Water Management Plan

November 2025 Update / DRAFT

Contents

Attachments

SECTION 1 DESCRIPTION OF THE DISTRICT

District Name	City of Shasta Lake
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A. History

The population in the City of Shasta Lake area increased from about 100 people in 1938 to about 2,600 people in 1945 due to the construction of Shasta Dam.

The City of Shasta Lake water system was, in essence, created in 1945 by the establishment of the Shasta Dam Public Utility District (SDAPUD) that was organized to serve the unincorporated communities of Central Valley, Project City, and Pine Grove. The initial water system improvements were financed by private loans and bonds in 1947 and by the purchase agreement with Central Valley Water Company to lease purchase their existing distribution facilities. A long term (40 years) water contract was signed in 1948 with the United States Bureau of Reclamation (USBR). In 1954, the USBR replaced the 10-inch spiral steel line constructed in 1947 with 9,470 feet of 16-inch and 4,830 feet of 14-inch steel line. This also included increasing pump capacity and storage at the Reclamation Dam facilities. At the same time, a 6-inch line was also extended to serve the area then known as Buckeye County Water District (City of Redding).

In 1966, SDAPUD constructed a 2.0-million-gallon-per-day (mgd) filtration plant approximately one mile northwest of Central Valley, just above the Toyon Government Camp. Capacity improvements to this plant occurred over the next 24 years until 1990 when the new treatment plant at Fisherman's Point replaced the old facility. In 1978, the SDAPUD annexed the Summit City PUD and acquired its 1.0 mgd water filtration plant, transmission, and distribution facilities. Additional improvements to the distribution and storage facilities were implemented by the SDAPUD until 1993 when the City of Shasta Lake was created and acquired control of the water system.

1. Date District Formed: 1944 Date of First Reclamation Contract: 1948

   Original Size Acres: 4,768 Current Year (last complete calendar year): 2024

2. Current size, population, and irrigated acres:

	2024
Size (acres)	6,931
Population Served (urban connections)	10,209
Irrigated Acres	26.7(1)

Notes:
(1) All irrigated acres use recycled water provided by the City of Shasta Lake.

3. Water supplies received in current year:

Water Source	AF
Federal urban water (Table 1)	1,905.9
Federal agricultural water (Table 1)	0
State water (Table 1)	0
Other wholesaler (define) (Table 1)	0
Local surface water (Table 1)	0
Upslope drain water (Table 1)	0
District groundwater (Table 2)	0
Banked water (Table 1)	0
Transferred water (Table 1)	0
Recycled water (Table 3)	67.7
Other (define) (Table 1)	0
Total	**1,973.6**

4. Annual entitlement under each right and/or contract:

   The City of Shasta Lake has had agreements with other entities in the past, but the ones listed in the table below are the only currently active agreements from which the City can obtain water.

	AF	Source	Contract #	Availability Period(s)
Reclamation Urban AF/Y	4,430(1)	Central Valley Project (CVP)	4-07-20-W1134-P	Beginning July 1, 2020 (No expiration)
Reclamation Agriculture AF/Y	N/A			
City of Redding AF/Y	224	Groundwater (GW)	N/A	2007 agreement with annual renewal. City has not purchased water since 2005.
Shasta County Water Agency (SCWA) AF/Y	50	CVP	14-06-2003367A	Annual renewal between City and SCWA
Anderson Cottonwood Irrigation District (ACID) AF/Y	2,000	CVP	3346A-R-1	April 24, 2008 to February 28, 2045. Available annually between April 1 and October 31.
MCM Properties AF/Y	325(2)	CVP	7827A	March 1, 2006 to Feb 28, 2045
McConnell Foundation AF/Y	N/A	CVP	N/A	Short-term purchase agreement for needed amounts, subject to availability
Centerville Community Services District (CCSD) AF/Y	N/A	CVP	N/A	Short-term purchase agreement for needed amounts, subject to availability

Notes:
(1) The Reclamation amount of 4,430 AF/Y includes 30 AF/Y allocated to the City of Redding Summit City Pressure Zone, an area of the City of Redding supplied by the City of Shasta Lake.
(2) The MCM amount of 325 AF/Y has not been approved due to Cold Water Pool (CWP) issues.

5. Anticipated land-use changes. For Ag contractors, also include changes in irrigated acres:

   None.

6. Cropping patterns (Agricultural only):

   N/A, no agricultural uses.

7. Major irrigation methods (by acreage) (Agricultural only):

   N/A, no agricultural uses.

B. Location and Facilities

The City of Shasta Lake's water supply is surface water conveyed from Shasta Lake. The diversion point is at the face of Shasta Dam, where there are two intakes at elevation 754 and 960 feet above sea level. The coordinates are (T33N, R5W, 15). Raw water is pumped from the Dam to the City's Water Treatment Facilities via the USBR Raw Water Pumping Station located at the base of Shasta Dam.

The distribution system contains approximately 85 miles of pipelines. The system consists of steel, cast iron, asbestos cement, and polyvinyl chloride piping. Most of the steel piping is pre 1960 vintage with a large portion of smaller diameter mains (less than 5-inch in diameter) being installed prior to 1950. There are approximately 42,240 feet of undersized steel pipe over 50 years old that are in need of replacement.

See Attachment A - City Service Area Map.

1. Incoming flow locations and measurement methods:

Location Name	Physical Location	Type of Measurement Device	Accuracy
Shasta Lake	Lake Blvd (Water Plant)	Badger M2000 magmeter (owned/operated by Reclamation)	±0.5%
Redding/Shasta Lake emergency intertie	District Drive (Knauf property)	Siemens Sitrans F M Magflow Mag 5000	±0.5%
Bella Vista/Shasta Lake emergency intertie	Akrich Street	Badger ACCUMAG meter, forward/reverse flow capability	±0.5%

2. Current Year Agricultural Conveyance System:

   N/A.

3. Current year Urban Distribution System:

Miles of AC Pipe	Miles of Steel Pipe	Miles of Cast Iron Pipe	Miles - Other
18.4	21.03	0	40 (PVC, HDPE), 5.6 (Unknown)

4. Storage facilities (tanks, reservoirs, regulating reservoirs):

   The storage system consists of eight treated water storage tanks and one raw-water storage tank, ranging in size from 200,000 gallons to 2,900,000 gallons. The total treated water storage is approximately 5,650,000 gallons.

Name	Type	Capacity (AF)	Distribution or Spill	Tank Number
150,000 Gallon Raw Water (WTP)	Steel	0.46	Distribution (raw water)	-
220,000 Gallon (WTP)	Steel	0.68	Distribution	-

Name	Type	Capacity (AF)	Distribution or Spill	Tank Number
330,000 Gallon (WTP)	Steel	1.01	Distribution	-
200,000 Gallon (Pickard Street)	Steel	0.61	Distribution	1
200,000 Gallon (Rouge Road)	Steel	0.61	Distribution	2
200,000 Gallon (Shasta Way, North End)	Steel	0.61	Distribution	3A
2.9 MG (Montana Ave)	Steel	8.90	Distribution	4A
1 MG (Montana Ave)	Steel	3.07	Distribution	4B
600,000 Gallon (Holly Street)	Steel	1.84	Distribution	5

5. Description of the agricultural spill recovery system and outflow points:

   N/A.

6. Agricultural delivery system operation:

   N/A.

7. Restrictions on water source(s):

Source	Restriction	Cause of Restriction	Effect on Operations
Shasta Lake	CVP water can be delivered only within the USBR service area	Service area identified in USBR contract	Could delay future commercial and industrial growth
Shasta Lake	Transfer water from MCM Properties does not have long term approval to divert from the USBR	Despite issuing a Finding of No Significant Impact, USBR has not approved the MCM transfer agreement to date.	No drought protection during CVP allocation reduction years. Could eventually delay future growth of the City.

   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 MCM and ACID 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 had 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 long-term water transfer agreement between the City and MCM and between the City and ACID.

   In 2023, USBR issued a Finding of No Significant Impact and provided full approval of the ACID transfer agreement through October 31, 2044.

   USBR has not approved the MCM transfer agreement to date.

1. Proposed changes or additions to facilities and operations for the next 5 years:

   The 2016-2026 Water Master Plan update, which is available for viewing at https://www.cityofshastalake.gov/DocumentCenter/View/1299/2016-2026-Water-Master-Plan?bidId=, identifies recommended capital improvement projects. The City has a new 2.45 mgd potable water tank under construction at the corner of Lake Blvd and Kennett Road. The City also has secured grant funding for a new 1.8 mgd raw water tank at the treatment plant, in the design phase now. The USBR was awarded 2.5 million dollars for a raw water pump station upgrade design as well. Other additions may be constructed due to development, but nothing is currently planned.

C. Topography and Soils

1. Topography of the district and its impact on water operations and management:

   The City of Shasta Lake lies within the upper Churn Creek and Stillwater Creek watersheds that slope to the south from the hilly ridge forming the southern containment of Shasta Lake (W.A. Gelonek & Affiliates, Inc., 1981). The City lies at the northerly end of California's Sacramento Valley and borders Interstate 5 and the Union Pacific Railroad. Developed areas are gently rolling with numerous small creeks tributary to the two major waterways. The southern portion of the City tends to be flatter; the northern boundary becomes hilly with steep slopes and generally undeveloped land (W.A. Gelonek & Affiliates, Inc., 1981).

   Elevations in the City range from a high of 1,280 feet above sea level at the northern boundary to a low of about 670 feet at the southern boundary. The majority of the developed community lies between 800 and 900 feet.

   Due to the topography within the city limits, the water system includes 9 pressure zones fed by gravity storage tanks, with pressure reducing valves to regulate pressures. Pressures range from 12 psi at the highest elevation to 135 psi at the lowest elevation.

2. District soil association map (Agricultural only):

   N/A.

3. Agricultural limitations resulting from soil problems (Agricultural only):

   N/A.

D. Climate

1. General climate of the district service area:

   The City of Shasta Lake has hot dry summers and cool rainy winters. Temperatures range from below freezing to 115 degrees F, with most of the rain coming from November to March.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Ave Precip (inches)	10.88	10.05	8.89	4.31	2.56	1.22	0.23	0.37	1.02	3.44	7.66	10.78	61.59
Ave Temp (F)	46.2	49.0	52.3	58.4	66.5	74.8	82.1	80.7	75.3	65.1	53.3	46.7	62.4
Ave Max Temp (F)	53.1	57.1	61.5	69.0	78.0	86.9	95.7	94.3	88.1	75.7	60.9	53.3	72.5
Ave Min Temp (F)	39.2	40.9	43.0	47.8	55.0	62.6	68.5	67.0	62.4	54.5	45.6	40.1	52.2
Ave ETo (inches)	1.54	1.88	3.00	4.89	6.71	8.20	8.53	7.05	5.39	3.70	1.81	1.07	53.75

Weather station ID: 048135 Data period: Year 1943 to Year 2025

ET Station ID: CIMIS Reference ET Average annual frost-free days: 355

Frost Free Days – According to National Oceanic and Atmospheric Administration (NOAA), frost free days are days with temperatures greater than 28 degrees Fahrenheit.

2. Data Sources:
   a. Precipitation, temperature: Western Regional Climate Center Shasta Dam (048135). Represents monthly average from January 01, 1943, to September 23, 2025.
   b. Evapotranspiration: California Irrigation Management Information System (CIMIS) Station 224 Shasta College. Represents monthly average ETo from January 2013 to August 2025.
3. Impact of microclimates on water management within the service area:

   Impacts to operations are minor. Throughout the system, the City uses general freeze protection (insulation, heat trace, etc.).

E. Natural and Cultural Resources

1. Natural resource areas within the service area:

Name	Estimated Acres	Description
Moody Creek	Unknown	Small creek
Churn Creek and tributaries	Unknown	Small creeks

2. Description of district management of these resources in the past or present:

   None.

3. Recreational and/or cultural resources areas within the service area:

Name	Estimated Acres	Description
Margaret V. Polf Regional Park	16.70	Soccer, softball, football, bicycle-motocross, and walking/jogging trail
Harold “Bizz” Johnson Park	6.70	Little League Baseball
Wynne Price Athletic Field	7.92	High School and summer baseball
Clair Engle Park	4.95	Senior Community Center, outdoor stage and bandstand, playground, picnic facilities, barbecues, and a skateboard park
Akard Park	4.75	Outdoor basketball court, playground, picnic area, and small baseball field
Shasta Park	0.37	Playground and picnic area
Blue Canyon Park	0.79	Playground and picnic area
Triangle Park/Dam Worker’s Park	0.1	Picnic area

F. Operating Rules and Regulations

1. Operating rules and regulations:

   See Attachment B, City of Shasta Lake’s Operating Rules and Regulations for Water allocation policy (Agricultural only).

   N/A, no agriculture uses.

2. Official and actual lead times necessary for water orders and shut-off:

   N/A, no agriculture uses.

3. Policies regarding return flows (surface and subsurface drainage from farms) and outflow (Agricultural only):

   N/A, no agriculture uses.

4. Policies on water transfers by the district and its customers:

   Water transfers are governed by the specific agreements between agencies. The City has no overall general written policy. Other than the City's water contracts, the City usually buys water from only the McConnell Foundation, so other water transfers are not common.

G. Water Measurement, Pricing, and Billing

1. Agricultural Customers:

   N/A, no agriculture uses.

2. Urban Customers:

   a. Total number of connections: 3,893.
   b. Total number of metered connections: 3,893.
   c. Total number of connections not billed by quantity: 0.
   d. Percentage of water that was measured at delivery point: 100%.
   e. Percentage of delivered water that was billed by quantity: 98.9%.
   f. Measurement device table:

Meter Size and Type	Number	Accuracy(1) (+/- Percentage)	Reading Frequency (Days)	Calibration Frequency (Months)	Maintenance Frequency (Months)
5/8"-3/4" Disc	3,731	± 1.5%	30	N/A	Per manufacturer
1" Disc	89	± 1.5%	30	N/A	Per manufacturer
1-1/2" Disc	18	± 1.5%	30	N/A	Per manufacturer
2" Disc	42	± 1.5%	30	36	Per manufacturer
3" Turbine	4	± 1.5%	30	36	Per manufacturer
4" Turbine	1	± 1.5%	30	36	Per manufacturer
6" Turbine	1	± 1.5%	30	24	Per manufacturer
8" Ultrasonic Mach	1	± 1.5%	30	N/A	Per manufacturer
10" Magnetic	1	± 1.5%	30	12	Per manufacturer
Compound	1(2)	± 1.5%	30	N/A	Per manufacturer
Turbo	0		N/A		
Other (Reuse)	3	N/A	30	N/A	Per manufacturer
Total	**3,893**				

Notes:
(1) See Attachment C for documentation verifying the accuracy of measurement devices. The City is in process of replacing Badger water meters with Neptune water meters and anticipates replacement to be complete in 2026.
(2) This is a compound (4" and 1") meter to a portion of the City of Redding served by the City of Shasta Lake. The City of Redding further distributes the water to individual end users.

3. Agricultural and Urban Rates:

   a. Current year agricultural and/or urban water charges - including rate structures and billing frequency.
   Billing is done on a monthly basis. Charges are based on meter size (fixed) and usage (volumetric). See Attachment D for sample bill and current water rates. Water rates are approved through fiscal year 2028. The water rates will continue to be in effect until new rates are adopted.

   b. Annual charges collected from agricultural customers:
   N/A, no agriculture uses.

   c. Describe the contractor's record management system:
   The City uses contractor specific software: Incode's utility billing system, Badger Connect, Neptune 360, and Tantalus remote read software.
   Records are available on-line for customer review for seven years. Hard copies are kept for ten years in a vault and then placed in storage. Data are stored electronically and reconciled annually to the general ledger. The City does not currently reconcile delivery differences but plans to implement a procedure to compare water production versus delivered. Billing frequency is monthly.

H. Water Shortage Allocation Policies

1. Current year water shortage policies or shortage response plan – specifying how reduced water supplies are allocated:

   See Attachment E, Water Shortage Contingency Plan.

2. Current year policies that address wasteful use of water and enforcement methods:

   The City currently has policies and enforcement for certain types of landscaping projects per City Municipal Code Chapter 15.10. See Attachment B, Operating Rules and Regulations for Water.

I. Evaluate Policies of Regulatory Agencies Affecting the Contractor and Identify Policies that Inhibit Good Water Management

Discuss possible modifications to policies and solutions for improved water management:

None.

SECTION 2 INVENTORY OF WATER RESOURCES

A. Surface Water Supply

1. Surface water supplies in acre feet, imported and originating within the service area, by month (Table 1):

   See Attachment M, Water Inventory Tables, Table 1.

2. Amount of water delivered to the district by each of the district sources for the last 10 years:

   See Attachment M, Water Inventory Tables, Table 8.

B. Groundwater Supply

1. Groundwater extracted by the district and delivered, by month (Table 2) – See Attachment M, Water Inventory Tables, Table 8.
2. Groundwater basin(s) that underlies the service area:

   Not applicable. The City is located outside of the Redding ground-water basin, which contains the main water-bearing geologic units in the northern Sacramento Valley.

   The geology underlying the City is characterized mainly by dense, relatively unfractured metavolcanic rock (Copley greenstone). Wells completed in the Copley greenstone generally have very low yields (less than 10 gpm). Less dense, probably more highly fractured black shale, the Kennett formation underlies the northeastern corner of the City. Wells of record completed in the Kennett formation within the City have similar or slightly higher yields than those completed in the Copley greenstone.

   Chico formation rocks underlie the extreme south portion of the City. The Chico formation generally has poor water quality, and wells completed in this area of the City generally have low yields. A small area of Red Bluff formation occurs in the southeastern corner of the City.

   Most wells of record within the City have very low yields (less than 10 gpm). The highest yielding wells in the vicinity of the City are those of the Mountain Gate Community Services District (CSD). The Mountain Gate CSD has two wells that average about 200 gpm each. The Mountain Gate CSD wells are completed in highly fractured Kennett formation and are downgradient of a drainage area 1,200 acres that supplies recharge to the formation.

   The area with the best potential ground-water yield within the City's sphere of influence is the northeastern corner. This area appears to have a similar geologic setting to that of the Mountain Gate CSD well area. The Kennett formation has been mapped in that area, and there appears to be at least two fracture zones running through the area. Geologic conditions may not match exactly those of the Mountain Gate area, however, and it cannot be stated with certainty that yields similar to those at Mountain Gate can be obtained.

3. Map of district-operated wells and managed groundwater recharge areas:

   N/A, no district-operated wells.

4. Description of conjunctive use of surface and groundwater:

   N/A, no conjunctive use.

5. Groundwater Management Plan:

   Not applicable. The City is a member of the Redding Area Water Council, which is a collaboration of public and private agencies that are interested in our water resources and their plan and managed use. This collaborative has prepared a countywide water resource master plan, which looked at the groundwater resources within the Redding basin and Shasta County. The City of Shasta Lake is not located over a groundwater basin, does not use groundwater, and has no role in groundwater management. The countywide water resource master plan proposes possible conjunctive use of groundwater for the City of Shasta Lake. This would mean diverting ACID water out of Shasta Lake for our City while we pumped groundwater out of a future well, near the canal, into the ACID canal.

6. Groundwater Banking Plan:

   Not applicable.

C. Other Water Supplies

1. "Other" water used as part of the water supply – Describe supply:

   See Attachment M, Water Inventory Tables, Table 8.

D. Source Water Quality Monitoring Practices

1. Potable water quality (Urban only):

   See Attachment H – Annual Potable Water Quality Report.

2. Agricultural water quality concerns: [X] No [ ] Yes (if yes, describe):

   N/A, no agricultural uses.

3. Description of the agricultural water quality testing program and the role of each participant, including the district, in the program:

   NA, no agricultural uses.

4. Current water quality monitoring programs for surface water by source (Agricultural only):

   N/A, no agricultural uses.

5. Current water quality monitoring programs for groundwater by source (Agricultural only):

   N/A, no agricultural uses.

E. Water Uses Within the District

1. Agricultural:

   See Attachment M, Water Inventory Tables, Table 5 - Crop Water Needs.

