0	0	515	103	135	600
Stage 1	-	-	-	-	-	-	0	0	-	337	389	-
Stage 2	-	-	-	-	-	-	0	0	-	477	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	820	-	-	977	-	-	-	-	515	93	130	600
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	93	130	-
Stage 1	-	-	-	-	-	-	-	-	-	335	377	-
Stage 2	-	-	-	-	-	-	-	-	-	439	484	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	12.6	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	515	820	-	-	977	-	-	600
HCM Lane V/C Ratio	0.076	0.005	-	-	0.03	-	-	0.139
HCM Control Delay (s)	12.6	9.4	-	-	8.8	-	-	12
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.5

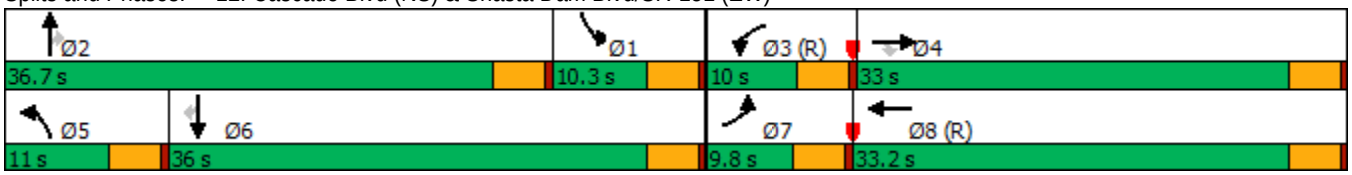


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	429	91	100	663	95	106	41	63	87	46	41
Future Volume (vph)	79	429	91	100	663	95	106	41	63	87	46	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		120	170		0	50		100	55		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			80			50			55		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981				0.850			0.850
Flt Protected	*0.918			*0.918			*0.918			*0.918		
Satd. Flow (prot)	1710	3539	1583	1710	3472	0	1710	1863	1583	1710	1863	1583
Flt Permitted	0.918			0.918			0.918			0.918		
Satd. Flow (perm)	1710	3539	1583	1710	3472	0	1710	1863	1583	1710	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158		18				109			109
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		390			475			345			436	
Travel Time (s)		6.6			8.1			7.8			9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	466	99	109	721	103	115	45	68	95	50	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	466	99	109	824	0	115	45	68	95	50	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	33.0	33.0	9.5	33.0		9.5	22.5	22.5	9.5	36.0	36.0
Total Split (s)	9.8	33.0	33.0	10.0	33.2		11.0	36.7	36.7	10.3	36.0	36.0
Total Split (%)	10.9%	36.7%	36.7%	11.1%	36.9%		12.2%	40.8%	40.8%	11.4%	40.0%	40.0%
Maximum Green (s)	5.8	29.0	29.0	6.0	29.2		7.0	32.7	32.7	6.3	32.0	32.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0						7.0	7.0
Flash Dont Walk (s)		22.0	22.0		22.0						25.0	25.0
Pedestrian Calls (#/hr)		5	5		5						5	5
Act Effct Green (s)	5.8	29.0	29.0	6.0	29.2		7.0	32.7	32.7	6.3	32.0	32.0
Actuated g/C Ratio	0.06	0.32	0.32	0.07	0.32		0.08	0.36	0.36	0.07	0.36	0.36
v/c Ratio	0.78	0.41	0.16	0.96	0.72		0.86	0.07	0.11	0.80	0.08	0.07
Control Delay	85.4	25.1	1.5	116.9	29.4		92.1	19.2	1.7	85.0	19.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.4	25.1	1.5	116.9	29.4		92.1	19.2	1.7	85.0	19.7	0.2
LOS	F	C	A	F	C		F	B	A	F	B	A
Approach Delay		29.5			39.6			50.8			47.7	
Approach LOS		C			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 3:WBL and 8:WBT, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 38.4		Intersection LOS: D	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 12: Cascade Blvd (NS) & Shasta Dam Blvd/SR-151 (EW)

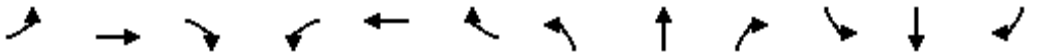




Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	466	99	109	824	115	45	68	95	50	45
v/c Ratio	0.78	0.41	0.16	0.96	0.72	0.86	0.07	0.11	0.80	0.08	0.07
Control Delay	85.4	25.1	1.5	116.9	29.4	92.1	19.2	1.7	85.0	19.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.4	25.1	1.5	116.9	29.4	92.1	19.2	1.7	85.0	19.7	0.2
Queue Length 50th (ft)	49	107	0	64	211	66	16	0	54	19	0
Queue Length 95th (ft)	#130	151	10	#168	280	#164	39	11	#139	43	0
Internal Link Dist (ft)		310			395		265			356	
Turn Bay Length (ft)	180		120	170		50		100	55		110
Base Capacity (vph)	110	1140	617	114	1138	133	676	644	119	662	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.41	0.16	0.96	0.72	0.86	0.07	0.11	0.80	0.08	0.07

Intersection Summary

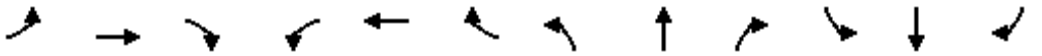
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	429	91	100	663	95	106	41	63	87	46	41
Future Volume (veh/h)	79	429	91	100	663	95	106	41	63	87	46	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	466	99	109	721	103	115	45	68	95	50	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	1135	506	124	1021	146	139	680	576	125	665	564
Arrive On Green	0.06	0.32	0.32	0.02	0.11	0.11	0.08	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	1781	3121	446	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	86	466	99	109	410	414	115	45	68	95	50	45
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1790	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.3	9.2	4.1	5.5	20.1	20.1	5.7	1.4	1.9	4.7	1.6	1.7
Cycle Q Clear(g_c), s	4.3	9.2	4.1	5.5	20.1	20.1	5.7	1.4	1.9	4.7	1.6	1.7
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	1135	506	124	581	586	139	680	576	125	665	564
V/C Ratio(X)	0.78	0.41	0.20	0.88	0.71	0.71	0.83	0.07	0.12	0.76	0.08	0.08
Avail Cap(c_a), veh/h	115	1145	511	124	581	586	139	680	576	125	665	564
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	24.0	22.2	43.6	36.0	36.0	40.9	18.7	10.8	41.1	19.2	19.2
Incr Delay (d2), s/veh	27.9	0.2	0.2	45.9	6.8	6.8	32.6	0.2	0.4	23.7	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.7	1.5	4.0	10.5	10.6	3.7	0.6	0.9	2.9	0.7	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	24.2	22.4	89.5	42.8	42.8	73.5	18.9	11.2	64.8	19.4	19.5
LnGrp LOS	E	C	C	F	D	D	E	B	B	E	B	B
Approach Vol, veh/h		651			933			228			190	
Approach Delay, s/veh		29.9			48.3			44.2			42.1	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	36.7	10.2	32.8	11.0	36.0	9.6	33.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.3	32.7	6.0	29.0	7.0	32.0	5.8	29.2
Max Q Clear Time (g_c+I1), s	6.7	3.9	7.5	11.2	7.7	3.7	6.3	22.1
Green Ext Time (p_c), s	0.0	0.4	0.0	3.0	0.0	0.4	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D



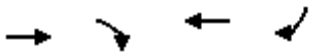
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	282	285	0	797	0	0	0	0	0	0	53
Future Volume (vph)	0	282	285	0	797	0	0	0	0	0	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.865
Flt Protected												
Satd. Flow (prot)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			310									193
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		475			758			535			509	
Travel Time (s)		8.1			12.9			12.2			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	307	310	0	866	0	0	0	0	0	0	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	307	310	0	866	0	0	0	0	0	0	58
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2							1
Detector Template		Thru	Right		Thru							Right
Leading Detector (ft)		100	20		100							20
Trailing Detector (ft)		0	0		0							0
Detector 1 Position(ft)		0	0		0							0
Detector 1 Size(ft)		6	20		6							20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex							Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0							0.0
Detector 1 Queue (s)		0.0	0.0		0.0							0.0
Detector 1 Delay (s)		0.0	0.0		0.0							0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Free		NA							Prot
Protected Phases		4			8							1
Permitted Phases			Free									
Detector Phase		4			8							1
Switch Phase												
Minimum Initial (s)		5.0			5.0							5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		22.5			22.5							9.5
Total Split (s)		63.0			63.0							27.0
Total Split (%)		70.0%			70.0%							30.0%
Maximum Green (s)		59.0			59.0							23.0
Yellow Time (s)		3.5			3.5							3.5
All-Red Time (s)		0.5			0.5							0.5
Lost Time Adjust (s)		0.0			0.0							0.0
Total Lost Time (s)		4.0			4.0							4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							3.0
Recall Mode		None			C-Max							None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		11.0			11.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)		79.2	90.0		79.2							5.5
Actuated g/C Ratio		0.88	1.00		0.88							0.06
v/c Ratio		0.19	0.20		0.28							0.21
Control Delay		0.4	0.8		1.4							1.7
Queue Delay		0.0	0.0		0.0							0.0
Total Delay		0.4	0.8		1.4							1.7
LOS		A	A		A							A
Approach Delay		0.6			1.4						1.7	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay: 1.1		Intersection LOS: A	
Intersection Capacity Utilization 32.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Shasta Dam Blvd/SR-151 (EW) & I-5 SB Off-Ramp (NS)

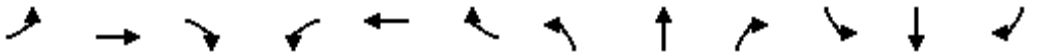




Lane Group	EBT	EBR	WBT	SBR
Lane Group Flow (vph)	307	310	866	58
v/c Ratio	0.19	0.20	0.28	0.21
Control Delay	0.4	0.8	1.4	1.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.4	0.8	1.4	1.7
Queue Length 50th (ft)	2	5	31	0
Queue Length 95th (ft)	m6	m15	41	0
Internal Link Dist (ft)	395		678	
Turn Bay Length (ft)				
Base Capacity (vph)	1639	1583	3114	555
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.20	0.28	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



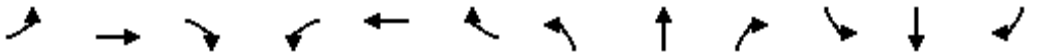
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↑↑							↱
Traffic Volume (veh/h)	0	282	285	0	797	0	0	0	0	0	0	53
Future Volume (veh/h)	0	282	285	0	797	0	0	0	0	0	0	53
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				0	0	1870
Adj Flow Rate, veh/h	0	307	0	0	866	0				0	0	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	0				0	0	2
Cap, veh/h	0	1226		0	2330	0				0	0	0
Arrive On Green	0.00	0.66	0.00	0.00	0.66	0.00				0.00	0.00	0.00
Sat Flow, veh/h	0	1870	1585	0	3741	0					0	
Grp Volume(v), veh/h	0	307	0	0	866	0					0.0	
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1777	0						
Q Serve(g_s), s	0.0	6.1	0.0	0.0	10.0	0.0						
Cycle Q Clear(g_c), s	0.0	6.1	0.0	0.0	10.0	0.0						
Prop In Lane	0.00		1.00	0.00		0.00						
Lane Grp Cap(c), veh/h	0	1226		0	2330	0						
V/C Ratio(X)	0.00	0.25		0.00	0.37	0.00						
Avail Cap(c_a), veh/h	0	1226		0	2330	0						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.00	0.90	0.00	0.00	1.00	0.00						
Uniform Delay (d), s/veh	0.0	6.4	0.0	0.0	7.1	0.0						
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.5	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.0	2.0	0.0	0.0	3.2	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.5	0.0	0.0	7.5	0.0						
LnGrp LOS	A	A		A	A	A						
Approach Vol, veh/h		307	A		866							
Approach Delay, s/veh		6.5			7.5							
Approach LOS		A			A							

Timer - Assigned Phs				4				8				
Phs Duration (G+Y+Rc), s				63.0				63.0				
Change Period (Y+Rc), s				4.0				4.0				
Max Green Setting (Gmax), s				59.0				59.0				
Max Q Clear Time (g_c+I1), s				8.1				12.0				
Green Ext Time (p_c), s				1.8				6.9				

Intersection Summary												
HCM 6th Ctrl Delay			7.2									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	119	6	18	101	56	15	6	88	34	3	58
Future Volume (vph)	92	119	6	18	101	56	15	6	88	34	3	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	345		90	120		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			80			90			65		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.860			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1863	1583	1770	1602	0	1770	1596	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1848	0	1770	1863	1583	1770	1602	0	1770	1596	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1395			1895			1288			1162	
Travel Time (s)		23.8			32.3			29.3			26.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	129	7	20	110	61	16	7	96	37	3	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	136	0	20	110	61	16	103	0	37	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.0%		ICU Level of Service A	
Analysis Period (min) 15			

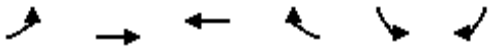
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	119	6	18	101	56	15	6	88	34	3	58
Future Vol, veh/h	92	119	6	18	101	56	15	6	88	34	3	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	345	-	90	120	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	129	7	20	110	61	16	7	96	37	3	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	136	0	0	547	544	133	534	486	110
Stage 1	-	-	-	-	-	-	333	333	-	150	150	-
Stage 2	-	-	-	-	-	-	214	211	-	384	336	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1406	-	-	1448	-	-	448	446	916	457	481	943
Stage 1	-	-	-	-	-	-	681	644	-	853	773	-
Stage 2	-	-	-	-	-	-	788	728	-	639	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1406	-	-	1448	-	-	389	409	916	378	441	943
Mov Cap-2 Maneuver	-	-	-	-	-	-	389	409	-	378	441	-
Stage 1	-	-	-	-	-	-	633	598	-	792	762	-
Stage 2	-	-	-	-	-	-	722	718	-	526	596	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	0.8	10.5	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	389	849	1406	-	-	1448	-	-	378	893
HCM Lane V/C Ratio	0.042	0.12	0.071	-	-	0.014	-	-	0.098	0.074
HCM Control Delay (s)	14.7	9.8	7.8	-	-	7.5	-	-	15.6	9.4
HCM Lane LOS	B	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.4	0.2	-	-	0	-	-	0.3	0.2

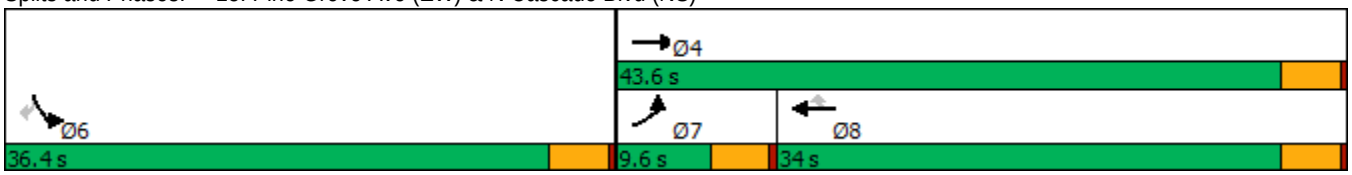


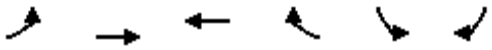
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	264	430	249	133	25
Future Volume (vph)	22	264	430	249	133	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275			0	110	0
Storage Lanes	1			1	1	1
Taper Length (ft)	135				110	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	*0.918				*0.918	
Satd. Flow (prot)	1661	3438	1810	1538	1661	1538
Flt Permitted	0.918				0.918	
Satd. Flow (perm)	1661	3438	1810	1538	1661	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				271		27
Link Speed (mph)		40	40		30	
Link Distance (ft)		609	338		516	
Travel Time (s)		10.4	5.8		11.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	24	287	467	271	145	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	287	467	271	145	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	34.0	34.0	36.0	36.0
Total Split (s)	9.6	43.6	34.0	34.0	36.4	36.4
Total Split (%)	12.0%	54.5%	42.5%	42.5%	45.5%	45.5%
Maximum Green (s)	5.6	39.6	30.0	30.0	32.4	32.4
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	Max	Max
Walk Time (s)			7.0	7.0	7.0	7.0
Flash Dont Walk (s)			23.0	23.0	25.0	25.0
Pedestrian Calls (#/hr)			5	5	5	5
Act Effct Green (s)	5.7	25.5	22.3	22.3	33.2	33.2
Actuated g/C Ratio	0.09	0.38	0.33	0.33	0.50	0.50
v/c Ratio	0.17	0.22	0.77	0.39	0.18	0.03
Control Delay	36.3	13.3	30.1	4.3	13.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	13.3	30.1	4.3	13.4	6.2
LOS	D	B	C	A	B	A
Approach Delay		15.1	20.6		12.2	
Approach LOS		B	C		B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 67			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 36.7%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

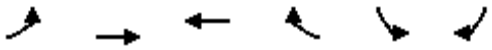
Splits and Phases: 15: Pine Grove Ave (EW) & N Cascade Blvd (NS)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	24	287	467	271	145	27
v/c Ratio	0.17	0.22	0.77	0.39	0.18	0.03
Control Delay	36.3	13.3	30.1	4.3	13.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	13.3	30.1	4.3	13.4	6.2
Queue Length 50th (ft)	9	39	150	0	27	0
Queue Length 95th (ft)	35	61	299	46	85	15
Internal Link Dist (ft)		529	258		436	
Turn Bay Length (ft)	275				110	
Base Capacity (vph)	142	2085	831	853	824	776
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.14	0.56	0.32	0.18	0.03

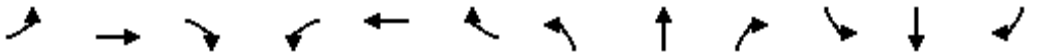
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	264	430	249	133	25
Future Volume (veh/h)	22	264	430	249	133	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	24	287	467	271	145	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	47	1380	568	481	840	747
Arrive On Green	0.03	0.40	0.31	0.31	0.48	0.48
Sat Flow, veh/h	1739	3561	1826	1547	1739	1547
Grp Volume(v), veh/h	24	287	467	271	145	27
Grp Sat Flow(s),veh/h/ln	1739	1735	1826	1547	1739	1547
Q Serve(g_s), s	0.9	3.6	15.9	9.8	3.2	0.6
Cycle Q Clear(g_c), s	0.9	3.6	15.9	9.8	3.2	0.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	47	1380	568	481	840	747
V/C Ratio(X)	0.51	0.21	0.82	0.56	0.17	0.04
Avail Cap(c_a), veh/h	145	2048	817	692	840	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.2	13.3	21.4	19.3	9.8	9.1
Incr Delay (d2), s/veh	8.5	0.1	4.5	1.0	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.2	6.7	3.3	1.2	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.7	13.3	25.9	20.3	10.2	9.2
LnGrp LOS	D	B	C	C	B	A
Approach Vol, veh/h		311	738		172	
Approach Delay, s/veh		15.4	23.9		10.1	
Approach LOS		B	C		B	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			30.7		36.4	5.8	24.9
Change Period (Y+Rc), s			4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s			39.6		32.4	5.6	30.0
Max Q Clear Time (g_c+I1), s			5.6		5.2	2.9	17.9
Green Ext Time (p_c), s			1.8		0.5	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	89	337	127	618	0	0	0	0	38	0	49
Future Volume (vph)	0	89	337	127	618	0	0	0	0	38	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	155		0	0		0	0		50
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		225			446			656			388	
Travel Time (s)		3.8			7.6			14.9			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	97	366	138	672	0	0	0	0	41	0	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	366	138	672	0	0	0	0	0	41	53
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

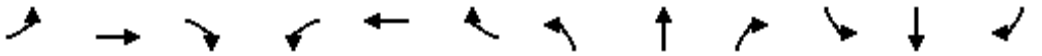
Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	89	337	127	618	0	0	0	0	38	0	49
Future Vol, veh/h	0	89	337	127	618	0	0	0	0	38	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	155	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	97	366	138	672	0	0	0	0	41	0	53

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	463	0	0			1228	1411	672
Stage 1	-	-	-	-	-	-			948	948	-
Stage 2	-	-	-	-	-	-			280	463	-
Critical Hdwy	-	-	-	4.15	-	-			6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-			5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.45	5.55	-
Follow-up Hdwy	-	-	-	2.245	-	-			3.545	4.045	3.345
Pot Cap-1 Maneuver	0	-	-	1083	-	0			194	136	451
Stage 1	0	-	-	-	-	0			372	335	-
Stage 2	0	-	-	-	-	0			760	559	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1083	-	-			169	0	451
Mov Cap-2 Maneuver	-	-	-	-	-	-			169	0	-
Stage 1	-	-	-	-	-	-			325	0	-
Stage 2	-	-	-	-	-	-			760	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.5	22.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1083	-	169	451
HCM Lane V/C Ratio	-	-	0.127	-	0.244	0.118
HCM Control Delay (s)	-	-	8.8	-	33.1	14
HCM Lane LOS	-	-	A	-	D	B
HCM 95th %tile Q(veh)	-	-	0.4	-	0.9	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	87	0	0	177	31	563	0	77	0	0	0
Future Volume (vph)	38	87	0	0	177	31	563	0	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	0		0	0		50	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		446			181			589			428	
Travel Time (s)		7.6			3.1			13.4			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	41	95	0	0	192	34	612	0	84	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	95	0	0	192	34	0	612	84	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	42.9

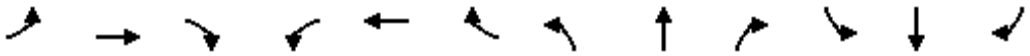
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	87	0	0	177	31	563	0	77	0	0	0
Future Vol, veh/h	38	87	0	0	177	31	563	0	77	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	-	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	41	95	0	0	192	34	612	0	84	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	226	0	-	-	-	0	386	403	95
Stage 1	-	-	-	-	-	-	177	177	-
Stage 2	-	-	-	-	-	-	209	226	-
Critical Hdwy	4.15	-	-	-	-	-	6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.45	5.55	-
Follow-up Hdwy	2.245	-	-	-	-	-	3.545	4.045	3.345
Pot Cap-1 Maneuver	1325	-	0	0	-	-	~ 611	532	953
Stage 1	-	-	0	0	-	-	846	747	-
Stage 2	-	-	0	0	-	-	819	711	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1325	-	-	-	-	-	~ 592	0	953
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 592	0	-
Stage 1	-	-	-	-	-	-	820	0	-
Stage 2	-	-	-	-	-	-	819	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.4	0	64.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	592	953	1325	-	-	-
HCM Lane V/C Ratio	1.034	0.088	0.031	-	-	-
HCM Control Delay (s)	72.4	9.1	7.8	-	-	-
HCM Lane LOS	F	A	A	-	-	-
HCM 95th %tile Q(veh)	16.4	0.3	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	35	70	3	31	1	106	19	4	1	15	108
Future Volume (vph)	73	35	70	3	31	1	106	19	4	1	15	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.947			0.996			0.996			0.882	
Flt Protected		0.980			0.996			0.961				
Satd. Flow (prot)	0	1729	0	0	1848	0	0	1783	0	0	1643	0
Flt Permitted		0.980			0.996			0.961				
Satd. Flow (perm)	0	1729	0	0	1848	0	0	1783	0	0	1643	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		181			285			397			451	
Travel Time (s)		3.1			4.9			9.0			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	38	76	3	34	1	115	21	4	1	16	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	0	0	38	0	0	140	0	0	134	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	73	35	70	3	31	1	106	19	4	1	15	108
Future Vol, veh/h	73	35	70	3	31	1	106	19	4	1	15	108
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	38	76	3	34	1	115	21	4	1	16	117

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	114	0	0	341	275	76	288	313	35
Stage 1	-	-	-	-	-	-	234	234	-	41	41	-
Stage 2	-	-	-	-	-	-	107	41	-	247	272	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1576	-	-	1475	-	-	613	632	985	664	602	1038
Stage 1	-	-	-	-	-	-	769	711	-	974	861	-
Stage 2	-	-	-	-	-	-	898	861	-	757	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1475	-	-	509	597	985	616	568	1038
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	597	-	616	568	-
Stage 1	-	-	-	-	-	-	727	673	-	921	859	-
Stage 2	-	-	-	-	-	-	780	859	-	691	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.6	14.3	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	528	1576	-	-	1475	-	-	939
HCM Lane V/C Ratio	0.266	0.05	-	-	0.002	-	-	0.144
HCM Control Delay (s)	14.3	7.4	0	-	7.4	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	1.1	0.2	-	-	0	-	-	0.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	355	60	105	549	1	121	0	66	1	1	0
Future Volume (vph)	0	355	60	105	549	1	121	0	66	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	80		0	0		55	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	70			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978							0.850			
Flt Protected				0.950			0.950				0.976	
Satd. Flow (prot)	1810	3362	0	1719	1810	0	1719	0	1538	0	1766	0
Flt Permitted				0.950			0.950				0.976	
Satd. Flow (perm)	1810	3362	0	1719	1810	0	1719	0	1538	0	1766	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		338			225			390			203	
Travel Time (s)		5.8			3.8			8.9			4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	386	65	114	597	1	132	0	72	1	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	451	0	114	598	0	132	0	72	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	17

