ENPLAN

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SUBJECT: Biological and Wetland Screening for the Clean Tech Industrial Park Site

This is to confirm that ENPLAN has conducted a biological and wetland screening for a ±28.4-acre site located in the northwest quadrant of the Pine Grove Avenue/Ashby Road intersection, in the City of Shasta Lake, Shasta County. The study area consists of Shasta County Assessor's Parcel 064-150-060. Potential utility line corridors along Pine Grove Avenue (from Churn Creek to the western edge of the subject site) and District Drive (from Shasta Gateway Drive to Pine Grove Avenue) were also evaluated, with the study corridor extending 10 feet outward from the edge of pavement. The site ranges in elevation from approximately 720 to 770 feet above sea level. Run-off from the site flows to the east and southeast. Nelson Creek and Churn Creek flow through the northeastern tip of the parcel and converge immediately downstream.

Most of site has been significantly disturbed in the past. According to a newspaper article[1], the project site and surrounding lands were graded/denuded in the winter of 1979/80. The grading, which appears to have stopped just west of Nelson Creek, created two nearly level benches separated by a short, steep slope with an approximate 8-foot elevation change. The easterly bench gently slopes toward Nelson Creek. The site has subsequently been used by off-road vehicles, which has resulted in establishment of numerous dirt roads on the site.

Records Review

Records reviewed for this evaluation consisted of California Natural Diversity Data Base (CNDDB, July 2010 data) records, in-house biological records, soil records maintained by the U.S. Department of Agriculture's Natural Resources Conservation Service, and National Wetlands Inventory (NWI) maps (U.S. Fish and Wildlife Service, no date). The CNDDB records search covered a 5-mile radius around the project site (consisting of portions of the Shasta Dam, Project City, Redding, and Enterprise quadrangles). Soil records maintained by the Natural Resources Conservation Service[2] were reviewed to determine the soil types on the site and their potential to support wetlands. The NWI map[3] for the Shasta Dam quadrangle was reviewed to determine if wetlands features have been previously mapped on the site.

1 Redding Record Searchlight. February 22, 1980. C.V. grading 'a real disaster.'
2 http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
3 http://www.fws.gov/wetlands/Data/Mapper.html

Field Reconnaissance
The field reconnaissance was conducted on July 28 and 29, 2010. Many of the special-status species potentially occurring in the area would not have been evident at the time the fieldwork was conducted. The potential presence of species not readily identifiable during the field studies was determined on the basis of observed habitat characteristics.

Streams and Wetlands
The records review showed that two soil types are present on the site: Auburn loam, 8 to 30 percent slopes, and Boomer gravelly loam, 15 to 30 percent slopes. Both of these soil units are listed as "not hydric." The NWI map does not show any wetlands on or immediately adjacent to the site.

The field inspection showed that water enters the site from the upper reaches of Churn and Nelson creeks, which pass through the northeastern tip of the parcel. The remainder of the parcel appears to receive negligible runoff from surrounding lands: lands to the north, south and west are lower in elevation than the subject site, and runoff would be intercepted by Nelson Creek, Pine Grove Avenue, and the railroad tracks. However, with annual precipitation averaging approximately 63 inches, the site receives sufficient direct precipitation to maintain ponding in shallow, created wetlands for long duration during the wet season.

The principal wetland features on the site subject to Corps jurisdiction are Nelson Creek and Churn Creek, including several overflow channels of Churn Creek. Over 50 small depressions that contain water for long duration were mapped during our field evaluation; the largest of these is less than 0.08 acres in size. Although these features exhibit wetland hydrology, they are unlikely to have hydric soils due to the past grading of the site. Some of the depressions have a predominance hydrophytic plants, others support mainly upland species, and yet others have less than five percent vegetative cover and are considered unvegetated. The jurisdictional status of these features is unclear. They could be regulated as atypical, man-induced wetlands, as non-wetland "other waters of the U.S." or as non-jurisdictional features. Corps staff was contacted for guidance, but was unable to provide any clarification of the potential jurisdictional status of these features.