   N/A, no agriculture uses.

2. Types of irrigation systems used for each crop in current year:

   N/A, No agriculture uses.

3. Urban use by customer type in current year:

Customer Type	Number of Connections	AF
Single-family	3,593	1,236.5
Multi-family	103	64.9
Commercial	155	174.4
Industrial	14	295.9
Institutional	See commercial	
Landscape irrigation	24	47.1
Wholesale	0	
Recycled	3	67.7
Other (USBR potable use)	1	21.0
Other (Hydrant)	--	0.5
Unaccounted for		52.0
Total	**3,893**	**1,960**

4. Urban Wastewater Collection/Treatment Systems serving the service area:

Treatment Plant	Treatment Level (1,2,3)	AF	Disposal to/Uses
Wastewater Treatment Plant	2	1,190	Churn Creek, reuse (irrigation, log deck wetdown)
	Total	**1,190**	
Total discharged to ocean and/or saline sink		0	

The City provides recycled water to Sierra Pacific Industries (SPI), Knauf Insulation (Knauf), and the California Department of Transportation (Caltrans). SPI utilizes the recycled water for soaking log decks for fire prevention, Knauf for landscape and turf irrigation, and Caltrans for irrigation of the Shasta Dam Boulevard interchange on I-5. All treated effluent that is not used by the three recycled water customers is discharged to Churn Creek.

5. Groundwater recharge in current year (Table 6):

   None.

   a. Transfers and exchanges into the service area in current year – (Table 1):
      None.
   b. Transfers and exchanges out of the service area in current year – (Table 6):
      None.

7. Wheeling, or other transactions in and out of the district boundaries – (Table 6):

   N/A.

8. Other uses of water:

   None.

F. Outflow from the District (Agricultural only)

N/A, No agriculture.

G. Water Accounting (Inventory)

Urban water inventory tables are included in Attachment M.

SECTION 3 BEST MANAGEMENT PRACTICES (BMP) FOR AGRICULATURAL CONTRACTORS

Not applicable, there are no agricultural uses or contractors.

SECTION 4 BEST MANAGEMENT PRACTICES FOR URBAN CONTRACTORS

A. BMP Compliance Methodology

The City's 15-year baseline (1997-2010) is 267 gallons per capita per day (gpcd). The City met the 2020 target (215 gpcd) in the year 2024 (167 gpcd).

B. Foundational BMPs

1. Operations Programs:

1.1 Operations Practices:

A.1) Conservation Coordinator: The City has a designated Water Conservation Coordinator (Chris Carr, ccarr@cityofshastalake.gov) that supervises BMP implementation, evaluates effectiveness, and communicates program goals to the community.

A.2) Water waste prevention: The City Municipal Code contains the Water Waste Prevention Ordinance (15.10.160), which is available for viewing at https://www.municode.com/library/ca/shasta_lake/codes/code_of_ordinances. This Water Waste Prevention Ordinance is in place at all times and is not dependent upon a water shortage for implementation.

A.3) Wholesale agency assistance programs: N/A.

1.2 Water Loss Control: The City has completed and submitted results of the AWWA water audits and loss control. The entire City is metered which allows the City to routinely calculate water losses. When a complaint is lodged regarding a potential water leak, the City takes swift action to identify and repair the given leak as warranted.

1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections: All connections in the City are metered. Refer to Retail Conservation Pricing.

1.4 Retail Conservation Pricing: These metered water rates consist of a monthly rate based on meter size, a rate per 100 cubic feet (CF) based on usage, and drought surcharges for Stages 1 through 6. See Attachment D.

2. Education Programs: See Attachment I for notices of education programs available to customers and the City website conservation page https://www.cityofshastalake.gov/870/Efficiency-and-Rebates.

2.1 Public Information Programs: The City implemented public education and outreach through the provision of flyers/brochures to customers, as well as providing bill inserts promoting water conservation, providing information on the City website, conducting a "Water Awareness Week," and providing tours of the WTP and WWTP.

2.2 School Education Programs: The City implemented an active school education program through the provision of educational materials, instructional assistance, classroom presentations, and participation in the Central Valley High school career day. Approximately 400 water conservation coloring books are distributed to children during an annual holiday party organized by the City. Additionally, approximately 200 water conservation coloring books are distributed to children at the annual Shasta Damboree.

C. Programmatic BMPs

3. Residential:

A.1) Residential assistance program: The City manages a comprehensive energy efficiency incentive program for residential and commercial customers focusing on peak load reduction and energy conservation. The City's Water Efficiency Rebate and Conservation website, which is available for viewing at https://www.cityofshastalake.gov/1215/Water-Rebates-and-Resources, has a link to the rebate programs and provides water conservation tips.

A.2) Landscape water survey: Water customers can schedule an appointment for free water audits, leak detection, and landscape surveys.

A.3) High-efficiency clothes washers (HECW): The City offers a washer rebate of $100 per installation if the high efficiency washing machine meets requirements (Water Factor of 5.0 or less).

A.4) WaterSense Specification (WSS) toilets: The City offers a toilet rebate of $100 per installation if the high performance low-flush toilet is a WaterSense labeled model replacing a standard toilet.

A.5) WaterSense Specifications for residential development: The City is in the process of updating the City Municipal Code to incorporate state specifications.

4. Commercial, Industrial, and Institutional (CII): Refer to residential assistance program. For commercial customers, rebates are available for upgraded lighting, heating, ventilation, and air conditioning (HVAC) equipment, and, in cases where an analysis is performed, rebates can be offered for additional equipment that reduces energy use and/or demand.

5. Landscape: The City offers an automatic irrigation controller rebate of $100 per installation if replacing a manually controlled model.

D. Provide a 5-Year Budget for Expenditures and Staff Effort for BMPs

1. Amount actually spent during current year:

   The City has a budget line item for water conservation totaling $18,000 per fiscal year. The City also has a budgeted line item for $1,000 each for public education and school education. This amount is not further allocated but can be used for any water conservation or education activities related to the BMPs. The staff hours are not officially allocated but represent a minimum effort typically expended on all water conservation or education efforts related to the BMPs.

Current Year (2024) BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$0	100
1.2	Water Loss Control	$0	0
1.3	Metering	$0	0
1.4	Retail Conservation Pricing	$0	0
2	Educational Programs		
2.1	Public Information Programs	$1,000	0
2.2	School Educational Programs	$1,000	0
3	Residential	$18,000	0
4	CII	$0	0
5	Landscape	$0	0
	Total	**$20,000**	**100**

2. Projected budget summary for 2nd year:

Year 2 (2025) BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$0	100
1.2	Water Loss Control	$0	0
1.3	Metering	$0	0
1.4	Retail Conservation Pricing	$0	0
2	Educational Programs		
2.1	Public Information Programs	$1,000	0
2.2	School Educational Programs	$1,000	0
3	Residential	$18,000	0
4	CII	$0	0
5	Landscape	$0	0
	Total	**$20,000**	**100**

3. Projected budget summary for 3rd year:

Year 3 (2026) BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$0	100
1.2	Water Loss Control	$0	0
1.3	Metering	$0	0
1.4	Retail Conservation Pricing	$0	0
2	Educational Programs		
2.1	Public Information Programs	$1,000	0
2.2	School Educational Programs	$1,000	0
3	Residential	$18,000	0
4	CII	$0	0
5	Landscape	$0	0
	Total	**$20,000**	**100**

4. Projected budget summary for 4th year:

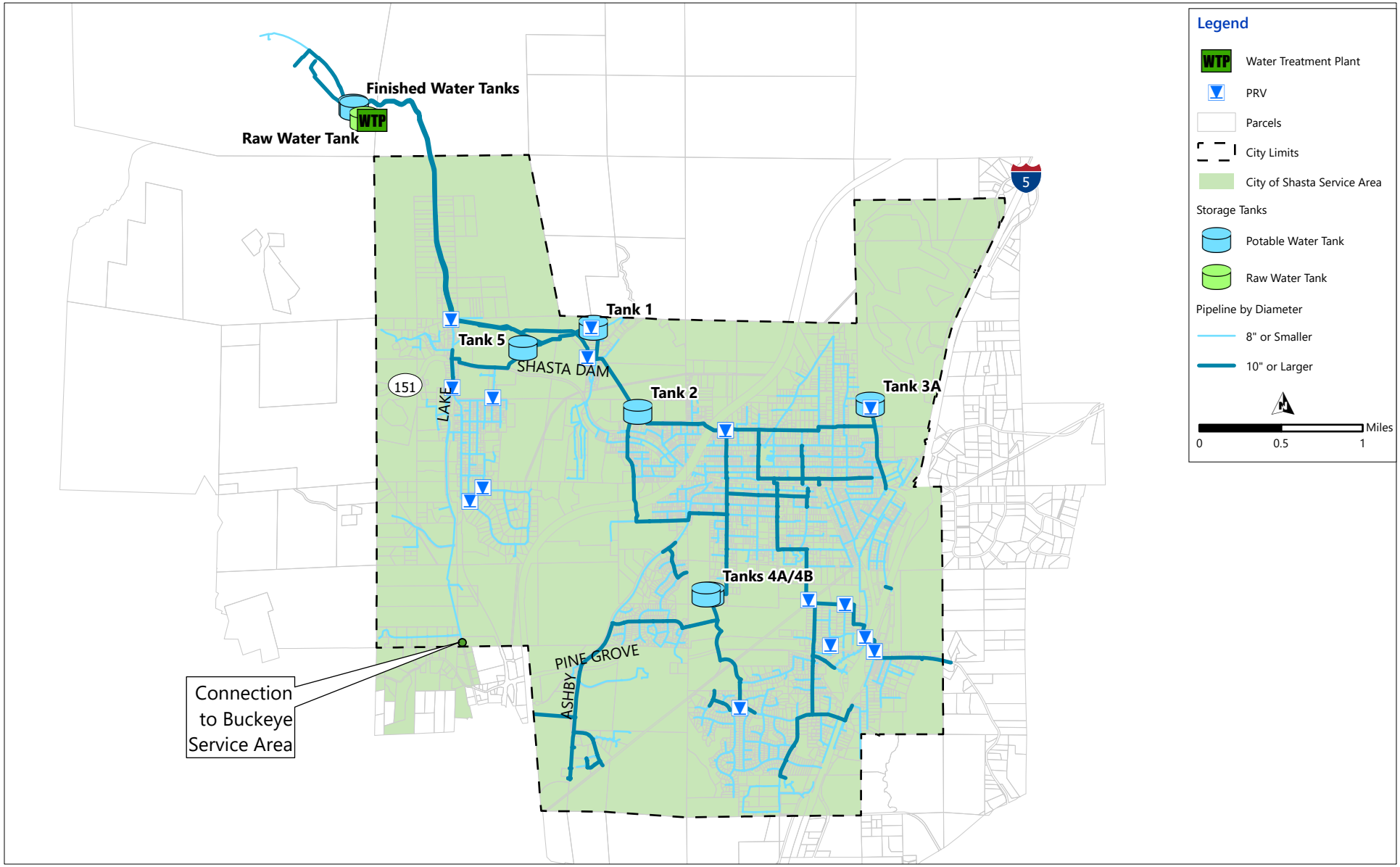
Year 4 (2027) BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$0	100
1.2	Water Loss Control	$0	0
1.3	Metering	$0	0
1.4	Retail Conservation Pricing	$0	0
2	Educational Programs		
2.1	Public Information Programs	$1,000	0
2.2	School Educational Programs	$1,000	0
3	Residential	$18,000	0
4	CII	$0	0
5	Landscape	$0	0
	Total	**$20,000**	**100**

5. Projected budget summary for 5th year:

Year 5 (2028) BMP #	BMP Name	Budgeted Expenditure (not including staff time)	Staff Hours
1	Utility Operations		
1.1	Operation Practices	$0	100
1.2	Water Loss Control	$0	0
1.3	Metering	$0	0
1.4	Retail Conservation Pricing	$0	0

2	Educational Programs		
2.1	Public Information Programs	$1,000	0
2.2	School Educational Programs	$1,000	0
3	Residential	$18,000	0
4	CII	$0	0
5	Landscape	$0	0
	Total	**$20,000**	**100**

ATTACHMENT A CITY SERVICE AREA MAP


Finished Water Tanks
WTP
Raw Water Tank
Tank 1
Tank 5
SHASTA DAM
151
LAKE
Tank 2
Tank 3A
Tanks 4A/4B
PINE GROVE
ASHBY
Connection to Buckeye Service Area
5
Legend
WTP
Water Treatment Plant
PRV
Parcels
City Limits
City of Shasta Service Area
Storage Tanks
Potable Water Tank
Raw Water Tank
Pipeline by Diameter
8" or Smaller
10" or Larger
N
Miles
0
0.5
1

ATTACHMENT B

OPERATING RULES AND REGULATIONS FOR WATER

Chapter 13.12 WATER SERVICE SYSTEM

Article I. Water Service Regulations

13.12.010 Application of chapter provisions.

This chapter fixes rates for water furnished by the city water department, and provides rules and regulations governing the furnishing of water by the city's water department.

(Amended during 1998 codification; prior code § 9.04.010)

13.12.020 Water not supplied outside city.

In accordance with the conditions of the city's contract with the United States Bureau of Reclamation, no water shall be supplied to any property located outside of the city's boundaries.

(Amended during 1998 codification; prior code § 9.04.020)

13.12.030 Service to premises—Limitations.

A. No water shall be served to two or more parcels of property separately owned through a common service pipe or water meter.

B. Each applicant for a water service connection shall be notified that a single meter may serve only one residence, or one residential building, or one commercial or one industrial building. However, residential or commercial building groups, the individual buildings of which cannot be owned separately, and which are located on parcels which cannot be divided into smaller portions, may be served from the same single meter.

C. If the use to which the building is intended indicates that a meter larger than a five-eighths-inch meter will be needed, it will be the responsibility of the city manager to determine the size of meter needed, and to inform the applicant that he or she will be required to install such a specified meter. Building plans, as approved by the Shasta County building department, must be submitted by the applicant for determination of meter size required.

(Amended during 1998 codification; prior code § 9.04.030)

13.12.040 Meter—Attachment conditions.

A. The city's water department may attach a meter to any service, or service pipe, at any time it shall be deemed expedient to do so, and render corrected bills from the date of installation of such meter according to the meter rates set forth in this title. After the meter is so attached, any damage to such meter resulting from malice, carelessness or neglect of the customer, or any member of his or her family or anyone employed by him or her, and any damage which may result from hot water or steam from a boiler or otherwise, shall be paid for by the consumer to the city on presentation of a bill therefor; and in case such bill is not paid, the water shall be shut off from the premises without further notice, and shall not be turned on until all charges are paid.

B. It is unlawful to interfere with or remove a water meter from any service where it has been attached, without first notifying and receiving permission from the meter and service clerk of the city. Such permission shall be granted only for the purpose of tests, replacements, repairs to the meter or service pipe, readjustment of service, or similar emergency.

(Amended during 1998 codification; prior code § 9.04.040)

13.12.050 Meter—Use required when—Bypassing prohibited.

A. All city water used on any premises where a meter is installed must pass through the meter, except as provided in case of private fire services. No bypass or connection between the meter and the main shall be made or maintained.

B. Consumers will be held responsible and charged for all water passing through their meters.

(Amended during 1998 codification; prior code § 9.04.050)

13.12.060 Meter—Inaccurate registration—Customer charges.

If a meter fails to register during any period, or is known to register inaccurately, the consumer shall be charged with an average daily consumption as a season, as shown by the meter when in use and registering accurately.

(Amended during 1998 codification; prior code § 13.12.060)

13.12.070 Meter—Testing by city— Adjustment of charges.

Any consumer may demand that the meter through which water is being furnished be examined and tested by the city, for the purpose of ascertaining whether or not it is registering correctly the amount of water which is being delivered through it. Such demand shall be made in writing to the city. The written demand shall be accompanied by a deposit in an amount determined by the current chargeout rate for one-half hour of city staff time. Upon receipt of such demand, it shall be the duty of the city to cause the meter to be examined and tested for the purpose of ascertaining whether or not it is registering correctly the water being delivered through it. If, on such examination and test, the meter shall be found to register over three percent more water than actually passes through it, another meter will be substituted therefor, the deposit fee shall be repaid to the person making the application, and the water bill for the current period adjusted in such a manner as the city manager may deem fair and just. If the meter is found to register not over three percent fast, the deposit shall be forfeited to the city and the water bills paid as rendered.

(Amended during 1998 codification; prior code § 9.04.070)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.080 Tapping or connections—City permission required.

No person shall tap or connect with any water main or pipe which forms any part of the water storage, transmission, or distribution system of the city, without first notifying and obtaining written permission to do so from the public works director of the city, who shall issue no such permit to or for any person or firm whose indebtedness to the city for water or other charges is delinquent.

(Amended during 1998 codification; prior code § 9.04.080)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.090 Services and meters—Property of city—Damage responsibility.

All services and water meters installed by the city shall remain at all times the property of the city, and shall be maintained and repaired and renewed by the city when rendered unserviceable through fair wear and tear; provided, that where replacements, repairs or adjustments of any meter are rendered necessary by the act, negligence or carelessness of the consumer, or any member of his or her family or person in his or her employ, any expense caused to the department thereby shall be charged against and collected from the consumer.

(Amended during 1998 codification; prior code § 9.04.090)

13.12.100 Installation at applicant's expense when.

In all cases where an installation is requested for any purpose not covered by other provisions of Chapters 12.04, 12.08 and Title 13 of this code, such service shall be installed at the expense of the applicant, at city cost.

(Amended during 1998 codification; prior code § 9.04.100)

13.12.110 Check valve requirements.

The placing of an approved reduced pressure principle (RPP) device on the property side of the water meter of any consumer is for the safety and protection from damage of the water system, meters and piping of the city, and such approved RPP devices shall be installed by and at the expense of the consumer. If the consumer fails to comply with this section, all costs to repair the damage to the city's water system, meters and piping will be billed to the consumer. In addition, the water will be shut off to the property until an approved RPP device is installed.

(Amended during 1998 codification; prior code § 9.04.110)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.120 Shutoff valves.

All shutoff valves on the city's side of the water meter are installed by the city for the use of the city. Such shutoff valves shall not be used or in any way molested or manipulated by consumers of water, except in case of emergency. For ordinary usage, all consumers shall provide their own shutoff valves and pressure regulators on the property side of the meter.

(Amended during 1998 codification; prior code § 9.04.120)

13.12.130 Vacant houses or businesses.

In case a house or business building becomes vacant, the regular minimum rate shall be charged and collected from the owner thereof, whether water is used or not, unless the water department is notified in writing of the fact that the property is unoccupied and is requested to cut off water therefrom.

(Amended during 1998 codification; prior code § 9.04.130)

13.12.140 Standby charges.

A standby charge shall be charged and collected from the owner of a vacant lot which has a water meter in place. The charge shall be the regular minimum monthly service charge.

(Amended during 1998 codification; prior code § 9.04.135)

13.12.150 Temporary water service.

A. Where temporary water service is requested to be furnished through fire hydrants or other existing connections, a portable meter will be installed and water charged for at the following rates:

The sum of the (meter surcharge) plus (demand charge for one unit) plus (consumption charge), in accordance with the surcharge, demand charge and consumption rates currently in effect.

B. Such service shall be installed by the water department at the expense of the applicant, at city costs.

(Amended during 1998 codification; prior code § 9.04.140)

13.12.160 Customer restrictions and city rights.

A. No consumer shall supply water to any person, firm or corporation other than the occupant or occupants of the premises of such consumer.

B. No person shall transport, or cause to be transported, water supplied by the City of Shasta Lake for any use outside the city service territory unless: 1) use is for the personal consumption of the transporter, and 2) the transporter is a customer of the City of Shasta Lake. The purpose of this restriction is to prevent the transportation and use of water to areas outside the city for other than personal use such as drinking, bathing, and personal sanitation of the customer.

C. No consumer shall permit leaks or waste of water. The city reserves the right to bill the property owner of substandard dwellings or other type buildings for water service where the city records show consistent financial losses due to billing the tenants of these substandard dwellings or other type buildings.