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	355	60	105	549	1	121	0	66	1	1	0
Future Vol, veh/h	0	355	60	105	549	1	121	0	66	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	80	-	-	0	-	55	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	386	65	114	597	1	132	0	72	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	598	0	0	451	0	0	1245	-	226	1019	1277	598
Stage 1	-	-	-	-	-	-	419	-	-	826	826	-
Stage 2	-	-	-	-	-	-	826	-	-	193	451	-
Critical Hdwy	4.175	-	-	4.175	-	-	7.375	-	6.975	7.375	6.575	6.275
Critical Hdwy Stg 1	-	-	-	-	-	-	6.575	-	-	6.175	5.575	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.175	-	-	6.575	5.575	-
Follow-up Hdwy	2.2475	-	-	2.2475	-	-	3.5475	-	3.3475	3.5475	4.0475	3.3475
Pot Cap-1 Maneuver	959	-	-	1089	-	-	137	0	770	199	163	494
Stage 1	-	-	-	-	-	-	576	0	-	360	380	-
Stage 2	-	-	-	-	-	-	360	0	-	783	564	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	959	-	-	1089	-	-	~ 125	-	770	166	146	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 125	-	-	166	146	-
Stage 1	-	-	-	-	-	-	576	-	-	360	340	-
Stage 2	-	-	-	-	-	-	321	-	-	710	564	-

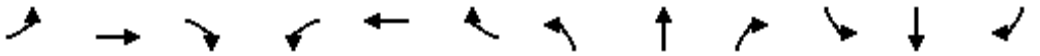
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.4	109	28.6
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	125	770	959	-	-	1089	-	-	155
HCM Lane V/C Ratio	1.052	0.093	-	-	-	0.105	-	-	0.014
HCM Control Delay (s)	162.9	10.2	0	-	-	8.7	-	-	28.6
HCM Lane LOS	F	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	7.4	0.3	0	-	-	0.4	-	-	0

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

GENERAL PLAN BUILDOUT 2040

WITH MITIGATION



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	2	5	34	7	19	3	12	8	13	20	1
Future Volume (vph)	1	2	5	34	7	19	3	12	8	13	20	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.916			0.957				0.850		0.996	
Flt Protected		0.994			0.973			0.991			0.981	
Satd. Flow (prot)	0	1696	0	0	1735	0	0	1846	1583	0	1820	0
Flt Permitted		0.994			0.973			0.991			0.981	
Satd. Flow (perm)	0	1696	0	0	1735	0	0	1846	1583	0	1820	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			3245			1275			1105	
Travel Time (s)		16.1			73.8			29.0			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	5	37	8	21	3	13	9	14	22	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	66	0	0	16	9	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

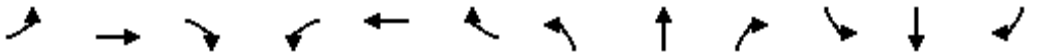
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	2	5	34	7	19	3	12	8	13	20	1
Future Vol, veh/h	1	2	5	34	7	19	3	12	8	13	20	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	5	37	8	21	3	13	9	14	22	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	6.8	7.3	7.3	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	0%	12%	57%	38%
Vol Thru, %	80%	0%	25%	12%	59%
Vol Right, %	0%	100%	62%	32%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	8	8	60	34
LT Vol	3	0	1	34	13
Through Vol	12	0	2	7	20
RT Vol	0	8	5	19	1
Lane Flow Rate	16	9	9	65	37
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.022	0.01	0.009	0.072	0.044
Departure Headway (Hd)	4.783	3.982	3.739	3.97	4.242
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	747	896	949	899	841
Service Time	2.52	1.718	1.792	2.011	2.28
HCM Lane V/C Ratio	0.021	0.01	0.009	0.072	0.044
HCM Control Delay	7.6	6.8	6.8	7.3	7.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0.2	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	83	5	6	77	13	6	1	12	14	1	3
Future Volume (vph)	2	83	5	6	77	13	6	1	12	14	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	300		0	0		0	0		50
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	60			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.979			0.916				0.850
Flt Protected	0.950			0.950				0.984			0.955	
Satd. Flow (prot)	1770	1848	0	1770	1824	0	0	1679	0	0	1779	1583
Flt Permitted	0.950			0.950				0.984			0.955	
Satd. Flow (perm)	1770	1848	0	1770	1824	0	0	1679	0	0	1779	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3245			555			514			456	
Travel Time (s)		73.8			12.6			11.7			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	90	5	7	84	14	7	1	13	15	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	95	0	7	98	0	0	21	0	0	16	3
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	83	5	6	77	13	6	1	12	14	1	3
Future Vol, veh/h	2	83	5	6	77	13	6	1	12	14	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	300	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	90	5	7	84	14	7	1	13	15	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	98	0	0	95	0	0	204	209	93	209	204	91
Stage 1	-	-	-	-	-	-	97	97	-	105	105	-
Stage 2	-	-	-	-	-	-	107	112	-	104	99	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1495	-	-	1499	-	-	754	688	964	748	692	967
Stage 1	-	-	-	-	-	-	910	815	-	901	808	-
Stage 2	-	-	-	-	-	-	898	803	-	902	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1495	-	-	1499	-	-	747	684	964	734	688	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	747	684	-	734	688	-
Stage 1	-	-	-	-	-	-	909	814	-	900	804	-
Stage 2	-	-	-	-	-	-	890	799	-	887	812	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	9.3	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	866	1495	-	-	1499	-	-	731	967
HCM Lane V/C Ratio	0.024	0.001	-	-	0.004	-	-	0.022	0.003
HCM Control Delay (s)	9.3	7.4	-	-	7.4	-	-	10	8.7
HCM Lane LOS	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	NBR2	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	258	49	156	101	18	0	129	0	0
Future Volume (vph)	258	49	156	101	18	0	129	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	165		55	0		187	0
Storage Lanes		1	1		1	1		0	0
Taper Length (ft)			70		70			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850		
Flt Protected			0.950		0.950				
Satd. Flow (prot)	1863	1583	1770	1863	1770	0	1583	0	0
Flt Permitted			0.950		0.950				
Satd. Flow (perm)	1863	1583	1770	1863	1770	0	1583	0	0
Link Speed (mph)	40			30	30			40	
Link Distance (ft)	572			398	787			427	
Travel Time (s)	9.8			9.0	17.9			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	280	53	170	110	20	0	140	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	280	53	170	110	20	0	140	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	0			12	12			12	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane					Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9	9	15	9
Sign Control	Free			Free	Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.6%		ICU Level of Service A	
Analysis Period (min) 15			

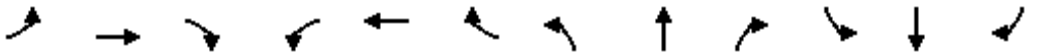
Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR	NWL	NWR
Lane Configurations								
Traffic Vol, veh/h	258	49	156	101	18	0	0	0
Future Vol, veh/h	258	49	156	101	18	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	-	-	None	-	-	-	None
Storage Length	-	50	165	-	55	0	-	-
Veh in Median Storage, #	0	-	-	0	0	-	16965	-
Grade, %	0	-	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	280	53	170	110	20	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	333	0	730	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	450	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1226	-	389	759
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1226	-	335	759
Mov Cap-2 Maneuver	-	-	-	-	335	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.1	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	335	759	-	-	1226	-
HCM Lane V/C Ratio	0.058	0.185	-	-	0.138	-
HCM Control Delay (s)	16.4	10.8	-	-	8.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.7	-	-	0.5	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	32	227	30	20	12	0	0	31	17
Future Volume (vph)	0	0	0	32	227	30	20	12	0	0	31	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			85			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.982						0.953	
Flt Protected				0.950				0.970				
Satd. Flow (prot)	0	0	0	1770	1829	0	0	1807	0	0	1775	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	0	0	0	1770	1829	0	0	1807	0	0	1775	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		398			761			118			339	
Travel Time (s)		6.8			13.0			2.7			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	35	247	33	22	13	0	0	34	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	35	280	0	0	35	0	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.8%		ICU Level of Service A	
Analysis Period (min) 15			

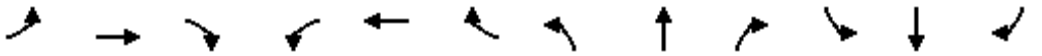
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	32	227	30	20	12	0	0	31	17
Future Vol, veh/h	0	0	0	32	227	30	20	12	0	0	31	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	70	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	35	247	33	22	13	0	0	34	18

Major/Minor	Major2			Minor1			Minor2			
Conflicting Flow All	0	0	0	360	350	-	-	334	264	
Stage 1	-	-	-	0	0	-	-	334	-	
Stage 2	-	-	-	360	350	-	-	0	-	
Critical Hdwy	4.12	-	-	7.12	6.52	-	-	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-	
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	
Follow-up Hdwy	2.218	-	-	3.518	4.018	-	-	4.018	3.318	
Pot Cap-1 Maneuver	-	-	-	596	574	0	0	586	775	
Stage 1	-	-	-	-	-	0	0	643	-	
Stage 2	-	-	-	658	633	0	0	-	-	
Platoon blocked, %		-	-							
Mov Cap-1 Maneuver	-	-	-	556	574	-	-	586	775	
Mov Cap-2 Maneuver	-	-	-	556	574	-	-	586	-	
Stage 1	-	-	-	-	-	-	-	643	-	
Stage 2	-	-	-	609	633	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s		11.8	11.1
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	563	-	-	-	641
HCM Lane V/C Ratio	0.062	-	-	-	0.081
HCM Control Delay (s)	11.8	-	-	-	11.1
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	315	18	0	0	0	0	21	75	37	24	0
Future Volume (vph)	9	315	18	0	0	0	0	21	75	37	24	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	140			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992						0.895				
Flt Protected	0.950										0.971	
Satd. Flow (prot)	1770	1848	0	0	0	0	0	1667	0	0	1809	0
Flt Permitted	0.950										0.971	
Satd. Flow (perm)	1770	1848	0	0	0	0	0	1667	0	0	1809	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		427			1196			599			118	
Travel Time (s)		9.7			27.2			13.6			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	342	20	0	0	0	0	23	82	40	26	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	362	0	0	0	0	0	105	0	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			16	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.3%		ICU Level of Service A	
Analysis Period (min) 15			

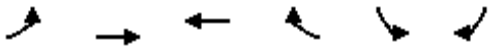
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	315	18	0	0	0	0	21	75	37	24	0
Future Vol, veh/h	9	315	18	0	0	0	0	21	75	37	24	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	342	20	0	0	0	0	23	82	40	26	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	372	352	425	382	-
Stage 1	-	-	-	-	372	-	0	0	-
Stage 2	-	-	-	-	0	-	425	382	-
Critical Hdwy	4.12	-	-	-	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	-	-	-	0	558	692	540	551	0
Stage 1	-	-	-	0	619	-	-	-	0
Stage 2	-	-	-	0	-	-	607	613	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	558	692	462	551	-
Mov Cap-2 Maneuver	-	-	-	-	558	-	462	551	-
Stage 1	-	-	-	-	619	-	-	-	-
Stage 2	-	-	-	-	-	-	516	613	-

Approach	EB	NB	SB
HCM Control Delay, s		11.5	13.4
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	657	-	-	-	493
HCM Lane V/C Ratio	0.159	-	-	-	0.134
HCM Control Delay (s)	11.5	-	-	-	13.4
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.5



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	565	316	29	42	11
Future Volume (vph)	11	565	316	29	42	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			100	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.972	
Flt Protected	0.950				0.962	
Satd. Flow (prot)	1770	1863	1863	1583	1742	0
Flt Permitted	0.950				0.962	
Satd. Flow (perm)	1770	1863	1863	1583	1742	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		763	1469		346	
Travel Time (s)		13.0	25.0		7.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	614	343	32	46	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	614	343	32	58	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	565	316	29	42	11
Future Vol, veh/h	11	565	316	29	42	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	614	343	32	46	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	375	0	-	0	981	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1183	-	-	-	277	700
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1183	-	-	-	274	700
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1183	-	-	-	431
HCM Lane V/C Ratio	0.01	-	-	-	0.134
HCM Control Delay (s)	8.1	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	13	20	2	8	1	12	4	1	1	19	4
Future Volume (vph)	11	13	20	2	8	1	12	4	1	1	19	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.938			0.989			0.992			0.979	
Flt Protected		0.988			0.992			0.965			0.998	
Satd. Flow (prot)	0	1726	0	0	1828	0	0	1783	0	0	1820	0
Flt Permitted		0.988			0.992			0.965			0.998	
Satd. Flow (perm)	0	1726	0	0	1828	0	0	1783	0	0	1820	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			558			692			322	
Travel Time (s)		11.2			12.7			15.7			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	14	22	2	9	1	13	4	1	1	21	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	12	0	0	18	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

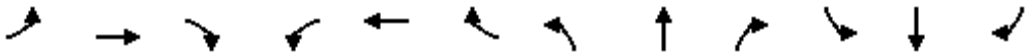
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	13	20	2	8	1	12	4	1	1	19	4
Future Vol, veh/h	11	13	20	2	8	1	12	4	1	1	19	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	14	22	2	9	1	13	4	1	1	21	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	7.1	7.3	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	71%	25%	18%	4%
Vol Thru, %	24%	30%	73%	79%
Vol Right, %	6%	45%	9%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	44	11	24
LT Vol	12	11	2	1
Through Vol	4	13	8	19
RT Vol	1	20	1	4
Lane Flow Rate	18	48	12	26
Geometry Grp	1	1	1	1
Degree of Util (X)	0.021	0.05	0.013	0.029
Departure Headway (Hd)	4.165	3.797	4.029	3.961
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	860	943	888	904
Service Time	2.188	1.82	2.056	1.983
HCM Lane V/C Ratio	0.021	0.051	0.014	0.029
HCM Control Delay	7.3	7	7.1	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	8	13	1	4	1	11	15	2	55	42	1
Future Volume (vph)	1	8	13	1	4	1	11	15	2	55	42	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.921			0.977			0.991			0.999	
Flt Protected		0.998			0.992			0.980			0.973	
Satd. Flow (prot)	0	1712	0	0	1805	0	0	1809	0	0	1811	0
Flt Permitted		0.998			0.992			0.980			0.973	
Satd. Flow (perm)	0	1712	0	0	1805	0	0	1809	0	0	1811	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		544			979			655			692	
Travel Time (s)		12.4			22.3			14.9			15.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	9	14	1	4	1	12	16	2	60	46	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	6	0	0	30	0	0	107	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

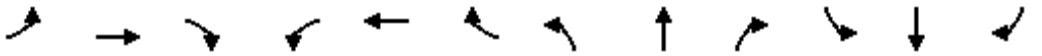
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	8	13	1	4	1	11	15	2	55	42	1
Future Vol, veh/h	1	8	13	1	4	1	11	15	2	55	42	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	9	14	1	4	1	12	16	2	60	46	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	7.2	7.3	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	5%	17%	56%
Vol Thru, %	54%	36%	67%	43%
Vol Right, %	7%	59%	17%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	22	6	98
LT Vol	11	1	1	55
Through Vol	15	8	4	42
RT Vol	2	13	1	1
Lane Flow Rate	30	24	7	107
Geometry Grp	1	1	1	1
Degree of Util (X)	0.035	0.025	0.007	0.122
Departure Headway (Hd)	4.103	3.831	4.123	4.116
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	871	924	858	872
Service Time	2.136	1.899	2.195	2.132
HCM Lane V/C Ratio	0.034	0.026	0.008	0.123
HCM Control Delay	7.3	7	7.2	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	663	24	7	358	16	0	0	46	0	0	20
Future Volume (vph)	12	663	24	7	358	16	0	0	46	0	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		75	50		184	0		25	0		25
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1469			1081			343			655	
Travel Time (s)		25.0			18.4			7.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	721	26	8	389	17	0	0	50	0	0	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	721	26	8	389	17	0	0	50	0	0	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.9%		ICU Level of Service A	
Analysis Period (min) 15			

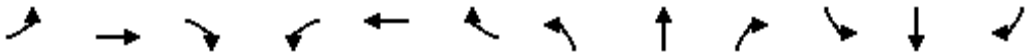
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	663	24	7	358	16	0	0	46	0	0	20
Future Vol, veh/h	12	663	24	7	358	16	0	0	46	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	75	50	-	184	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	721	26	8	389	17	0	0	50	0	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	406	0	0	747	0	0	-	-	721	-	-	389
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	1153	-	-	861	-	-	0	0	427	0	0	659
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1153	-	-	861	-	-	-	-	427	-	-	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	14.5	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	427	1153	-	-	861	-	-	659
HCM Lane V/C Ratio	0.117	0.011	-	-	0.009	-	-	0.033
HCM Control Delay (s)	14.5	8.2	-	-	9.2	-	-	10.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	5	1	11	1	3	1	71	6	1	89	18
Future Volume (vph)	11	5	1	11	1	3	1	71	6	1	89	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.975			0.989			0.977	
Flt Protected		0.968			0.964			0.999				
Satd. Flow (prot)	0	1789	0	0	1751	0	0	1840	0	0	1820	0
Flt Permitted		0.968			0.964			0.999				
Satd. Flow (perm)	0	1789	0	0	1751	0	0	1840	0	0	1820	0
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		359			384			333			367	
Travel Time (s)		8.2			8.7			9.1			10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	5	1	12	1	3	1	77	7	1	97	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	16	0	0	85	0	0	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.4%		ICU Level of Service A	
Analysis Period (min) 15			

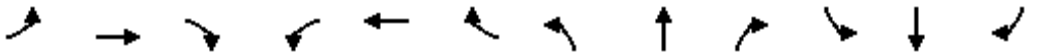
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	5	1	11	1	3	1	71	6	1	89	18
Future Vol, veh/h	11	5	1	11	1	3	1	71	6	1	89	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	5	1	12	1	3	1	77	7	1	97	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	194	195	107	195	202	81	117	0	0	84	0	0
Stage 1	109	109	-	83	83	-	-	-	-	-	-	-
Stage 2	85	86	-	112	119	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	765	700	947	764	694	979	1471	-	-	1513	-	-
Stage 1	896	805	-	925	826	-	-	-	-	-	-	-
Stage 2	923	824	-	893	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	760	699	947	757	693	979	1471	-	-	1513	-	-
Mov Cap-2 Maneuver	760	699	-	757	693	-	-	-	-	-	-	-
Stage 1	895	804	-	924	825	-	-	-	-	-	-	-
Stage 2	918	823	-	885	796	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.7	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1471	-	-	749	788	1513	-	-
HCM Lane V/C Ratio	0.001	-	-	0.025	0.021	0.001	-	-
HCM Control Delay (s)	7.4	0	-	9.9	9.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	754	4	10	313	79	0	0	13	21	10	88
Future Volume (vph)	1	754	4	10	313	79	0	0	13	21	10	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		100	130		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.970				0.865			0.865
Flt Protected	0.950			0.950							0.967	
Satd. Flow (prot)	1770	1863	1583	1770	3433	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950							0.967	
Satd. Flow (perm)	1770	1863	1583	1770	3433	0	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		640			390			248			333	
Travel Time (s)		10.9			6.6			5.6			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	820	4	11	340	86	0	0	14	23	11	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	820	4	11	426	0	0	0	14	0	34	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

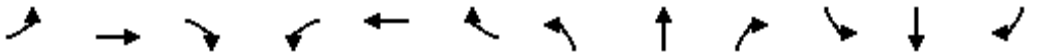
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	754	4	10	313	79	0	0	13	21	10	88
Future Vol, veh/h	1	754	4	10	313	79	0	0	13	21	10	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	130	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	820	4	11	340	86	0	0	14	23	11	96

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	426	0	0	824	0	0	-	-	820	1236	1231	213
Stage 1	-	-	-	-	-	-	-	-	-	405	405	-
Stage 2	-	-	-	-	-	-	-	-	-	831	826	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1132	-	-	804	-	-	0	0	374	142	177	793
Stage 1	-	-	-	-	-	-	0	0	-	594	598	-
Stage 2	-	-	-	-	-	-	0	0	-	363	386	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1132	-	-	804	-	-	-	-	374	135	174	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	135	174	-
Stage 1	-	-	-	-	-	-	-	-	-	593	590	-
Stage 2	-	-	-	-	-	-	-	-	-	349	386	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	15	10.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	374	1132	-	-	804	-	-	793
HCM Lane V/C Ratio	0.038	0.001	-	-	0.014	-	-	0.121
HCM Control Delay (s)	15	8.2	-	-	9.5	-	-	10.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

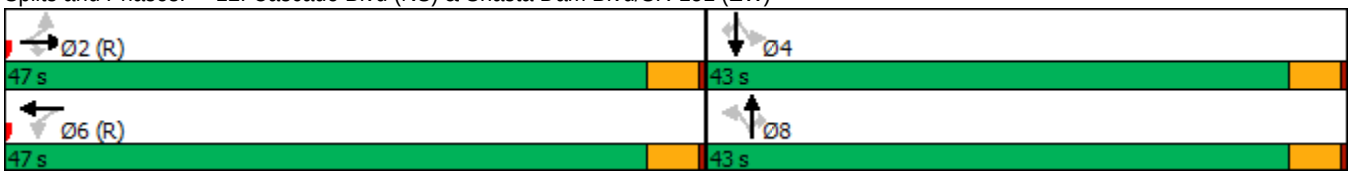


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	707	50	18	332	75	48	21	107	155	21	54
Future Volume (vph)	57	707	50	18	332	75	48	21	107	155	21	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		120	170		0	50		100	55		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			80			50			55		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972				0.850			0.850
Flt Protected	*0.918			*0.918			*0.918			*0.918		
Satd. Flow (prot)	1710	3539	1583	1710	3440	0	1710	1863	1583	1710	1863	1583
Flt Permitted	0.461			0.280			0.742			0.742		
Satd. Flow (perm)	859	3539	1583	522	3440	0	1382	1863	1583	1382	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			54		42				116			59
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		390			475			345			436	
Travel Time (s)		6.6			8.1			7.8			9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	768	54	20	361	82	52	23	116	168	23	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	768	54	20	443	0	52	23	116	168	23	59
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8		8	4		4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		22.5	22.5	22.5	36.0	36.0	36.0
Total Split (s)	47.0	47.0	47.0	47.0	47.0		43.0	43.0	43.0	43.0	43.0	43.0
Total Split (%)	52.2%	52.2%	52.2%	52.2%	52.2%		47.8%	47.8%	47.8%	47.8%	47.8%	47.8%
Maximum Green (s)	43.0	43.0	43.0	43.0	43.0		39.0	39.0	39.0	39.0	39.0	39.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0	22.0	22.0	22.0					25.0	25.0	25.0
Pedestrian Calls (#/hr)	5	5	5	5	5					5	5	5
Act Effct Green (s)	43.0	43.0	43.0	43.0	43.0		39.0	39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.43	0.43	0.43	0.43	0.43	0.43
v/c Ratio	0.15	0.45	0.07	0.08	0.27		0.09	0.03	0.15	0.28	0.03	0.08
Control Delay	14.5	16.8	4.0	13.1	12.2		15.6	14.9	3.7	18.1	14.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	16.8	4.0	13.1	12.2		15.6	14.9	3.7	18.1	14.9	4.6
LOS	B	B	A	B	B		B	B	A	B	B	A
Approach Delay		15.8			12.2			8.3			14.6	
Approach LOS		B			B			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

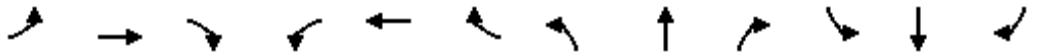
Splits and Phases: 12: Cascade Blvd (NS) & Shasta Dam Blvd/SR-151 (EW)





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	768	54	20	443	52	23	116	168	23	59
v/c Ratio	0.15	0.45	0.07	0.08	0.27	0.09	0.03	0.15	0.28	0.03	0.08
Control Delay	14.5	16.8	4.0	13.1	12.2	15.6	14.9	3.7	18.1	14.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	16.8	4.0	13.1	12.2	15.6	14.9	3.7	18.1	14.9	4.6
Queue Length 50th (ft)	19	147	0	6	66	17	7	0	60	7	0
Queue Length 95th (ft)	44	194	19	19	92	39	21	29	106	21	22
Internal Link Dist (ft)		310			395		265			356	
Turn Bay Length (ft)	180		120	170		50		100	55		110
Base Capacity (vph)	410	1690	784	249	1665	598	807	751	598	807	719
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.45	0.07	0.08	0.27	0.09	0.03	0.15	0.28	0.03	0.08