Approximately 15 stream-like features were also mapped and a number of similar, but less developed, features were also observed. A few of these connect to downstream jurisdictional waters and appear to be subject to Corps jurisdiction. The jurisdictional status of the remainder is not clear. While we believe they are non-jurisdictional erosional rills, the Corps could potentially claim jurisdiction over them. The enclosed figure shows the results of our initial wetland screening.

It should be noted that many of the potential wetland and stream-like features were not mapped during our previous field screening of the project site. Some of the features that were deemed non-jurisdictional during our earlier study now qualify as jurisdictional due to new guidance in the Arid West Supplement[4] on how to identify wetlands. Additionally, the Corps is now exerting great latitude in determining that features have a "significant nexus" to downstream waters, and is using this connection to support a jurisdictional claim.

4 U.S. Department of the Army, Corps of Engineers. 2008. Interim Regional Supplement to the Corps of Engineers Wetland *Delineation Manual: Arid West Region.* U.S. Army Engineer Research and Development Center, Vicksburg, MS.

With respect to the possible utility corridors, no features clearly subject to Corps jurisdiction are located within 10 feet of the edge of pavement. However, several features of questionable status occur in the road corridors. These include an intermittent stream at the southwest corner of the Pine Grove Avenue/District Drive intersection; this stream receives water from a storm drain along Pine Grove Avenue and feeds a well-developed, but possibly isolated, wetland to the southwest. A 2-foot-wide drainage ditch on the south side of Pine Grove Avenue (shown on our map) should be considered as a non-jurisdictional roadside ditch, but could potentially be claimed as jurisdictional by the Corps. Other roadside ditches are present on both sides of District Drive, but appear less likely to be claimed as jurisdictional. For most of its length, the ditch on the west side of District Drive is more than 10 feet from the edge of pavement and would not be affected by construction of the reclaimed-water pipeline. Two swales are present on the south side of Pine Grove Avenue, east of District Drive. We treated these features as non-jurisdictional upland swales when we completed the delineation for construction of Pine Grove Avenue. During road construction, steep cut slopes were created and riprap was placed in the drainage paths down the cut slope to provide erosion protection. We anticipate that the roadside runoff from these two upland swales will continue to be treated as non-jurisdictional, but the Corps may differ.

Even if Nelson and Churn creeks are not directly affected by site development, the Department of Fish and Game may comment on the project proposal during the CEQA review process. For main tributaries, such as Churn Creek, DFG stream/riparian policies call for development setbacks of 50 feet from the riparian dripline or 100 feet from the streambank, whichever is greater. For secondary tributaries, such as Nelson Creek, the setbacks are 25 feet and 50 feet, respectively.

Special-Status Species

Special-Status Plant Species

Review of CNDDB records showed that no special-status plant species have been previously reported on the site. Only one special-status plant species is reported to occur within the 5-mile records search radius: silky cryptantha (Table 1). This plant generally occurs on gravel bars of small to large streams. ENPLAN's in-house records show five additional special-status plant species not reported in the CNDDB, but known to occur within the search radius: Henderson's bentgrass, woolly meadowfoam, tripod buckwheat, Sanborn's onion, and depauperate milk vetch. None of these five species are state or federally listed. The bentgrass is on the California Native Plant Society's (CNPS) List 3.2 (Plants about Which We Need More Information – A Watch List; Fairly Threatened in California), while the remainder are on CNPS List 4.2 (Plants with a Limited Distribution; Fairly Threatened in California), or 4.3 (Plants with a Limited Distribution; Not Very Threatened in California). DFG does not generally require mitigation for loss of plant populations on CNPS Lists 3 or 4.

Field reconnaissance showed that the project site has a low potential to support any of the other species noted above. Most of the species would not have been identifiable at the time fieldwork was conducted. The only species likely to be of concern to DFG is silky cryptantha; if present, this species would probably occur in or immediately adjacent to Churn Creek, and would be very unlikely to be affected by development of the site.