(Amended during 1998 codification; prior code § 9.04.150)

(Ord. No. 14-237, § 1, 12-2-2014)

13.12.170 Backflow prevention requirements—Leaks and waste prohibited.

The city is required by laws of the state of California, the California Administrative Code, Title 17, Chapter V, Sections 7583 through 7622 inclusive, and by the Shasta County health department to enforce regulations to safeguard its drinking water supply by preventing backflow into the water system. If a property served water by the city has a well or other source of water supply, it must provide a state-approved reduced pressure principle (RPP) device on the property side of the city water meter service. The RPP device must be tested and certified by a certified backflow device tester at least once each year for backflow leaks. If leakage is found, a new RPP device shall be installed immediately. The California Department of Public Health sanitary engineering personnel, the Shasta County health department personnel and the city's personnel may also inspect the RPP device at various times each year, and if found to be defective, the property owner will be notified to make repairs at once.

(Amended during 1998 codification; prior code § 9.04.160)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.180 Water for steam boilers, hydraulic elevators, power pumps and similar apparatus.

A. No person shall draw water from the city pipes directly into any stationary steam boiler, hydraulic elevator, power pump, or similar apparatus.

B. Where city water is used to supply a steam boiler, hydraulic elevator or power pump, its owner shall provide a tank of sufficient capacity to afford a supply for at least twelve (12) hours, into which the service pipe shall be discharged.

(Amended during 1998 codification; prior code § 9.04.170)

13.12.190 Service turnoff authority.

The water department shall have the power to turn off water from mains and pipes of the system without notice.

(Amended during 1998 codification; prior code § 9.04.180)

Article II. Rates and Charges

13.12.200 Rates for service.

The following rates and compensation are fixed and established as the rates to be charged and collected by the city's water department for water furnished by the department:

Monthly Service Charges	Effective 7/1/2024	Effective 7/1/2025	Effective 7/1/2026	Effective 7/1/2027	Effective 7/1/2028
Lifeline	$40.29	$42.95	$45.77	$48.76	$51.93
⅝"	$44.29	$46.95	$49.77	$52.76	$55.93
1"	$108.89	$115.43	$122.36	$129.71	$137.50
1.5"	$216.55	$229.55	$243.33	$257.93	$273.41
2"	$345.75	$366.50	$388.49	$411.80	$436.51
3"	$647.23	$686.07	$727.24	$770.88	$817.14
4"	$1,077.89	$1,142.57	$1,211.13	$1,283.80	$1,360.83
6"	$2,154.57	$2,283.85	$2,420.89	$2,566.15	$2,720.12
8"	$3,446.57	$3,653.37	$3,872.58	$4,104.94	$4,351.24
10"	$6,245.90	$6,620.66	$7,017.90	$7,438.98	$7,885.32
12"	$9,260.58	$9,816.22	$10,405.20	$11,029.52	$11,691.30

Consumption Charges ($/hcf)	Effective 7/1/2024	Effective 7/1/2025	Effective 7/1/2026	Effective 7/1/2027	Effective 7/1/2028
Residential	$2.85	$3.03	$3.22	$3.42	$3.63

Lifeline	$2.85	$3.03	$3.22	$3.42	$3.63
Multi-Family & Mobile	$2.85	$3.03	$3.22	$3.42	$3.63
Commercial & Industrial	$2.85	$3.03	$3.22	$3.42	$3.63
Comm. Irr. & Govt.	$2.85	$3.03	$3.22	$3.42	$3.63
Schools	$2.85	$3.03	$3.22	$3.42	$3.63

Drought Rates	**Effective 7/1/2024**	**Effective 7/1/2025**	**Effective 7/1/2026**	**Effective 7/1/2027**	**Effective 7/1/2028**
Stage 1—10% Reduction	$0.32	$0.34	$0.37	$0.40	$0.43
Stage 2—20% Reduction	$0.72	$0.77	$0.82	$0.87	$0.93
Stage 3—30% Reduction	$1.23	$1.31	$1.39	$1.48	$1.57
Stage 4—40% Reduction	$1.90	$2.02	$2.15	$2.28	$2.42
Stage 5—50% Reduction	$2.85	$3.03	$3.22	$3.42	$3.63
Stage 6—60% Reduction	$4.28	$4.54	$4.82	$5.11	$5.42

Water Supply Surcharges	**Effective 7/1/2024**
Constrained Year Water Supply	
McConnell Water Surcharge	$0.17
ACID Water Surcharge	$0.24
Combined Surcharge	$0.41

(Ord. 07-187 § 1: Ord. 04-158 § 1: Ord. 97-97 § 1: Ord. 94-31 § 1: prior code § 9.08.010)

(Ord. No. 09-201, § 1, 7-7-2009; Ord. No. 16-251, § 1, 8-16-2016; Ord. No. 24-304, § 1, 6-4-2024)

13.12.210 Unit determination—Property under one ownership with single use.

For a property under one ownership, having a single building or use, served by a single meter, as: One dwelling, one commercial enterprise or building, one business enterprise or building, one public service or public service building, one industrial operation or building, one school or school building, one church or church building, one nonprofit organization or building, one office or office building not in a multiple unit, or for any other single use or building, the unit determination shall be: One unit per meter.

(Prior code § 9.08.020)

13.12.220 Unit determination—Properties under one ownership having multiple uses.

A. For properties under one ownership, having multiple uses or buildings, served by a single meter, as: Homes, mobile homes, apartments, complex dwelling units, mobile home parks, two or more commercial enterprises or buildings, two or more business enterprises or buildings, two or more public services or public service buildings, two or more industrial operations or buildings, two or more churches or buildings, two or more schools or school buildings, or any combination of the above or other uses, the unit determination shall be:

One unit per occupancy, per proprietorship, per building, or per use.

B. When a unit is deleted, at the owner's request, from the multiple unit demand charge, no water shall again be served to the deleted unit, and a separate water service connection and meter must be installed to serve the deleted unit if water is served to it, unless the buildings or uses meet the requirements of subsection B. of Section 13.12.030 of this chapter.

(Prior code § 9.08.030)

13.12.230 Unit determination—Properties under one ownership providing rooms, guest homes or travel trailer parks.

Properties under one ownership, served by a single meter, providing rooms, spaces or suites, for rent or use, as: Rooming houses, hotels, motels, rest or guest homes, travel trailer parks, office or public buildings renting out rooms or suites, or any building or business with rooms, suites or spaces, the unit determination shall be:

Per room, suite, space or use division:

One-quarter, one-half, three-quarters, or one full unit, to be determined by the city according to estimated water required by the room, space, suite or division.

(Amended during 1998 codification; prior code § 9.08.040)

13.12.240 Unit determination— Nonpermanent, self-contained mobile homes used as domiciles.

All nonpermanent, self-contained, travel or mobile homes, used as a domicile for other than the property owner's family, occupying the same lot or property served with water by the city, shall be charged as one unit, in addition to the property owner's unit charge. Charges made for water to a nonpermanent trailer will be dropped when the city has been notified at the city's office, or in writing, that the trailer has been moved from the property, and no longer supplied with water.

(Amended during 1998 codification; prior code § 9.08.050)

13.12.250 Unmetered water rates.

The city shall charge for unmetered water delivered to any public or private customer as follows:

A. Water for commercial: regular city rates;

B. Water for street-sprinkling or flushings, and other nondomestic or noncommercial uses: three dollars and fifty cents ($3.50) per one thousand (1,000) gallons;

C. Water for park purposes: regular city rates.

(Amended during 1998 codification; prior code § 9.08.060)

Article III. Fire Protection Services

13.12.260 Fire hydrants—Placement and maintenance.

Fire hydrants shall be placed, maintained and repaired by the Shasta Lake fire protection district and/or the city.

(Amended during 1998 codification; prior code § 9.12.010)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.270 Fire hydrants—Opening and use restrictions.

Fire hydrants are provided for the sole purpose of extinguishing fires, and shall be opened and used by the city water department and the Shasta Lake fire protection district, or such persons as may be authorized to do so by the public works director and/or the fire chief, respectively, in accordance with the provisions of Chapters 12.04 and 12.08 and Title 13 of this code.

(Amended during 1998 codification; prior code § 9.12.020)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.280 Fire service—Monthly rates.

A. The monthly rates to be charged and collected for service used for unmetered fire protection shall be as follows:

Monthly Private Fire Charges	Effective 7/1/2024	Effective 7/1/2025	Effective 7/1/2026	Effective 7/1/2027	Effective 7/1/2028
2" or Less	$16.93	$17.95	$19.03	$20.18	$21.40
3" or Less	$46.17	$48.95	$51.89	$55.01	$58.32
4" or Less	$96.60	$102.40	$108.55	$115.07	$121.98
6" or Less	$277.62	$294.28	$311.94	$330.66	$350.50
8" or Less	$589.82	$625.21	$662.73	$702.50	$744.65
10" or Less	$1,059.43	$1,123.00	$1,190.38	$1,261.81	$1,337.52
12" or Less	$1,710.30	$1,812.92	$1,921.70	$2,037.01	$2,159.24

B. In no case shall private fire hydrants be used for other purposes than fire protection. Violation of this rule will be cause for water service to be discontinued to the premises.

C. No charge will be made for private fire protection where water used passes through a metered service.

(Prior code § 9.12.030)

(Ord. No. 16-251, 8-16-2016; Ord. No. 24-304, § 2, 6-4-2024)

Ord. No. 24-304, § 2, adopted June 4, 2024, amended the title of § 13.12.280 to read as herein set out. The former § 13.12.280 title pertained to fire service—monthly rates—use of hydrants prohibited when.

13.12.290 Private fire protection services and charges.

Private fire protection, when installed by the city, shall be installed at the expense of the applicant at city cost. Such services shall be used only in case of fire. Any person using such fire service for other than fire purposes shall be subject to the penalty provisions contained in Section 1.16.010 for each such use. Additionally, the city is authorized to enforce this provision by cutting off all water from the property where such use occurs. When water is cut off by virtue of this provision, no further water shall be served to such property until any estimated water consumption and penalties have been paid, plus the turn-on charges in accordance with Sections 13.04.330, 13.04.370 and 13.04.380 of this title.

(Amended during 1998 codification; prior code § 9.12.040)

(Ord. No. 12-228, § 1, 9-4-2012)

Article IV. Water Main Extensions

13.12.300 Agreement and charge for installation.

In general, whenever extension of a water main within the city boundaries is required because a principal part of the premises to be served does not lie along an available water main with adequate capacity and proper pressure, the extension will be installed after an agreement has been executed by the applicant and the city, and the applicable charge paid by the applicant. The manner of determining this charge is set forth in this chapter.

(Amended during 1998 codification; prior code § 9.16.010)

13.12.310 Installation—By owner or city— Specifications and costs.

A. A water main extension may be installed by the city at its option, or the city may require the applicant to install the water main extension.

B. In the case of an applicant installation, the material installed and the work performed must comply with the specifications furnished by the city, and shall be subject to city inspection at all times. The applicant will be required to pay for all inspection services.

C. Upon completion of the installation in accordance with the agreement, title to the extension shall be transferred to the city by the applicant upon acceptance of the extension by the city.

(Amended during 1998 codification; prior code § 9.16.020)

13.12.320 Specifications determined by city.

The specifications, point of commencement, charge to the applicant, and all other requirements for main extensions shall be determined by the city, with proper allowance being made for future demand.

(Amended during 1998 codification; prior code § 9.16.030)

13.12.330 Financing by city when.

Main extensions installed for general improvement of the distribution system will be financed by the city. Such improvements will not be installed upon the request of one or more applicants to serve a particular premises.

(Amended during 1998 codification; prior code § 9.16.040)

13.12.340 Charges to applicants for main extensions—Determination.

A. In general, the following provisions shall be in effect for determining the charges to the applicant for a main extension:

   1. The maximum length of main extension for which the applicant will be required to pay shall not exceed the distance from the location of service to the nearest available main six inches or larger in diameter with adequate capacity and under proper pressure to supply the expected demand. However, the applicant will be required to pay for extension of mains to front completely the premises to be served.

   2. The charge shall be for an extension adequate to serve the applicant, but shall not be less than the charge for installing a main six inches in diameter, and appurtenant structures and costs.

   3. The city will sustain that portion of the cost for an extension which exceeds the charge for the main required to serve the development proposed. The city may require a guarantee of revenue whenever enlargement of existing facilities is needed behind the point of commencement of an extension.

B. When a main extension is requested by a property owner for fire service, the extension will be paid in full by the property owner (owners) requesting the extension.

C. When the city determines to install water main extensions and the extension benefits the water distribution system as a whole and offers a particular benefit to adjacent property owners:

   1. The city shall install the extension.

   2. Thirty (30%) percent of the construction cost will be attributed to any adjacent properties specially benefited by the extension. This portion will be distributed to the specially benefited adjacent properties based on each property's linear foot frontage as it relates to the total footage of the extension.

   3. Payment from the specially benefited properties will be due when the property connects to the water system and will be paid along with the then existing fees and charges required of all new meters.

   4. In the event a property owner can demonstrate that the owner's property was benefited less than the share of costs attributed to the property, the city council may reduce the share of costs to the appropriate amount.

(Amended during 1998 codification; prior code § 9.16.050)

(Ord. No. 12-228, § 1, 9-4-2012)

13.12.350 Front foot charges—Requirements and procedures.

A. The city will collect a front foot charge, where applicable, before granting a standard service or a private fire service to premises which lie along and may be served directly from any main extension installed under the

provisions of this chapter. The front foot charge for a main extension shall be in effect for a period of twenty (20) years from the date of execution of the contract, if the extension is installed by the applicant. This provision shall apply to all water mains installed under contracts executed on or after the effective date of the ordinance codified in Chapters 12.04, 12.08 and Title 13 of this code.

B. The front foot charge shall not be applied more than once to any premises. Except for unusual conditions, premises already served at the date of installation of the extension will be excluded in determining the front foot charge.

C. If a main extension is installed by an applicant, the front foot charge will be determined by dividing the charge for the extension by the front footage of all premises which lie along and may be served directly from the extension.

(Amended during 1998 codification; prior code § 9.16.060)

13.12.360 Front foot charges—Refund conditions.

A. The applicant who has financed a main extension (or his or her assigns) is entitled to the front foot charges collected by the city on such extension where it is necessary for the city to connect a standard service or a private fire service to such extension. The amounts collected will be refunded without interest within ninety (90) days following the date of collection.

B. No front foot charge refunds will be made after twenty (20) years from the date of execution of the contract for an applicant-installed extension, except those refunds which have accrued during such twenty (20) year period.

C. The total amount of all refunds made by the city to the applicant (or his or her assigns) may not exceed the charge to the applicant, computed as if the installation were made by the city.

(Amended during 1998 codification; prior code § 9.16.070)

ATTACHMENT C

MEASUREMENT DEVICE DOCUMENTATION

Easy Installation, Seamless Integration

Neptune® E-CODER®)R900*i*™

The Neptune® E-CODER®)R900*i* ™ is designed as an all-in-one package – pairing absolute encoder technology with the reliable connectivity of any Neptune R900® System endpoint. The E-CODER register provides an easy-to-read LCD display combined with flexible AMR/AMI connectivity and is compatible with any Neptune mechanical meter. Integrated endpoints eliminate the hassle of wiring while delivering reliable and accurate data to optimize system performance, improve customer service, and support water conservation initiatives.

- Eliminate the hassle of endpoint programming and wiring
- Flexible meter reading options with AMR/AMI capabilities
  - R900 (AMR/AMI)
  - LoRaWAN® (AMI)
  - Cellular (AMI)
- Peace of mind with access to 96 days of historical consumption data
- Prevent tampering and environmental damage with no external wires
- Improve service quality and billing accuracy with detailed consumption data
- Reduce inventory with an all-in-one register and endpoint package
- Pinpoint trouble areas quickly with flags that identify leaks, reverse flow, and tampering
- Streamline testing and onsite troubleshooting with on-screen flow rate and flags

NEPTUNE
TECHNOLOGY GROUP

#winyourday

Endpoint Specifications

Electrical Specifications

- Endpoint power: Lithium battery with capacitor

Transmitter Specifications:

- Two-way endpoint
- Meter Reading & Flag Interval:
  - Every 15 minutes
  - Leak, Backflow, Tamper
- Data Logging Interval:
  - 96 days of hourly data

Environmental Conditions

- Operating Temperature: -22ºF to +149ºF (-30ºC to +65ºC)
- Storage Temperature: -40°F to +158°F (-40°C to +70°C)
- Operating Humidity: 100% condensing, fully submersible (Pit Set version only)

Materials

- Register Housing:
  - Engineer polymer
  - Roll-sealed copper (Pit Set version only)
- Lens: Tempered Glass

Options

Compatibility

- Available for every size Neptune mechanical meter
- Handhelds/mobile devices with belt clip transceiver – mobile RF
- Mobile data collector RF
- R900® gateway – fixed network RF
- LoRaWAN gateway – fixed network RF

Resolution & Capacity

High Resolution (8-digit reading)

	Size	G	ft³	m³
T-10 (Includes disc side of TRU/FLO)	⅝", ¾", 1"	0.1	0.01	0.001
T-10 (Includes disc side of HPPIII)	1½", 2"	1	0.1	0.01
HP Turbine (Includes FS Turbine, HPPIII, Turbine Side of TRU/FLO)	1½", 2", 3", 4"	1	0.1	0.01
HP Turbine (Includes FS Turbine, HPPIII, Turbine Side of TRU/FLO)	6", 8", 10"	10	1	0.1

Register Capacity

	Size	G	ft³	m³
T-10®(Includes disc side of TRU/FLO®)	⅝ ", ¾", 1"	10,000,000	1,000,000	100,000
T-10 (Includes disc side of HPPIII)	1½", 2"	100,000,000	10,000,000	1,000,000
HP Turbine (Includes FS Turbine, HPPIII, Turbine Side of TRU/FLO)	1½", 2", 3", 4"	100,000,000	10,000,000	1,000,000
HP Turbine (Includes FS Turbine, HPPIII, Turbine Side of TRU/FLO)	6", 8", 10"	1,000,000,000	100,000,000	10,000,000

Units of Measure

- U.S. Gallons, Cubic Feet, Imperial Gallons, Cubic Metres

Antennas

- Internal antenna (not available on LoRaWAN or cellular)
- Optional through-the-lid antenna
- 18" coax
- 6' coax
- 20' coax

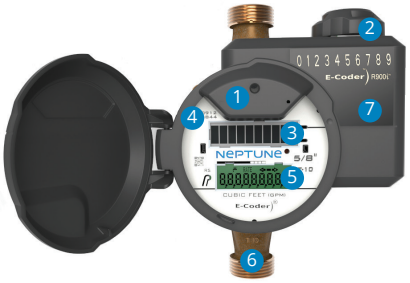
Warranty

- Neptune provides a limited warranty for performance, materials, and workmanship. See warranty statement for details.

LCD Display

- 9-digit display for extra resolution on manual reads.

1. Internal Antenna
2. External Antenna Port
3. Solar Panel
4. Date of Manufacture
5. LCD Display
6. T-10® Meter
7. R900® Endpoint Integrated



FLOW INDICATOR
Shows the direction of flow through the meter: ON Water in use. OFF Water not in use. Flashing Water is running slowly. (-) Reverse flow. (+) Forward flow.

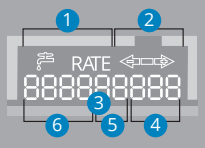
LEAK INDICATOR
Displays a possible leak: OFF No leak indicated. Flashing Intermittent leak indicates that water has been used for at least 50 of the 96 15-minute intervals during a 24-hour period. On Continuously Indicates water use for all 96 15-minute intervals during a 24-hour period.

RATE OF FLOW
Average flow rate is displayed every twelve seconds on LCD display.

RATE

LCD DISPLAY
Nine-digit LCD displays the meter reading in billing units of measure: U.S. gallons, cubic feet, Imperial gallons, or cubic metres.