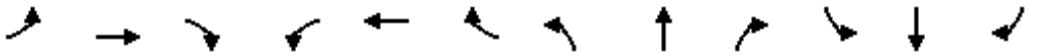
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	707	50	18	332	75	48	21	107	155	21	54
Future Volume (veh/h)	57	707	50	18	332	75	48	21	107	155	21	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	768	54	20	361	82	52	23	116	168	23	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	525	1698	757	302	1378	309	641	810	687	613	810	687
Arrive On Green	0.48	0.48	0.48	0.96	0.96	0.96	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	947	3554	1585	666	2883	647	1316	1870	1585	1250	1870	1585
Grp Volume(v), veh/h	62	768	54	20	221	222	52	23	116	168	23	59
Grp Sat Flow(s),veh/h/ln	947	1777	1585	666	1777	1754	1316	1870	1585	1250	1870	1585
Q Serve(g_s), s	3.3	13.0	1.7	1.0	0.7	0.7	2.1	0.6	4.0	8.0	0.6	2.0
Cycle Q Clear(g_c), s	4.0	13.0	1.7	13.9	0.7	0.7	2.8	0.6	4.0	8.7	0.6	2.0
Prop In Lane	1.00		1.00	1.00		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	525	1698	757	302	849	838	641	810	687	613	810	687
V/C Ratio(X)	0.12	0.45	0.07	0.07	0.26	0.27	0.08	0.03	0.17	0.27	0.03	0.09
Avail Cap(c_a), veh/h	525	1698	757	302	849	838	641	810	687	613	810	687
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	15.7	12.7	3.6	1.1	1.1	15.4	14.6	15.6	17.1	14.6	15.0
Incr Delay (d2), s/veh	0.5	0.9	0.2	0.4	0.7	0.8	0.2	0.1	0.5	1.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	5.0	0.6	0.1	0.4	0.4	0.7	0.3	1.5	2.4	0.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.0	16.5	12.9	4.1	1.8	1.8	15.7	14.7	16.1	18.2	14.7	15.3
LnGrp LOS	B	B	B	A	A	A	B	B	B	B	B	B
Approach Vol, veh/h		884			463			191			250	
Approach Delay, s/veh		16.1			1.9			15.8			17.2	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.0		43.0		47.0		43.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		43.0		39.0		43.0		39.0				
Max Q Clear Time (g_c+I1), s		15.0		10.7		15.9		6.0				
Green Ext Time (p_c), s		6.0		0.9		2.7		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			12.6									
HCM 6th LOS			B									



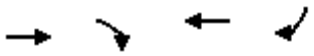
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	440	528	0	343	0	0	0	0	0	0	72
Future Volume (vph)	0	440	528	0	343	0	0	0	0	0	0	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.865
Flt Protected												
Satd. Flow (prot)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			574									519
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		475			758			535			509	
Travel Time (s)		8.1			12.9			12.2			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	478	574	0	373	0	0	0	0	0	0	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	478	574	0	373	0	0	0	0	0	0	78
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2							1
Detector Template		Thru	Right		Thru							Right
Leading Detector (ft)		100	20		100							20
Trailing Detector (ft)		0	0		0							0
Detector 1 Position(ft)		0	0		0							0
Detector 1 Size(ft)		6	20		6							20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex							Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0							0.0
Detector 1 Queue (s)		0.0	0.0		0.0							0.0
Detector 1 Delay (s)		0.0	0.0		0.0							0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Free		NA							Prot
Protected Phases		4			8							1
Permitted Phases			Free									
Detector Phase		4			8							1
Switch Phase												
Minimum Initial (s)		5.0			5.0							5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		22.5			22.5							9.5
Total Split (s)		33.0			33.0							12.0
Total Split (%)		73.3%			73.3%							26.7%
Maximum Green (s)		29.0			29.0							8.0
Yellow Time (s)		3.5			3.5							3.5
All-Red Time (s)		0.5			0.5							0.5
Lost Time Adjust (s)		0.0			0.0							0.0
Total Lost Time (s)		4.0			4.0							4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							3.0
Recall Mode		None			C-Max							None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		11.0			11.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)		36.9	45.0		36.9							5.5
Actuated g/C Ratio		0.82	1.00		0.82							0.12
v/c Ratio		0.31	0.36		0.13							0.12
Control Delay		1.5	1.7		1.9							0.4
Queue Delay		0.0	0.0		0.0							0.0
Total Delay		1.5	1.7		1.9							0.4
LOS		A	A		A							A
Approach Delay		1.6			1.9						0.4	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 6 (13%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 26.5%		ICU Level of Service A	
Analysis Period (min) 15			

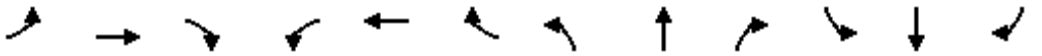
Splits and Phases: 13: Shasta Dam Blvd/SR-151 (EW) & I-5 SB Off-Ramp (NS)





Lane Group	EBT	EBR	WBT	SBR
Lane Group Flow (vph)	478	574	373	78
v/c Ratio	0.31	0.36	0.13	0.12
Control Delay	1.5	1.7	1.9	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.5	1.7	1.9	0.4
Queue Length 50th (ft)	27	27	11	0
Queue Length 95th (ft)	36	45	19	0
Internal Link Dist (ft)	395		678	
Turn Bay Length (ft)				
Base Capacity (vph)	1528	1583	2902	713
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.36	0.13	0.11

Intersection Summary



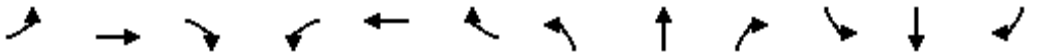
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	440	528	0	343	0	0	0	0	0	0	72
Future Volume (veh/h)	0	440	528	0	343	0	0	0	0	0	0	72
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				0	0	1870
Adj Flow Rate, veh/h	0	478	0	0	373	0				0	0	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	0				0	0	2
Cap, veh/h	0	1205		0	2290	0				0	0	0
Arrive On Green	0.00	1.00	0.00	0.00	0.64	0.00				0.00	0.00	0.00
Sat Flow, veh/h	0	1870	1585	0	3741	0					0	
Grp Volume(v), veh/h	0	478	0	0	373	0					0.0	
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1777	0						
Q Serve(g_s), s	0.0	0.0	0.0	0.0	1.9	0.0						
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	1.9	0.0						
Prop In Lane	0.00		1.00	0.00		0.00						
Lane Grp Cap(c), veh/h	0	1205		0	2290	0						
V/C Ratio(X)	0.00	0.40		0.00	0.16	0.00						
Avail Cap(c_a), veh/h	0	1205		0	2290	0						
HCM Platoon Ratio	1.00	1.67	1.67	1.00	1.00	1.00						
Upstream Filter(I)	0.00	0.93	0.00	0.00	1.00	0.00						
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	3.2	0.0						
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	0.3	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.2	0.0	0.0	3.3	0.0						
LnGrp LOS	A	A		A	A	A						
Approach Vol, veh/h		478	A		373							
Approach Delay, s/veh		0.2			3.3							
Approach LOS		A			A							

Timer - Assigned Phs				4				8				
Phs Duration (G+Y+Rc), s				33.0				33.0				
Change Period (Y+Rc), s				4.0				4.0				
Max Green Setting (Gmax), s				29.0				29.0				
Max Q Clear Time (g_c+I1), s				2.0				3.9				
Green Ext Time (p_c), s				2.9				2.3				

Intersection Summary	
HCM 6th Ctrl Delay	1.6
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	122	32	125	68	86	9	11	49	80	17	111
Future Volume (vph)	127	122	32	125	68	86	9	11	49	80	17	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	345		90	120		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			80			90			65		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969				0.850		0.878			0.869	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1805	0	1770	1863	1583	1770	1635	0	1770	1619	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1805	0	1770	1863	1583	1770	1635	0	1770	1619	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1395			1895			1288			1162	
Travel Time (s)		23.8			32.3			29.3			26.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	133	35	136	74	93	10	12	53	87	18	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	168	0	136	74	93	10	65	0	87	139	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.4%		ICU Level of Service A	
Analysis Period (min) 15			

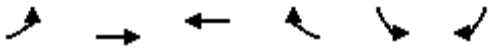
Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	122	32	125	68	86	9	11	49	80	17	111
Future Vol, veh/h	127	122	32	125	68	86	9	11	49	80	17	111
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	345	-	90	120	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	138	133	35	136	74	93	10	12	53	87	18	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	168	0	0	889	866	151	805	790	74
Stage 1	-	-	-	-	-	-	427	427	-	346	346	-
Stage 2	-	-	-	-	-	-	462	439	-	459	444	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	-	1410	-	-	264	291	895	301	322	988
Stage 1	-	-	-	-	-	-	606	585	-	670	635	-
Stage 2	-	-	-	-	-	-	580	578	-	582	575	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1410	-	-	188	237	895	234	262	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	237	-	234	262	-
Stage 1	-	-	-	-	-	-	547	528	-	604	574	-
Stage 2	-	-	-	-	-	-	445	523	-	483	519	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	3.5	13.5	18.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	188	593	1411	-	-	1410	-	-	234	722
HCM Lane V/C Ratio	0.052	0.11	0.098	-	-	0.096	-	-	0.372	0.193
HCM Control Delay (s)	25.2	11.8	7.8	-	-	7.8	-	-	29.2	11.2
HCM Lane LOS	D	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0.4	0.3	-	-	0.3	-	-	1.6	0.7



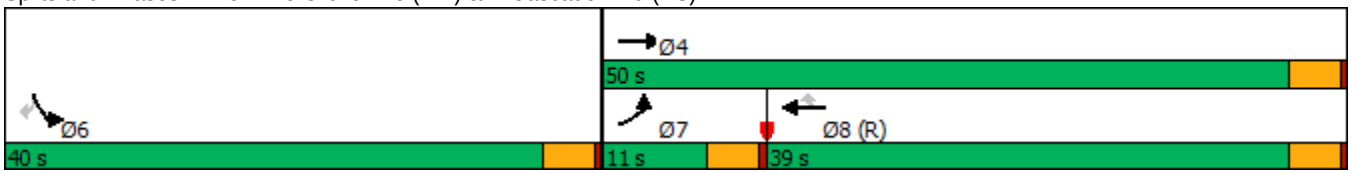
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	29	347	282	125	251	23
Future Volume (vph)	29	347	282	125	251	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275			0	110	0
Storage Lanes	1			1	1	1
Taper Length (ft)	135				110	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	*0.918				*0.918	
Satd. Flow (prot)	1661	3438	1810	1538	1661	1538
Flt Permitted	0.918				0.918	
Satd. Flow (perm)	1661	3438	1810	1538	1661	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				136		25
Link Speed (mph)		40	40		30	
Link Distance (ft)		609	338		516	
Travel Time (s)		10.4	5.8		11.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	32	377	307	136	273	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	377	307	136	273	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	

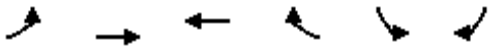
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	34.0	34.0	36.0	36.0
Total Split (s)	11.0	50.0	39.0	39.0	40.0	40.0
Total Split (%)	12.2%	55.6%	43.3%	43.3%	44.4%	44.4%
Maximum Green (s)	7.0	46.0	35.0	35.0	36.0	36.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	Max	Max
Walk Time (s)			7.0	7.0	7.0	7.0
Flash Dont Walk (s)			23.0	23.0	25.0	25.0
Pedestrian Calls (#/hr)			5	5	5	5
Act Effct Green (s)	6.5	46.0	39.4	39.4	36.0	36.0
Actuated g/C Ratio	0.07	0.51	0.44	0.44	0.40	0.40
v/c Ratio	0.27	0.21	0.39	0.18	0.41	0.04
Control Delay	45.0	12.5	9.5	3.9	21.8	6.9
Queue Delay	0.0	0.0	0.6	0.0	0.0	0.0
Total Delay	45.0	12.5	10.0	3.9	21.8	6.9
LOS	D	B	B	A	C	A
Approach Delay		15.0	8.2		20.5	
Approach LOS		B	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 34 (38%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 13.8		Intersection LOS: B	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

* User Entered Value

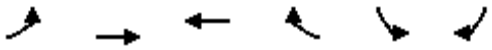
Splits and Phases: 15: Pine Grove Ave (EW) & N Cascade Blvd (NS)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	32	377	307	136	273	25
v/c Ratio	0.27	0.21	0.39	0.18	0.41	0.04
Control Delay	45.0	12.5	9.5	3.9	21.8	6.9
Queue Delay	0.0	0.0	0.6	0.0	0.0	0.0
Total Delay	45.0	12.5	10.0	3.9	21.8	6.9
Queue Length 50th (ft)	17	58	130	29	109	0
Queue Length 95th (ft)	46	85	209	45	176	15
Internal Link Dist (ft)		529	258		436	
Turn Bay Length (ft)	275				110	
Base Capacity (vph)	129	1757	792	749	664	630
Starvation Cap Reductn	0	0	202	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.21	0.52	0.18	0.41	0.04

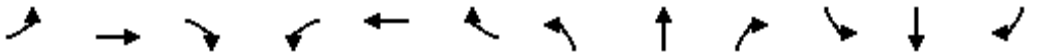
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	347	282	125	251	23
Future Volume (veh/h)	29	347	282	125	251	23
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	32	377	307	136	273	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	53	1609	710	602	696	619
Arrive On Green	0.03	0.46	0.13	0.13	0.40	0.40
Sat Flow, veh/h	1739	3561	1826	1547	1739	1547
Grp Volume(v), veh/h	32	377	307	136	273	25
Grp Sat Flow(s),veh/h/ln	1739	1735	1826	1547	1739	1547
Q Serve(g_s), s	1.6	5.9	14.0	7.1	10.1	0.9
Cycle Q Clear(g_c), s	1.6	5.9	14.0	7.1	10.1	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	53	1609	710	602	696	619
V/C Ratio(X)	0.60	0.23	0.43	0.23	0.39	0.04
Avail Cap(c_a), veh/h	135	1773	710	602	696	619
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	43.1	14.5	30.1	27.1	19.2	16.5
Incr Delay (d2), s/veh	10.4	0.1	1.7	0.8	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.1	7.1	2.8	4.2	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.5	14.6	31.8	27.9	20.9	16.6
LnGrp LOS	D	B	C	C	C	B
Approach Vol, veh/h		409	443		298	
Approach Delay, s/veh		17.6	30.6		20.5	
Approach LOS		B	C		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			45.8		40.0	6.8	39.0
Change Period (Y+Rc), s			4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s			46.0		36.0	7.0	35.0
Max Q Clear Time (g_c+I1), s			7.9		12.1	3.6	16.0
Green Ext Time (p_c), s			2.5		0.9	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	83	582	50	376	0	0	0	0	26	0	29
Future Volume (vph)	0	83	582	50	376	0	0	0	0	26	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	155		0	0		0	0		50
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		225			446			656			388	
Travel Time (s)		3.8			7.6			14.9			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	90	633	54	409	0	0	0	0	28	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	90	633	54	409	0	0	0	0	0	28	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

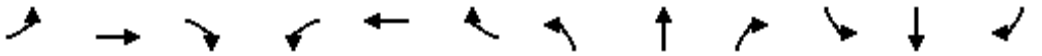
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	83	582	50	376	0	0	0	0	26	0	29
Future Vol, veh/h	0	83	582	50	376	0	0	0	0	26	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	155	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	90	633	54	409	0	0	0	0	28	0	32

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	723	0	0			924	1240	409
Stage 1	-	-	-	-	-	-			517	517	-
Stage 2	-	-	-	-	-	-			407	723	-
Critical Hdwy	-	-	-	4.15	-	-			6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-			5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.45	5.55	-
Follow-up Hdwy	-	-	-	2.245	-	-			3.545	4.045	3.345
Pot Cap-1 Maneuver	0	-	-	866	-	0			295	173	636
Stage 1	0	-	-	-	-	0			592	529	-
Stage 2	0	-	-	-	-	0			666	426	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	866	-	-			277	0	636
Mov Cap-2 Maneuver	-	-	-	-	-	-			277	0	-
Stage 1	-	-	-	-	-	-			555	0	-
Stage 2	-	-	-	-	-	-			666	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.1	15
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	866	-	277	636
HCM Lane V/C Ratio	-	-	0.063	-	0.102	0.05
HCM Control Delay (s)	-	-	9.4	-	19.5	11
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.3	0.2

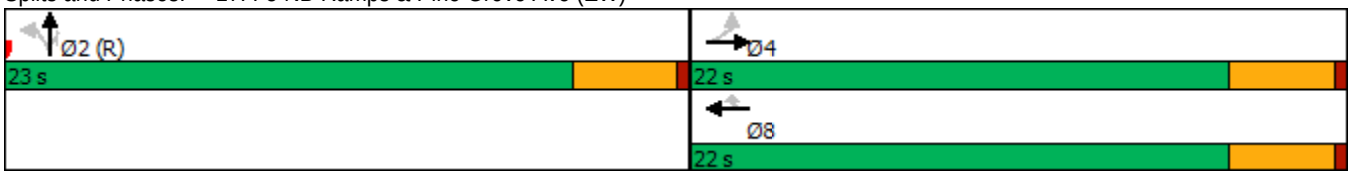


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	92	0	0	88	29	321	0	118	0	0	0
Future Volume (vph)	34	92	0	0	88	29	321	0	118	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	0		0	0		50	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Flt Permitted	0.727							0.950				
Satd. Flow (perm)	1316	1810	0	0	1810	1538	0	1719	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						32			128			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		446			181			589			428	
Travel Time (s)		7.6			3.1			13.4			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	37	100	0	0	96	32	349	0	128	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	100	0	0	96	32	0	349	128	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100			100	20	20	100	20			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Detector 1 Position(ft)	0	0			0	0	0	0	0			
Detector 1 Size(ft)	20	6			6	20	20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4					8	2		2			
Detector Phase	4	4			8	8	2	2	2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Minimum Split (s)	22.0	22.0			22.0	22.0	22.0	22.0	22.0			
Total Split (s)	22.0	22.0			22.0	22.0	23.0	23.0	23.0			
Total Split (%)	48.9%	48.9%			48.9%	48.9%	51.1%	51.1%	51.1%			
Maximum Green (s)	18.0	18.0			18.0	18.0	19.0	19.0	19.0			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5	0.5	0.5			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None			None	None	C-Max	C-Max	C-Max			
Act Effct Green (s)	7.9	7.9			7.9	7.9		34.7	34.7			
Actuated g/C Ratio	0.18	0.18			0.18	0.18		0.77	0.77			
v/c Ratio	0.16	0.32			0.30	0.11		0.26	0.11			
Control Delay	13.0	14.6			18.0	7.4		4.1	1.3			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	13.0	14.6			18.0	7.4		4.1	1.3			
LOS	B	B			B	A		A	A			
Approach Delay		14.1			15.4			3.3				
Approach LOS		B			B			A				

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 16 (36%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 17: I-5 NB Ramps & Pine Grove Ave (EW)

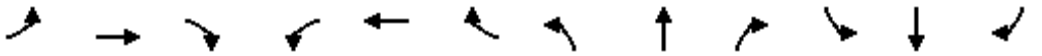




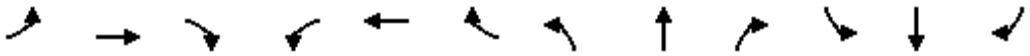
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	37	100	96	32	349	128
v/c Ratio	0.16	0.32	0.30	0.11	0.26	0.11
Control Delay	13.0	14.6	18.0	7.4	4.1	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	14.6	18.0	7.4	4.1	1.3
Queue Length 50th (ft)	10	29	22	0	30	0
Queue Length 95th (ft)	m21	50	48	15	73	13
Internal Link Dist (ft)		366	101		509	
Turn Bay Length (ft)	115					50
Base Capacity (vph)	526	724	724	634	1327	1216
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.14	0.13	0.05	0.26	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	92	0	0	88	29	321	0	118	0	0	0
Future Volume (veh/h)	34	92	0	0	88	29	321	0	118	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	37	100	0	0	96	32	349	0	128			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	255	230	0	0	230	195	1211	0	1078			
Arrive On Green	0.13	0.13	0.00	0.00	0.13	0.13	0.70	0.00	0.70			
Sat Flow, veh/h	1232	1826	0	0	1826	1547	1739	0	1547			
Grp Volume(v), veh/h	37	100	0	0	96	32	349	0	128			
Grp Sat Flow(s),veh/h/ln	1232	1826	0	0	1826	1547	1739	0	1547			
Q Serve(g_s), s	1.3	2.3	0.0	0.0	2.2	0.8	3.4	0.0	1.2			
Cycle Q Clear(g_c), s	3.5	2.3	0.0	0.0	2.2	0.8	3.4	0.0	1.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	255	230	0	0	230	195	1211	0	1078			
V/C Ratio(X)	0.14	0.44	0.00	0.00	0.42	0.16	0.29	0.00	0.12			
Avail Cap(c_a), veh/h	593	730	0	0	730	619	1211	0	1078			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.8	18.2	0.0	0.0	18.2	17.6	2.6	0.0	2.3			
Incr Delay (d2), s/veh	0.3	1.3	0.0	0.0	1.2	0.4	0.6	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	0.9	0.0	0.0	0.8	0.3	0.6	0.0	0.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.0	19.5	0.0	0.0	19.4	18.0	3.2	0.0	2.5			
LnGrp LOS	C	B	A	A	B	B	A	A	A			
Approach Vol, veh/h		137			128			477				
Approach Delay, s/veh		19.6			19.0			3.0				
Approach LOS		B			B			A				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		35.3		9.7				9.7				
Change Period (Y+Rc), s		4.0		4.0				4.0				
Max Green Setting (Gmax), s		19.0		18.0				18.0				
Max Q Clear Time (g_c+I1), s		5.4		5.5				4.2				
Green Ext Time (p_c), s		2.2		0.4				0.4				
Intersection Summary												
HCM 6th Ctrl Delay			8.8									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	31	88	2	33	1	37	2	11	1	13	58
Future Volume (vph)	88	31	88	2	33	1	37	2	11	1	13	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.943			0.997			0.970			0.891	
Flt Protected		0.979			0.997			0.964			0.999	
Satd. Flow (prot)	0	1720	0	0	1852	0	0	1742	0	0	1658	0
Flt Permitted		0.979			0.997			0.964			0.999	
Satd. Flow (perm)	0	1720	0	0	1852	0	0	1742	0	0	1658	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		181			285			397			451	
Travel Time (s)		3.1			4.9			9.0			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	34	96	2	36	1	40	2	12	1	14	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	226	0	0	39	0	0	54	0	0	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.7%		ICU Level of Service A	
Analysis Period (min) 15			

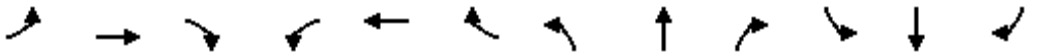
Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	88	31	88	2	33	1	37	2	11	1	13	58
Future Vol, veh/h	88	31	88	2	33	1	37	2	11	1	13	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	34	96	2	36	1	40	2	12	1	14	63

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	37	0	0	130	0	0	353	315	82	322	363	37
Stage 1	-	-	-	-	-	-	274	274	-	41	41	-
Stage 2	-	-	-	-	-	-	79	41	-	281	322	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1574	-	-	1455	-	-	602	601	978	631	565	1035
Stage 1	-	-	-	-	-	-	732	683	-	974	861	-
Stage 2	-	-	-	-	-	-	930	861	-	726	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1574	-	-	1455	-	-	526	561	978	589	527	1035
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	561	-	589	527	-
Stage 1	-	-	-	-	-	-	684	638	-	910	860	-
Stage 2	-	-	-	-	-	-	858	860	-	668	608	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	0.4	11.8	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	587	1574	-	-	1455	-	-	874
HCM Lane V/C Ratio	0.093	0.061	-	-	0.001	-	-	0.09
HCM Control Delay (s)	11.8	7.4	0	-	7.5	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	0.3