Special-Status Wildlife Species
Review of CNDDB records showed that no special-status wildlife species have been previously reported on the site. Seven special-status wildlife species are known to occur within a 5-mile radius of the site: Central Valley spring-run Chinook salmon, Sacramento River winter-run Chinook salmon, western pond turtle, foothill yellow-legged frog, bald eagle, Pacific fisher, and Shasta salamander (Table 1). Three additional special-status fish species not reported in the CNDDB, but known to occur in the vicinity include Central Valley fall-run Chinook salmon (a federal and state Species of Concern), Central Valley late fall-run Chinook salmon (a federal and state Species of Concern), and Central Valley steelhead (a federal Threatened species). The CNDDB records search also identified five non-status wildlife species within the search radius: Shasta chaparral, Oregon shoulderband, Antioch Dunes anthicid beetle, Sacramento anthicid beetle, and silver-haired bat.

Churn Creek is known to support some of the anadromous fish noted above, and all of the taxa could potentially use Churn and/or Nelson creeks for non-natal rearing. Neither of these streams is designated as critical habitat for the federally listed anadromous fish. If the streams are directly affected by project implementation and suitable development setbacks are maintained from the streams, no direct impacts would occur. Nonetheless, indirect effects to special-status fish species and their downstream habitats could occur if sediment carried in storm water runoff from the site degrades spawning or rearing habitat downstream. With Best Management Practices implemented for erosion control, and pre-treatment of storm water runoff prior to its release, no adverse indirect effects to special-status fish species are expected.

Churn Creek is also known to support western pond turtles and has a low potential to support foothill yellow-legged frogs. The turtles and frogs could also potentially utilize Nelson Creek at some times of the year. If the streams are not directly affected, no direct effects on western pond turtles or foothill yellow-legged frogs would occur. Best Management Practices for erosion control and pre-treatment of storm water runoff prior to its release would minimize the potential for indirect effects to these species. If site development activities, such as construction of stormwater drainage outfalls, necessitate encroachment into Nelson or Churn creeks, federal Endangered Species Act consultation regarding anadromous salmonids would be required with the National Marine Fisheries Service as part of the Corps' permit process, and removal of pond turtles and frogs would be warranted prior to the start of in-water work.

The bald eagle requires 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. No bald eagles or their nests were observed during the field study, and the site is very unlikely to support nesting bald eagles. No adverse impacts on the bald eagle are anticipated as a result of project implementation.

In California, Pacific fishers primarily inhabit mixed-conifer forests composed of Douglas-fir and associated conifers, although they also are encountered frequently in higher elevation fir and pine forests, and mixed evergreen/broadleaf forests. Suitable habitat for Pacific

fishers consists of large areas of mature, dense forest stands with snags and greater than 50 percent canopy closure. The study area lacks suitable habitat for the Pacific fisher. The Pacific fisher was not observed during the wildlife survey and is not expected to be present.

The Shasta salamander is primarily restricted to limestone outcrops near Lake Shasta. Habitat consists of moist limestone fissures and caves, in volcanic or other rock outcroppings, and under woody debris on the surface during wet weather. No suitable habitat for the Shasta salamander occurs on the site, and the species is not expected to be present.

The Shasta chaparral and Oregon shoulderband are terrestrial snails. The Shasta chaparral inhabits limestone-derived soils with some protective shade, while the Oregon shoulderband inhabits basaltic talus slopes in riparian areas. No suitable habitat for either of these species occurs on the site, and the species are not expected to be present.

Antioch Dunes and Sacramento anthicid beetles inhabit sandy habitats in the Sacramento-San Joaquin Delta and along the Sacramento River. No suitable habitat for either of these species occurs on the site, and the species are not expected to be present.