1. E-CODER basic reading/customary 6-digit remote reading
2. Customary sweep hand digits
3. E-CoderPLUS reading (8-digit remote reading)
4. Testing units used for diagnostics
5. Extended reading units
6. Customary billing units



neptunetg.com
#winyourday

Neptune Technology Group
1600 Alabama Highway 229
Tallassee, AL 36078
800-633-8754 f 334-283-7293

Badger Meter

Recordall® Cold Water Bronze Disc Meter

Size 5/8 x 3/4" (DN 15mm)

NSF/ANSI Standard 61 Certified, Annex G

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Lead-Free Alloy. The Lead-Free Alloy (Trade designation: M25-LL) version has been certified to comply with NSF/ANSI Standard 61, Annex G and carries the NSF-61 Mark on the housing. All components of the Lead-Free Alloy meter, i.e., disc, chamber, housing, seals, etc. comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger Meter Recordall Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Meter Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register. The water meter is available in bronze and lead-free alloy with externally-threaded spuds. A corrosion-resistant engineered polymer material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment.

MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating engineered polymer gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Automatic meter reading systems are available for all Recordall Disc meters. All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Meter Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger Meter offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Model 25

SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	1/2 - 25 GPM (.11 to 5.7 m^3/hr)
Low Flow (Min. 98.5%)	1/4 GPM (.057 m^3/hr)
Maximum Continuous Operation	15 GPM (3.4 m^3/hr)
Pressure Loss at Maximum Continuous Operation	2.8 PSI at 15 GPM (0.19 bar at 3.4 m^3/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, permanently sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Register Capacity	10,000,000 Gallons, 1,000,000 Cubic Feet, 100,000 m^3. 6 odometer wheels.
Meter Connections	Available in bronze and engineered polymer to fit 3/4" (DN 15mm) spud thread bore diameter sizes. See table below.

METER SPUD AND CONNECTION SIZES

Size Designation	x	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
5/8" x 3/4"	x	7 1/2"	5/8", 3/4"	1" (3/4")	3/4"

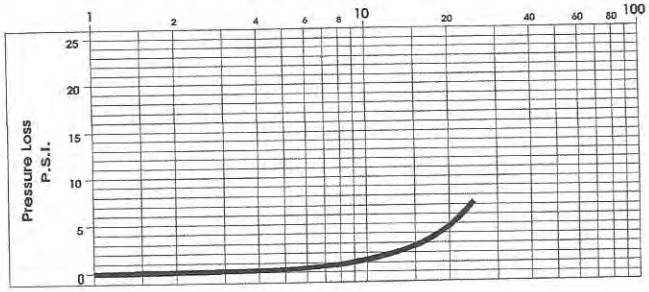
MATERIALS

Meter Housing	Cast Bronze, Lead-Free Alloy
Housing Bottom Plates	Bronze, Cast Iron, Engineered Polymer, Lead-Free Alloy
Measuring Chamber	Engineered Polymer
Disc	Engineered Polymer
Trim	Stainless Steel, Bronze
Strainer	Engineered Polymer
Disc Spindle	Stainless Steel, Engineered Polymer
Magnet	Ceramic, Polymer-Bonded
Magnet Spindle	Stainless Steel, Engineered Polymer
Register Lid and Shroud	Engineered Polymer, Bronze
Generator Housing	Engineered Polymer

Technical Brief

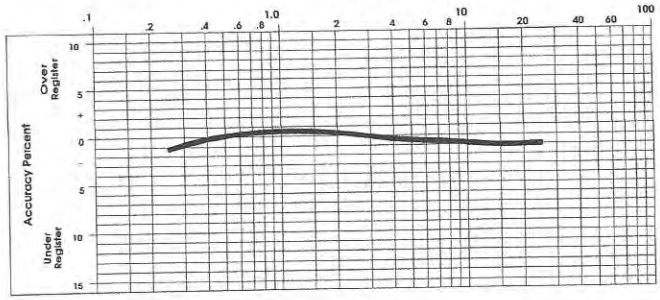
PRESSURE LOSS CHART

Rate of Flow, in Gallons per Minute



ACCURACY CHART

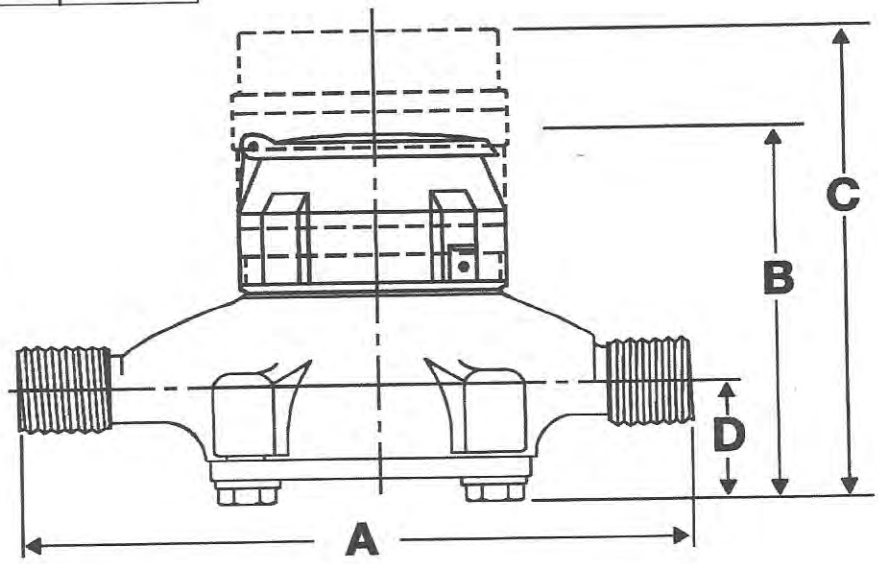
Rate of Flow, in Gallons per Minute



METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG./RTR	C HEIGHT GEN.	D CENTERLINE BASE	WIDTH	APPROX. SHIPPING WEIGHT
$^{5}/_{8}$X$^{3}/_{4}$" (15mm)	25	$7^{1}/_{2}$" (190mm)	$4^{15}/_{16}$" (125mm)	$6^{5}/_{16}$" (160mm)	$1^{11}/_{16}$" (42mm)	$4^{1}/_{4}$" (108mm)	$4^{1}/_{2}$ lb. (2.0kg)

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M25	10	1	.1/.01



Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

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Badger Meter

Recordall® Cold Water Bronze Disc Meter
Size 1" (DN 25mm)
NSF/ANSI Standard 61 Certified, Annex G

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Lead-Free Alloy. The Lead-Free Alloy (Trade designation: M55-LL) version has been certified to comply with NSF/ANSI Standard 61, Annex G and carries the NSF-61 Mark on the housing. All components of the Lead-Free Alloy meter, i.e., disc, chamber, housing, seals, etc. comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger Meter Recordall Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Meter Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register. The water meter is available in bronze and Lead-Free Alloy with externally-threaded spuds. A corrosion-resistant engineered polymer material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment.

MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating engineered polymer gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Automatic meter reading systems are available for all Recordall Disc meters. See the back of this sheet for additional information. All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Meter Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger Meter offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Model 55

SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	1-55 GPM (.23 to 12.5 m³/hr)
Low Flow (Min. 95%)	1/2 GPM (.11 m³/hr)
Maximum Continuous Operation	40 GPM (9.1 m³/hr)
Pressure Loss at Maximum Continuous Operation	3.4 PSI at 40 GPM (.23 bar at 9.1 m³/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Register Capacity	10,000,000 Gallons, 1,000,000 Cubic Feet, 100,000 m³, 6 odometer wheels.
Meter Connections	Available in bronze and engineered polymer to fit 1" (DN 25mm) spud thread bore diameter sizes. See table below.

METER SPUD AND CONNECTION SIZES

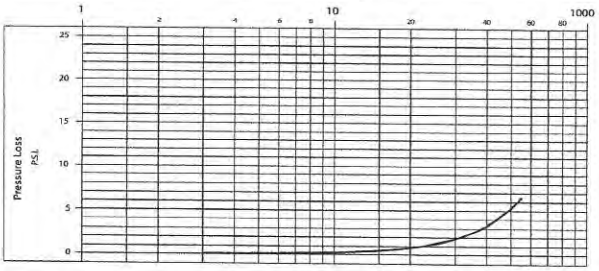
Size Designation	x	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
1"	x	10 3/4"	1"	1 1/4" (1")	1"

MATERIALS

Meter Housing	Cast Bronze, Lead-Free Alloy
Housing Bottom Plates	Bronze, Cast Iron, Lead-Free Alloy
Measuring Chamber	Engineered Polymer
Disc	Engineered Polymer
Trim	Stainless Steel, Bronze
Strainer	Engineered Polymer
Disc Spindle	Engineered Polymer
Magnet	Polymer Bonded
Magnet Spindle	Engineered Polymer
Register Lid and Shroud	Engineered Polymer, Bronze
Generator Housing	Engineered Polymer

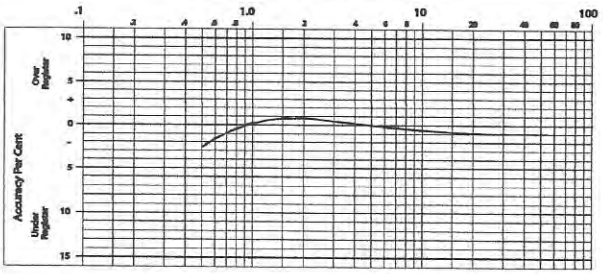
PRESSURE LOSS CHART

Rate of Flow, in Gallons per Minute



ACCURACY CHART

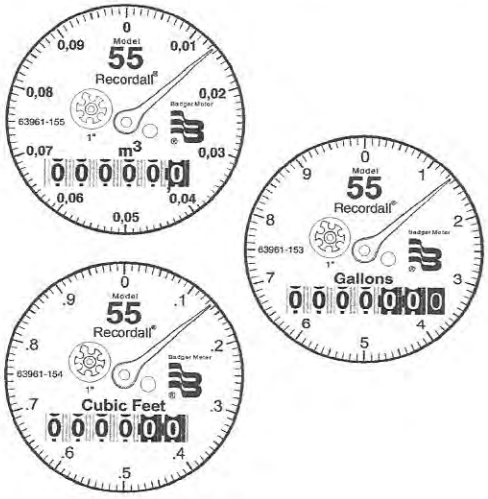
Rate of Flow, in Gallons per Minute

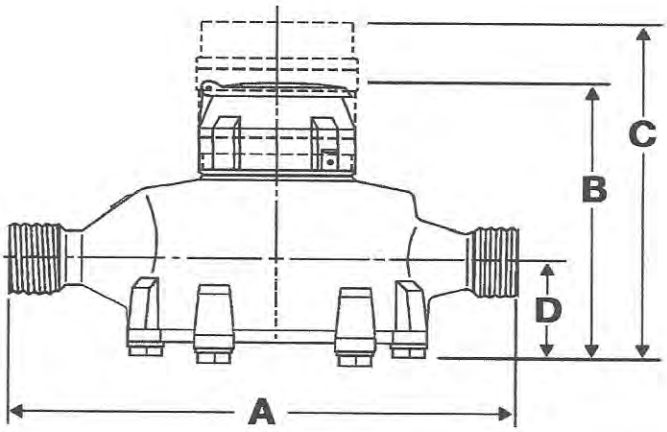


METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG./RTR	B HEIGHT TO ADE	C HEIGHT GEN.	D CENTERLINE TO BASE	WIDTH	METER WEIGHT
1" (25mm)	55	10 3/4" (273mm)	6" (152mm)	6 1/2" (165mm)	7 3/8" (187mm)	2 1/32" (52mm)	6 1/4" (159mm)	8.75 lbs.

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M55	10	1	.1





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Badger Meter

Recordall® Disc Meters

Lead-Free Bronze Alloy Models 120 & 170, Sizes 1-1/2" (40 mm) & 2" (50 mm), NSF/ANSI Standards 61 and 372 Certified

DESCRIPTION

The Recordall Models 120 and 170 Disc Series meters meet or exceed the most recent revision of AWWA Standard C700 and are available in a lead-free bronze alloy. Both meters comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI Standards 61 and 372 (Trade Designations: M120-LL and M170LL) and carry the NSF-61 mark on the housing. All components of the lead-free bronze alloy meter (housing, measuring element, seals, and so on) comprise the certified system.

Applications: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

Operation: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register or encoder face.

Operating Performance: The Recordall Disc Series meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated in AWWA Standard C700.

Construction: Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register or encoder. The water meter is available in a lead-free bronze alloy. A corrosion-resistant engineered polymer material is used for the measuring chamber.

Magnetic Drive: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading or AMR/AMI meter reading options.

Tamper-Proof Features: Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

Maintenance: Badger Meter Recordall Disc Series meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

Connections: Companion flanges in cast iron or NL bronze are available as options. Straight connection sets are available in NL bronze.

M120

M170

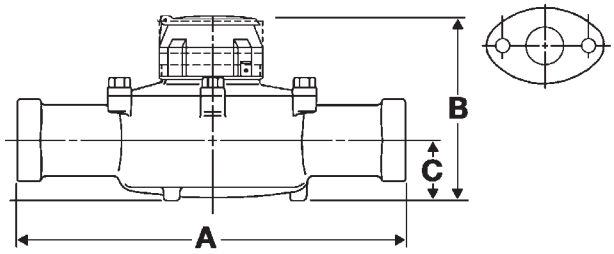
SPECIFICATIONS

Meter Model	M120	M170
Typical Operating Range (100% ± 1.5%)	2.5…120 gpm (0.57…27 m^3/hr)	2.5…170 gpm (0.57…39 m^3/hr)
Low Flow (Min. 95%)	1.25 gpm (0.28 m^3/hr)	1.5 gpm (0.34 m^3/hr)
Maximum Continuous Operation	80 gpm (18 m^3/hr)	100 gpm (23 m^3/hr)
Pressure Loss at Maximum Continuous Operation	4.8 psi at 80 gpm (0.33 bar at 18 m^3/hr)	3.3 psi at 100 gpm (0.23 bar at 23 m^3/hr)
Maximum Operating Temperature	80° F (26° C)	80° F (26° C)
Maximum Operating Pressure	150 psi (10 bar)	150 psi (10 bar)
Measuring Element	Nutating disc, positive displacement	Nutating disc, positive displacement
Meter Connections	1-1/2" AWWA two-bolt elliptical flange, drilled or 1-1/2…11-1/2 NPT internal pipe threads	2" AWWA two-bolt elliptical flange, drilled or 2…11-1/2 NPT internal pipe threads
Test Plugs	Optional 1" NPT test plug (TP)	Optional 1" NPT test plug (TP)

Materials

Meter Housing	Lead-free bronze alloy
Housing Top Plates	Lead-free bronze alloy
Measuring Chamber	Engineered polymer
Disc	Engineered polymer
Trim	Stainless steel
Strainer	Engineered polymer
Disc Spindle	Stainless steel
Magnet	Ceramic
Magnet Spindle	Stainless steel
Register Lid and Shroud	Engineered polymer, bronze

DIMENSIONS



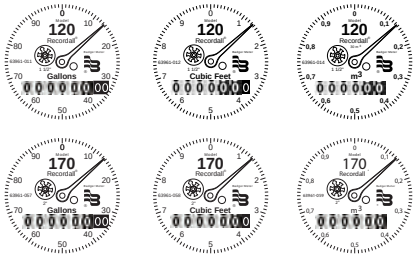
Meter Size	Meter Model	A Laying Length	B Height Reg./RTR	C Centerline Base	Width	Approx. Shipping Weight
1-1/2" (40 mm)	120 EL, Hex 120 EL, TP	12-5/8" (321 mm)	7" (178 mm)	2-3/8" (60 mm)	8-3/4" (222 mm)	19 lb (8.6 kg)
1-1/2" (40 mm)	120 ELL 120 ELL, TP	13" (330 mm)	7" (178 mm)	2-3/8" (60 mm)	8-3/4" (222 mm)	19 lb (8.6 kg)
2" (50 mm)	170 EL, Hex 170 EL, TP	15-1/4" (387 mm)	8" (203 mm)	2-7/8" (73 mm)	9-1/2" (241 mm)	30 lb (13.6 kg)
2" (50 mm)	170 ELL 170 ELL, TP	17" (432 mm)	8" (203 mm)	2-7/8" (73 mm)	8-1/2" (241 mm)	30 lb (13.6 kg)

EL = Elliptical | ELL = Elliptical Long | Hex = Hexagon, 1-1/2…11-1/2" NPT Thread | TP=Test Plug 1"

REGISTERS / ENCODERS

Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 10,000,000 gallons (1,000,000 ft³, 100,000 m³).



Meter Model	Gallon	Cubic Feet	Cubic Meter
120	100	10	1/0.1
170	100	10	1

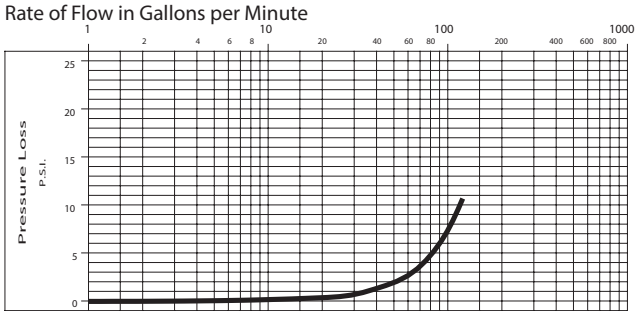
Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Disc Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at **www.badgermeter.com**.

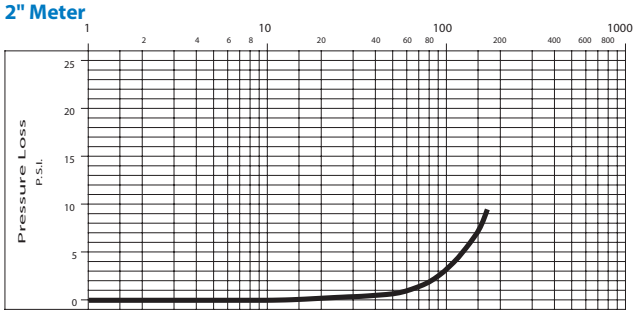
PRESSURE LOSS CHARTS

1-1/2" Meter

Rate of Flow in Gallons per Minute



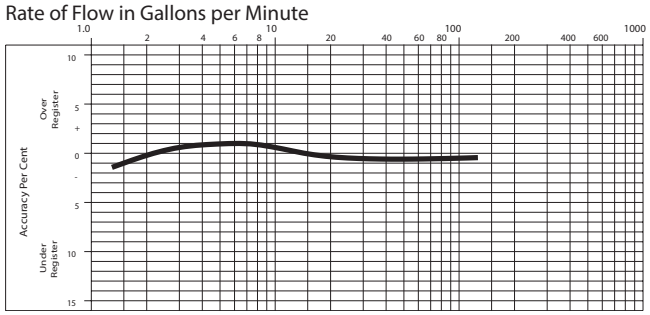
2" Meter



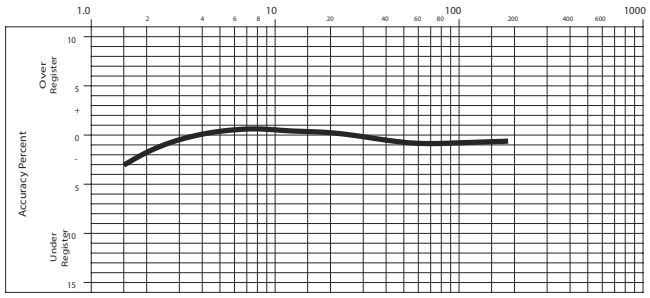
ACCURACY CHARTS

1-1/2" Meter

Rate of Flow in Gallons per Minute



2" Meter



www.badgermeter.com

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Legacy Document Numbers: RDM-DS-00071-EN and RDM-DS-00072-EN

Recordall® Turbo Series Meters

Models 160 (1-1/2"), 200 (2"), 450 (3"), 1000 (4"), 2000 (6"), 3500 (8"), 5500 (10"), & 6200 (12"); NSF/ANSI Standards 61 and 372 Certified

DESCRIPTION

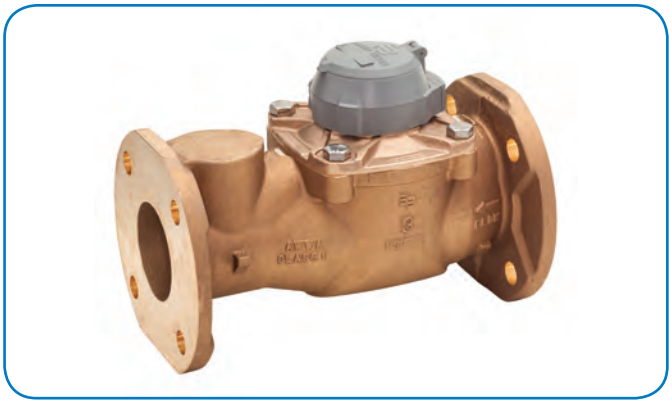
Recordall Turbo Series meters meet or exceed the most recent revision of AWWA Standard C701 Class II Standards and are available in a lead-free bronze alloy for sizes 1-1/2" through 10" and cast iron for 12" meters. Turbo Series meters comply with the lead-free provisions of the Safe Drinking Water Act. Sizes 1-1/2" through 10" meters are also certified to NSF/ANSI Standards 61 and 372 (Trade Designation: Turbo Series LL-NS) and carry the NSF-61 mark on the housing. All components of the lead-free alloy meter (housing, measuring element, seals and so on) comprise the certified system.