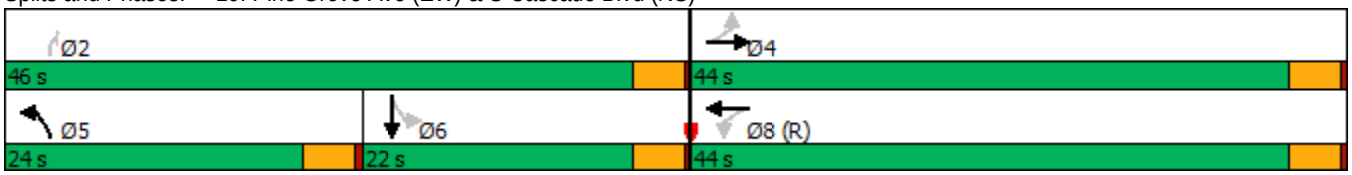


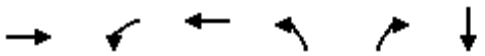
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	549	49	43	338	1	69	0	127	1	1	0
Future Volume (vph)	0	549	49	43	338	1	69	0	127	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	80		0	0		55	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	70			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988							0.850			
Flt Protected				0.950			0.950				0.976	
Satd. Flow (prot)	1810	3397	0	1719	1810	0	1719	0	1538	0	1766	0
Flt Permitted				0.327			0.950				0.976	
Satd. Flow (perm)	1810	3397	0	592	1810	0	1719	0	1538	0	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13							138			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		338			225			390			203	
Travel Time (s)		5.8			3.8			8.9			4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	597	53	47	367	1	75	0	138	1	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	650	0	47	368	0	75	0	138	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1		1	1	2	
Detector Template	Left	Thru		Left	Thru		Left		Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20		20	20	100	
Trailing Detector (ft)	0	0		0	0		0		0	0	0	
Detector 1 Position(ft)	0	0		0	0		0		0	0	0	
Detector 1 Size(ft)	20	6		20	6		20		20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm	NA		Perm	NA		Prot		Perm	Perm	NA	
Protected Phases		4			8		5				6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8					2	6		
Detector Phase	4	4		8	8		5		2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0		22.0	22.0	22.0	
Total Split (s)	44.0	44.0		44.0	44.0		24.0		46.0	22.0	22.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.7%		51.1%	24.4%	24.4%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0		42.0	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5		0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	None		C-Max	C-Max		Max		Max	Max	Max	
Act Effct Green (s)		40.0		40.0	40.0		20.0		42.0		18.0	
Actuated g/C Ratio		0.44		0.44	0.44		0.22		0.47		0.20	
v/c Ratio		0.43		0.18	0.46		0.20		0.17		0.01	
Control Delay		14.7		16.8	19.2		30.1		3.1		29.0	
Queue Delay		0.4		0.0	0.0		0.0		0.0		0.0	
Total Delay		15.1		16.8	19.2		30.1		3.1		29.0	
LOS		B		B	B		C		A		C	
Approach Delay		15.1			18.9			12.6			29.0	
Approach LOS		B			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 14 (16%), Referenced to phase 8:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

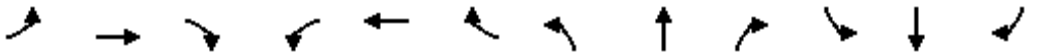
Splits and Phases: 19: Pine Grove Ave (EW) & S Cascade Blvd (NS)





Lane Group	EBT	WBL	WBT	NBL	NBR	SBT
Lane Group Flow (vph)	650	47	368	75	138	2
v/c Ratio	0.43	0.18	0.46	0.20	0.17	0.01
Control Delay	14.7	16.8	19.2	30.1	3.1	29.0
Queue Delay	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	16.8	19.2	30.1	3.1	29.0
Queue Length 50th (ft)	108	15	131	35	0	1
Queue Length 95th (ft)	141	36	213	73	30	7
Internal Link Dist (ft)	258		145			123
Turn Bay Length (ft)		80			55	
Base Capacity (vph)	1517	263	804	382	791	353
Starvation Cap Reductn	409	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.18	0.46	0.20	0.17	0.01

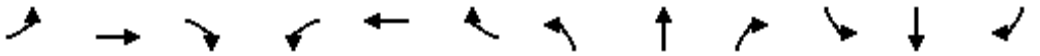
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	549	49	43	338	1	69	0	127	1	1	0
Future Volume (veh/h)	0	549	49	43	338	1	69	0	127	1	1	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826	1826	0	1826	1826	1826	1826
Adj Flow Rate, veh/h	0	597	53	47	367	1	75	0	138	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	0	5	5	5	5
Cap, veh/h	80	1433	127	323	809	2	386	0	0	60	0	0
Arrive On Green	0.00	0.44	0.44	0.89	0.89	0.89	0.22	0.00	0.00	0.20	0.20	0.00
Sat Flow, veh/h	990	3223	286	763	1820	5	1739	75		0	0	0
Grp Volume(v), veh/h	0	321	329	47	0	368	75	29.6		2	0	0
Grp Sat Flow(s),veh/h/ln	990	1735	1774	763	0	1825	1739	C		0	0	0
Q Serve(g_s), s	0.0	11.3	11.4	2.3	0.0	3.4	3.2			0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.3	11.4	13.7	0.0	3.4	3.2			0.1	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.00	1.00			0.50		0.00
Lane Grp Cap(c), veh/h	80	771	789	323	0	811	386			60	0	0
V/C Ratio(X)	0.00	0.42	0.42	0.15	0.00	0.45	0.19			0.03	0.00	0.00
Avail Cap(c_a), veh/h	80	771	789	323	0	811	386			60	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.96	0.96	1.00	0.00	1.00	1.00			1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	17.0	17.1	5.9	0.0	3.0	28.4			28.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.9	0.0	1.8	1.1			1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	4.3	0.2	0.0	1.2	1.4			0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.4	17.4	6.9	0.0	4.8	29.6			29.9	0.0	0.0
LnGrp LOS	A	B	B	A	A	A	C			C	A	A
Approach Vol, veh/h		650			415						2	
Approach Delay, s/veh		17.4			5.0						29.9	
Approach LOS		B			A						C	

Timer - Assigned Phs				4	5	6		8				
Phs Duration (G+Y+Rc), s				44.0	24.0	22.0		44.0				
Change Period (Y+Rc), s				4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s				40.0	20.0	18.0		40.0				
Max Q Clear Time (g_c+I1), s				13.4	5.2	2.1		15.7				
Green Ext Time (p_c), s				3.9	0.1	0.0		2.4				

Intersection Summary												
HCM 6th Ctrl Delay			13.7									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	8	42	8	22	6	23	11	27	39	1
Future Volume (vph)	1	4	8	42	8	22	6	23	11	27	39	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.913			0.959				0.850		0.998	
Flt Protected		0.996			0.972			0.989			0.980	
Satd. Flow (prot)	0	1694	0	0	1736	0	0	1842	1583	0	1822	0
Flt Permitted		0.996			0.972			0.989			0.980	
Satd. Flow (perm)	0	1694	0	0	1736	0	0	1842	1583	0	1822	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			3245			1275			1105	
Travel Time (s)		16.1			73.8			29.0			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	4	9	46	9	24	7	25	12	29	42	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	79	0	0	32	12	0	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

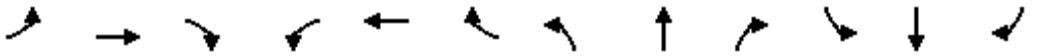
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	4	8	42	8	22	6	23	11	27	39	1
Future Vol, veh/h	1	4	8	42	8	22	6	23	11	27	39	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	4	9	46	9	24	7	25	12	29	42	1
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7	7.6	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	0%	8%	58%	40%
Vol Thru, %	79%	0%	31%	11%	58%
Vol Right, %	0%	100%	62%	31%	1%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	11	13	72	67
LT Vol	6	0	1	42	27
Through Vol	23	0	4	8	39
RT Vol	0	11	8	22	1
Lane Flow Rate	32	12	14	78	73
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.042	0.013	0.015	0.089	0.087
Departure Headway (Hd)	4.84	4.034	3.84	4.078	4.302
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	736	880	916	869	827
Service Time	2.595	1.79	1.93	2.151	2.358
HCM Lane V/C Ratio	0.043	0.014	0.015	0.09	0.088
HCM Control Delay	7.8	6.8	7	7.6	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0.3	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	83	13	19	94	8	4	1	14	10	1	1
Future Volume (vph)	3	83	13	19	94	8	4	1	14	10	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	300		0	0		0	0		50
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	60			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.988			0.899				0.850
Flt Protected	0.950			0.950				0.990			0.956	
Satd. Flow (prot)	1770	1825	0	1770	1840	0	0	1658	0	0	1781	1583
Flt Permitted	0.950			0.950				0.990			0.956	
Satd. Flow (perm)	1770	1825	0	1770	1840	0	0	1658	0	0	1781	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3245			555			514			456	
Travel Time (s)		73.8			12.6			11.7			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	90	14	21	102	9	4	1	15	11	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	104	0	21	111	0	0	20	0	0	12	1
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	83	13	19	94	8	4	1	14	10	1	1
Future Vol, veh/h	3	83	13	19	94	8	4	1	14	10	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	300	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	90	14	21	102	9	4	1	15	11	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	104	0	0	253	256	97	260	259	107
Stage 1	-	-	-	-	-	-	103	103	-	149	149	-
Stage 2	-	-	-	-	-	-	150	153	-	111	110	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1488	-	-	700	648	959	693	645	947
Stage 1	-	-	-	-	-	-	903	810	-	854	774	-
Stage 2	-	-	-	-	-	-	853	771	-	894	804	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1488	-	-	690	638	959	673	635	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	690	638	-	673	635	-
Stage 1	-	-	-	-	-	-	901	808	-	852	763	-
Stage 2	-	-	-	-	-	-	839	760	-	877	802	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.2	9.3	10.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	865	1479	-	-	1488	-	-	669	947
HCM Lane V/C Ratio	0.024	0.002	-	-	0.014	-	-	0.018	0.001
HCM Control Delay (s)	9.3	7.4	-	-	7.5	-	-	10.5	8.8
HCM Lane LOS	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	NBR2	NWL	NWR
Lane Configurations									
Traffic Volume (vph)	227	21	103	243	28	0	113	0	0
Future Volume (vph)	227	21	103	243	28	0	113	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		50	165		55	0		187	0
Storage Lanes		1	1		1	1		0	0
Taper Length (ft)			70		70			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.850		
Flt Protected			0.950		0.950				
Satd. Flow (prot)	1863	1583	1770	1863	1770	0	1583	0	0
Flt Permitted			0.950		0.950				
Satd. Flow (perm)	1863	1583	1770	1863	1770	0	1583	0	0
Link Speed (mph)	40			30	30			40	
Link Distance (ft)	572			398	787			427	
Travel Time (s)	9.8			9.0	17.9			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	23	112	264	30	0	123	0	0
Shared Lane Traffic (%)									
Lane Group Flow (vph)	247	23	112	264	30	0	123	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right	Right	Left	Right
Median Width(ft)	0			12	12			12	
Link Offset(ft)	0			0	0			0	
Crosswalk Width(ft)	16			16	16			16	
Two way Left Turn Lane					Yes				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9	9	15	9
Sign Control	Free			Free	Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.0%		ICU Level of Service A	
Analysis Period (min) 15			

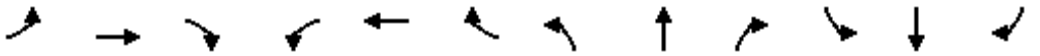
Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR	NWL	NWR
Lane Configurations								
Traffic Vol, veh/h	227	21	103	243	28	0	0	0
Future Vol, veh/h	227	21	103	243	28	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	-	-	None	-	-	-	None
Storage Length	-	50	165	-	55	0	-	-
Veh in Median Storage, #	0	-	-	0	0	-	16965	-
Grade, %	0	-	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	247	23	112	264	30	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	270	0	735	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1293	-	387	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	353	792
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	792	-	-	1293	-
HCM Lane V/C Ratio	0.086	0.155	-	-	0.087	-
HCM Control Delay (s)	16.2	10.4	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0.3	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	76	398	52	6	19	0	0	41	10
Future Volume (vph)	0	0	0	76	398	52	6	19	0	0	41	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			85			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.983						0.973	
Flt Protected				0.950				0.988				
Satd. Flow (prot)	0	0	0	1770	1831	0	0	1840	0	0	1812	0
Flt Permitted				0.950				0.988				
Satd. Flow (perm)	0	0	0	1770	1831	0	0	1840	0	0	1812	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		398			761			118			339	
Travel Time (s)		6.8			13.0			2.7			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	83	433	57	7	21	0	0	45	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	83	490	0	0	28	0	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.0%		ICU Level of Service A	
Analysis Period (min) 15			

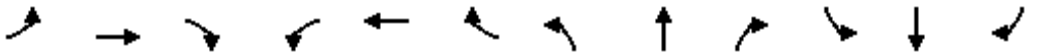
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	76	398	52	6	19	0	0	41	10
Future Vol, veh/h	0	0	0	76	398	52	6	19	0	0	41	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	70	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	83	433	57	7	21	0	0	45	11

Major/Minor	Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	656	656	-	-	628	462
Stage 1	-	-	-	0	0	-	-	628	-
Stage 2	-	-	-	656	656	-	-	0	-
Critical Hdwy	4.12	-	-	7.12	6.52	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	2.218	-	-	3.518	4.018	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	379	385	0	0	400	600
Stage 1	-	-	-	-	-	0	0	476	-
Stage 2	-	-	-	454	462	0	0	-	-
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	340	385	-	-	400	600
Mov Cap-2 Maneuver	-	-	-	340	385	-	-	400	-
Stage 1	-	-	-	-	-	-	-	476	-
Stage 2	-	-	-	404	462	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		15.4	14.7
HCM LOS		C	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	373	-	-	-	428
HCM Lane V/C Ratio	0.073	-	-	-	0.13
HCM Control Delay (s)	15.4	-	-	-	14.7
HCM Lane LOS	C	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	341	6	0	0	0	0	9	48	62	38	0
Future Volume (vph)	20	341	6	0	0	0	0	9	48	62	38	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	140			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997						0.887				
Flt Protected	0.950										0.970	
Satd. Flow (prot)	1770	1857	0	0	0	0	0	1652	0	0	1807	0
Flt Permitted	0.950										0.970	
Satd. Flow (perm)	1770	1857	0	0	0	0	0	1652	0	0	1807	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		427			1196			599			118	
Travel Time (s)		9.7			27.2			13.6			2.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	371	7	0	0	0	0	10	52	67	41	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	378	0	0	0	0	0	62	0	0	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			16	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.1%		ICU Level of Service A	
Analysis Period (min) 15			

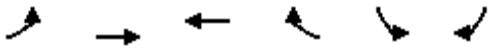
Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	341	6	0	0	0	0	9	48	62	38	0
Future Vol, veh/h	20	341	6	0	0	0	0	9	48	62	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	80	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	371	7	0	0	0	0	10	52	67	41	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	419	375	450	422	-
Stage 1	-	-	-	-	419	-	0	0	-
Stage 2	-	-	-	-	0	-	450	422	-
Critical Hdwy	4.12	-	-	-	6.52	6.22	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318	3.518	4.018	-
Pot Cap-1 Maneuver	-	-	-	0	525	671	519	523	0
Stage 1	-	-	-	0	590	-	-	-	0
Stage 2	-	-	-	0	-	-	589	588	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	525	671	472	523	-
Mov Cap-2 Maneuver	-	-	-	-	525	-	472	523	-
Stage 1	-	-	-	-	590	-	-	-	-
Stage 2	-	-	-	-	-	-	534	588	-

Approach	EB	NB	SB
HCM Control Delay, s		11.2	14.4
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	643	-	-	-	490
HCM Lane V/C Ratio	0.096	-	-	-	0.222
HCM Control Delay (s)	11.2	-	-	-	14.4
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	440	570	41	49	37
Future Volume (vph)	20	440	570	41	49	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			100	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	50				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1770	1863	1863	1583	1706	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1770	1863	1863	1583	1706	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		763	1469		346	
Travel Time (s)		13.0	25.0		7.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	478	620	45	53	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	478	620	45	93	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	440	570	41	49	37
Future Vol, veh/h	20	440	570	41	49	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	478	620	45	53	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	665	0	-	0	1142	620
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	924	-	-	-	222	488
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	924	-	-	-	217	488
Mov Cap-2 Maneuver	-	-	-	-	348	-
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	924	-	-	-	397
HCM Lane V/C Ratio	0.024	-	-	-	0.235
HCM Control Delay (s)	9	-	-	-	16.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	26	1	2	1	26	36	1	1	21	3
Future Volume (vph)	4	2	26	1	2	1	26	36	1	1	21	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.889			0.966			0.998			0.985	
Flt Protected		0.994			0.988			0.980			0.998	
Satd. Flow (prot)	0	1646	0	0	1778	0	0	1822	0	0	1831	0
Flt Permitted		0.994			0.988			0.980			0.998	
Satd. Flow (perm)	0	1646	0	0	1778	0	0	1822	0	0	1831	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		492			558			692			322	
Travel Time (s)		11.2			12.7			15.7			7.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2	28	1	2	1	28	39	1	1	23	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	4	0	0	68	0	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

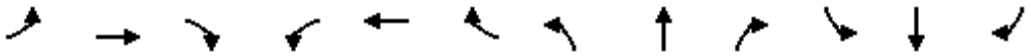
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	2	26	1	2	1	26	36	1	1	21	3
Future Vol, veh/h	4	2	26	1	2	1	26	36	1	1	21	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	2	28	1	2	1	28	39	1	1	23	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	6.8	7.1	7.5	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	12%	25%	4%
Vol Thru, %	57%	6%	50%	84%
Vol Right, %	2%	81%	25%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	63	32	4	25
LT Vol	26	4	1	1
Through Vol	36	2	2	21
RT Vol	1	26	1	3
Lane Flow Rate	68	35	4	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.078	0.035	0.005	0.03
Departure Headway (Hd)	4.096	3.64	4.026	3.99
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	877	977	884	897
Service Time	2.111	1.685	2.075	2.015
HCM Lane V/C Ratio	0.078	0.036	0.005	0.03
HCM Control Delay	7.5	6.8	7.1	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	8	6	2	4	6	18	61	3	42	45	1
Future Volume (vph)	4	8	6	2	4	6	18	61	3	42	45	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953			0.927			0.995			0.999	
Flt Protected		0.990			0.992			0.989			0.977	
Satd. Flow (prot)	0	1757	0	0	1713	0	0	1833	0	0	1818	0
Flt Permitted		0.990			0.992			0.989			0.977	
Satd. Flow (perm)	0	1757	0	0	1713	0	0	1833	0	0	1818	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		544			979			655			692	
Travel Time (s)		12.4			22.3			14.9			15.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	9	7	2	4	7	20	66	3	46	49	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	0	13	0	0	89	0	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

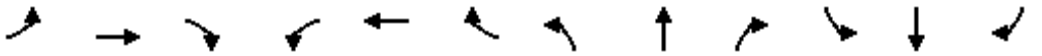
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	8	6	2	4	6	18	61	3	42	45	1
Future Vol, veh/h	4	8	6	2	4	6	18	61	3	42	45	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	9	7	2	4	7	20	66	3	46	49	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.6	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	22%	17%	48%
Vol Thru, %	74%	44%	33%	51%
Vol Right, %	4%	33%	50%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	82	18	12	88
LT Vol	18	4	2	42
Through Vol	61	8	4	45
RT Vol	3	6	6	1
Lane Flow Rate	89	20	13	96
Geometry Grp	1	1	1	1
Degree of Util (X)	0.101	0.022	0.014	0.11
Departure Headway (Hd)	4.085	4.106	3.999	4.146
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	875	858	880	863
Service Time	2.12	2.197	2.093	2.179
HCM Lane V/C Ratio	0.102	0.023	0.015	0.111
HCM Control Delay	7.6	7.3	7.2	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	496	34	13	620	66	0	0	39	0	0	12
Future Volume (vph)	20	496	34	13	620	66	0	0	39	0	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		75	50		184	0		25	0		25
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1469			1081			343			655	
Travel Time (s)		25.0			18.4			7.8			14.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	539	37	14	674	72	0	0	42	0	0	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	539	37	14	674	72	0	0	42	0	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.6%		ICU Level of Service A	
Analysis Period (min) 15			

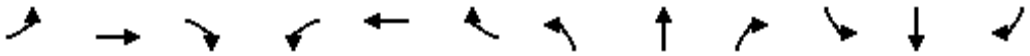
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	496	34	13	620	66	0	0	39	0	0	12
Future Vol, veh/h	20	496	34	13	620	66	0	0	39	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	75	50	-	184	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	539	37	14	674	72	0	0	42	0	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	746	0	0	576	0	0	-	-	539	-	-	674
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	-	-	3.318	-	-	3.318
Pot Cap-1 Maneuver	862	-	-	997	-	-	0	0	542	0	0	455
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	862	-	-	997	-	-	-	-	542	-	-	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	12.2	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	542	862	-	-	997	-	-	455
HCM Lane V/C Ratio	0.078	0.025	-	-	0.014	-	-	0.029
HCM Control Delay (s)	12.2	9.3	-	-	8.7	-	-	13.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	8	4	11	5	58	5	7	41	4
Future Volume (vph)	6	1	2	8	4	11	5	58	5	7	41	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.935			0.991			0.991	
Flt Protected		0.966			0.982			0.997			0.993	
Satd. Flow (prot)	0	1751	0	0	1710	0	0	1840	0	0	1833	0
Flt Permitted		0.966			0.982			0.997			0.993	
Satd. Flow (perm)	0	1751	0	0	1710	0	0	1840	0	0	1833	0
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		359			384			333			367	
Travel Time (s)		8.2			8.7			9.1			10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1	2	9	4	12	5	63	5	8	45	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	25	0	0	73	0	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.4%		ICU Level of Service A	
Analysis Period (min) 15			

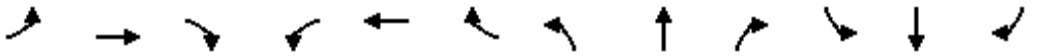
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	1	2	8	4	11	5	58	5	7	41	4
Future Vol, veh/h	6	1	2	8	4	11	5	58	5	7	41	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	2	9	4	12	5	63	5	8	45	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	147	141	47	141	141	66	49	0	0	68	0	0
Stage 1	63	63	-	76	76	-	-	-	-	-	-	-
Stage 2	84	78	-	65	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	821	750	1022	829	750	998	1558	-	-	1533	-	-
Stage 1	948	842	-	933	832	-	-	-	-	-	-	-
Stage 2	924	830	-	946	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	803	744	1022	822	744	998	1558	-	-	1533	-	-
Mov Cap-2 Maneuver	803	744	-	822	744	-	-	-	-	-	-	-
Stage 1	945	838	-	930	830	-	-	-	-	-	-	-
Stage 2	905	828	-	938	837	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	9.2	0.5	1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	835	880	1533	-	-
HCM Lane V/C Ratio	0.003	-	-	0.012	0.028	0.005	-	-
HCM Control Delay (s)	7.3	0	-	9.4	9.2	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	532	18	27	660	77	0	0	36	18	5	77
Future Volume (vph)	4	532	18	27	660	77	0	0	36	18	5	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		100	130		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.984				0.865			0.865
Flt Protected	0.950			0.950							0.962	
Satd. Flow (prot)	1770	1863	1583	1770	3483	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950							0.962	
Satd. Flow (perm)	1770	1863	1583	1770	3483	0	0	0	1611	0	0	1611
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		640			390			248			333	
Travel Time (s)		10.9			6.6			5.6			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	578	20	29	717	84	0	0	39	20	5	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	578	20	29	801	0	0	0	39	0	25	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

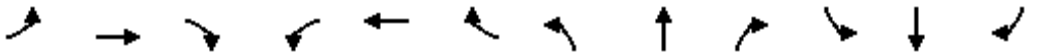
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	532	18	27	660	77	0	0	36	18	5	77
Future Vol, veh/h	4	532	18	27	660	77	0	0	36	18	5	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	100	130	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	578	20	29	717	84	0	0	39	20	5	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	801	0	0	598	0	0	-	-	578	1433	1423	401
Stage 1	-	-	-	-	-	-	-	-	-	817	817	-
Stage 2	-	-	-	-	-	-	-	-	-	616	606	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	820	-	-	977	-	-	0	0	515	103	135	600
Stage 1	-	-	-	-	-	-	0	0	-	337	389	-
Stage 2	-	-	-	-	-	-	0	0	-	477	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	820	-	-	977	-	-	-	-	515	93	130	600
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	93	130	-
Stage 1	-	-	-	-	-	-	-	-	-	335	377	-
Stage 2	-	-	-	-	-	-	-	-	-	439	484	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	12.6	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	515	820	-	-	977	-	-	600
HCM Lane V/C Ratio	0.076	0.005	-	-	0.03	-	-	0.139
HCM Control Delay (s)	12.6	9.4	-	-	8.8	-	-	12
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.5