Silver-haired bats generally occur in coastal and montane forests. Silver-haired bats roost in hollow trees, snags, buildings, rock crevices, caves, and under bark. The project site has a low potential to support silver-haired bats. Although avoidance measures are unlikely to be required by DFG, adverse effects on bats can generally be avoided through proper timing of construction or implementation of simple measures during tree removal.

Although there is virtually no potential for vernal pool fairy shrimp or vernal pool tadpole shrimp to occur on the site, the Army Corps of Engineers and/or U.S. Fish and Wildlife Service may require that surveys for fairy shrimp and tadpole shrimp be conducted.

Nesting Migratory Birds

The project site has a moderate to high potential to support nesting migratory birds. Such birds are most likely to nest in the riparian areas along Nelson and Churn creeks, but could also nest elsewhere on the site. The federal Migratory Bird Treaty Act requires that nesting birds not be adversely affected. To ensure compliance with the Act, vegetation removal should be conducted outside of the nesting season. In the local area, most birds nest between March 1 and July 31. Accordingly, the potential for adversely affecting nesting birds can be greatly minimized by removing vegetation before March 1 or after July 31. If this is not possible, a nesting survey should be conducted within two weeks prior to vegetation removal. If active nests are present, work within 500 feet of the nest(s) should be postponed until the young have fledged, unless a smaller nest buffer zone is authorized by the DFG.

Resource Agency Permit Requirements

At least some of the on-site wetlands are expected to be subject to the jurisdiction of the Corps of Engineers and Regional Water Quality Control Board. Fill of such features would trigger the need for a Department of the Army permit and Water Quality Certification. The Department of Fish and Game would likely assert jurisdiction only over Churn and Nelson

creeks. Assuming no direct effect to either of these streams, a Streambed Alteration Agreement would not be needed.

The Corps of Engineers would require an Individual Permit for site development if the total fill of waters exceeds one-half acre or if more than 300 lineal feet of stream is filled (the Corps can waive the 300-foot limitation but is unlikely to do so). If we assume that all of the mapped waters are subject to Corps jurisdiction and would be filled as part of site development, an Individual Permit would be needed from the Corps of Engineers. However, we anticipate that at least some, if not many, of the mapped features may be determined to be non-jurisdictional, and that the total acreage of impact would be less than one-half acre. Should the Corps accept the stream-like features as erosional rills not subject to its jurisdiction, site development could potentially proceed under Nationwide Permit 39 (Commercial and Institutional Developments).

As for all projects resulting in disturbance of more than one acre, a Notice of Intent/General Construction Activity Storm Water Permit (and Storm Water Pollution Prevention Plan) is required. The subject site contains surface water late into the season, or perhaps year-round; should dewatering be needed for utility trenches or other construction activities, a dewatering permit from the Regional Board would also be needed. Further, the Regional Board will require that post-construction storm water treatment measures be incorporated into the project design.

A tree survey may be required by the City of Shasta Lake. However, given past tree removal, very few trees on the site meet the City's minimum diameter for evaluation. These trees occur primarily along Churn and Nelson creeks and may not be affected by site development. We don't expect that tree protection requirements will significantly affect development plans. The City will also require completion of an Initial Study or EIR addressing the full range of impacts that could be generated by site development. Various other permits and approvals may be required by the City and other agencies (e.g., encroachment permits), but are beyond the scope of this review.

Conclusions and Recommendations

In summary, we find that the site contains waters subject to Corps, RWQCB, and/or DFG jurisdiction, could support several special-status wildlife species, and could support nesting migratory birds. Technical studies that will be needed in support of a development project include a wetland delineation in accordance with Corps protocols, a cultural resources study meeting federal Section 106 requirements (this will be requested by the Corps during its permit processing), additional botanical and wildlife surveys/documentation, and, if requested by the Corps, a vernal pool fairy shrimp/tadpole shrimp survey. If the Corps finds that site development could potentially affect salmonids in Churn and/or Nelson creeks, they would require completion of a Biological Assessment to document effects on the fish and fish habitat; the Corps would consult with the National Marine Fisheries Services upon completion of the Biological Assessment. A tree survey may also be required by the City of Shasta Lake.