Models 160 through 6200 are designed for 1-1/2" through 12" applications. These meters feature:

- Direct coupled turbine based on an exclusive "floating rotor" design that reduces bearing friction—and associated wear and tear.
- Low pressure loss for improved system efficiency.
- Exceptional registration accuracy across low flow rate, normal operating flow rate and maximum continuous operation flow.
- Permanently sealed, tamper-resistant register or encoder.
- Integral strainer option for sizes 1-1/2" through 4" help protect your system from damaging debris and related downtime.
- Meters and encoders are compatible with Badger Meter AMR/AMI meter reading systems and other approved reading technologies.

Applications: Recordall Turbo Series meters are designed for cold water, commercial and industrial applications where flows are consistent medium to high flows. Applications include hotels, apartment buildings, irrigations centers and manufacturing and processing plants. Turbo Series meters help reduce day-to-day maintenance costs while delivering accurate and efficient performance.

Operation & Performance: Direct magnetic drive is achieved when the magnet carrier is driven by a gear train coupled to the rotor. The gear train consists of two sets of gears connected by a vertical transmission shaft. One gear set is at the magnet carrier, the other is a worm gear set at the rotor shaft. When water flows into the Turbo Series meter measuring element, it contacts the multi-vaned rotor. The resulting rotor rotation is then transmitted by magnetic coupling to a sealed register or encoder. The direct magnetic drive is built to provides a reliable meter-to-registration coupling.



Tamper-Proof Features: Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

Construction: The Recordall Turbo Series meter is constructed in compliance with ANSI and AWWA C701 standards. It consists of the following basic components: meter housing, interchangeable, unitized measuring element and permanently sealed direct reading registers or encoders.

The measuring element consists of the transmission coupling, rotor, inlet and outlet straightening vanes with nose cones, and calibration ring assembly. The unique inlet and outlet straightening vanes minimize swirl from piping arrangements upstream as well as downstream.

A strainer is recommended to help ensure optimal flow conditioning and protection for the measuring element. An integral strainer is available as an option for 1-1/2" through 4" meter sizes. The stainless steel strainer is built into the inlet end and includes a removable cover plate to permit easy access for routine cleaning. External strainers are available in sizes 2" through 12".

To simplify maintenance, the registers or encoders and measuring elements can be removed without removing the meter housing. Interchangeability of certain parts between meters also minimizes spare parts inventory investment.

Meter Installation: The meter is designed for installations where flow is in one direction only. Companion flanges for installation of meters on various pipe types and sizes are available in cast iron or NL bronze as an option. See the Recordall Turbo Series Meters User Manual for specific instructions.

SPECIFICATIONS

Turbo Series Model	160 1-1/2" (40 mm)	200 2" (50 mm)	450 3" (80 mm)	1000 4" (100 mm)	2000 6" (150 mm)	3500 8" (200 mm)	5500 10" (250 mm)	6200 12″ (300 mm)
Meter Flanges AWWA 125 Pound Class	Elliptical	Elliptical or Round	Round	Round	Round	Round	Round	Round AWWA 125 lb class
Typical Operating Range (100% ± 1.5%)	4…200 gpm (0.9…45.4 m^3/h)	4…310 gpm (0.9…70.4 m^3/h)	5…550 gpm (1.1…124.9 m^3/h)	10…1250 gpm (2.3…284 m^3/hr)	20…2500 gpm (4.5…568 m^3/h)	30…4500 gpm (6.8…1022 m^3/h)	50…7000 gpm (11.4…1590 m^3/h)	90…8800 gpm (20.5…1998 m^3/h)
Typical Low Flow (95% min.)	2.5 gpm (0.6 m^3/h)	2.5 gpm (0.6 m^3/h)	4 gpm (0.9 m^3/h)	6 gpm (1.4 m^3/h)	12 gpm (2.7 m^3/h)	20 gpm (4.5 m^3/h)	30 gpm (6.8 m^3/h)	65 gpm (14.8 m^3/h)
Max. Continuous Flow	160 gpm (36 m^3/h)	200 gpm (45.4 m^3/h)	450 gpm (102.2 m^3/h)	1000 gpm (227.1 m^3/h)	2000 gpm (454 m^3/h)	3500 gpm (795 m^3/h)	5500 gpm (1250 m^3/h)	6200 gpm (1408 m^3/h)
Maximum Intermittent Flow	200 gpm (45.4 m^3/h)	310 gpm (70.4 m^3/h)	550 gpm (124.9 m^3h)	1250 gpm (284 m^3h)	2500 gpm (568 m^3/h)	4500 gpm (1022 m^3/h)	7000 gpm (1590 m^3h)	8800 gpm (1988 m^3/h)
Pressure Loss at Max. Continuous Flow	3.8 psi (0.26 bar)	3.1 psi (0.21 bar)	1.8 psi (0.12 bar)	7.3 psi (0.50 bar)	4.8 psi (0.33 bar)	2.5 psi (0.17 bar)	1.6 psi (0.11 bar)	0.8 psi (0.05 bar)
Pressure Loss at Max. Continuous Flow: With Integral Strainer	9.9 psi (0.68 bar)	8.3 psi (0.57 bar)	5 psi (0.43 bar)	17.8 psi (1.2 bar)	—			
Max. Operating Pressure	150 psi (10 bar)							
Max. Operating Temperature	120° F (49° C)							
Optional Integral Strainer	Built into inlet end. Removable cover plate permits access to strainer for cleaning.				—			
Optional External Strainer	—	Available for Models 200, 450, 1000, 2000, 3500, 5500 and 6200.						
Test Plug	Standard with integral strainer; optional for other models.				Optional for Models 2000 and 3500.		—	

MATERIALS

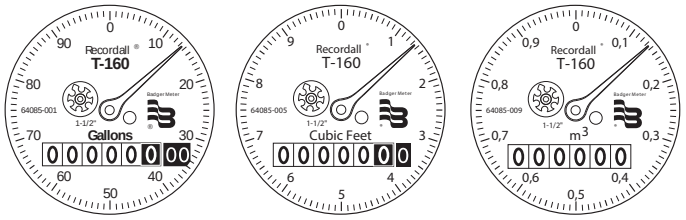
Meter Housing	Lead-free alloy (**EXCEPTION**: Model 6200 meter housing is blue epoxy-coated cast iron)
Turbo Head	Lead-free alloy
Nose Cone & Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thruster Bearing	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel & thermoplastic
Magnet	Ceramic
Trim	Stainless steel
Register Housing & Cover	Thermoplastic or bronze
Optional Strainer and Trim	Stainless steel

REGISTERS / ENCODERS

Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The high-flow register capacity for the 1-1/2", 2", 3" and 4" meters is 100,000,000 gallons (10,000,000 ft^3, 1,000,000 m^3). The high-flow register capacity for the 6", 8", and 10" meters is 1,000,000,000 gallons (100,000,000 ft^3, 10,000,000 m^3). The high-flow register capacity for the 12" meter is 10,000,000,000 gallons (1,000,000,000 ft^3, 10,000,000 m^3).

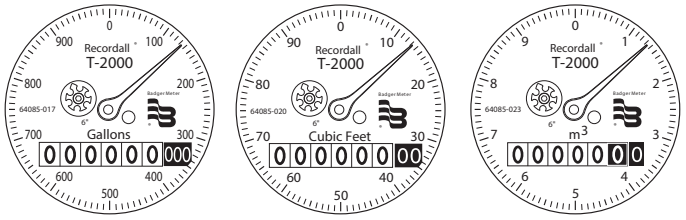
Registers for 1-1/2", 2", 3" and 4" Meters



Sweep Hand Revolution

Meter Model	Gallon	Cubic Feet	Cubic Meter
160	100	10	1
200	100	10	1
450	100	10	1
1000	100	10	1

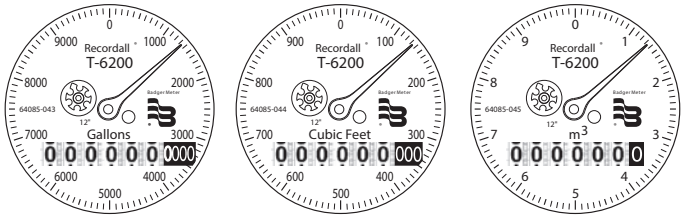
Registers for 6", 8" and 10" Meters



Sweep Hand Revolution

Meter Model	Gallon	Cubic Feet	Cubic Meter
2000	1000	100	10
3500	1000	100	10
5500	1000	100	10

Registers for 12" Meters



Sweep Hand Revolution

Meter Model	Gallon	Cubic Feet	Cubic Meter
6200	10000	1000	10

Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Disc Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at **www.badgermeter.com**.

PHYSICAL DIMENSIONS OF METERS WITHOUT STRAINER

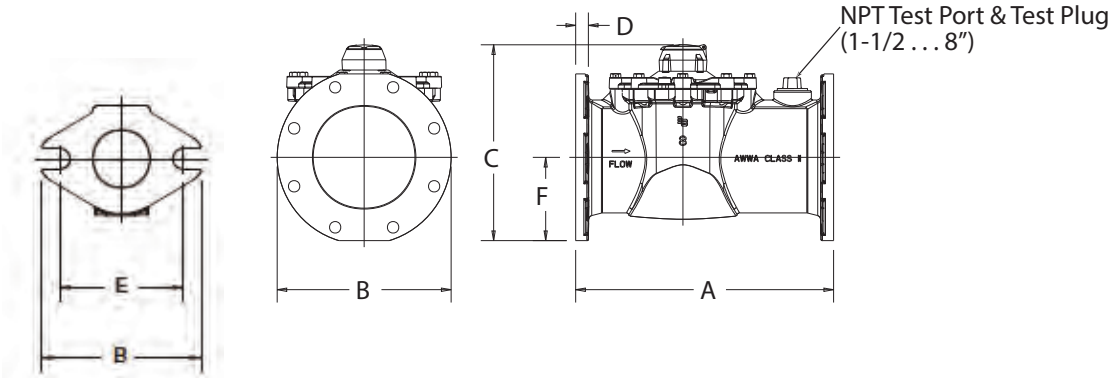


Figure 1: Sample Illustration from 8" Model 3500

Turbo Series Model	160	200	200	450	1000	2000	3500	5500	6200
Meter Flanges	1-1/2" Elliptical	2" Elliptical	2" Round	3" Round	4" Round	6" Round	8" Round	10" Round	12" Round
Meter & Pipe Size	1-1/2" (40 mm)	2" (50 mm)	2" (50 mm)	3" (80 mm)	4" (100 mm)	6" (150 mm)	8" (200 mm)	10" (250 mm)	12" (300 mm)
Net Weight	14.3 lb (6.5 kg)	14.9 lb (6.8 kg)	17.4 lb (7.9 kg)	31 lb (14.1 kg)	40 lb (18.1 kg)	77 lb (35 kg)	123 lb (55.7 kg)	210 lb (95.3 kg)	262 lb (118.8 kg)
Shipping Weight	16.8 lb (7.6 kg)	16.4 lb (7.4 kg)	18.9 lb (8.6 kg)	34 lb (15.4 kg)	45 lb (20.4 kg)	89 lb (40.4 kg)	147 lb (66.6 kg)	235 lb (106.6 kg)	286 lb (129.7 kg)
Qty. of Bolts	2	2	4	4	8	8	8	12	12
NPT Test Port & Test Plug (optional)	1" (25.4 mm)	1-1/2" (40 mm)	1-1/2" (40 mm)	2" (50 mm)	2" (50 mm)	2" (50 mm)	2" (50 mm)	—	—
Length (A)	13" (330 mm)	10" (254 mm)	10" (254 mm)	12" (305 mm)	14" (356 mm)	18" (457 mm)	20" (508 mm)	26" (660.4 mm)	19-11/16" (500 mm)
Width (B)	5-7/32" (133 mm)	5-27/32" (148 mm)	6" (152 mm)	7-1/2" (191 mm)	9" (229 mm)	11" (280 mm)	13-1/2" (343 mm)	16" (406.4 mm)	19" (482 mm)
Height (C)	6-9/32" (159 mm)	6-1/2" (165 mm)	7-3/32" (180 mm)	8-11/16" (220 mm)	9-21/32" (245 mm)	13-5/16" (338 mm)	15-3/16" (385 mm)	17-15/32" (443 mm)	19-11/16" (500 mm)
Flange (D)	51/64" (20 mm)	25/32" (20 mm)	5/8" (16 mm)	3/4" (19 mm)	13/16" (21 mm)	7/8" (22 mm)	1" (25 mm)	1-1/16" (27 mm)	1.26" (32 mm)
Bolt Circle (E)	4" (102 mm)	4-1/2" (114 mm)	4-3/4" (121 mm)	6" (152 mm)	7-1/2" (191 mm)	9-1/2" (241 mm)	11-3/4" (298 mm)	14-1/4" (362 mm)	17" (432 mm)
Centerline (F)	1-27/32" (47 mm)	2-1/16" (52 mm)	2-5/8" (67 mm)	3-11/32" (85 mm)	4-5/16" (109 mm)	5-1/4" (133 mm)	6-3/8" (162 mm)	7-7/8" (199.4 mm)	8-7/8" (226 mm)

PHYSICAL DIMENSIONS OF METERS WITH INTEGRAL STRAINER

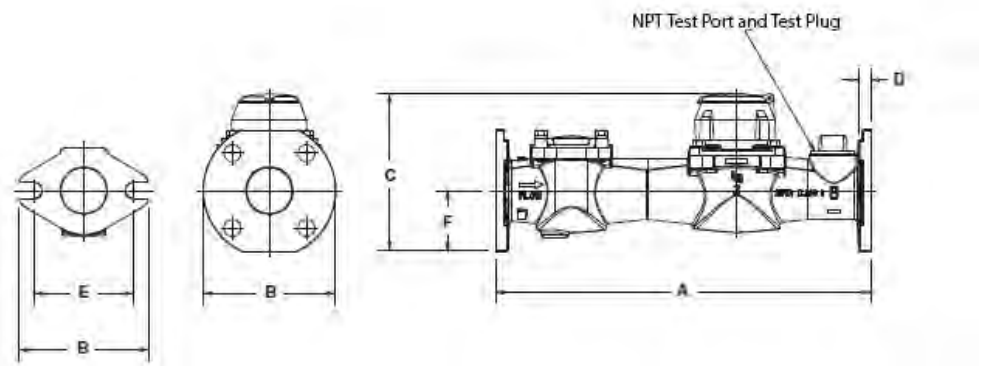
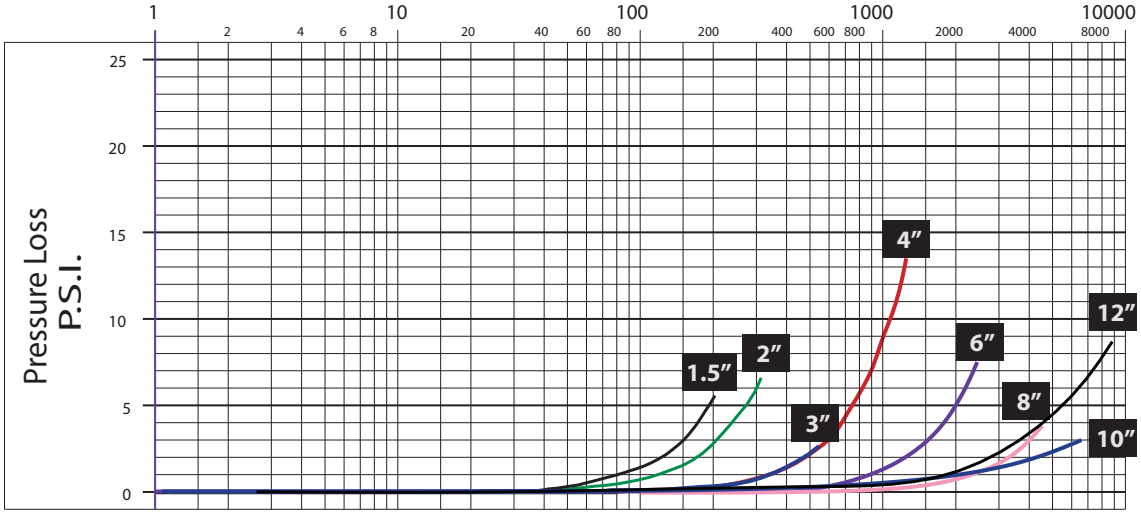


Figure 2: Physical dimensions

Turbo Series Model	160	200	200	450	1000
Meter Flanges	Elliptical	Elliptical	Round	Round	Round
Meter & Pipe Size	1-1/2" (40 mm)	2" (50 mm)	2" (50 mm)	3" (80 mm)	4" (100 mm)
Net Weight	14.3 lb (6.5 kg)	24 lb (11 kg)	26 lb (12 kg)	49 lb (22 kg)	60 lb (27.22 kg)
Shipping Weight	16.8 lb (7.6 kg)	28 lb (13 kg)	30 lb (14 kg)	55 lb (25 kg)	70 lb (31.75 kg)
Number of Bolts	2	2	4	4	8
NPT Test Port & Test Plug (Standard)	1" (25.4 mm)	1-1/2" (40 mm)	1-1/2" (40 mm)	2" (50 mm)	2" (50 mm)
Length (A)	13" (330 mm)	17" (432 mm)	17" (432 mm)	19" (483 mm)	23" (584 mm)
Width (B)	5-7/32" (133 mm)	5-27/32" (148 mm)	6" (152 mm)	7-1/2" (191 mm)	9" (229 mm)
Height (C)	6-9/32" (159 mm)	6-1/2" (165 mm)	7-3/32" (180 mm)	8-15/16" (227 mm)	9-21/32" (245 mm)
Flange (D)	51/64" (20 mm)	27/32" (47 mm)	5/8" (16 mm)	27/32" (21 mm)	13/16" (21 mm)
Bolt Circle (E)	4" (102 mm)	4-1/2" (114 mm)	4-3/4" (121 mm)	6" (152 mm)	7-1/2" (191 mm)
Centerline (F)	1-27/32" (47 mm)	2-1/16" (52 mm)	2-5/8" (67 mm)	3-19/32" (91 mm)	4-5/16" (109 mm)