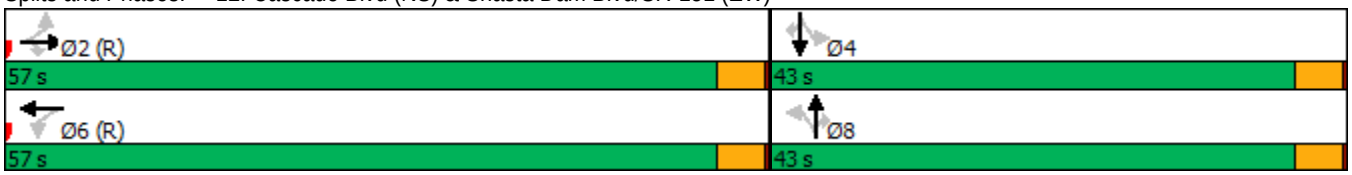


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	429	91	100	663	95	106	41	63	87	46	41
Future Volume (vph)	79	429	91	100	663	95	106	41	63	87	46	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	180		120	170		0	50		100	55		110
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			80			50			55		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981				0.850			0.850
Flt Protected	*0.918			*0.918			*0.918			*0.918		
Satd. Flow (prot)	1710	3539	1583	1710	3472	0	1710	1863	1583	1710	1863	1583
Flt Permitted	0.271			0.453			0.724			0.728		
Satd. Flow (perm)	505	3539	1583	844	3472	0	1349	1863	1583	1356	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99		24				68			45
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		390			475			345			436	
Travel Time (s)		6.6			8.1			7.8			9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	466	99	109	721	103	115	45	68	95	50	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	466	99	109	824	0	115	45	68	95	50	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8		8	4		4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		22.5	22.5	22.5	36.0	36.0	36.0
Total Split (s)	57.0	57.0	57.0	57.0	57.0		43.0	43.0	43.0	43.0	43.0	43.0
Total Split (%)	57.0%	57.0%	57.0%	57.0%	57.0%		43.0%	43.0%	43.0%	43.0%	43.0%	43.0%
Maximum Green (s)	53.0	53.0	53.0	53.0	53.0		39.0	39.0	39.0	39.0	39.0	39.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0					7.0	7.0	7.0
Flash Dont Walk (s)	22.0	22.0	22.0	22.0	22.0					25.0	25.0	25.0
Pedestrian Calls (#/hr)	5	5	5	5	5					5	5	5
Act Effct Green (s)	53.0	53.0	53.0	53.0	53.0		39.0	39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53		0.39	0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.32	0.25	0.11	0.24	0.45		0.22	0.06	0.10	0.18	0.07	0.07
Control Delay	17.5	13.2	2.8	13.4	13.6		21.8	19.5	5.3	21.2	19.6	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.2		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	13.2	2.8	13.4	13.8		21.8	19.5	5.3	21.2	19.6	6.2
LOS	B	B	A	B	B		C	B	A	C	B	A
Approach Delay		12.2			13.7			16.4			17.2	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			
* User Entered Value			

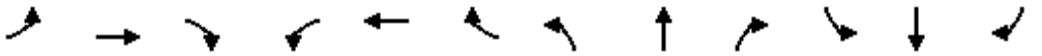
Splits and Phases: 12: Cascade Blvd (NS) & Shasta Dam Blvd/SR-151 (EW)





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	86	466	99	109	824	115	45	68	95	50	45
v/c Ratio	0.32	0.25	0.11	0.24	0.45	0.22	0.06	0.10	0.18	0.07	0.07
Control Delay	17.5	13.2	2.8	13.4	13.6	21.8	19.5	5.3	21.2	19.6	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	13.2	2.8	13.4	13.8	21.8	19.5	5.3	21.2	19.6	6.2
Queue Length 50th (ft)	30	80	0	36	147	48	18	0	39	20	0
Queue Length 95th (ft)	67	111	23	67	180	89	40	26	75	44	22
Internal Link Dist (ft)		310			395		265			356	
Turn Bay Length (ft)	180		120	170		50		100	55		110
Base Capacity (vph)	267	1875	885	447	1851	526	726	658	528	726	644
Starvation Cap Reductn	0	0	0	0	287	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.25	0.11	0.24	0.53	0.22	0.06	0.10	0.18	0.07	0.07

Intersection Summary



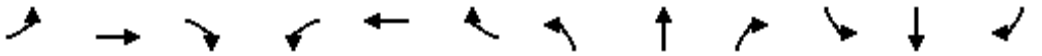
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	429	91	100	663	95	106	41	63	87	46	41
Future Volume (veh/h)	79	429	91	100	663	95	106	41	63	87	46	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	466	99	109	721	103	115	45	68	95	50	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	424	1883	840	460	1654	236	558	729	618	552	729	618
Arrive On Green	0.53	0.53	0.53	1.00	1.00	1.00	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	665	3554	1585	846	3121	446	1301	1870	1585	1280	1870	1585
Grp Volume(v), veh/h	86	466	99	109	410	414	115	45	68	95	50	45
Grp Sat Flow(s),veh/h/ln	665	1777	1585	846	1777	1790	1301	1870	1585	1280	1870	1585
Q Serve(g_s), s	7.0	7.1	3.1	2.3	0.0	0.0	6.1	1.5	2.7	5.0	1.7	1.8
Cycle Q Clear(g_c), s	7.0	7.1	3.1	9.4	0.0	0.0	7.8	1.5	2.7	6.5	1.7	1.8
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	424	1883	840	460	942	949	558	729	618	552	729	618
V/C Ratio(X)	0.20	0.25	0.12	0.24	0.44	0.44	0.21	0.06	0.11	0.17	0.07	0.07
Avail Cap(c_a), veh/h	424	1883	840	460	942	949	558	729	618	552	729	618
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	12.7	11.8	0.6	0.0	0.0	21.5	19.1	19.4	21.1	19.1	19.1
Incr Delay (d2), s/veh	1.1	0.3	0.3	1.2	1.4	1.4	0.8	0.2	0.4	0.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.7	1.1	0.1	0.4	0.4	2.0	0.7	1.1	1.6	0.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	13.0	12.1	1.8	1.4	1.4	22.4	19.2	19.8	21.8	19.3	19.4
LnGrp LOS	B	B	B	A	A	A	C	B	B	C	B	B
Approach Vol, veh/h		651			933			228			190	
Approach Delay, s/veh		13.0			1.5			21.0			20.6	
Approach LOS		B			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		57.0		43.0		57.0		43.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		53.0		39.0		53.0		39.0				
Max Q Clear Time (g_c+I1), s		9.1		8.5		11.4		9.8				
Green Ext Time (p_c), s		4.4		0.7		6.5		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			9.2									
HCM 6th LOS			A									

Notes

User approved changes to right turn type.



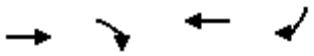
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	282	285	0	797	0	0	0	0	0	0	53
Future Volume (vph)	0	282	285	0	797	0	0	0	0	0	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.865
Flt Protected												
Satd. Flow (prot)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	1863	1583	0	3539	0	0	0	0	0	0	1611
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			310									196
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		475			758			535			509	
Travel Time (s)		8.1			12.9			12.2			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	307	310	0	866	0	0	0	0	0	0	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	307	310	0	866	0	0	0	0	0	0	58
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2							1
Detector Template		Thru	Right		Thru							Right
Leading Detector (ft)		100	20		100							20
Trailing Detector (ft)		0	0		0							0
Detector 1 Position(ft)		0	0		0							0
Detector 1 Size(ft)		6	20		6							20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex							Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0							0.0
Detector 1 Queue (s)		0.0	0.0		0.0							0.0
Detector 1 Delay (s)		0.0	0.0		0.0							0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Free		NA							Prot
Protected Phases		4			8							1
Permitted Phases			Free									
Detector Phase		4			8							1
Switch Phase												
Minimum Initial (s)		5.0			5.0							5.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		22.5			22.5							9.5
Total Split (s)		37.0			37.0							13.0
Total Split (%)		74.0%			74.0%							26.0%
Maximum Green (s)		33.0			33.0							9.0
Yellow Time (s)		3.5			3.5							3.5
All-Red Time (s)		0.5			0.5							0.5
Lost Time Adjust (s)		0.0			0.0							0.0
Total Lost Time (s)		4.0			4.0							4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0			3.0							3.0
Recall Mode		None			C-Max							None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		11.0			11.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)		41.9	50.0		41.9							5.5
Actuated g/C Ratio		0.84	1.00		0.84							0.11
v/c Ratio		0.20	0.20		0.29							0.17
Control Delay		1.4	0.5		2.1							1.0
Queue Delay		0.0	0.0		0.0							0.0
Total Delay		1.4	0.5		2.1							1.0
LOS		A	A		A							A
Approach Delay		0.9			2.1						1.0	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 50			
Offset: 12 (24%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 32.9%		ICU Level of Service A	
Analysis Period (min) 15			

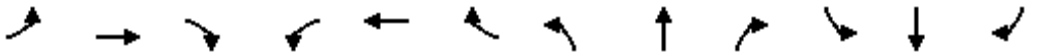
Splits and Phases: 13: Shasta Dam Blvd/SR-151 (EW) & I-5 SB Off-Ramp (NS)





Lane Group	EBT	EBR	WBT	SBR
Lane Group Flow (vph)	307	310	866	58
v/c Ratio	0.20	0.20	0.29	0.17
Control Delay	1.4	0.5	2.1	1.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.4	0.5	2.1	1.0
Queue Length 50th (ft)	16	2	31	0
Queue Length 95th (ft)	22	9	46	0
Internal Link Dist (ft)	395		678	
Turn Bay Length (ft)				
Base Capacity (vph)	1561	1583	2965	450
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.20	0.29	0.13

Intersection Summary



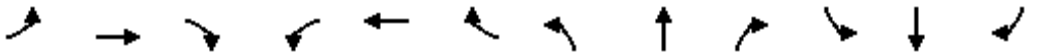
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	282	285	0	797	0	0	0	0	0	0	53
Future Volume (veh/h)	0	282	285	0	797	0	0	0	0	0	0	53
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				0	0	1870
Adj Flow Rate, veh/h	0	307	0	0	866	0				0	0	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	0				0	0	2
Cap, veh/h	0	1234		0	2345	0				0	0	0
Arrive On Green	0.00	1.00	0.00	0.00	0.66	0.00				0.00	0.00	0.00
Sat Flow, veh/h	0	1870	1585	0	3741	0					0	
Grp Volume(v), veh/h	0	307	0	0	866	0					0.0	
Grp Sat Flow(s),veh/h/ln	0	1870	1585	0	1777	0						
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.5	0.0						
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.5	0.0						
Prop In Lane	0.00		1.00	0.00		0.00						
Lane Grp Cap(c), veh/h	0	1234		0	2345	0						
V/C Ratio(X)	0.00	0.25		0.00	0.37	0.00						
Avail Cap(c_a), veh/h	0	1234		0	2345	0						
HCM Platoon Ratio	1.00	1.67	1.67	1.00	1.00	1.00						
Upstream Filter(I)	0.00	0.98	0.00	0.00	1.00	0.00						
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	3.8	0.0						
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.4	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.9	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.0	0.0	4.3	0.0						
LnGrp LOS	A	A		A	A	A						
Approach Vol, veh/h		307	A		866							
Approach Delay, s/veh		0.1			4.3							
Approach LOS		A			A							

Timer - Assigned Phs				4				8				
Phs Duration (G+Y+Rc), s				37.0				37.0				
Change Period (Y+Rc), s				4.0				4.0				
Max Green Setting (Gmax), s				33.0				33.0				
Max Q Clear Time (g_c+I1), s				2.0				7.5				
Green Ext Time (p_c), s				1.7				6.2				

Intersection Summary												
HCM 6th Ctrl Delay			3.2									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	119	6	18	101	56	15	6	88	34	3	58
Future Volume (vph)	92	119	6	18	101	56	15	6	88	34	3	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	345		90	120		0	100		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			80			90			65		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.860			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1863	1583	1770	1602	0	1770	1596	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1848	0	1770	1863	1583	1770	1602	0	1770	1596	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1395			1895			1288			1162	
Travel Time (s)		23.8			32.3			29.3			26.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	129	7	20	110	61	16	7	96	37	3	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	136	0	20	110	61	16	103	0	37	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.0%		ICU Level of Service A	
Analysis Period (min) 15			

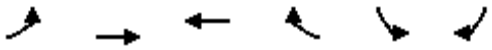
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	119	6	18	101	56	15	6	88	34	3	58
Future Vol, veh/h	92	119	6	18	101	56	15	6	88	34	3	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	-	345	-	90	120	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	129	7	20	110	61	16	7	96	37	3	63

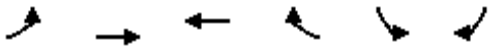
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	136	0	0	547	544	133	534	486	110
Stage 1	-	-	-	-	-	-	333	333	-	150	150	-
Stage 2	-	-	-	-	-	-	214	211	-	384	336	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1406	-	-	1448	-	-	448	446	916	457	481	943
Stage 1	-	-	-	-	-	-	681	644	-	853	773	-
Stage 2	-	-	-	-	-	-	788	728	-	639	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1406	-	-	1448	-	-	389	409	916	378	441	943
Mov Cap-2 Maneuver	-	-	-	-	-	-	389	409	-	378	441	-
Stage 1	-	-	-	-	-	-	633	598	-	792	762	-
Stage 2	-	-	-	-	-	-	722	718	-	526	596	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	0.8	10.5	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	389	849	1406	-	-	1448	-	-	378	893
HCM Lane V/C Ratio	0.042	0.12	0.071	-	-	0.014	-	-	0.098	0.074
HCM Control Delay (s)	14.7	9.8	7.8	-	-	7.5	-	-	15.6	9.4
HCM Lane LOS	B	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.4	0.2	-	-	0	-	-	0.3	0.2



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	264	430	249	133	25
Future Volume (vph)	22	264	430	249	133	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	275			0	110	0
Storage Lanes	1			1	1	1
Taper Length (ft)	135				110	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	*0.918				*0.918	
Satd. Flow (prot)	1661	3438	1810	1538	1661	1538
Flt Permitted	0.918				0.918	
Satd. Flow (perm)	1661	3438	1810	1538	1661	1538
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				271		27
Link Speed (mph)		40	40		30	
Link Distance (ft)		609	338		516	
Travel Time (s)		10.4	5.8		11.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	24	287	467	271	145	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	287	467	271	145	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	

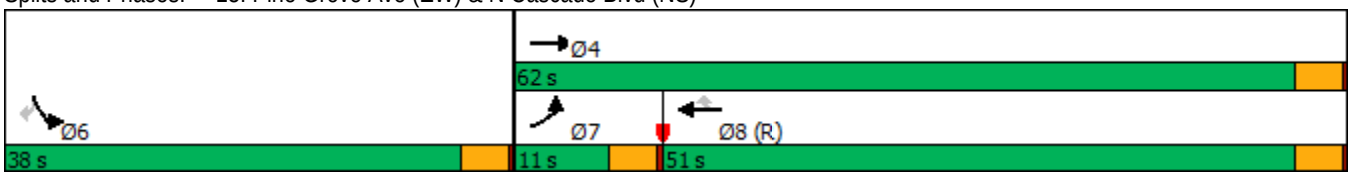


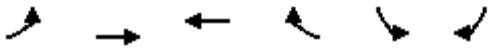
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases				8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	34.0	34.0	36.0	36.0
Total Split (s)	11.0	62.0	51.0	51.0	38.0	38.0
Total Split (%)	11.0%	62.0%	51.0%	51.0%	38.0%	38.0%
Maximum Green (s)	7.0	58.0	47.0	47.0	34.0	34.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	Max	Max
Walk Time (s)			7.0	7.0	7.0	7.0
Flash Dont Walk (s)			23.0	23.0	25.0	25.0
Pedestrian Calls (#/hr)			5	5	5	5
Act Effct Green (s)	6.5	58.0	53.6	53.6	34.0	34.0
Actuated g/C Ratio	0.06	0.58	0.54	0.54	0.34	0.34
v/c Ratio	0.22	0.14	0.48	0.29	0.26	0.05
Control Delay	49.3	9.9	8.4	2.7	25.4	8.6
Queue Delay	0.0	0.0	1.1	0.6	0.0	0.0
Total Delay	49.3	9.9	9.5	3.3	25.4	8.6
LOS	D	A	A	A	C	A
Approach Delay		12.9	7.2		22.8	
Approach LOS		B	A		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 78 (78%), Referenced to phase 8:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 36.7%		ICU Level of Service A	
Analysis Period (min) 15			

* User Entered Value

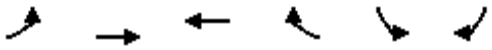
Splits and Phases: 15: Pine Grove Ave (EW) & N Cascade Blvd (NS)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	24	287	467	271	145	27
v/c Ratio	0.22	0.14	0.48	0.29	0.26	0.05
Control Delay	49.3	9.9	8.4	2.7	25.4	8.6
Queue Delay	0.0	0.0	1.1	0.6	0.0	0.0
Total Delay	49.3	9.9	9.5	3.3	25.4	8.6
Queue Length 50th (ft)	15	41	39	5	66	0
Queue Length 95th (ft)	41	61	289	56	116	18
Internal Link Dist (ft)		529	258		436	
Turn Bay Length (ft)	275				110	
Base Capacity (vph)	116	1994	969	949	564	540
Starvation Cap Reductn	0	0	283	375	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.14	0.68	0.47	0.26	0.05

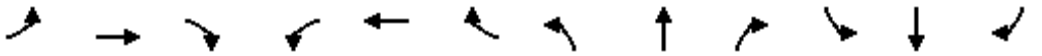
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	264	430	249	133	25
Future Volume (veh/h)	22	264	430	249	133	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	24	287	467	271	145	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5
Cap, veh/h	42	1854	858	727	591	526
Arrive On Green	0.02	0.53	0.47	0.47	0.34	0.34
Sat Flow, veh/h	1739	3561	1826	1547	1739	1547
Grp Volume(v), veh/h	24	287	467	271	145	27
Grp Sat Flow(s),veh/h/ln	1739	1735	1826	1547	1739	1547
Q Serve(g_s), s	1.4	4.2	18.2	11.3	6.0	1.2
Cycle Q Clear(g_c), s	1.4	4.2	18.2	11.3	6.0	1.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	42	1854	858	727	591	526
V/C Ratio(X)	0.57	0.15	0.54	0.37	0.25	0.05
Avail Cap(c_a), veh/h	122	2012	858	727	591	526
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.75	0.75	1.00	1.00
Uniform Delay (d), s/veh	48.3	11.8	18.9	17.0	23.8	22.2
Incr Delay (d2), s/veh	11.4	0.0	1.9	1.1	1.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.5	7.6	4.0	2.6	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.6	11.9	20.7	18.1	24.7	22.4
LnGrp LOS	E	B	C	B	C	C
Approach Vol, veh/h		311	738		172	
Approach Delay, s/veh		15.5	19.8		24.4	
Approach LOS		B	B		C	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			57.4		38.0	6.4	51.0
Change Period (Y+Rc), s			4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s			58.0		34.0	7.0	47.0
Max Q Clear Time (g_c+I1), s			6.2		8.0	3.4	20.2
Green Ext Time (p_c), s			1.9		0.5	0.0	3.9

Intersection Summary		
HCM 6th Ctrl Delay	19.3	
HCM 6th LOS	B	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	89	337	127	618	0	0	0	0	38	0	49
Future Volume (vph)	0	89	337	127	618	0	0	0	0	38	0	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	155		0	0		0	0		50
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Flt Permitted				0.950							0.950	
Satd. Flow (perm)	0	1810	1538	1719	1810	0	0	0	0	0	1719	1538
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		225			446			656			388	
Travel Time (s)		3.8			7.6			14.9			8.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	97	366	138	672	0	0	0	0	41	0	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	366	138	672	0	0	0	0	0	41	53
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

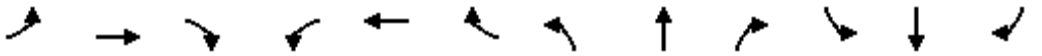
Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	89	337	127	618	0	0	0	0	38	0	49
Future Vol, veh/h	0	89	337	127	618	0	0	0	0	38	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	155	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	0	97	366	138	672	0	0	0	0	41	0	53

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	463	0	0			1228	1411	672
Stage 1	-	-	-	-	-	-			948	948	-
Stage 2	-	-	-	-	-	-			280	463	-
Critical Hdwy	-	-	-	4.15	-	-			6.45	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-			5.45	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.45	5.55	-
Follow-up Hdwy	-	-	-	2.245	-	-			3.545	4.045	3.345
Pot Cap-1 Maneuver	0	-	-	1083	-	0			194	136	451
Stage 1	0	-	-	-	-	0			372	335	-
Stage 2	0	-	-	-	-	0			760	559	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1083	-	-			169	0	451
Mov Cap-2 Maneuver	-	-	-	-	-	-			169	0	-
Stage 1	-	-	-	-	-	-			325	0	-
Stage 2	-	-	-	-	-	-			760	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.5	22.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1083	-	169	451
HCM Lane V/C Ratio	-	-	0.127	-	0.244	0.118
HCM Control Delay (s)	-	-	8.8	-	33.1	14
HCM Lane LOS	-	-	A	-	D	B
HCM 95th %tile Q(veh)	-	-	0.4	-	0.9	0.4

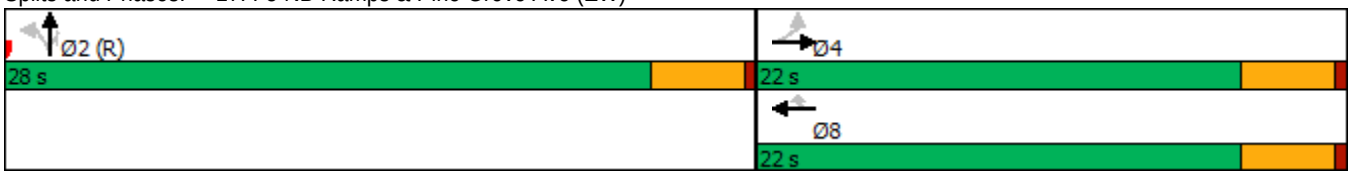


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	87	0	0	177	31	563	0	77	0	0	0
Future Volume (vph)	38	87	0	0	177	31	563	0	77	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	0		0	0		50	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1719	1810	0	0	1810	1538	0	1719	1538	0	0	0
Flt Permitted	0.578							0.950				
Satd. Flow (perm)	1046	1810	0	0	1810	1538	0	1719	1538	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						34			57			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		446			181			589			428	
Travel Time (s)		7.6			3.1			13.4			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	41	95	0	0	192	34	612	0	84	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	95	0	0	192	34	0	612	84	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100			100	20	20	100	20			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Detector 1 Position(ft)	0	0			0	0	0	0	0			
Detector 1 Size(ft)	20	6			6	20	20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4					8	2		2			
Detector Phase	4	4			8	8	2	2	2			
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0	5.0	5.0	5.0			
Minimum Split (s)	22.0	22.0			22.0	22.0	22.0	22.0	22.0			
Total Split (s)	22.0	22.0			22.0	22.0	28.0	28.0	28.0			
Total Split (%)	44.0%	44.0%			44.0%	44.0%	56.0%	56.0%	56.0%			
Maximum Green (s)	18.0	18.0			18.0	18.0	24.0	24.0	24.0			
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5	0.5	0.5			
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None			None	None	C-Max	C-Max	C-Max			
Act Effct Green (s)	10.4	10.4			10.6	10.6		34.3	34.3			
Actuated g/C Ratio	0.21	0.21			0.21	0.21		0.69	0.69			
v/c Ratio	0.19	0.25			0.50	0.10		0.52	0.08			
Control Delay	14.8	15.4			21.3	6.6		8.0	2.6			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay	14.8	15.4			21.3	6.6		8.0	2.6			
LOS	B	B			C	A		A	A			
Approach Delay		15.2			19.1			7.4				
Approach LOS		B			B			A				

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 50			
Offset: 32 (64%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

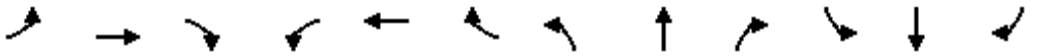
Splits and Phases: 17: I-5 NB Ramps & Pine Grove Ave (EW)