Recommended measures include the following:

- Conduct a delineation of waters on the subject site and in the off-site utility line corridors, and obtain Corps verification of the delineation. This work should be

conducted early in the process so that jurisdictional waters can be avoided to the maximum extent feasible.

- Maintain a minimum 50-foot setback from the southwest bank of Nelson Creek, and confine development to the west of this line.
- Conduct follow-up botanical and wildlife surveys in support of subsequent CEQA review. Conduct vernal pool fairy shrimp/tadpole shrimp surveys if requested by the Army Corps of Engineers. Prepare a Biological Assessment for submittal to the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service, if requested by the Corps of Engineers.
- Implement Best Management Practices for erosion control to ensure that downstream waters are not adversely affected.
- If work would directly affect Nelson or Churn creeks, immediately prior to in-water work a qualified biologist should capture any pond turtles and foothill yellow-legged frogs that may be present and move them to a safe location upstream or downstream of the work area.
- Avoid vegetation removal during the nesting season (generally March 1 to July 31), to the extent possible. If vegetation removal must occur during the nesting season, a nest survey should be conducted by a qualified biologist, within two weeks of vegetation removal, to identify active nests in and adjacent to the project site. If nesting birds are found present, no construction should occur within 500 feet of an active nest until the young have fledged, unless a smaller buffer zone is authorized by the Department of Fish and Game.
- Obtain appropriate permits from the Army Corps of Engineers and Regional Water Quality Control Board and/or California Department of Fish and Game.
- Comply with other regulatory requirements such as CEQA, the City's tree preservation policies, erosion control requirements, etc.

Please contact me if you have any questions regarding our findings or recommendations.

Sincerely,

Donald Burk
Environmental Services Manager

encl. Table 1. Rarefind (CNNB) Report Summary
Wetland Screening Results

Table 1

Rarefind (CNDDB) Report Summary (July 2010 Data) Clean Tech Industrial Park Site: Shasta County APN 064-150-060					
Listed Element	Quadrangle[1]				Status[2]
	RE	EN	SH	PR	
Animals					
Antioch Dunes anthicid beetle			●		None
Bald eagle			●	●	FD, SE, SFP
Central Valley spring-run Chinook salmon	●				FT, ST
Sacramento River winter-run Chinook salmon	●	●			FE, SE
Foothill yellow-legged frog			●		SSC
Oregon shoulderband				●	None
Pacific fisher			●		FC, SSC
Sacramento anthicid beetle			●		None
Shasta chaparral	●	●			None
Shasta salamander			●	●	ST
Silver-haired bat		●			None
Western pond turtle		●	●	●	SSC
Plants					
Silky cryptantha				●	1B.2

Highlighting denotes the quadrangle in which the project site is located. Results are for a 5-mile search radius.