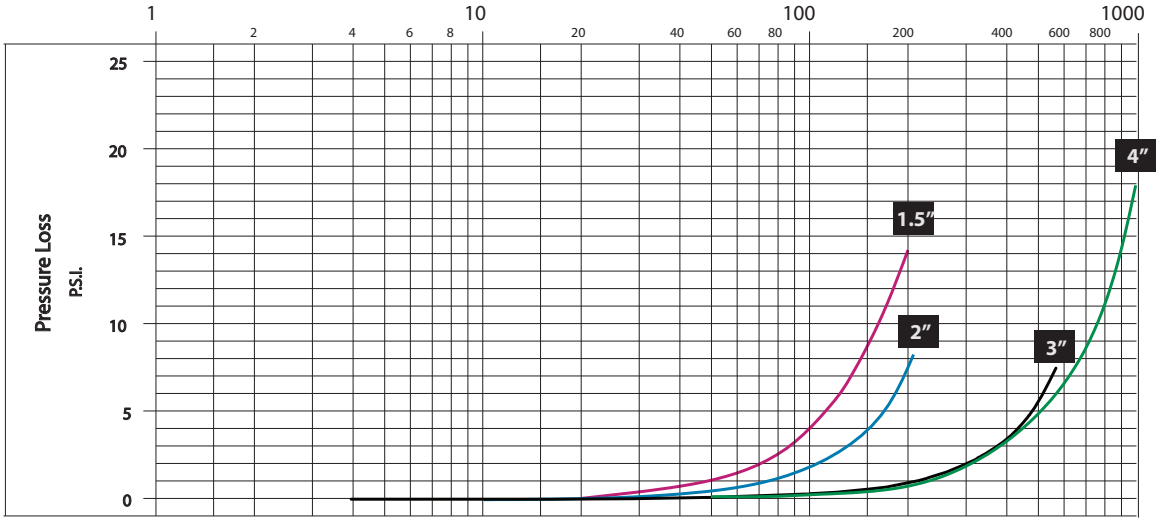
PRESSURE LOSS CHART FOR METERS WITHOUT STRAINER

Rate of flow in gallons per minute (gpm)



PRESSURE LOSS CHART FOR METERS WITH INTEGRAL STRAINER

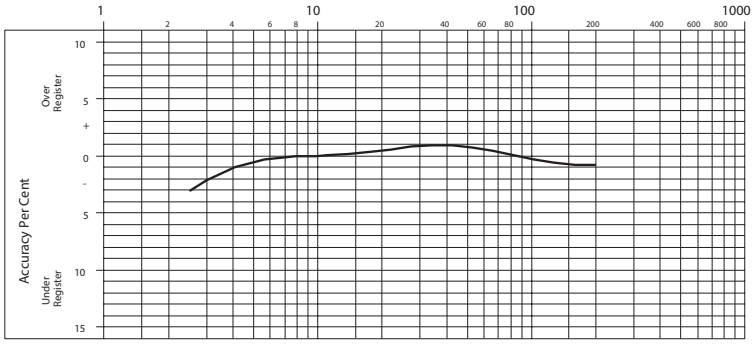
Rate of flow in gallons per minute (gpm)



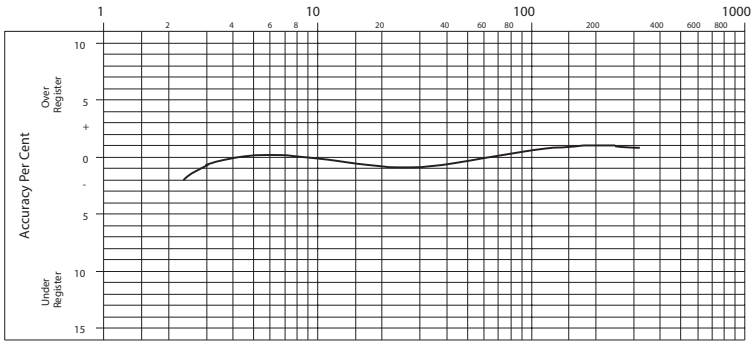
ACCURACY CHARTS FOR METERS WITHOUT STRAINER

Rate of flow in gallons per minute (gpm)

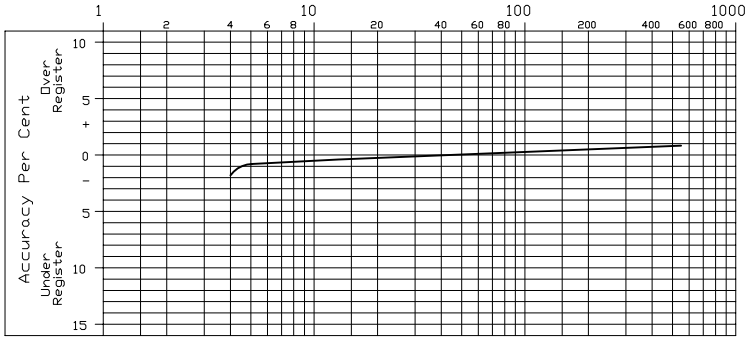
1-1/2" Meter



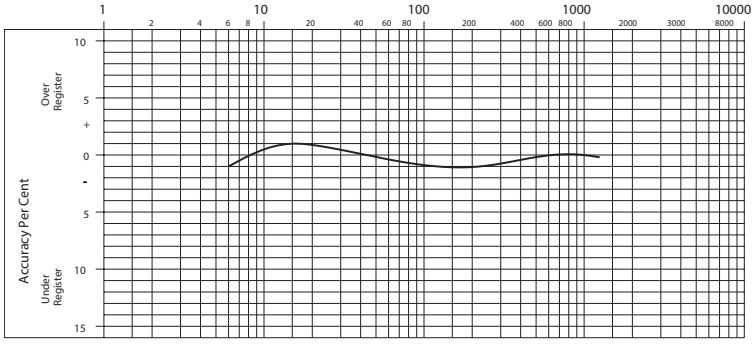
2" Meter



3" Meter



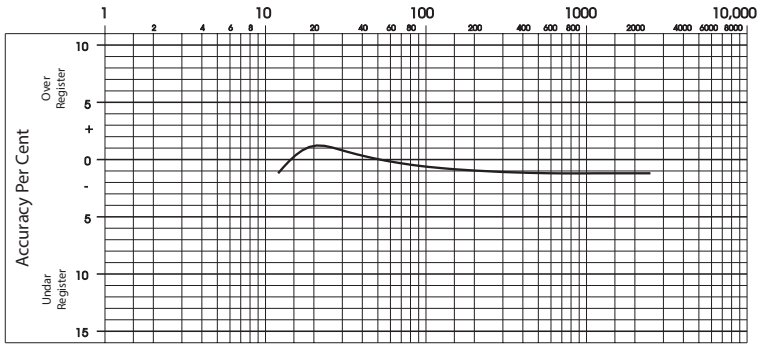
4" Meter



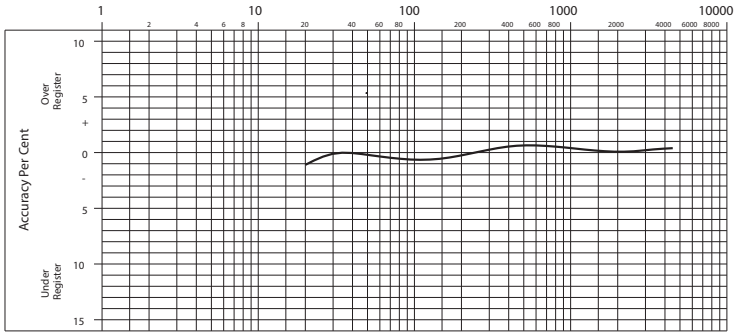
ACCURACY CHARTS FOR METERS WITHOUT STRAINER (CONTINUED)

Rate of flow in gallons per minute (gpm)

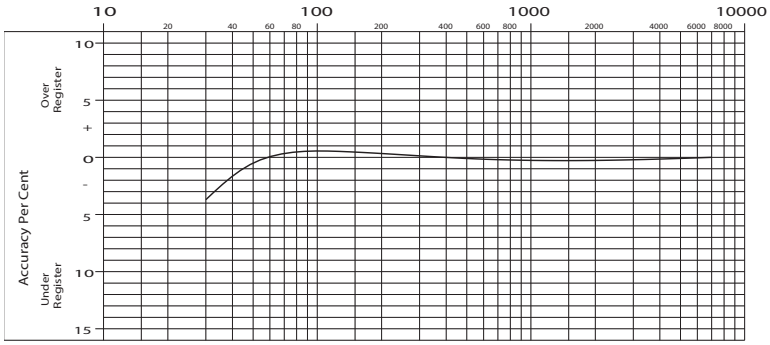
6" Meter



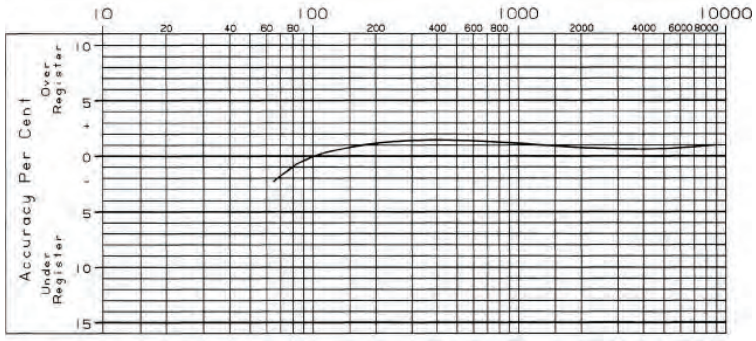
8" Meter



10" Meter



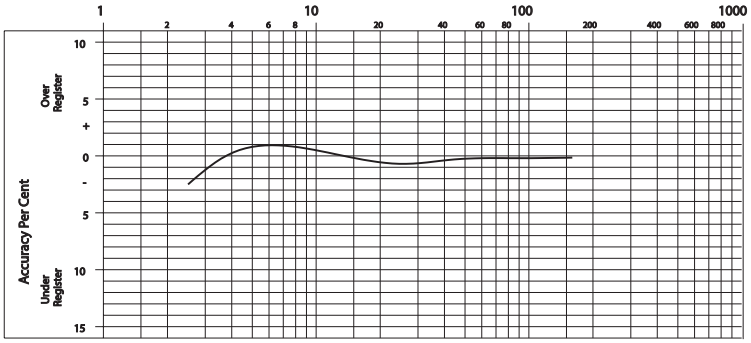
12" Meter



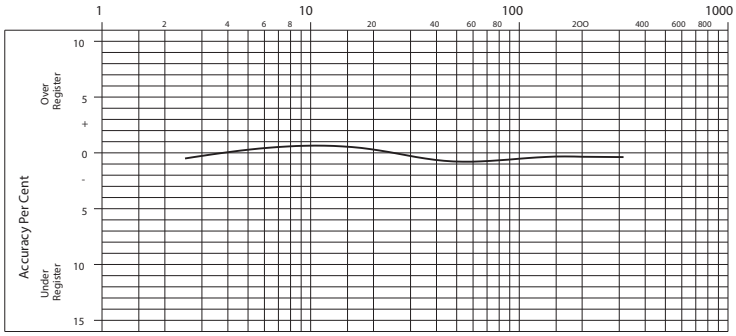
ACCURACY CHARTS FOR METERS WITH INTEGRAL STRAINER

Rate of flow in gallons per minute (gpm)

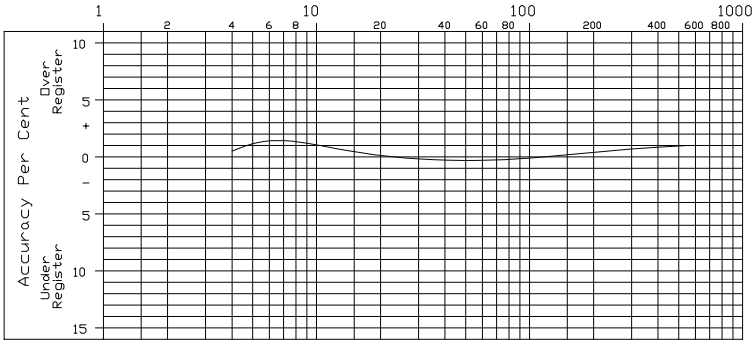
1-1/2" Meter



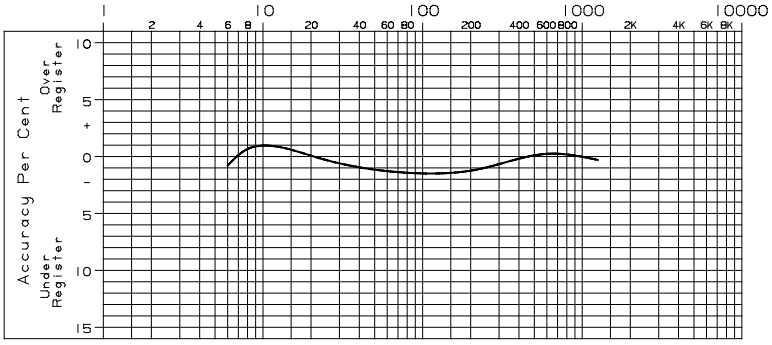
2" Meter



3" Meter



4" Meter



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Legacy Document Numbers: RTS-T-1-1/2. 3. 4. 6. 8. 10 and 12; RTS-T-I 1-1/2, 2, 3, and 4

ModMAG®
M-Series® | B-MAG Electromagnetic Flow Meters

M-Series® M2000

Electromagnetic Flow Meter

DESCRIPTION

The Badger Meter M-Series® M2000 is the result of years of research and field use of electromagnetic flow meter technology. Based on Faraday's law of induction, these meters can measure almost any liquid, slurry or paste that has minimum electrical conductivity.

Designed, developed and manufactured under strict quality standards, the M-Series meter features sophisticated, processor-based signal conversion with accuracies of ±0.25 percent. The wide selection of liner and electrode materials helps ensure maximum compatibility and minimum maintenance over a long operating period.

OPERATION

The flow meter is a stainless steel tube lined with a non-conductive material. Outside the tube, two DC powered electromagnetic coils are positioned opposing each other. Perpendicular to these coils, two electrodes are inserted into the flow tube. Energized coils create a magnetic field across the whole diameter of the pipe.

As a conductive fluid flows through the magnetic field, a voltage is induced across the electrodes. This voltage is proportional to the average flow velocity of the fluid and is measured by the two electrodes. The M2000 amplifier receives the detector's analog signal, amplifies that signal and converts it into digital information. At the processor level, the signal is analyzed through a series of sophisticated software algorithms. After separating the signal from electrical noise, it is converted into both analog and digital signals that are used to display rate of flow and totalization.

With no moving parts in the flow stream, there is no pressure lost. Also, accuracy is not affected by temperature, pressure, viscosity, density or flow profile. There is practically no maintenance required.

ELECTRODES

When looking from the end of the meter into the inside bore, the two measuring electrodes are positioned at three o'clock and nine o'clock. M2000 mag meters have an "empty pipe detection" feature. This is accomplished with a third electrode positioned in the meter between twelve o'clock and one o'clock.

If this electrode is not covered by fluid for a minimum five-second duration, the meter will display an "empty pipe detection" condition, send out an error message, if desired, and stop measuring to maintain accuracy. When the electrode again becomes covered with fluid, the error message will disappear and the meter will continue measuring.

As an option to using grounding rings, a grounding electrode (fourth electrode) can be built into the meter during manufacturing to assure proper grounding. The position of this electrode is at five o'clock.

APPLICATION

The M2000 amplifier can be integrally mounted to the detector or can be remote-mounted, if necessary and has many advantages over other conventional technologies. The meter targets a variety of applications and is well suited for the diverse water and wastewater treatment industry. The M2000 meter can accurately measure fluid flow—whether the fluid is water or a highly corrosive liquid, very viscous, contains a moderate amount of solids, or requires special handling. Today, magnetic meters are successfully used in industries including food and beverage, pharmaceutical, water and wastewater, and chemical

FEATURES

- Available in sizes 0.25…54" (6…1350 mm)
- Pulsed DC magnetic field for zero point stability
- Integral and remote signal converter availability
- Corrosion resistant liners for long life
- Measurement largely independent of flow profile
- User friendly programming procedure
- Empty pipe detection
- Power loss totalization
- Digital signal processor (32-bit)
- Non-volatile programming memory
- Rotating cover
- Calibrated in state-of-the-art facilities
- NSF listed
- CSA certified

Badger Meter

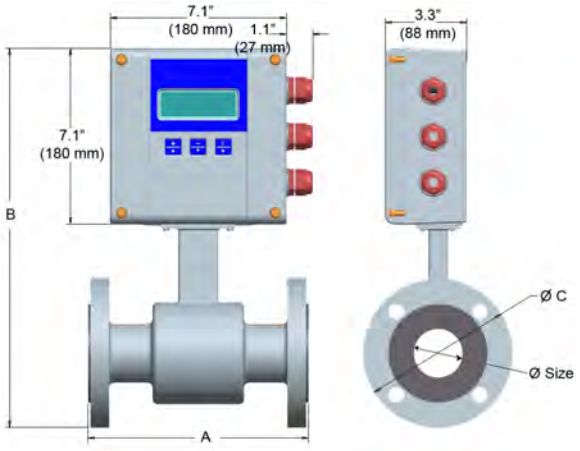
MAG-DS-01047-EN-05 (November 2014)

Product Data Sheet

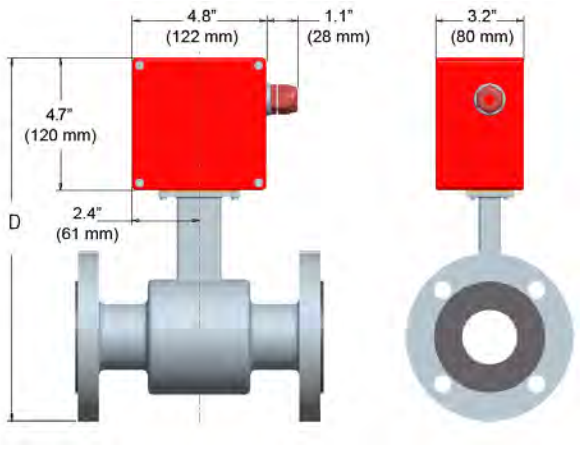
SPECIFICATIONS

Flow Range	0.10…39.4 ft/s (0.03…12 m/s)
Accuracy	± 0.25 percent of rate for velocities greater than 1.64 ft/s (0.50 m/s) ± 0.004 ft/s (± 1 mm/s) for velocities less than 1.64 ft/s (0.50 m/s)
Repeatability	± 0.1%
Power Supply	**AC Power Supply:** 85…265V AC; Typical Power: 20V A or 15W; Maximum Power: 26V A or 20W **Optional DC Power Supply:** 10…36V DC; Typical Power: 10W; Maximum Power: 14W
Analog Output	4…20 mA, 0…20 mA, 0…10 mA, 2…10 mA (programmable and scalable) Voltage sourced 24V DC isolated. Maximum loop resistance < 800 ohms.
Digital Output	Four total, configurable 24V DC sourcing active output (up to 2),100 mA total, 50 mA each; sinking open collector output (up to four), 30V DC max, 100 mA each; AC solid-state relay (up to 2), 48V AC, 500 mA max
Digital Input	Max 30V DC (programmable – positive zero return, external totalizer reset or preset batch start)
Frequency Output	Scalable up to 10 kHz, open collector up to 1 kHz, solid-state relay
Misc Output	High/low flow alarm (0…100% of flow), error alarm, empty pipe alarm, flow direction, preset batch alarm, 24V DC supply, ADE
Communication	RS232 Modbus RTU; RS485 Modbus RTU, HART, Profibus DP require separate daughterboards
Pulse Width	Scalable up to 10 kHz, passive open collector up to 10 kHz, active switched 24V DC. Up to two outputs (forward and reverse). Pulse width programmable from 1…1000 ms or 50% duty cycle.
Processing	32-bit DSP
Empty Pipe Detection	Field tunable for optimum performance based on specific application
Excitation Frequency	1 Hz, 3.75 Hz, 7.5 Hz or 15 Hz (factory optimized to pipe diameter)
Noise Dampening	Programmable 0…30 seconds
Low Flow Cut-Off	Programmable 0…10% of maximum flow
Galvanic Separation	250V
Fluid Conductivity	Minimum 5.0 micromhos/cm
Fluid Temperature	**With Remote Amplifier:** PFA, PTFE & Halar 302° F (150° C) **With Meter-Mounted Amplifier:** Rubber 178° F, (80° C), PFA, PTFE & Halar 212° F (100° C), Rubber 178° F, (80° C)
Ambient Temperature	– 4…140° F (–20…60° C)
Relative Humidity	Up to 90 percent non-condensing
Flow Direction	Unidirectional or bidirectional two separate totalizers (programmable)
Totalization	Programmable/resettable
Units of Measure	Ounce, pound, liter, US gallon, imperial gallon, barrel, hectoliter, mega gallon, cubic meter, cubic feet, acre feet
Display	4 x 20 character display with backlight
Programming	Three-button, external manual or remote
Amplifier Housing	Cast aluminum, powder-coated paint
Detector Housing	Carbon steel welded
Pipe Spool Material	316 stainless steel
Flanges	**Standard**: ANSI B16.5 Class 150 RF cast steel; **Optional:** 300 lb cast steel, 316 stainless steel
Liner Material	PFA up to 3/8", PTFE 1/2…24", soft and hard rubber from 1…54", Halar® from 14…40"
Electrode Materials	**Standard:** Alloy C; **Optional:** 316 stainless steel, gold/platinum plated, tantalum, platinum/rhodium
Mounting	Meter mount or remote wall mount (bracket supplied)
Locations	Indoor and outdoor
Meter Enclosure Classification	NEMA 4X (IP66); **Optional:** Submersible NEMA 6P (IP67), remote amplifier required
Junction Box Enclosure Protection	For remote amplifier option: powder-coated die-cast aluminum, NEMA 4 (IP66)
Cable Entries	1/2" NPT cord grip (3)
Optional Stainless Steel Grounding Rings	**Meter Size** — **Thickness (of one ring)** Up through 10" — 0.135" 12…54" — 0.187"
NSF Listed	Models with hard rubber liner, 4"size and up; PTFE liner, all sizes
Token Features	Data Logging (Blue token); Store/Restore (Red token); Firmware Upgrade (Black token)