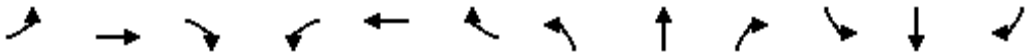


Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	41	95	192	34	612	84
v/c Ratio	0.19	0.25	0.50	0.10	0.52	0.08
Control Delay	14.8	15.4	21.3	6.6	8.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	15.4	21.3	6.6	8.0	2.6
Queue Length 50th (ft)	12	29	50	0	84	2
Queue Length 95th (ft)	25	45	88	15	199	17
Internal Link Dist (ft)		366	101		509	
Turn Bay Length (ft)	115					50
Base Capacity (vph)	376	651	651	575	1180	1074
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.15	0.29	0.06	0.52	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	87	0	0	177	31	563	0	77	0	0	0
Future Volume (veh/h)	38	87	0	0	177	31	563	0	77	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	41	95	0	0	192	34	612	0	84			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	235	323	0	0	323	274	1153	0	1026			
Arrive On Green	0.18	0.18	0.00	0.00	0.18	0.18	0.66	0.00	0.66			
Sat Flow, veh/h	1127	1826	0	0	1826	1547	1739	0	1547			
Grp Volume(v), veh/h	41	95	0	0	192	34	612	0	84			
Grp Sat Flow(s),veh/h/ln	1127	1826	0	0	1826	1547	1739	0	1547			
Q Serve(g_s), s	1.7	2.3	0.0	0.0	4.8	0.9	9.2	0.0	1.0			
Cycle Q Clear(g_c), s	6.6	2.3	0.0	0.0	4.8	0.9	9.2	0.0	1.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	235	323	0	0	323	274	1153	0	1026			
V/C Ratio(X)	0.17	0.29	0.00	0.00	0.59	0.12	0.53	0.00	0.08			
Avail Cap(c_a), veh/h	441	657	0	0	657	557	1153	0	1026			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.9	17.9	0.0	0.0	18.9	17.3	4.4	0.0	3.0			
Incr Delay (d2), s/veh	0.4	0.5	0.0	0.0	1.7	0.2	1.8	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.4	0.9	0.0	0.0	1.9	0.3	2.3	0.0	0.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	18.4	0.0	0.0	20.7	17.5	6.1	0.0	3.2			
LnGrp LOS	C	B	A	A	C	B	A	A	A			
Approach Vol, veh/h		136			226			696				
Approach Delay, s/veh		19.5			20.2			5.8				
Approach LOS		B			C			A				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		37.1		12.9				12.9				
Change Period (Y+Rc), s		4.0		4.0				4.0				
Max Green Setting (Gmax), s		24.0		18.0				18.0				
Max Q Clear Time (g_c+I1), s		11.2		8.6				6.8				
Green Ext Time (p_c), s		3.8		0.3				0.8				
Intersection Summary												
HCM 6th Ctrl Delay			10.6									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	35	70	3	31	1	106	19	4	1	15	108
Future Volume (vph)	73	35	70	3	31	1	106	19	4	1	15	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.947			0.996			0.996			0.882	
Flt Protected		0.980			0.996			0.961				
Satd. Flow (prot)	0	1729	0	0	1848	0	0	1783	0	0	1643	0
Flt Permitted		0.980			0.996			0.961				
Satd. Flow (perm)	0	1729	0	0	1848	0	0	1783	0	0	1643	0
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		181			285			397			451	
Travel Time (s)		3.1			4.9			9.0			10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	38	76	3	34	1	115	21	4	1	16	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	0	0	38	0	0	140	0	0	134	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.5%		ICU Level of Service A	
Analysis Period (min) 15			

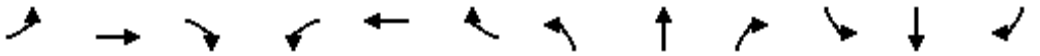
Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	73	35	70	3	31	1	106	19	4	1	15	108
Future Vol, veh/h	73	35	70	3	31	1	106	19	4	1	15	108
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	38	76	3	34	1	115	21	4	1	16	117

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	114	0	0	341	275	76	288	313	35
Stage 1	-	-	-	-	-	-	234	234	-	41	41	-
Stage 2	-	-	-	-	-	-	107	41	-	247	272	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1576	-	-	1475	-	-	613	632	985	664	602	1038
Stage 1	-	-	-	-	-	-	769	711	-	974	861	-
Stage 2	-	-	-	-	-	-	898	861	-	757	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1576	-	-	1475	-	-	509	597	985	616	568	1038
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	597	-	616	568	-
Stage 1	-	-	-	-	-	-	727	673	-	921	859	-
Stage 2	-	-	-	-	-	-	780	859	-	691	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.6	14.3	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	528	1576	-	-	1475	-	-	939
HCM Lane V/C Ratio	0.266	0.05	-	-	0.002	-	-	0.144
HCM Control Delay (s)	14.3	7.4	0	-	7.4	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	1.1	0.2	-	-	0	-	-	0.5

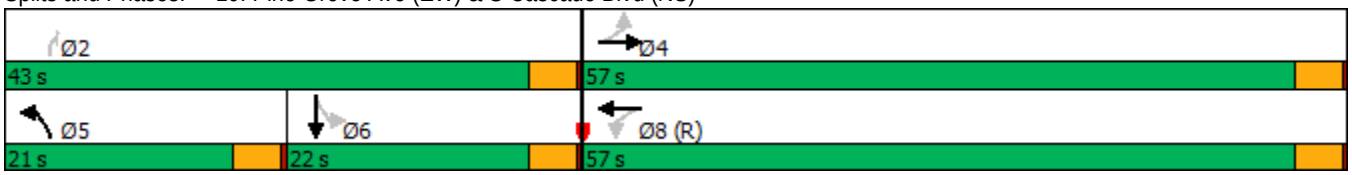


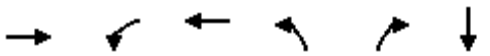
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	355	60	105	549	1	121	0	66	1	1	0
Future Volume (vph)	0	355	60	105	549	1	121	0	66	1	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	80		0	0		55	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	70			70			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978							0.850			
Flt Protected				0.950			0.950				0.976	
Satd. Flow (prot)	1810	3362	0	1719	1810	0	1719	0	1538	0	1766	0
Flt Permitted				0.462			0.950				0.976	
Satd. Flow (perm)	1810	3362	0	836	1810	0	1719	0	1538	0	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29							72			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		338			225			390			203	
Travel Time (s)		5.8			3.8			8.9			4.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	386	65	114	597	1	132	0	72	1	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	451	0	114	598	0	132	0	72	0	2	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1		1	1	2	
Detector Template	Left	Thru		Left	Thru		Left		Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20		20	20	100	
Trailing Detector (ft)	0	0		0	0		0		0	0	0	
Detector 1 Position(ft)	0	0		0	0		0		0	0	0	
Detector 1 Size(ft)	20	6		20	6		20		20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm	NA		Perm	NA		Prot		Perm	Perm	NA	
Protected Phases		4			8		5				6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8					2	6		
Detector Phase	4	4		8	8		5		2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		9.0		22.0	22.0	22.0	
Total Split (s)	57.0	57.0		57.0	57.0		21.0		43.0	22.0	22.0	
Total Split (%)	57.0%	57.0%		57.0%	57.0%		21.0%		43.0%	22.0%	22.0%	
Maximum Green (s)	53.0	53.0		53.0	53.0		17.0		39.0	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5		3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5		0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	Max	Max		C-Max	C-Max		None		Max	Max	Max	
Act Effct Green (s)		53.0		53.0	53.0		12.7		39.0		22.3	
Actuated g/C Ratio		0.53		0.53	0.53		0.13		0.39		0.22	
v/c Ratio		0.25		0.26	0.62		0.61		0.11		0.01	
Control Delay		10.7		13.8	18.9		52.4		5.3		33.0	
Queue Delay		0.0		0.0	0.1		0.0		0.0		0.0	
Total Delay		10.7		13.8	19.0		52.4		5.3		33.0	
LOS		B		B	B		D		A		C	
Approach Delay		10.7			18.2			35.8			33.0	
Approach LOS		B			B			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 54 (54%), Referenced to phase 8:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			

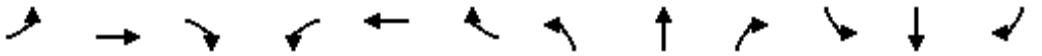
Splits and Phases: 19: Pine Grove Ave (EW) & S Cascade Blvd (NS)





Lane Group	EBT	WBL	WBT	NBL	NBR	SBT
Lane Group Flow (vph)	451	114	598	132	72	2
v/c Ratio	0.25	0.26	0.62	0.61	0.11	0.01
Control Delay	10.7	13.8	18.9	52.4	5.3	33.0
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	10.7	13.8	19.0	52.4	5.3	33.0
Queue Length 50th (ft)	68	38	241	81	0	1
Queue Length 95th (ft)	93	77	369	136	27	7
Internal Link Dist (ft)	258		145			123
Turn Bay Length (ft)		80			55	
Base Capacity (vph)	1795	443	959	292	643	393
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	34	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.26	0.65	0.45	0.11	0.01

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	355	60	105	549	1	121	0	66	1	1	0
Future Volume (veh/h)	0	355	60	105	549	1	121	0	66	1	1	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	1826	1826	0	1826	1826	1826	1826
Adj Flow Rate, veh/h	0	386	65	114	597	1	132	0	72	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	5	5	5	5	5	5	0	5	5	5	5
Cap, veh/h	72	1576	263	493	966	2	163	0	0	54	0	0
Arrive On Green	0.00	0.53	0.53	1.00	1.00	1.00	0.09	0.00	0.00	0.18	0.18	0.00
Sat Flow, veh/h	801	2974	497	917	1822	3	1739	132		0	0	0
Grp Volume(v), veh/h	0	224	227	114	0	598	132	53.6		2	0	0
Grp Sat Flow(s),veh/h/ln	801	1735	1736	917	0	1825	1739	D		0	0	0
Q Serve(g_s), s	0.0	7.0	7.1	2.2	0.0	0.0	7.4			0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	7.0	7.1	9.2	0.0	0.0	7.4			0.1	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.00	1.00			0.50		0.00
Lane Grp Cap(c), veh/h	72	919	920	493	0	967	163			54	0	0
V/C Ratio(X)	0.00	0.24	0.25	0.23	0.00	0.62	0.81			0.04	0.00	0.00
Avail Cap(c_a), veh/h	72	919	920	493	0	967	296			54	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.99	0.99	1.00	0.00	1.00	1.00			1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	12.7	12.7	0.6	0.0	0.0	44.4			33.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.6	1.1	0.0	3.0	9.2			1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.7	0.1	0.0	0.8	3.6			0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	13.3	13.3	1.7	0.0	3.0	53.6			35.0	0.0	0.0
LnGrp LOS	A	B	B	A	A	A	D			C	A	A
Approach Vol, veh/h		451			712						2	
Approach Delay, s/veh		13.3			2.8						35.0	
Approach LOS		B			A						C	

Timer - Assigned Phs				4	5	6		8				
Phs Duration (G+Y+Rc), s				57.0	13.4	22.0		57.0				
Change Period (Y+Rc), s				4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s				53.0	17.0	18.0		53.0				
Max Q Clear Time (g_c+I1), s				9.1	9.4	2.1		11.2				
Green Ext Time (p_c), s				2.7	0.2	0.0		5.0				

Intersection Summary												
HCM 6th Ctrl Delay			11.7									
HCM 6th LOS			B									

APPENDIX D

TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

PEAK HOUR VOLUME WARRANT
(Rural Areas)

General Plan Buildout AM

Major Street Name = I-5 NB Ramps

Total of Both Approaches (VPH) = 439

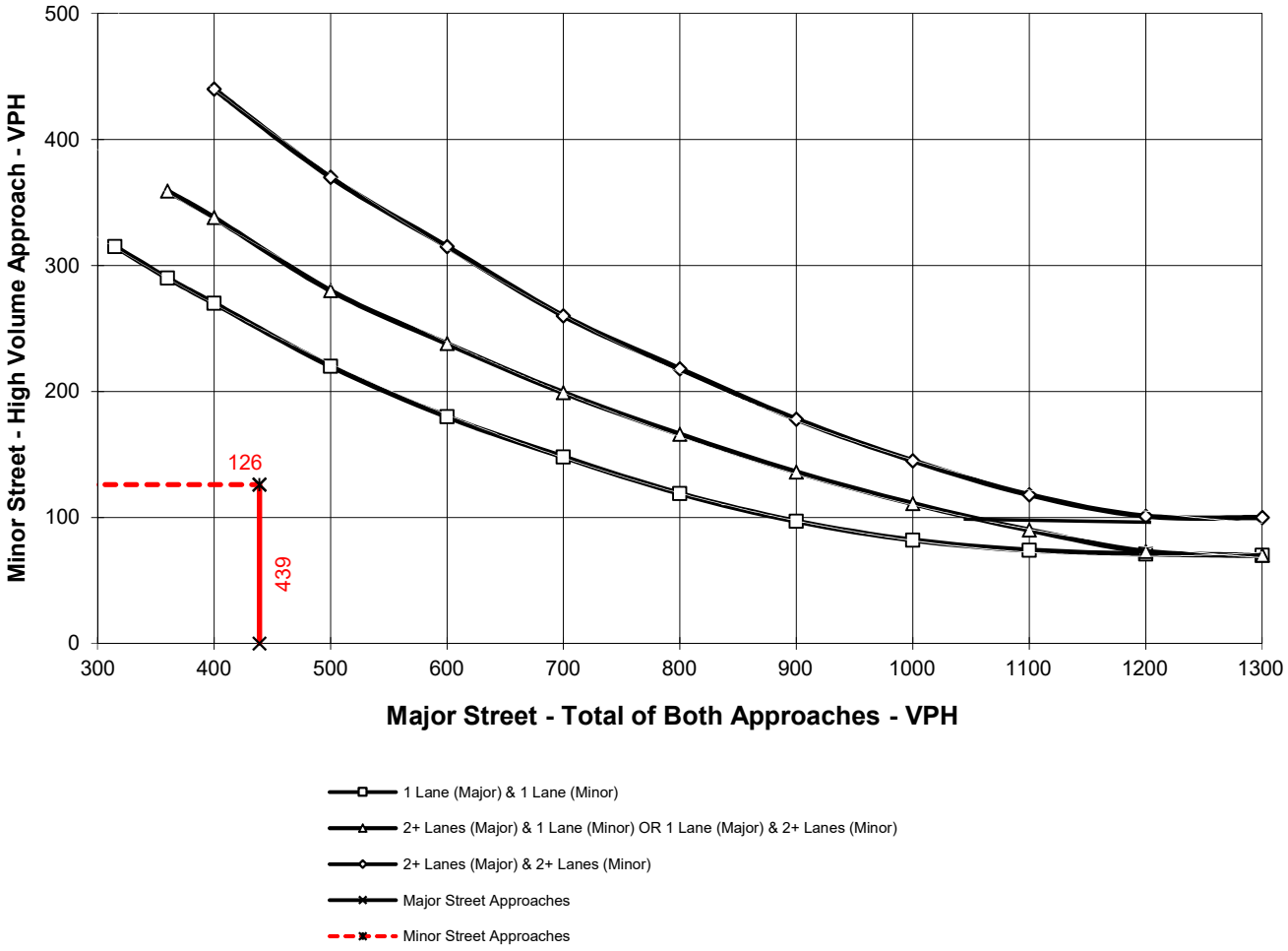
Number of Approach Lanes Major Street = 1

Minor Street Name = Pine Grove Ave

High Volume Approach (VPH) = 126

Number of Approach Lanes Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

General Plan Buildout PM

Major Street Name = I-5 NB Ramps

Total of Both Approaches (VPH) = 640

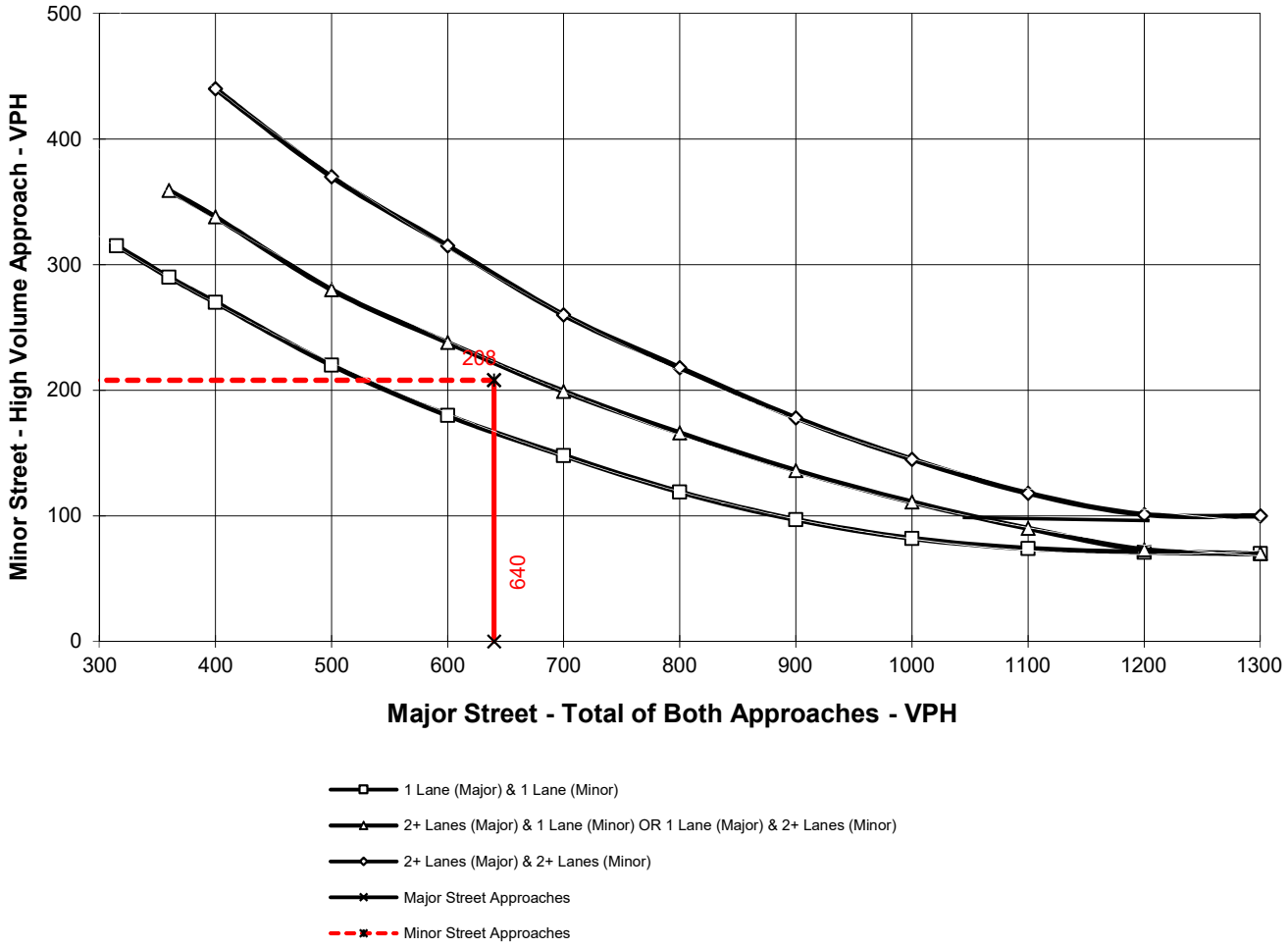
Number of Approach Lanes Major Street = 1

Minor Street Name = Pine Grove Ave

High Volume Approach (VPH) = 208

Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

General Plan Buildout AM

Major Street Name = Pine Grove Ave

Total of Both Approaches (VPH) = 980

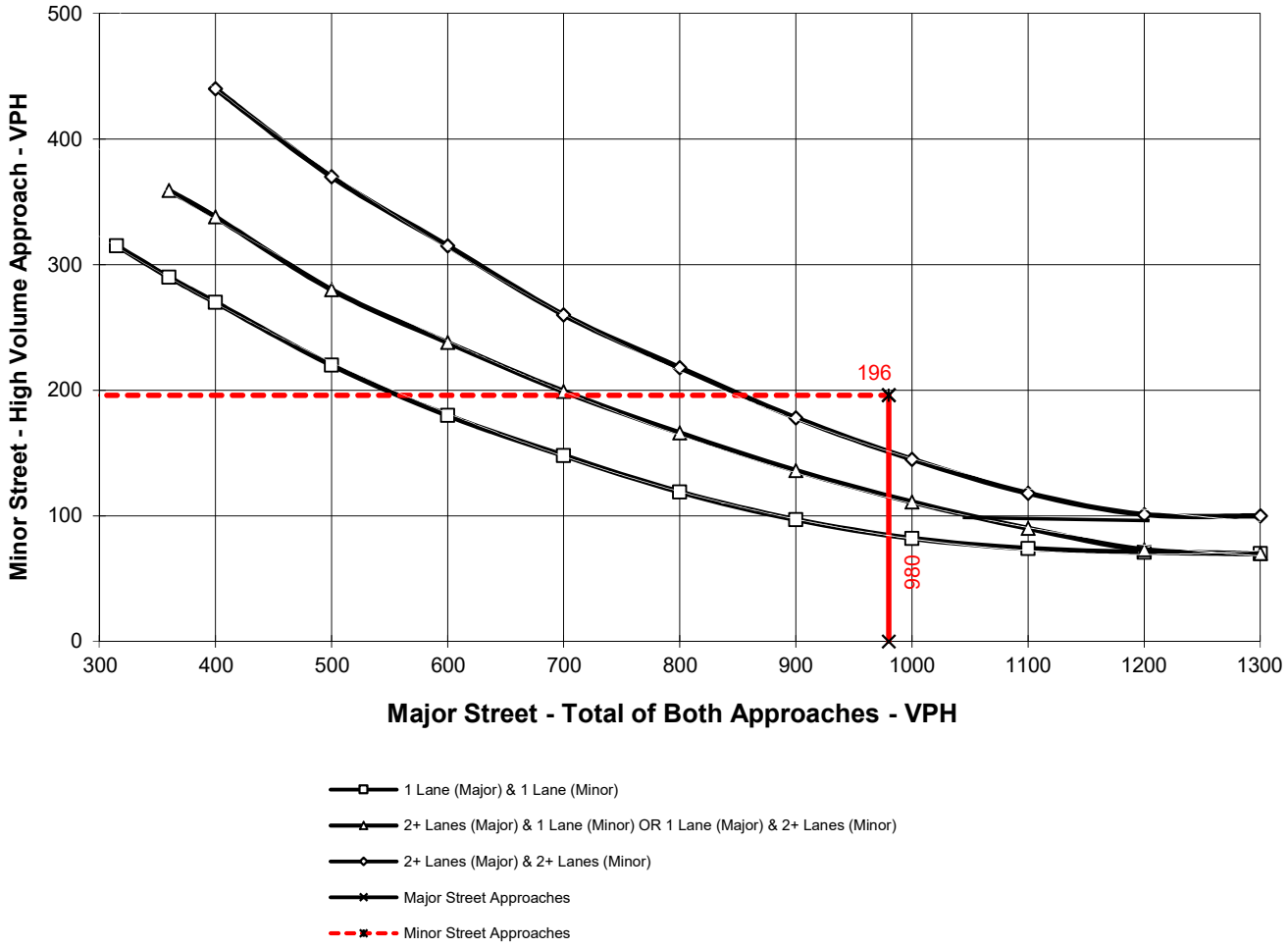
Number of Approach Lanes Major Street = 1

Minor Street Name = South Cascade Blvd

High Volume Approach (VPH) = 196

Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

General Plan Buildout PM

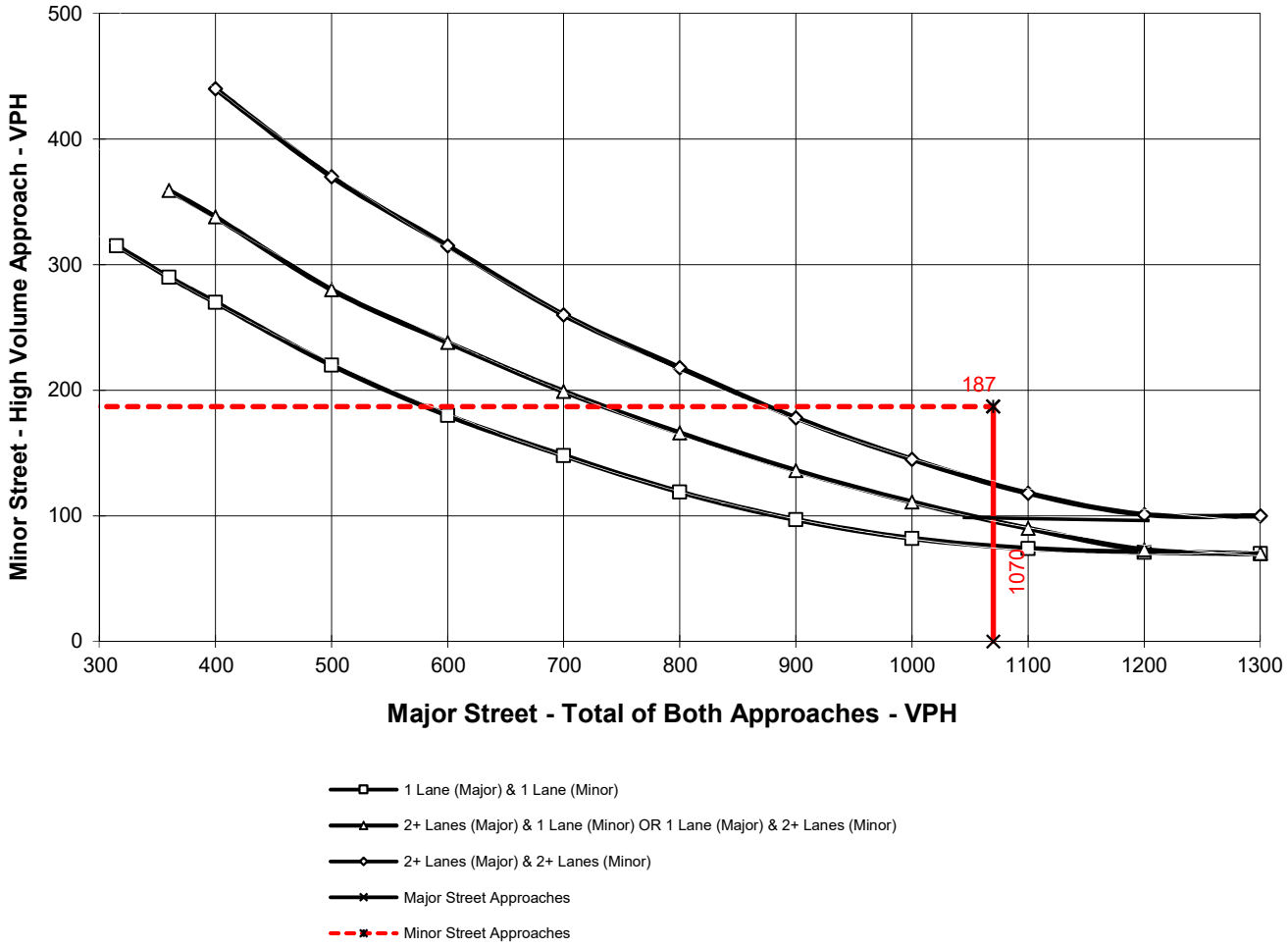
Major Street Name = Pine Grove Ave

Total of Both Approaches (VPH) = 1070
Number of Approach Lanes Major Street = 1

Minor Street Name = South Cascade Blvd

High Volume Approach (VPH) = 187
Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.