[1]Quadrangle Code

RE = Redding
EN = Enterprise
SH = Shasta Dam
PR = Project City

[2]Status Codes

Federal/State

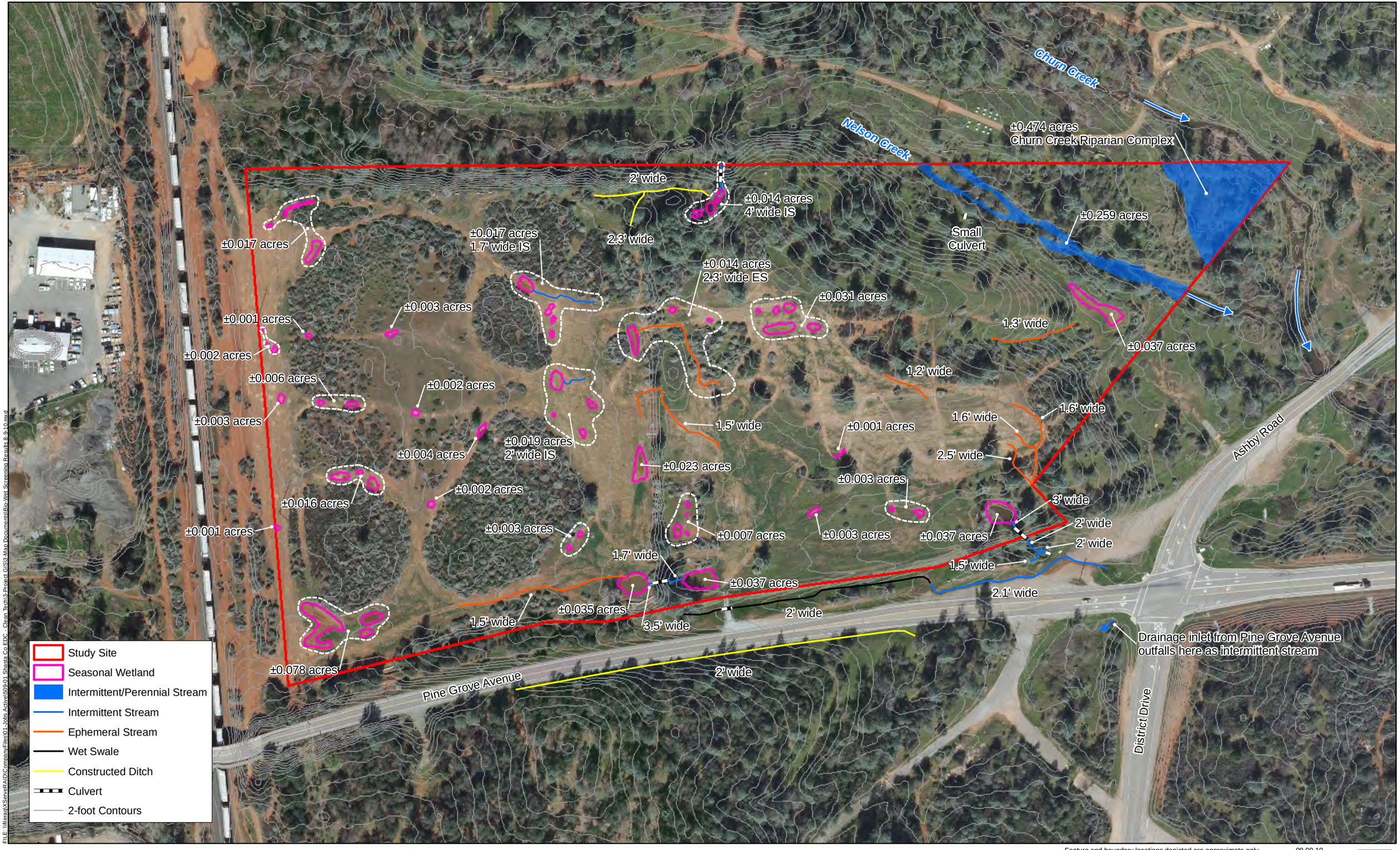
FE = Federally Listed – Endangered
FT = Federally Listed – Threatened
FC = Federal Candidate Species
FD = Federally Delisted
SE = State Listed – Endangered
ST = State Listed – Threatened
SSC = State Species of Concern
SR = State Rare
SFP = State Fully Protected

California Native Plant Society

List 1A = Plants Presumed Extinct in California
List 1B = Plants Rare, Threatened or Endangered in California and Elsewhere
List 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
List 3 = Plants About Which We Need More Information – A Review List
List 4 = Plants of Limited Distribution – A Watch List

Threat Ranks

0.1 = Seriously Threatened in California
0.2 = Fairly Threatened in California
0.3 = Not Very Threatened in California



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Feet
0 150

Clean Tech Industrial Park Site

Wetland Screening Results

Feature and boundary locations depicted are approximate only. 08.09.10

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