DIMENSIONS IN INCHES (MILLIMETERS)



Meter with M2000 Amplifier



Meter with Junction Box for Remote M2000 Amplifier

Size		A		B		C		D		Est. Weight with M2000		Flow Range			
												LPM		GPM	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lb	kg	min	max	min	max
1/4	6	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.05	20	0.01	5
5/16	8	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.09	36	0.02	10
3/8	10	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.14	57	0.04	15
1/2	15	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.32	127	0.08	34
3/4	20	6.7	170	14.2	361	3.9	99	11.5	293	13	5.5	0.46	183	0.12	48
1	25	8.9	225	14.4	366	4.3	108	11.7	298	18	8.0	0.79	318	0.21	84
1-1/4	32	8.9	225	15.2	386	4.6	117	12.5	318	20	9.0	1.5	594	0.39	157
1-1/2	40	8.9	225	15.4	390	5.0	127	12.7	322	21	9.5	2.1	834	0.55	220
2	50	8.9	225	15.9	403	6.0	152	13.2	335	26	11.5	3.6	1431	0.94	378
2-1/2	65	11.0	280	17.1	434	7.0	178	14.4	366	52	23.5	6.2	2471	1.63	653
3	80	11.0	280	17.3	440	7.5	191	14.7	372	54	24.5	8.4	3344	2.21	883
4	100	11.0	280	18.4	466	9.0	229	15.7	398	56	25.5	12	4997	3.30	1320
5	125	15.8	400	19.6	498	10.0	254	16.9	430	58	26.0	20	8008	5.29	2115
6	150	15.8	400	20.6	524	11.0	279	17.9	456	60	27.0	30	11890	7.85	3141
8	200	15.8	400	22.5	572	13.5	343	20.4	518	86	39.0	59	23765	15.69	6278
10	250	19.7	500	26.8	681	16.0	406	24.1	613	178	81.0	95	37934	25.05	10021
12	300	19.7	500	28.9	734	19.0	483	26.2	666	207	94.0	127	50894	33.61	13445
14	350	19.7	500	30.8	782	21.0	533	28.2	716	258	117	173	69272	45.75	18300
16	400	23.6	590	33.7	856	23.5	597	31.0	788	306	139	226	90477	59.75	23902
18	450	23.6	590	35.0	890	25.0	635	32.4	822	400	181	286	114511	75.63	30250
20	500	23.6	590	38.2	969	27.5	699	35.5	901	493	224	353	141371	93.37	37346
22	550	23.6	590	39.6	1005	29.5	749	36.9	937	523	237	428	171059	112.97	45189
24	600	23.6	590	42.2	1071	32.0	813	39.5	1003	552	251	509	203574	134.45	53779
28	700	23.6	590	46.2	1173	36.5	927	44.0	1118	648	294	693	277089	183.00	73199
30	750	31.5	800	48.3	1228	39.0	984	45.7	1161	702	319	795	318087	210.07	84030
32	800	31.5	800	52.2	1325	41.4	1015	49.5	1257	768	349	905	361912	239.02	95607
36	900	31.5	800	55.3	1405	46.0	1168	54.1	1374	848	385	1145	458045	302.51	121003
40	1000	31.5	800	60.0	1525	50.2	1230	57.4	1457	922	419	1414	565487	373.46	149386
42	1050	36.0	914	66.0	1675	53.0	1346	63.4	1610	1198	499	1559	623449	411.74	164698
48	1200	39.4	1000	69.9	1775	59.4	1455	67.2	1707	1208	549	2036	814301	537.79	215116
54	1350	39.4	1000	75.4	1915	66.2	1681	73.0	1927	1854	619	2576	1030599	680.64	272255

Control. Manage. Optimize.

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Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
Czech Republic | Badger Meter Czech Republic s.r.o. | Mařikova 2082/26 | 621 00 Brno, Czech Republic | +420-5-41420411
Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
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Legacy Document Numbers: MAG-DS-00176-EN and MAG-DS-00178-EN

Badger Meter

Recordall® Turbo Series Meter

Model 450 Fire Hydrant Meter, 3"

DESCRIPTION

The Badger Meter Model 450 fire hydrant meter is designed for use in measuring potable cold water from a fire hydrant or other non-permanent installation where flow is in one direction.

Operation

Water flows into the meter's measuring element where flow readings are obtained by rotor revolutions transmitted by magnetic drive coupling through the meter's cover plate to the sealed register. Magnetic drive is achieved by a right angle worm drive, coupling the rotor to the vertical transmission spindle. A ceramic magnet on the spindle rotates around the vertical axis. Through the magnetic coupling, rotor rotation is transmitted to a follower magnet which transmits rotation to the register gearing.

Operating Performance

The Model 450 fire hydrant meters meet or exceed registration accuracy for the low flow rate, normal operating flow rate, and maximum continuous operation flow rate as specifically stated in AWWA Standard C701.

Construction

The Model 450 fire hydrant meter construction consists of three basic components: meter housing, measuring element, and permanently sealed register. The housing is light-weight heat treated aluminum alloy, compact and easy to handle.
The measuring element consists of the transmission coupling, measuring element insert, rotor, straightening vane, and calibration vane assembly. The straightening vanes minimize swirl from piping arrangements upstream.

Magnetic Drive

Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling.

Restriction Plate

A permanent orifice, positioned in the outlet side of the meter housing, limits the maximum flow of water through the meter. This is provided to protect the measuring element from overspeeding when the meter discharges to atmosphere.

Sealed Register

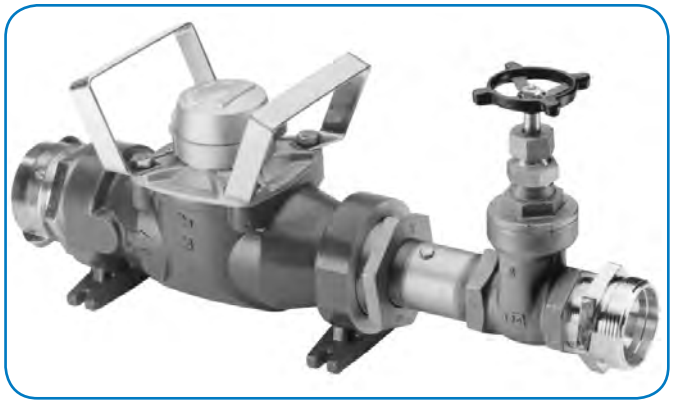
The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provide long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading.

Tamper-Resistant Features

Removal of the register to obtain free water is prevented when the tamper detection seal wire screw or TORX® tamper-resistant seal screw is added to the meter. A tamper-resistant calibration plug seal provides protection from unauthorized personnel use.

Strainer

A compression fit double layer stainless steel strainer is installed in the inlet housing tube. The strainer insures optimum long-term field performance.



Maintenance

The Model 450 fire hydrant meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger Meter offers various maintenance and meter component exchange programs to fit the needs of the utility.

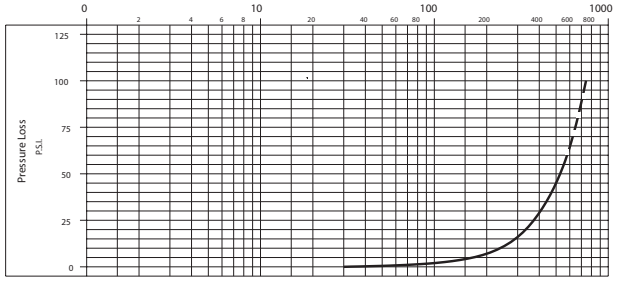
Hose Couplings

The meter is available with standard (2-1/2" – 7-1/2 NST) fire hose swivel couplings, unless otherwise specified. Complete thread specifications (listed on the back page of this document) must be furnished for special fire hose fittings.

Options: 2" or 2-1/2" gate valve, check valve.

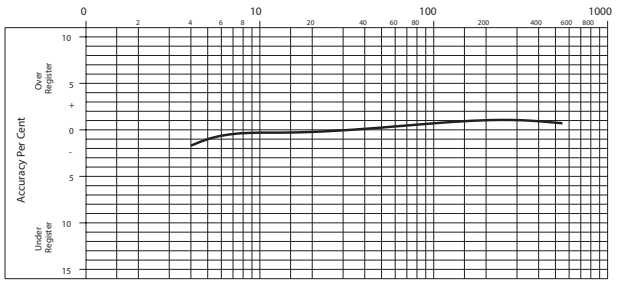
Pressure Loss Chart

Rate of flow in gallons per minute (gpm)



Accuracy Chart

Rate of flow in gallons per minute (gpm)



RTS-DS-00546-EN-02 (November 2013)

Product Data Sheet

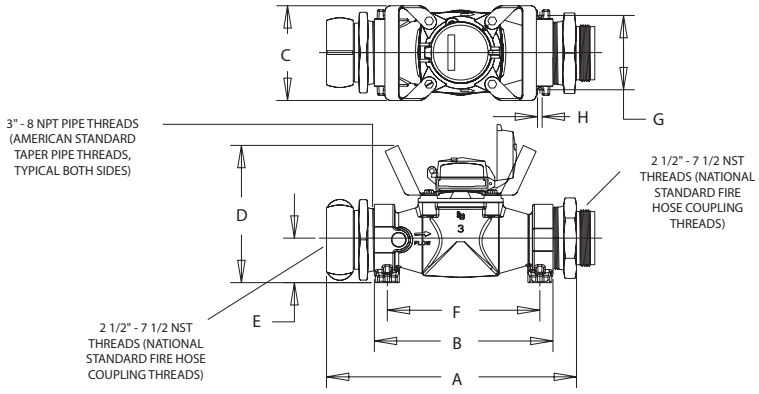
SPECIFICATIONS

Typical Operating Range (100%±1.5%)	5…660 gpm (1.1…150 m³/hr)
Maximum Continuous Flow	500 gpm (102 m³/hr)
Maximum Intermittant Flow	660 gpm (150 m³/hr)
Typical Low Flow (Min. 95%)	4 gpm (0.9 m³/hr)
Pressure Loss at Max. Continuous Operation	37 psi @ 450 gpm (2.55 bar @ 102 m³/hr) (standard couplings with orifice and screen) **Note:** 27 psi @ 350 gpm
Maximum Operating Pressure	150 psi (10 bar)
Standard Hose Coupling	2-1/2" – 7-1/2 NST threads (78P – 3.4 mm) (National standard fire hose coupling thread)
Register	Straight-reading, permanently sealed magnetic drive standard.
Registration	100,000,000 gallons; 100 gallons/sweep hand revolution.
	10,000,000 cubic feet; 10 cubic ft/sweep hand revolution.
	1,000,000 m³; 1 m³/sweep hand revolution.
Flow Restriction (Orifice)	Limits flow through the meter to 660 gpm @ 85 psi (150 m³/hr @ 59 bar) system pressure with standard couplings.

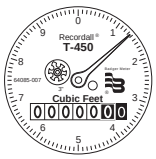
Materials

Housing	Heat treated aluminum alloy
Nose Cone and Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thrust Bearings	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel and thermoplastic
Magnet	Ceramic
Register Cover	Bronze
Options	2" gate valve, 2-1/2" gate valve, 2" check valve, bronze
Trim	Stainless steel
Inlet Screen	Stainless steel with Elastomer

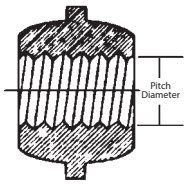
DIMENSIONS



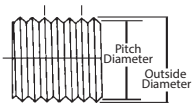
Meter & Pipe Size	Length w/coupl. A	Length w/o coupl. B	Width C	Height D	Ctrline E	F	G	H	Net Weight w/o Fittings	Net Weight w/Fittings	Net Weight w/Valve	Shipping Weight w/o Fittings	Shipping Weight w/Fittings	Shipping Weight w/Valve
3" (DN 80)	17" (432 mm)	12" (305 mm)	6-3/8" (162 mm)	9.0" (229 mm)	2-15/16" (73 mm)	10-1/4" (260 mm)	5" (127 mm)	11/32" (9 mm)	14.2 lb (6.44 kg)	20.6 lb (9.34 kg)	31.6 lb (14.33 kg)	17.2 lb (7.80 kg)	23.6 lb (10.7 kg)	34.6 lb (15.7 kg)



Specifications for Special Fire Hose Coupling Threads



Female Threads



Male Threads

Required Information

- Number of threads per inch and thread form, if other than American National Standard.
- Outside diameter of male threads.
- Pitch diameter of male threads.
- Pitch diameter of female threads.

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Legacy Document Number: RTS-T-3FH-EN

ATTACHMENT D

SAMPLE BILL AND WATER RATES

City of Shasta Lake
P.O. Box 777
4477 Main St
Shasta Lake, CA 96019-0777
(530) 275-7400
www.cityofshastalake.gov

Account Number	AMOUNT DUE
01-0003[redacted]	**$187.38**
Due Date	**After Penalty Date Pay**
11/1/2025	$202.38
Service Address	
[redacted] Linda Ln	

There will be a charge on all returned checks.
Please return this portion with your payment.
When paying in person, please bring both portions of this bill.

[redacted]
Shasta Lake, CA 96019

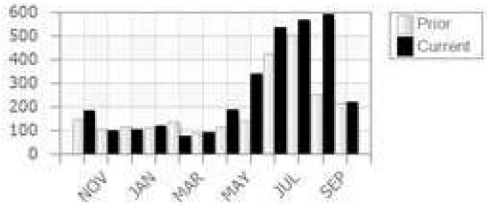
City of Shasta Lake
P.O. Box 777
Shasta Lake, CA 96019-0777

CUSTOMER ACCOUNT INFORMATION - RETAIN FOR YOUR RECORDS

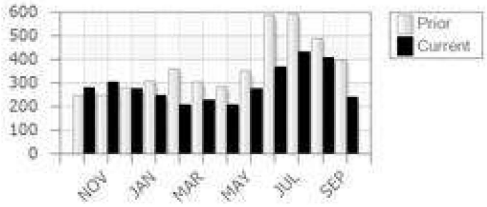
Name	Service Address	Account Number
[redacted]	[redacted]inda Ln	01-0003[redacted]

Status	Billing Period From	Billing Period To	# Days	Bill Date	Penalty Date	Due Date
Active	9/6/2025	10/6/2025	30	10/12/2025	11/18/2025	11/1/2025

WATER USAGE (Cubic Feet)



ELECTRIC USAGE (kWh)



	Previous Reading	Current Reading	Usage		Rate
WATER	2,598	2,818	220	CF	$0.0303
ELECTRIC	18,128	18,367	239	kWh	$0.17114

PREVIOUS BALANCE	$233.77
PAYMENTS	($233.77)
ADJUSTMENTS	$0.00
PENALTIES	$0.00
PAST DUE AMOUNT	**$0.00**
WATER RESIDENTIAL	6.67
WATER: 5/8" SERV	46.95
WATER LIFELINE	-4.00
ELE RESIDENTIAL	40.90
ELE POWER COST ADJST	6.86
ELE PUBLIC BENEFIT	2.06
ELE RES SERVICE CHRG	24.50
ELE LIFELINE DISCOUN	-16.50
WASTEWATER RESIDENT	80.76
WASTEWATER LIFELINE	-16.15
SOLID WASTE 64 GL SR	15.33
CURRENT BILL	**$187.38**
AMOUNT DUE	**$187.38**
AMOUNT DUE AFTER PENALTY DATE	$202.38

ORDINANCE CC 2024-304

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SHASTA LAKE AMENDING CITY MUNICIPAL CODE SECTIONS FOR WATER RATES AND CHARGES

The City of Shasta Lake City Council does hereby ordain that City of Shasta Lake Municipal Code Sections 13.12.200 and 13.12.280 are hereby amended to read as follows:

Section 1. 13.12.200 Rates for Service: The following rates and compensation are fixed and established as the rates to be charged and collected by the city's water department for water furnished by the department:

Monthly Service Charges	Effective 7/1/2024	Effective 7/1/2025	Effective 7/1/2026	Effective 7/1/2027	Effective 7/1/2028
Lifeline	$40.29	$42.95	$45.77	$48.76	$51.93
5/8"	$44.29	$46.95	$49.77	$52.76	$55.93
1"	$108.89	$115.43	$122.36	$129.71	$137.50
1.5"	$216.55	$229.55	$243.33	$257.93	$273.41
2"	$345.75	$366.50	$388.49	$411.80	$436.51
3"	$647.23	$686.07	$727.24	$770.88	$817.14
4"	$1,077.89	$1,142.57	$1,211.13	$1,283.80	$1,360.83
6"	$2,154.57	$2,283.85	$2,420.89	$2,566.15	$2,720.12
8"	$3,446.57	$3,653.37	$3,872.58	$4,104.94	$4,351.24
10"	$6,245.90	$6,620.66	$7,017.90	$7,438.98	$7,885.32
12"	$9,260.58	$9,816.22	$10,405.20	$11,029.52	$11,691.30

Consumption Charges ($/hcf)	Effective 7/1/2024	Effective 7/1/2025	Effective 7/1/2026	Effective 7/1/2027	Effective 7/1/2028
Residential	$2.85	$3.03	$3.22	$3.42	$3.63
Lifeline	$2.85	$3.03	$3.22	$3.42	$3.63
Multi-Family & Mobile	$2.85	$3.03	$3.22	$3.42	$3.63
Commercial & Industrial	$2.85	$3.03	$3.22	$3.42	$3.63
Comm. Irr. & Govt.	$2.85	$3.03	$3.22	$3.42	$3.63
Schools	$2.85	$3.03	$3.22	$3.42	$3.63

Drought Rates	Effective 7/1/2024	Effective 7/1/2025	Effective 7/1/2026	Effective 7/1/2027	Effective 7/1/2028
Stage 1 - 10% Reduction	$0.32	$0.34	$0.37	$0.40	$0.43
Stage 2 - 20% Reduction	$0.72	$0.77	$0.82	$0.87	$0.93

Stage 3 - 30% Reduction	$1.23	$1.31	$1.39	$1.48	$1.57
Stage 4 - 40% Reduction	$1.90	$2.02	$2.15	$2.28	$2.42
Stage 5 - 50% Reduction	$2.85	$3.03	$3.22	$3.42	$3.63
Stage 6 - 60% Reduction	$4.28	$4.54	$4.82	$5.11	$5.42

Water Supply Surcharges	**Effective 7/1/2024**
Constrained Year Water Supply	
McConnell Water Surcharge	$0.17
ACID Water Surcharge	$0.24
Combined Surcharge	$0.41

Section 2. 13.12.280 - Fire service—Monthly rates.