GANDDINI GROUP INC.

714.795.3100 | ganddini.com

March 23, 2022

Mr. Ethan Mobley
DYNAMIC PLANNING + SCIENCES
Via Electronic Mail

RE: City of Shasta Lake General Plan Update Vehicle Miles Traveled Analysis
Project No. 19251

Dear Mr. Mobley:

Ganddini Group, Inc. is pleased to submit this Vehicle Miles Traveled Analysis for the City of Shasta Lake General Plan Update. The purpose of this study is to evaluate the potential for transportation impacts associated with the proposed General Plan update in the context of the California Environmental Quality Act (CEQA) and current requirements specified in CEQA Guidelines Section 15064.3, subdivision (b), pertaining to vehicle miles traveled (VMT).

PROJECT LOCATION

The City of Shasta Lake is located in Shasta County, California. The City is located within the metropolitan planning organization (MPO) of Shasta Regional Transportation Agency (SRTA). Figure 1 shows the regional location map.

PROJECT DESCRIPTION

The proposed Project consists of buildout of the City of Shasta Lake in accordance with the proposed Land Use Element. Based on market forecasts through General Plan buildout, the proposed land use designations are estimated to result in the development of approximately 837 additional residential dwelling units and 706 additional employees between years 2020 and 2040.

SENATE BILL 743 BACKGROUND

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the CEQA Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of VMT as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended

goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (State of California, December 2018) ["OPR Technical Advisory"] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT.

VMT ANALYTICAL METHODOLOGY

In the absence of VMT guidelines and thresholds established by the City of Shasta Lake, this analysis evaluates VMT impacts associated with the proposed project based on guidance from the OPR Technical Advisory.

Methodology

VMT modeling was performed by DKS Associates using the SRTA ShastaSIM 1.2 activity-based travel demand model as updated for the 2018 Regional Transportation Plan (RTP), which includes year 2020 and year 2040 scenarios.

The proposed General Plan update was modeled based on land use modifications to the 2018 RTP model to reflect the estimated changes in population and employment associated with the proposed General Plan; no changes were made to the existing or future roadway netowrk. Recent land use changes were updated in the base year 2020 model to reflect current conditions, resulting in an increase of 94 households compared to the default 2018 RTP model. The proposed General Plan update is expected to result in 237 additional households in 2040. It is noted that population changes associated with the proposed General Plan result in the ShastaSIM model re-generation of population estimates throughout the County based on census demographics. VMT modeling outputs are provided in Appendix A.

Based on previous work efforts by DKS Associates for the 2018 RTP model, the following outputs were readily available and were used for evaluation of VMT impacts associated with the proposed General Plan update:

- Residential data (population, households, and VMT) with breakdown by jurisdiction;
- Total Countywide VMT; and,
- VMT for all travel on roadways within the ShastaSIM model.

In accordance with OPR guidance, the VMT impact should be evaluated *"across the full area over which the plan may substantively affect travel patterns."* Therefore, the VMT metrics evaluated for this analysis are based on the full trip lengths (i.e., trips to/from within Shasta County and trips to/from outside the City of Shasta Lake).

Thresholds of Significance

As noted in the OPR Technical Advisory, "agencies should analyze VMT outcomes of land use plans across the full area over which the plan may substantively affect travel patterns, including beyond the boundary of the plan or jurisdiction's geography." Furthermore, the OPR Technical Advisory recommends that a general plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the following thresholds recommended for development projects (i.e., 15 percent below existing VMT per capita for residential, 15 percent below existing regional VMT per employee for office, and a net increase in total VMT for retail). Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described above for purposes of analysis and mitigation.

Mr. Ethan Mobley
DYNAMIC PLANNING + SCIENCES
March 23, 2022

In the case of a general plan update, the "no project" condition would result in buildout of the current general plan. Therefore, the "existing" regional VMT used for this analysis is based on the regional VMT associated with the existing General Plan buildout. Additionally, since a breakdown of work VMT per employee and net VMT for the City of Shasta Lake is not readily available, the significance of office and retail VMT was evaluated on the basis of the project's net effect on the region.

As such, the proposed General Plan update is considered to cause a significant transportation impact if:

1) General Plan buildout residential VMT per capita for the City of Shasta Lake exceeds 15 percent below the General Plan buildout residential VMT per capita for the County of Shasta; or

2) Buildout of the proposed General Plan is forecast to increase total VMT per capita for the County of Shasta.

VMT FORECASTS

Residential VMT

Table 1 below summarizes residential VMT estimates for the City of Shasta Lake for buildout under the existing General Plan and the proposed General Plan update.

Table 1
Residential VMT Estimates

Year	No Project (Current General Plan)			Proposed General Plan Update		
	Residential VMT	Population	VMT / Capita	Residential VMT	Population	VMT / Capita
Citywide						
2020	175,999	10,360	16.99	173,435	10,416	16.65
2040	216,248	12,025	17.98	225,466	12,578	17.93
Countywide						
2020	3,516,912	191,905	18.33	3,544,891	191,993	18.46
2040	4,386,532	223,042	19.67	4,310,675	223,952	19.25

Source: Shasta Regional Transportation Agency, 2018 RTP Activity-Based Regional Travel Demand Model.
Notes:
1. Year 2020 No Project data is shown for the updated year 2020 model to account for recently approved land use changes that have already occurred prior to the proposed General Plan update.

As shown in Table 1, the City of Shasta Lake is forecast to generate an average of 17.98 residential VMT per capita with buildout of the existing General Plan land uses and an average of 17.93 residential VMT per capita with buildout of the proposed General Plan land uses.

Total VMT

Table 2 summarizes the total of all residential-, employment-, and commercial-related VMT by the County.

Mr. Ethan Mobley
DYNAMIC PLANNING + SCIENCES
March 23, 2022

Table 2
Total VMT Estimates

Year	County of Shasta					
	No Project (Current General Plan)			Proposed General Plan Update		
	Total VMT	Population	VMT / Capita	Total VMT	Population	VMT / Capita
2020	6,202,918	191,993	32.31	6,228,063	191,993	32.44
% Change	*n/a*	*n/a*	*n/a*	*+0.4%*	*+0.0%*	*+0.4%*
2040	7,846,822	223,042	35.18	7,869,715	223,952	35.14
% Change	*n/a*	*n/a*	*n/a*	*+0.3%*	*+0.4%*	*-0.1%*

Source: Shasta Regional Transportation Agency, 2018 RTP Activity-Based Regional Travel Demand Model.
Notes:
1. Year 2020 No Project data is shown for the updated year 2020 model to account for recently approved land use changes that have already occurred prior to the proposed General Plan update.

As shown in Table 2, buildout of the existing General Plan land uses is forecast to result in a Countywide average of 35.18 total VMT per capita. Buildout of the proposed General Plan land uses is forecast to result in a Countywide average of 35.14 total VMT per capita, resulting in a marginal decrease in total VMT per capita (-0.1%).

VMT IMPACTS

Threshold 1: Residential VMT Impacts

Table 3 summarizes the VMT impact evaluation for residential-generated VMT based on the results from Table 1.

Table 3
Residential VMT Impact Evaluation

Regional VMT per Capita with Existing General Plan	19.67
Threshold (15% below Existing General Plan)	16.70
Regional VMT per Capita with Proposed General Plan Update	17.93
Significant Impact?	Yes
% Above Threshold	+7.3%

As shown in Table 3, the regional residential VMT per capita for the existing General Plan buildout is equal to 19.67. The proposed General Plan update is forecast to generate a Citywide residential VMT per capita of 17.93; therefore, residential land use changes associated with the proposed General Plan update would result in a significant transportation impact, without mitigation, based on the OPR-recommended threshold of 16.70 (15 percent below regional VMT).

Threshold 2: Total VMT Impacts

As previously shown in Table 2, the proposed General Plan update is forecast to result in marginal decrease in total VMT per capita for the County; therefore, office and retail land use changes associated with the

proposed General Plan update would result in a less than significant transportation impact based on the OPR guidance and readily available VMT data from the 2018 RTP model.

MITIGATION MEASURES

Since the proposed General Plan update is forecast to result in a significant transportation impact, mitigation is necessary to reduce the impact to a less-than-significant level or the extent feasible. The proposed General Plan update is forecast to generate a Citywide residential VMT per capita of 17.93, which exceeds the regional threshold by 7.3 percent. Therefore, mitigation measures should target a residential VMT reduction of 7.3 percent to fully mitigate the project's impact to a less-than-significant level.

Mitigation Measure #1 describes a summary of transportation-related VMT reduction measures that may be implemented to reduce VMT. The measure numbers and range of effectiveness are based on guidance from the California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* (August 2010) ["CAPCOA guidance"]. Fact sheets containing additional details and methods for quantifying the VMT reduction for each of the following measures are provided in Appendix B.

Mitigation Measure #1
The City of Shasta Lake shall implement the following VMT reduction measures:

- SDT-1: Provide Pedestrian Network Improvements (0-2% VMT reduction)
  - Require new residential developments to provide pedestrian improvements and demonstrate connectivity with both on-site and off-site destinations.

- SDT-2: Provide Traffic Calming Measures (0.25–1% VMT reduction)
  - Require new residential development to provide traffic calming improvements.

- TST-3: Expand Transit Network (0.1-8.2% VMT reduction)
  - Coordinate with SRTA to expand transit access in the City of Shasta Lake.
  - Group with TST-2 (Implement Transit Access Improvements) and TST-5 (Provide Bike Parking Near Transit) for increased effectiveness.

- TST-4: Increase Transit Frequency/Speed (0.02-2.5% VMT reduction)
  - Coordinate with SRTA to increase transit frequency in the City of Shasta Lake.

Other transportation-related VMT reduction measures included in the CAPCOA guidance were reviewed, such as parking policies and bus rapid transit programs, but are not recommended as they would not be effective or feasible given the suburban/rural context of the City of Shasta Lake.

Level of Significance With Mitigation

Based on the range of effectiveness, successful implementation of the above VMT reduction measures could potentially reduce Citywide residential VMT by up to 13.7 percent, which would reduce the proposed General Plan VMT impacts to a less-than-significant level; however, since key VMT reduction measures require coordination with and approval by outside agencies (i.e., SRTA), the City of Shasta Lake cannot implementation to the level necessary to fully mitigate the proposed General Plan impacts. Therefore, residential land use changes associated with the proposed General Plan update would remain significant and unavoidable with mitigation incorporated.

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DYNAMIC PLANNING + SCIENCES
March 23, 2022

CONCLUSION

Key findings of this analysis include:

- The City of Shasta Lake is forecast to generate an average of 17.98 residential VMT per capita with buildout of the existing General Plan land uses and an average of 17.93 residential VMT per capita with buildout of the proposed General Plan land uses.

- Buildout of the proposed General Plan land uses is forecast to result in a Countywide average of 35.14 total VMT per capita, resulting in a marginal decrease in total VMT per capita (-0.1%).

- The proposed General Plan update is forecast to generate a Citywide residential VMT per capita of 17.93; therefore, residential land use changes associated with the proposed General Plan update would result in a significant transportation impact, without mitigation, based on the OPR-recommended threshold of 16.70 (15 percent below regional VMT).

- The proposed General Plan update is forecast to result in a marginal decrease in total VMT per capita for the County; therefore, office and retail land use changes associated with the proposed General Plan update would result in a less than significant transportation impact based on the OPR guidance and readily available VMT data from the 2018 RTP model.

- Mitigation Measure #1 identifies VMT reduction measures that, if successfully implemented, have the potential to reduce the projected impacts to a less-than-significant level.

- Since key VMT reduction measures require coordination with and approval by outside agencies (i.e., SRTA), the City of Shasta Lake cannot implementation to the level necessary to fully mitigate the proposed General Plan impacts. Therefore, residential land use changes associated with the proposed General Plan update would remain significant and unavoidable with mitigation incorporated.

It has been a pleasure to assist you with this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Sincerely,

GANDDINI GROUP, INC.
Giancarlo Ganddini, TE, PTP
Principal



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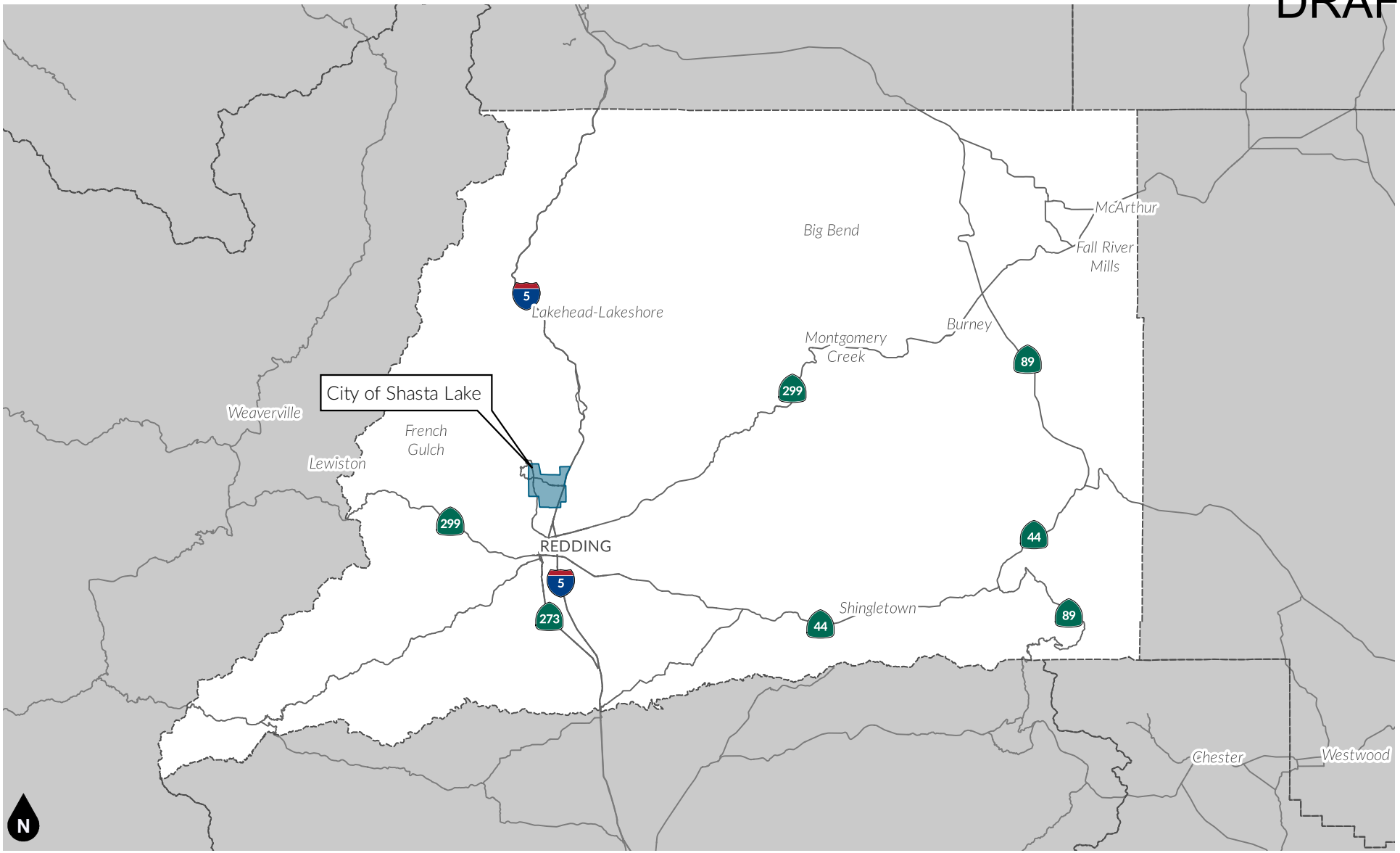


Figure 1
Regional Location Map

APPENDIX A

SHASTASIM 1.2 VMT OUTPUT SUMMARIES

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Shasta County Activity Based Model: Population, Households, and VMT Summary

MOE	2018 RTP Model		Shasta Lake Model	
Population	**2020**	**2040**	**SL20**	**SL40**
Shasta County Total	191,905	223,042	191,993	223,952
Redding	102,978	117,570	102,323	117,610
Anderson	11,319	13,031	11,148	13,498
Shasta Lake	10,360	12,025	10,416	12,578
Unincorporated County	67,248	80,416	68,106	80,266
Households	**2020**	**2040**	**SL20**	**SL40**
Shasta County Total	77,283	89,837	77,377	90,074
Redding	41,440	47,459	41,440	47,459
Anderson	4,535	5,318	4,535	5,318
Shasta Lake	4,073	4,760	4,167	4,997
Unincorporated County	27,235	32,300	27,235	32,300
Population Change			**2020-SL20**	**2040-SL40**
Shasta County Total			88	910
Redding			-655	40
Anderson			-171	467
Shasta Lake			56	553
Unincorporated County			858	-150
Households Change			**2020-SL20**	**2040-SL40**
Shasta County Total			94	237
Redding			0	0
Anderson			0	0
Shasta Lake			94	237
Unincorporated County			0	0
Average Population Per Household	**2020**	**2040**	**SL20**	**SL40**
Shasta County Total	2.48	2.48	2.48	2.49
Redding	2.48	2.48	2.47	2.48
Anderson	2.50	2.45	2.46	2.54
Shasta Lake	2.54	2.53	2.50	2.52
Unincorporated County	2.47	2.49	2.50	2.49

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Shasta County Activity Based Model: Population, Households, and VMT Summary

MOE	2018 RTP Model		Shasta Lake Model	
VMT Attributed to Households	**2020**	**2040**	**SL20**	**SL40**
To/From Within Shasta County (I-I)				
Shasta County Total	2,838,772	3,460,548	2,865,976	3,313,996
Redding	1,103,707	1,294,684	1,108,804	1,297,530
Anderson	145,107	171,354	149,124	176,456
Shasta Lake	141,636	167,625	138,521	171,571
Unincorporated County	1,448,321	1,826,886	1,469,527	1,668,438
To/From Outside Shasta County (I-X and X-I)				
Shasta County Total	678,140	925,984	678,915	996,679
Redding	348,869	469,634	347,952	505,623
Anderson	39,345	54,566	39,306	59,101
Shasta Lake	34,363	48,624	34,914	53,895
Unincorporated County	255,563	353,160	256,744	378,061
All VMT				
Shasta County Total	3,516,912	4,386,532	3,544,891	4,310,675
Redding	1,452,576	1,764,318	1,456,756	1,803,153
Anderson	184,452	225,920	188,430	235,557
Shasta Lake	175,999	216,248	173,435	225,466
Unincorporated County	1,703,884	2,180,046	1,726,271	2,046,499
VMT Attributed to Households (Per Capita)	**2020**	**2040**	**SL20**	**SL40**
To/From Within Shasta County (I-I)				
Shasta County Total	14.79	15.52	14.93	14.80
Redding	10.72	11.01	10.84	11.03
Anderson	12.82	13.15	13.38	13.07
Shasta Lake	13.67	13.94	13.30	13.64
Percent of County Average	92%	90%	89%	92%
Unincorporated County	21.54	22.72	21.58	20.79
To/From Outside Shasta County (I-X and X-I)				
Shasta County Total	3.53	4.15	3.54	4.45
Redding	3.39	3.99	3.40	4.30
Anderson	3.48	4.19	3.53	4.38
Shasta Lake	3.32	4.04	3.35	4.28
Percent of County Average	94%	97%	95%	96%
Unincorporated County	3.80	4.39	3.77	4.71
All VMT Per Capita				
Shasta County Total	18.33	19.67	18.46	19.25
Redding	14.11	15.01	14.24	15.33
Anderson	16.30	17.34	16.90	17.45
Shasta Lake	16.99	17.98	16.65	17.93
Percent of County Average	93%	91%	90%	93%
Unincorporated County	25.34	27.11	25.35	25.50

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Shasta County Activity Based Model: Population, Households, and VMT Summary

MOE	2018 RTP Model		Shasta Lake Model	
VMT Per Household	**2020**	**2040**	**SL20**	**SL40**
To/From Within Shasta County (I-I)				
Shasta County Total	36.73	38.52	37.04	36.79
Redding	26.63	27.28	26.76	27.34
Anderson	32.00	32.22	32.88	33.18
Shasta Lake	34.77	35.22	33.24	34.33
Percent of County Average	95%	91%	90%	93%
Unincorporated County	53.18	56.56	53.96	51.65
To/From Outside Shasta County (I-X and X-I)				
Shasta County Total	8.77	10.31	8.77	11.07
Redding	8.42	9.90	8.40	10.65
Anderson	8.68	10.26	8.67	11.11
Shasta Lake	8.44	10.22	8.38	10.79
Percent of County Average	96%	99%	95%	97%
Unincorporated County	9.38	10.93	9.43	11.70
All VMT Per Household				
Shasta County Total	45.51	48.83	45.81	47.86
Redding	35.05	37.18	35.15	37.99
Anderson	40.67	42.48	41.55	44.29
Shasta Lake	43.21	45.43	41.62	45.12
Percent of County Average	95%	93%	91%	94%
Unincorporated County	62.56	67.49	63.38	63.36
Vehicle Trips	**2020**	**2040**	**SL20**	**SL40**
To/From Within Shasta County (I-I)				
Shasta County Total	465,060	543,171	466,968	545,002
Redding	254,774	292,459	255,014	292,747
Anderson	26,617	31,153	27,051	32,371
Shasta Lake	23,878	28,121	24,241	29,304
Unincorporated County	159,792	191,439	160,662	190,580
To/From Outside Shasta County (I-X and X-I)				
Shasta County Total	24,387	36,661	24,401	36,690
Redding	10,247	14,253	10,218	14,867
Anderson	2,571	3,671	2,575	3,879
Shasta Lake	883	1,269	901	1,393
Unincorporated County	10,686	17,468	10,707	16,551
All Vehicle Trips				
Shasta County Total	489,447	579,832	491,369	581,692
Redding	265,021	306,712	265,232	307,614
Anderson	29,188	34,824	29,626	36,250
Shasta Lake	24,761	29,390	25,142	30,697
Unincorporated County	170,478	208,907	171,369	207,131

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Shasta County Activity Based Model: Population, Households, and VMT Summary

MOE	2018 RTP Model		Shasta Lake Model	
Average Trip Length	**2020**	**2040**	**SL20**	**2040**
To/From Within Shasta County (I-I)				
Shasta County Total	6.10	6.37	6.14	6.08
Redding	4.33	4.43	4.35	4.43
Anderson	5.45	5.50	5.51	5.45
Shasta Lake	5.93	5.96	5.71	5.85
Unincorporated County	9.06	9.54	9.15	8.75
To/From Outside Shasta County (I-X and X-I)				
Shasta County Total	27.81	25.26	27.82	27.16
Redding	34.05	32.95	34.05	34.01
Anderson	15.30	14.86	15.26	15.24
Shasta Lake	38.92	38.32	38.75	38.69
Unincorporated County	23.92	20.22	23.98	22.84
Total Average Trip Length				
Shasta County Total	7.19	7.57	7.21	7.41
Redding	5.48	5.75	5.49	5.86
Anderson	6.32	6.49	6.36	6.50
Shasta Lake	7.11	7.36	6.90	7.34
Unincorporated County	9.99	10.44	10.07	9.88
Average Daily Trips per Household	**2020**	**2040**	**SL20**	**2040**
Shasta County Total	6.33	6.45	6.35	6.46
Redding	6.40	6.46	6.40	6.48
Anderson	6.44	6.55	6.53	6.82
Shasta Lake	6.08	6.17	6.03	6.14
Percent of County Average	96%	96%	95%	95%
Unincorporated County	6.26	6.47	6.29	6.41

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Speed Bin	2018 RTP Model		Shasta Lake Model	
	2020 Base	2040 Base	2020 Shasta Lake	2040 Shasta Lake
0 to 7.5 mph	2	3	3	2
7.5 to 12.5 mph	309	950	294	925
12.5 to 17.5 mph	84,957	103,615	85,149	104,726
17.5 to 22.5 mph	107,992	143,015	108,392	142,679
22.5 to 27.5 mph	349,699	428,597	349,872	433,056
27.5 to 32.5 mph	187,976	245,745	190,282	248,950
32.5 to 37.5 mph	446,520	553,390	446,227	555,911
37.5 to 42.5 mph	396,951	491,085	400,628	487,722
42.5 to 47.5 mph	620,305	733,122	627,849	740,797
47.5 to 52.5 mph	947,815	1,127,099	954,967	1,136,022
52.5 to 57.5 mph	176,414	180,303	173,025	175,273
57.5 to 62.5 mph	738,406	940,992	742,913	947,608
62.5 to 67.5 mph	1,047,892	1,505,651	1,049,728	1,504,084
67.5 to 72.5 mph	0	0	0	0
Total (Internal plus IXXI)	5,105,238	6,453,567	5,129,329	6,477,755
Intrazonal	37,772	40,688	38,828	39,393
Total (Through Trips)	1,059,907	1,352,568	1,059,906	1,352,567
Total VMT	**6,202,918**	**7,846,822**	**6,228,063**	**7,869,715**
change vs. RTP Model			25,146	22,892
			0.4%	0.3%
Population	191,905	223,042	191,993	223,952
SB 375 VMT per Capita	**26.8**	**29.1**	**26.9**	**29.1**

Speed Bin	2018 RTP Model		Shasta Lake Model	
	2020 Base	2040 Base	2020 Shasta Lake	2040 Shasta Lake
0 to 7.5 mph	0.0%	0.0%	0.0%	0.0%
7.5 to 12.5 mph	0.0%	0.0%	0.0%	0.0%
12.5 to 17.5 mph	1.7%	1.6%	1.7%	1.6%
17.5 to 22.5 mph	2.1%	2.2%	2.1%	2.2%
22.5 to 27.5 mph	6.8%	6.6%	6.8%	6.7%
27.5 to 32.5 mph	3.7%	3.8%	3.7%	3.8%
32.5 to 37.5 mph	8.7%	8.6%	8.7%	8.6%
37.5 to 42.5 mph	7.8%	7.6%	7.8%	7.5%
42.5 to 47.5 mph	12.2%	11.4%	12.2%	11.4%
47.5 to 52.5 mph	18.6%	17.5%	18.6%	17.5%
52.5 to 57.5 mph	3.5%	2.8%	3.4%	2.7%
57.5 to 62.5 mph	14.5%	14.6%	14.5%	14.6%
62.5 to 67.5 mph	20.5%	23.3%	20.5%	23.2%
67.5 to 72.5 mph	0.0%	0.0%	0.0%	0.0%
Total	**100%**	**100%**	**100%**	**100%**

APPENDIX B

CAPCOA VMT REDUCTION FACT SHEETS

3.2 Neighborhood/Site Enhancements

3.2.1 Provide Pedestrian Network Improvements

Range of Effectiveness: 0 - 2% vehicle miles traveled (VMT) reduction and therefore 0 - 2% reduction in GHG emissions.

Measure Description:

Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects
- Reduction benefit only occurs if the project has both pedestrian network improvements on site and connections to the larger off-site network.

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The project applicant must provide information regarding pedestrian access and connectivity within the project and to/from off-site destinations.

Mitigation Method:

Estimated VMT Reduction	Extent of Pedestrian Accommodations	Context
2%	Within Project Site and Connecting Off-Site	Urban/Suburban
1%	Within Project Site	Urban/Suburban
< 1%	Within Project Site and Connecting Off-Site	Rural

Assumptions:

Data based upon the following references:

- Center for Clean Air Policy (CCAP) Transportation Emission Guidebook. http://www.ccap.org/safe/guidebook/guide_complete.html (accessed March 2010)
- 1000 Friends of Oregon (1997) "Making the Connections: A Summary of the LUTRAQ Project" (p. 16): http://www.onethousandfriendsoforegon.org/resources/lut_vol7.html

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[45]
CO_2e	0 - 2% of running
PM	0 - 2% of running
CO	0 - 2% of running
NOx	0 - 2% of running
SO_2	0 - 2% of running
ROG	0 – 1.2% of total

Discussion:

As detailed in the preferred literature section below, the lower range of 1 – 2% VMT reduction was pulled from the literature to provide a conservative estimate of reduction potential. The literature does not speak directly to a rural context, but an assumption was made that the benefits will likely be lower than a suburban/urban context.

Example:

N/A – calculations are not needed.

Preferred Literature:

[45] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

- 1 - 2% reduction in VMT

The Center for Clean Air Policy (CCAP) attributes a 1% reduction in VMT from pedestrian-oriented design assuming this creates a 5% decrease in automobile mode share (e.g. auto split shifts from 95% to 90%). This mode split is based on the Portland Regional Land Use Transportation and Air Quality (LUTRAQ) project. The LUTRAQ analysis also provides the high end of 10% reduction in VMT. This 10% assumes the following features:

– Compact, mixed-use communities
– Interconnected street network
– Narrower roadways and shorter block lengths
– Sidewalks
– Accessibility to transit and transit shelters
– Traffic calming measures and street trees
– Parks and public spaces

Other strategies (development density, diversity, design, transit accessibility, traffic calming) are intended to account for the effects of many of the measures in the above list. Therefore, the assumed effectiveness of the Pedestrian Network measure should utilize the lower end of the 1 - 10% reduction range. If the pedestrian improvements are being combined with a significant number of the companion strategies, trip reductions for those strategies should be applied as well, based on the values given specifically for those strategies in other sections of this report. Based upon these findings, and drawing upon recommendations presented in the alternate literature below, the recommended VMT reduction attributable to pedestrian network improvements, above and beyond the benefits of other measures in the above bullet list, should be 1% for comprehensive pedestrian accommodations within the development plan or project itself, or 2% for comprehensive internal accommodations and external accommodations connecting to off-site destinations.

Alternative Literature:

Alternate:

- Walking is three times more common with enhanced pedestrian infrastructure
- 58% increase in non-auto mode share for work trips

The Nelson\Nygaard [1] report for the City of Santa Monica Land Use and Circulation Element EIR summarized studies looking at pedestrian environments. These studies have found a direct connection between non-auto forms of travel and a high quality pedestrian environment. Walking is three times more common with communities that have pedestrian friendly streets compared to less pedestrian friendly communities. Non-auto mode share for work trips is 49% in a pedestrian friendly community, compared to 31% in an auto-oriented community. Non-auto mode share for non-work trips is 15%, compared to 4% in an auto-oriented community. However, these effects also depend upon other aspects of the pedestrian friendliness being present, which are accounted for separately in this report through land use strategy mitigation measures such as density and urban design.

Alternate:

- 0.5% - 2.0% reduction in VMT

The Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions [2] attributes 1% reduction for a project connecting to *existing* external streets and pedestrian facilities. A 0.5% reduction is attributed to connecting to *planned* external streets and pedestrian facilities (which must be included in a pedestrian master plan or equivalent). Minimizing pedestrian barriers attribute an additional 1% reduction in VMT. These recommendations are generally in line with the recommended discounts derived from the preferred literature above.

Preferred and Alternative Literature Notes:

[1] Nelson\Nygaard, 2010. City of Santa Monica Land Use and Circulation Element EIR Report, Appendix – Santa Monica Luce Trip Reduction Impacts Analysis (p.401). http://www.shapethefuture2025.net/

Nelson\Nygaard looked at the following studies: Anne Vernez Moudon, Paul Hess, Mary Catherine Snyder and Kiril Stanilov (2003), Effects of Site Design on Pedestrian Travel in Mixed Use, Medium-Density Environments, http://www.wsdot.wa.gov/research/reports/fullreports/432.1.pdf; Robert Cervero and Carolyn Radisch (1995), Travel Choices in Pedestrian Versus Automobile Oriented Neighborhoods, http://www.uctc.net/papers/281.pdf;

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD) Recommended Guidance for Land Use Emission Reductions. (p. 11) http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf

Other Literature Reviewed:

None

3.2.2 Provide Traffic Calming Measures

Range of Effectiveness: 0.25 – 1.00% vehicle miles traveled (VMT) reduction and therefore 0.25 – 1.00% reduction in GHG emissions.

Measure Description:

Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in VMT. Project design will include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways will be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

Measure Applicability:

- Urban, suburban, and rural context
- Appropriate for residential, retail, office, industrial and mixed-use projects

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage of streets within project with traffic calming improvements
- Percentage of intersections within project with traffic calming improvements

Mitigation Method:

		% of streets with improvements			
		25%	*50%*	*75%*	*100%*
		% VMT Reduction			
% of intersections with improvements	*25%*	**0.25%**	**0.25%**	**0.5%**	**0.5%**
	50%	**0.25%**	**0.5%**	**0.5%**	**0.75%**
	75%	**0.5%**	**0.5%**	**0.75%**	**0.75%**
	100%	**0.5%**	**0.75%**	**0.75%**	**1%**

Assumptions:

Data based upon the following references:

[1] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.*(p. B-25) http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD) *Recommended Guidance for Land Use Emission Reductions.* (p.13) http://www.airquality.org/ceqa/GuidanceLUEmissionReductions.pdf

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[46]
CO_2e	0.25 – 1.00% of running
PM	0.25 – 1.00% of running
CO	0.25 – 1.00% of running
NOx	0.25 – 1.00% of running
SO_2	0.25 – 1.00% of running
ROG	0.15 – 0.6% of total

Discussion:

The table above allows the Project Applicant to choose a range of street and intersection improvements to determine an appropriate VMT reduction estimate. The Applicant will look at the rows on the left and choose the percent of intersections within

[46] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

the project which will have traffic calming improvements. Then, the Applicant will look at the columns along the top and choose the percent of streets within the project which will have traffic calming improvements. The intersection cell of the row and column selected in the matrix is the VMT reduction estimate.

Though the literature provides some difference between a suburban and urban context, the difference is small and thus a conservative estimate was used to be applied to all contexts. Rural context is not specifically discussed in the literature but is assumed to have similar impacts.

For a low range, a project is assumed to have 25% of its streets with traffic calming improvements and 25% of its intersections with traffic calming improvements. For a high range, 100% of streets and intersections are assumed to have traffic calming improvements

Example:

N/A - No calculations needed.

Preferred Literature:

- -0.03 = elasticity of VMT with respect to a pedestrian environment factor (PEF)
- 1.5% - 2.0% reduction in suburban VMT
- 0.5% - 0.6% reduction in urban VMT

Moving Cooler [1] looked at Ewing's synthesis elasticity from the Smart Growth INDEX model (-0.03) to estimate VMT reduction for a suburban and urban location. The estimated reduction in VMT came from looking at the difference between the VMT results for Moving Cooler's strategy of pedestrian accessibility only compared to an aggressive strategy of pedestrian accessibility and traffic calming.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) *Recommended Guidance for Land Use Emission Reductions* [2] attributes 0.25 – 1% of VMT reductions to traffic calming measures. The table above illustrates the range of VMT reductions based on the percent of streets and intersections with traffic calming measures implemented. This range of reductions is recommended because it is generally consistent with the effectiveness ranges presented in the other preferred literature for situations in which the effects of traffic calming are distinguished from the other measures often found to co-exist with calming, and because it provides graduated effectiveness estimates depending on the degree to which calming is implemented.

Alternative Literature:

None

Alternative Literature References:

None

Other Literature Reviewed:

None

3.5.2 Implement Transit Access Improvements

Range of Effectiveness: Grouped strategy. [See TST-3 and TST-4]

Measure Description:

This project will improve access to transit facilities through sidewalk/ crosswalk safety enhancements and bus shelter improvements. The benefits of Transit Access Improvements alone have not been quantified and should be grouped with Transit Network Expansion (TST-3) and Transit Service Frequency and Speed (TST-4).

Measure Applicability:

- Urban, suburban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of improving transit facilities as a standalone strategy.

Alternative Literature References:

None

Other Literature Reviewed:

None

3.5.3 Expand Transit Network

Range of Effectiveness: 0.1 – 8.2% vehicle miles travelled (VMT) reduction and therefore 0.1 – 8.2% reduction in GHG emissions[71]

Measure Description:

The project will expand the local transit network by adding or modifying existing transit service to enhance the service near the project site. This will encourage the use of transit and therefore reduce VMT.

Measure Applicability:

- Urban and suburban context
- May be applicable in a rural context but no literature documentation available (effectiveness will be case specific and should be based on specific assessment of levels of services and origins/destinations served)
- Appropriate for specific or general plans

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage increase transit network coverage
- Existing transit mode share
- Project location: urban center, urban, or suburban

[71] Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project specificity if desired. Please see Appendix C for calculation detail:

- Average vehicle occupancy

Mitigation Method:

% VMT Reduction = Coverage * B * Mode * D

Where

Coverage = % increase in transit network coverage

B = elasticity of transit ridership with respect to service coverage (see Table below)

Mode = existing transit mode share

D = adjustments from transit ridership increase to VMT (0.67, from Appendix C)

B:

Project setting	Elasticity
Suburban	1.01
Urban	0.72
Urban Center	0.65
Source: TCRP 95, Chapter 10	

Mode: Provide existing transit mode share for project or utilize the following averages

Project setting	Transit mode share
Suburban	1.3%
Urban	4%
Urban Center	17%
Source: NHTS, 2001http://www.dot.ca.gov/hq/tsip/tab/ documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf (Urban – MTC, SACOG. Suburban – SCAG, SANDAG, Fresno County.) Urban Center from San Francisco County Transportation Authority Countywide Transportation Plan, 2000.	

Assumptions:

Data based upon the following references:

[1] Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 10: Bus Routing and Coverage. 2004. (p. 10-8 to 10-10)

Emission Reduction Ranges and Variables:

Pollut0ant	Category Emissions Reductions[72]
CO_2e	0.1 – 8.2% of running
PM	0.1 – 8.2% of running
CO	0.1 – 8.2% of running
NOx	0.1 – 8.2% of running
SO_2	0.1 – 8.2% of running
ROG	0.06 – 4.9% of total

Discussion:

In general, transit operational strategies alone are not enough for a large modal shift [2], as evidenced by the low range in VMT reductions. Through case study analysis, the TCRP report [2] observed that strategies that focused solely on improving level of service or quality of transit were unsuccessful at achieving a significant shift. Strategies that reduce the attractiveness of vehicle travel should be implemented in combination to attract a larger shift in transit ridership. The three following factors directly impact the attractiveness of vehicle travel: urban expressway capacity, urban core density, and downtown parking availability.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (10% expansion, suburban) = 10% * 1.01 * 1.3% * .67 = 0.1%
- High Range % VMT Reduction (100% expansion, urban) = 100% * 0.72 * 17% * .67 = 8.2%

The low and high ranges are estimates and may vary based on the characteristics of the project.

[72] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

Preferred Literature:

- 0.65 = elasticity of transit ridership with respect to service coverage/expansion (in radial routes to central business districts)
- 0.72 = elasticity of transit ridership with respect to service coverage/expansion (in central city routes)
- 1.01 = elasticity of transit ridership with respect to service coverage/expansion (in suburban routes)

TCRP 95 Chapter 10 [1] documents the results of system-wide service expansions in San Diego. The least sensitivity to service expansion came from central business districts while the largest impacts came from suburban routes. Suburban locations, with traditionally low transit service, tend to have greater ridership increases compared to urban locations which already have established transit systems. In general, there is greater opportunity in suburban locations.

Alternative Literature:

- -0.06 = elasticity of VMT with respect to transit revenue miles

Growing Cooler [3] modeled the impact of various urban variables (including transit revenue miles and transit passenger miles) on VMT, using data from 84 urban areas around the U.S.

Alternative Literature References:

[2] Transit Cooperative Research Program. TCRP 27 – Building Transit Ridership: An Exploration of Transit's Market Share and the Public Policies That Influence It (p.47-48). 1997. [cited in discussion section above]

[3] Ewing, et al, 2008. Growing Cooler – The Evidence on Urban Development and Climate Change. Urban Land Institute.

3.5.4 Increase Transit Service Frequency/Speed

Range of Effectiveness: 0.02 – 2.5% vehicle miles traveled (VMT) reduction and therefore 0.02 – 2.5% reduction in GHG emissions[73]

Measure Description:

This project will reduce transit-passenger travel time through more reduced headways and increased speed and reliability. This makes transit service more attractive and may result in a mode shift from auto to transit which reduces VMT.

Measure Applicability:

- Urban and suburban context
- May be applicable in a rural context but no literature documentation available (effectiveness will be case specific and should be based on specific assessment of levels of services and origins/destinations served)
- Appropriate for specific or general plans

Baseline Method:

See introduction to transportation section for a discussion of how to estimate trip rates and VMT. The CO_2 emissions are calculated from VMT as follows:

$$CO_2 = VMT \times EF_{running}$$

Where:

VMT = vehicle miles traveled

$EF_{running}$ = emission factor for running emissions

Inputs:

The following information needs to be provided by the Project Applicant:

- Percentage reduction in headways (increase in frequency)
- Level of implementation
- Project setting: urban center, urban, suburban
- Existing transit mode share

[73] Transit vehicles may also result in increases in emissions that are associated with electricity production or fuel use. The Project Applicant should consider these potential additional emissions when estimating mitigation for these measures.

The following are optional inputs. Average (default) values are included in the calculations but can be updated to project-specific values if desired. Please see Appendix C for calculation detail:

- Average vehicle occupancy

Mitigation Method:

% VMT Reduction = Headway * B * C * Mode * E

Where

Headway = % reduction in headways

B = elasticity of transit ridership with respect to increased frequency of service (from [1])

C = adjustment for level of implementation

Mode = existing transit mode share

E = adjustments from transit ridership increase to VMT

Detail:

- Headway: reasonable ranges from 15 – 80%
- B:

Setting	Elasticity
Urban	0.32
Suburban	0.36
Source: TCRP Report 95 Chapter 9	

- C:

Level of implementation = number of lines improved / total number of lines serving project	Adjustment
<50%	50%
>=50%	85%
Fehr & Peers, 2010.	

- Mode: Provide existing transit mode share for project or utilize the following averages

Project setting	Transit mode share
Suburban	1.3%
Urban	4%
Urban Center	17%
Source: NHTS, 2001http://www.dot.ca.gov/hq/tsip/tab/ documents/travelsurveys/Final2001_StwTravelSurveyWkdayRpt.pdf (Urban – MTC, SACOG. Suburban – SCAG, SANDAG, Fresno County.)	

Urban Center from San Francisco County Transportation Authority Countywide Transportation Plan, 2000.

- E: 0.67 (see Appendix C for detail)

Assumptions:

Data based upon the following references:

[1] Transit Cooperative Research Program. TCRP Report 95 Traveler Response to System Changes – Chapter 9: Transit Scheduling and Frequency (p. 9-14)

Emission Reduction Ranges and Variables:

Pollutant	Category Emissions Reductions[74]
CO_2e	0.02 – 2.5% % of running
PM	0.02 – 2.5% % of running
CO	0.02 – 2.5% % of running
NOx	0.02 – 2.5% % of running
SO_2	0.02 – 2.5% % of running
ROG	0.01 – 1.5% % of total

Discussion:

Reasonable ranges for reductions were calculated assuming existing 30-minute headways reduced to 25 minutes and 5 minutes to establish the estimated low and high reductions, respectively.

The level of implementation adjustment is used to take into account increases in transit ridership due to shifts from other lines. If increases in frequency are only applied to a percentage of the lines serving the project, then we conservatively estimate that 50% of the transit ridership increase is a shift from the existing lines. If frequency increases are applied to a majority of the lines serving the project, we conservatively assume at least some of the transit ridership (15%) comes from existing riders.

In general, transit operational strategies alone are not enough for a large modal shift [2], as evidenced by the low range in VMT reductions. Through case study analysis, the TCRP report [2] observed that strategies that focused solely on improving level of service or quality of transit were unsuccessful at achieving a significant shift. Strategies that reduce the attractiveness of vehicle travel should be implemented in combination to attract a larger shift in transit ridership. The three following factors directly impact the

[74] The percentage reduction reflects emission reductions from running emissions. The actual value will be less than this when starting and evaporative emissions are factored into the analysis. ROG emissions have been adjusted to reflect a ratio of 40% evaporative and 60% exhaust emissions based on a statewide EMFAC run of all vehicles.

attractiveness of vehicle travel: urban expressway capacity, urban core density, and downtown parking availability.

Example:

Sample calculations are provided below:

- Low Range % VMT Reduction (15% reduction in headways, suburban, <50% implementation) = 15% * 0.36 * 50% * 1.3% *0.67 = 0.02%
- High Range % VMT Reduction (80% reduction in headways, urban, >50% implementation) = 80% * 0.32 * 85% * 17% * 0.67 = 2.5%

Preferred Literature:

- 0.32 = elasticity of transit ridership with respect to transit service (urban)
- 0.36 – 0.38 = elasticity of transit ridership with respect to transit service (suburban)

TCRP 95 Chapter 9 [1] documents the results of frequency changes in Dallas. Increases in frequency are more sensitive in a suburban environment. Suburban locations, with traditionally low transit service, tend to have greater ridership increases compared to urban locations which already have established transit systems. In general, there is greater opportunity in suburban locations

Alternative Literature:

- 0.5 = elasticity of transit ridership with respect to increased frequency of service
- 1.5 to 2.3% increase in annual transit trips due to increased frequency of service
- 0.4-0.5 = elasticity of ridership with respect to increased operational speed
- 4% - 15% increase in annual transit trips due to increased operational speed
- 0.03-0.09% annual GHG reduction (for bus service expansion, increased frequency, and increased operational speed)

For increased frequency of service strategy, *Moving Cooler* [3] looked at three levels of service increases, 3%, 3.5% and 4.67% increases in service, resulting in a 1.5 – 2.3% increase in annual transit trips. For increased speed and reliability, Moving Cooler looked at three levels of speed/reliability increases. Improving travel speed by 10% assumed implementing signal prioritization, limited stop service, etc. over 5 years. Improving travel speed by 15% assumed all above strategies plus signal synchronization and intersection reconfiguration over 5 years. Improving travel speed by 30% assumed all above strategies and an improved reliability by 40%, integrated fare system, and implementation of BRT where appropriate. *Moving Cooler* calculates estimated 0.04-0.14% annual GHG reductions in combination with bus service expansion strategy.

Alternative Literature References:

[2] Transit Cooperative Research Program. TCRP 27 – Building Transit Ridership: An Exploration of Transit's Market Share and the Public Policies That Influence It (p.47-48). 1997. [cited in discussion section]

[3] Cambridge Systematics. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.* Technical Appendices. Prepared for the Urban Land Institute. (p B-32, B-33, Table D.3) http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendices_Complete_102209.pdf

3.5.5 Provide Bike Parking Near Transit

Range of Effectiveness: Grouped strategy. [See TST-3 and TST-4]

Measure Description:

Provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points. The benefits of Station Bike Parking have no quantified impacts as a standalone strategy and should be grouped with Transit Network Expansion (TST-3) and Increase Transit Service Frequency and Speed (TST-4) to encourage multi-modal use in the area and provide ease of access to nearby transit for bicyclists.

Measure Applicability:

- Urban, suburban context
- Appropriate for residential, retail, office, mixed use, and industrial projects

Alternative Literature:

No literature was identified that specifically looks at the quantitative impact of including transit station bike parking.

Alternative Literature References:

None

Other Literature Reviewed:

None