A. The monthly rates to be charged and collected for service used for unmetered fire protection shall be as follows:

Monthly Private Fire Charges	**Effective 7/1/2024**	**Effective 7/1/2025**	**Effective 7/1/2026**	**Effective 7/1/2027**	**Effective 7/1/2028**
2" or Less	$16.93	$17.95	$19.03	$20.18	$21.40
3" or Less	$46.17	$48.95	$51.89	$55.01	$58.32
4" or Less	$96.60	$102.40	$108.55	$115.07	$121.98
6" or Less	$277.62	$294.28	$311.94	$330.66	$350.50
8" or Less	$589.82	$625.21	$662.73	$702.50	$744.65
10" or Less	$1,059.43	$1,123.00	$1,190.38	$1,261.81	$1,337.52
12" or Less	$1,710.30	$1,812.92	$1,921.70	$2,037.01	$2,159.24

Section 3. Severability: If any provision of this ordinance or the applications thereof to any person or circumstances is held invalid, the remainder of the ordinance and the applications of such provision will remain in effect to the extent permitted by law.

Section 4. Effective Date: This ordinance shall take effect 30 days after the date of its second reading and posting pursuant to the City Code, with an operative date of July 1, 2024.

I HEREBY CERTIFY that the foregoing Ordinance was introduced and read at a regular meeting of the City Council of the City of Shasta Lake held on the 21st day of May 2024, and was finally passed at a regular meeting of the City Council of the City of Shasta Lake held on the 4th day of June 2024.

PASSED, APPROVED, AND ADOPTED this 4th day of June 2024, by the following vote:

AYES: Jones, Morgan, Powell, Watkins
NOES: Eisenbeisz
ABSENT: None

JANICE POWELL, Mayor

ATTEST:

CHARITY TATLOW, Deputy City Clerk

CITY COUNCIL ORDINANCE JURAT
AND CERTIFICATION OF POSTING

I, Charity Tatlow, the undersigned Deputy City Clerk of the City of Shasta Lake, California, do hereby certify that Ordinance No. CC-2024-304

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SHASTA LAKE AMENDING CITY MUNICIPAL CODE SECTIONS FOR WATER RATES AND CHARGES

Had its first reading on May 21, 2024, second reading on June 4, 2024 and was passed by the following vote:

1st reading

AYES:	JONES, MORGAN, POWELL, WATKINS
NOES:	EISENBEISZ
ABSENT:	NONE
ABSTAIN:	NONE

Adopted on 2nd reading

AYES:	JONES, MORGAN, POWELL, WATKINS
NOES:	EISENBEISZ
ABSENT:	NONE
ABSTAIN:	NONE

This Ordinance becomes effective thirty (30) days after adoption.

Charity Tatlow, Deputy City Clerk

The Ordinance was posted in the following locations within 15 days of adoption.

Shasta Lake Post Office
Summit City Post Office
City Council Chambers

ATTACHMENT E

WATER SHORTAGE CONTINGENCY PLAN

Water Shortage Contingency Plan

November 2025 / FINAL

Water Shortage Contingency Plan

November 2025 / FINAL

Digitally signed by Brianna L. Barton
Contact Info: Carollo Engineers, Inc.
Date: 2025.11.14 15:05:19-08'00'

Digitally signed by Nicola A. Fontaine
Contact Info: Carollo Engineers, Inc.
Date: 2025.11.14 15:06:22-08'00'

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Abbreviations

ADU	Accessory Dwelling Unit
AFY	acre-feet per year
AP	action plan
BMP	best management practice
BVWD	Bella Vista Water District
CCSD	Centerville Community Services District
CII	commercial, industrial, and institutional
City	City of Shasta Lake
County	Shasta County
CWC	California Water Code
DDW	Division of Drinking Water
DRA	drought risk assessment
EOC	Emergency Operations Center
ERP	Emergency Response Plan
gpcd	gallons per capita per day
I-5	Interstate 5
ICS	Incident Command System
MFR	multi-family residential
mgd	million gallons per day
PIO	Public Information Officer
RHNA	Regional Housing Needs Assessment
SCWA	Shasta County Water Agency
SFR	single-family residential
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
WTP	Water Treatment Plant

CHAPTER 1 WATER SHORTAGE CONTINGENCY PLAN

1.1 Purpose

The City of Shasta Lake (City) Water Shortage Contingency Plan (WSCP) details the stages of action to be undertaken during a reduction in available water supply, either due to reductions in the City's available water supply during drought years, or due to catastrophic interruption due to flooding, major fire emergencies, earthquake, regional power outages, water contamination or other situations that could impact the City's water supply.

The goal is to have a procedure for managing and mitigating shortages allowing the City to respond in an efficient and timely manner. This WSCP may be amended as needed at any time.

In the event any provision of this WSCP conflicts or overlaps with any mandatory State regulation related to water conservation, the most stringent shall apply.

1.2 Application

The provisions of this WSCP shall apply to all persons, customers, and property served by the City, wherever situated, and for all types of water provided by the City. In situations where a property is serviced by both the City and a private well, no City water may be used for activities that are prohibited by any regulations set forth in this WSCP.

The prohibited uses of water are not applicable to water necessary for public health and safety.

1.3 Authorization

The WSCP will be adopted by City Council and authorize the City Manager to declare a water shortage emergency and impose voluntary or mandatory water conservation restrictions by identifying the applicable stage.

1.4 Enforcement

The City Manager, Building Official, Development Services Director, and Water Conservation Coordinator and each of their respective designees are each authorized to administer and enforce all provisions of this WSCP, including the issuance of citations.

1.5 Definitions

The following words and phrases as used in this WSCP have the following meanings:

1. "Available water supply" means the amount of potable water available to the city in any given water year, including water available through long-term water purchase agreements/contracts, taking into consideration reductions to the allocations during drought years, and any supplemental water purchased from other water purveyors under short-term agreements.
2. "Bubbler" means an irrigation device that bubbles water only a short distance from the device, generally used for watering trees and shrubs on a per-tree/shrub basis.

3. "City" means the City of Shasta Lake.
4. "Drip irrigation" means a landscape watering system using low water pressure and flexible tubing placed on the ground to target the roots of plants, thereby conserving moisture that would be lost to evaporation with sprinkler systems
5. "Emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.
6. "Landscape irrigation system" means an irrigation system with pipes, spray heads or sprinkling devices that are operated through an automated or manual valving system.
7. "Large water user" means schools, commercial, industrial, civic/social/fraternal and government customers with a one-inch meter or larger, or more than one meter serving a property or facility, and single-family residential users with a water use of over 10,000 cubic feet per month over the prior 12-month period.
8. "Ornamental pond" or "ornamental fountain" means a design element where open water performs solely an aesthetic function.
9. "Person" means property owners, occupants, tenants, lessees, sub-lessees, individuals, partnerships, corporations, joint ventures, receivers, limited liability companies, trust, estates, cooperatives, associations public or private agency, government agency or institution, school district or any other user of water provided by the city.
10. "Potable water" means water that is provided to customers through the city's water treatment and distribution system. This does not include reclaimed water.
11. "Reclaimed water" means former wastewater that is treated to remove solids and impurities pursuant to state water quality requirements and used for landscape irrigation and/or to meet commercial and industrial water needs.
12. "Retrofit kit" means 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.
13. "Shut-off nozzle" shall mean a device attached to the end of a hose that must be manually operated, pressed or otherwise held in place to allow water to flow out of the hose.
14. "Soaker hose" means a garden hose with small holes that allow water to seep into the ground to the roots of plants, conserving moisture that would be lost to evaporation with sprinkler systems.
15. "Station" means a landscaped area served by one valve or by a set of valves that operate simultaneously.
16. "Unnecessary and wasteful use of water" means the application or usage of water for functions or activities which do not have any health or safety purpose, are not required by regulation, and are not part of the core function or business process at a site.
17. "Water year" means the period from and including March 1 of each calendar year through the last day of February of the following calendar year as established by the long-term water contract between the City and the United States Bureau of Reclamation (USBR).

CHAPTER 2 WATER SUPPLY RELIABILITY ANALYSIS

The City's water service area is located north of Redding in western Shasta County (County). The City is located along the Interstate 5 (I-5) corridor, south of Shasta Lake and the Shasta Dam. The City water supply is surface water diverted from Shasta Lake. Raw water is pumped to the Fisherman's Point Water Treatment Plant (WTP) via the USBR Raw Water Pumping Station located at the base of Shasta Dam. The Fisherman's Point WTP is capable of treating and distributing a maximum of approximately 9.72 million gallons per day (mgd).

In 2020, the population was estimated to be approximately 10,626. The population is anticipated to increase to 13,627 by the year 2045, which is based on an average annual growth rate of 1.0 percent. Water demands served by the City are primarily residential, including single-family residential (SFR) and multi-family residential (MFR), commercial, industrial, and institutional (CII), and landscape irrigation. All connections in the City are metered. The total volume supplied in 2020 was approximately 2,215 acre-feet per year (AFY). Demands are anticipated to increase to 3,282 AFY by the year 2045.

The per capita water demand was 186 gallons per capita per day (gpcd) in 2020. Although the City was able to meet the 2020 target of 215 gpcd, the year 2020 did not represent a typical year due to the impacts of the COVID-19 pandemic. However, since the 2020 per capita demand of 186 gpcd was below the 2020 goal, adjustments for extraordinary events were not made.

Supply availability was reviewed under a single-dry year and five-consecutive-year drought. In addition, a drought risk assessment (DRA) from 2021 through 2025 found that there is sufficient supply to meet projected demands within the next five years.

CHAPTER 3 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

The annual water supply and demand assessment identifies key data and methods for determining the supply reliability each year. The annual assessment is due on or before July 1 of each year, as required by California Water Code (CWC) Section 10632.1. The assessment plans for the following calendar year assuming the year following the planning year is a dry year.

The annual supply and demand assessment will include:

- Anticipated shortage.
- Triggered shortage response actions.
- Compliance and enforcement actions.
- Communication actions.
- Review of assets.

3.1 Water Conservation Coordinator

The City has a designated Water Conservation Coordinator (Chris Carr,ccarr@cityofshastalake.gov) that supervises best management practice (BMP) implementation, evaluates effectiveness, and communicates program goals to the community. The Water Conservation Coordinator tasks may include, but are not limited to, managing implementation of water conservation efforts and programs, preparing conservation reports, promoting water conservation to agency staff, evaluating the results of efforts, monthly tracking of production versus consumption, and enforcement of water use restrictions.

The Water Conservation Coordinator shall review and evaluate the status, condition, and availability of the City's water supplies and recommend and advise the City Manager concerning the water supply reliability of surface water source (Shasta Lake), the City's ability to purchase or transfer water, the system's ability to produce and distribute water to its customers, shortage levels (also referred to as stages), declaration of a water shortage emergency, and other water conservation matters, including but not limited to the number of new service connections allowed annually.

The Water Conservation Coordinator shall compare the previous year assessment to the actual state of the water supply prior to the summer high use period. This procedure will help the City to refine the assessment process and make changes as needed.

In the event of a water shortage, emergency, or drought condition, the Water Conservation Coordinator shall review and evaluate the status, condition, and availability of the City's water supplies and recommend and advise the City Manager concerning conservation and other significant resource management constraints, including the declaration of a Water Shortage Emergency.

3.2 Timeline

The proposed timeline for the annual supply and demand assessment is listed below and is subject to change. The USBR water year is March 1 through February 28/29 of the following year. The City submits their annual assessment (due on or before July 1 of each year to the state) in February prior to the start of the USBR water year:

- Preparation of Draft Supply and Demand Analysis – December.
- Submit and Present Assessment to City Manager or his/her designee – January.
- Update and Finalize Assessment – February.
- Receive City Manager Approval – February.
- Annual Supply and Demand Assessment – February (Due to state July 1).

3.3 Decision-Making Process

The steps in the decision-making process that the City Water Conservation Coordinator will use each year to determine and subsequently report to the state are listed below:

1. Water Conservation Coordinator determines:
    a. Previous calendar year water production.
    b. Infrastructure constraints.
    c. Expected demand.
2. Water Conservation Coordinator compares supply and demand and decides on the water supply reliability for the current year and one dry year.
3. Water Conservation Coordinator prepares and submits the Annual Assessment Report to the state.
4. Water Conservation Coordinator presents the findings and recommendations of the Annual Assessment Report to the City Council.
5. City Manager and Water Conservation Coordinator determines the shortage levels and other conservation matters, including but not limited to the number of new service connections allowed annually that are appropriate for all or portions of the City water system.
6. The City Manager, Building Official, Development Services Director, and Water Conservation Coordinator and each of their respective designees implements the provisions of this WSCP.

3.4 Key Data and Methodologies

The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, include the following:

- Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.
- Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.
- Existing infrastructure capabilities and plausible constraints.

- A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.
- A description and quantification of each source of water supply.

3.4.1 Water Supply

The annual assessment will evaluate the current year available and one subsequent dry year. The available water supplies for the City shall be quantified each year by summing the available water supplies. Potential production constraints, hydrological, and regulatory conditions will be considered. The long-term contract amount with USBR is sufficient to meet City demands when allocations are not reduced. During a single-dry year, the USBR allotments can be reduced by 50 percent or more.

3.4.2 Unconstrained Customer Demand

Water use for the previous year shall be quantified by summing the meter usage of each customer class for the previous year. Customer water demands shall be projected for the upcoming year based on the previous year's water usage and the number of anticipated new customer connections.

3.4.3 Planned Water Use for Current Year Considering Dry Subsequent Year

The planned water use for the current year is not impacted by an anticipated subsequent dry year. When USBR allocations are reduced, the City has emergency inter-ties with the City of Redding and Bella Vista Water District (BVWD) in which transfers of water can be made. The City also can purchase supplemental water under short-term contracts from the Shasta County Water Agency (SCWA), the McConnell Foundation, and the Centerville Community Services District (CCSD).

3.4.4 Infrastructure Considerations

Infrastructure projects anticipated for the upcoming year that could impact water supply will be evaluated for the timeframe the projects will impact supply. The available water supply will be increased or reduced accordingly for each month.

3.4.5 Other Factors

The Regional Housing Needs Assessment (RHNA) is mandated by State Housing Law as part of the periodic process of updating local housing elements of the General Plan. The RHNA for Shasta Lake for the 2018 to 2028 projection period is 238 new housing units, including 28 extremely low-income units, 28 very low-income units, 39 low-income units, 42 moderate-income units, and 101 above moderate-income units. It should also be noted, State legislation in 2017 made Accessory Dwelling Units (ADU) legal in all California cities. Homeowners can decide to build either a detached ADU in their backyard, an attached ADU that is part of a home addition, or an ADU conversion. Although the State has determined ADU's contribute no additional stress on utilities, the addition of another dwelling unit, another family occupant, on a single-family property does impact water usage.

3.4.6 Criteria

Evaluation of the appropriate shortage level will include, but not be limited to, the following considerations:

1. Current surface water level (Shasta Lake).
2. Recent trends in surface water level (Shasta Lake).
3. Other hydrological or other local conditions indicative of water supply available.
4. The previous winter's precipitations.
5. The previous year's water demand.
6. Current demand and anticipated demand for water by City Customers.
7. Current and anticipated supply of City water sources.
8. Damage to the City's water system.
9. Predicted weather patterns.
10. Water content of the snowpack.
11. Climate change impacts.

If the available water supply is greater than the anticipated customer demand for the upcoming year, then the City does not need to take any further action. If the anticipated customer demand for the upcoming year is greater than the available water supplies, the City can initiate water conservation actions as detailed in this WSCP.

CHAPTER 4 SIX STANDARD WATER SHORTAGE LEVELS

The following section describes the City water shortage levels and the conservation measures employed during each stage.

No Customer shall make, cause, use, or permit the use of water from the City for any residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this WSCP or in an amount in excess of that use permitted by the Shortage Level then in effect.

The WSCP will be adopted by City Council and authorize the City Manager to declare the appropriate water shortage level utilizing the factors contained in the annual water supply and demand assessment. Any shortage level shall be effective on declaration.

4.1 Shortage Levels

There shall be six shortage levels in response to water supply shortages. The six levels, including greater than 50 percent reduction in water supply are summarized in Table 4.1. The percent shortage is from the normal reliability condition. The existence of each level conservation conditions may be declared and adopted by the City in accordance with California State law.

Table 4.1 Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Water Shortage Condition
1	10 percent	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	>50 percent	Catastrophic Interruption of Water Supplies(1)

Notes:
(1) Including flooding, major fire emergencies, earthquake, regional power outages, water contamination, and emergencies other than water shortage.

4.2 Triggering Mechanisms for Shortage Levels

The triggering mechanisms to use as guidelines for the shortage levels are summarized in Table 4.2. The City Manager may impose any of the following conservation stages based upon facts and circumstances which may not have been otherwise anticipated in this plan.

Table 4.2 Shortage Level Triggers

Shortage Level	Triggers
1 10 percent Water Shortage	▪ System malfunction resulting in 10 percent shortage. ▪ City or State declaration due to drought. ▪ Federal, state, or local disaster declaration that may impact water supplies. ▪ Water Conservation Coordinator determination. ▪ Unplanned City water system maintenance.
2 11-20 percent Water Shortage	▪ System malfunction resulting in 11 percent to 20 percent shortage. ▪ City or State declaration due to drought. ▪ Federal, state, or local disaster declaration that may impact water supplies. ▪ Water Conservation Coordinator determination. ▪ Unplanned City water system maintenance.
3 21-30 percent Water Shortage	▪ System malfunction resulting in 21 percent to 30 percent shortage. ▪ City or State declaration due to drought. ▪ Federal, state, or local disaster declaration that may impact water supplies. ▪ Water Conservation Coordinator determination. ▪ Unplanned City water system maintenance.
4 31-40 percent Water Shortage	▪ System malfunction resulting in 31 percent to 40 percent shortage. ▪ City or State declaration due to drought. ▪ Federal, state, or local disaster declaration that may impact water supplies. ▪ Water Conservation Coordinator determination. ▪ Unplanned City water system maintenance.
5 41-50 percent Water Shortage	▪ System malfunction resulting in 41 percent to 50 percent shortage. ▪ City or State declaration due to drought. ▪ Federal, state, or local disaster declaration that may impact water supplies. ▪ Water Conservation Coordinator determination. ▪ Unplanned City water system maintenance.
6 >50 percent Water Shortage	▪ System malfunction resulting in up to >50 percent shortage or catastrophic interruption of water supplies.(1) ▪ City or State declaration due to drought. ▪ Federal, state, or local disaster declaration that may impact water supplies. ▪ Water Conservation Coordinator determination. ▪ Unplanned City water system maintenance.

Notes:
(1) Including flooding, major fire emergencies, earthquake, regional power outages, water contamination, and emergencies other than water shortage.

CHAPTER 5 SHORTAGE RESPONSE ACTIONS

The following rules and regulations associated with the shortage levels, described below, will be effective immediately upon declaration and approval of the City Manager. Additional water shortage response actions and/or changes in shortage levels may be recommended by the Water Conservation Coordinator and approved by the City Manager, whenever they determine necessary, in accordance with the annual water supply and demand assessment methodologies.

The water shortage response actions include demand reduction, supply augmentation, operational changes, and mandatory prohibitions to address shortage levels. Violations are considered waste and an unauthorized use of water, which result in penalties as outlined in Section 7.2, as amended from time to time.

5.1 Permanent Restrictions

The City enforces permanent State water conservation restrictions that are required regardless of the water supply condition. There are no additional local permanent water conservation restrictions.

5.2 Shortage Restrictions

The mandatory reduction measures for each water shortage level are detailed in the following tables (Tables 5.1 through 5.6).

5.3 Stage 1 – Water Shortage Alert

In Stage 1, there is a 10 percent reduction in the City's available water supply. The City's water supply (treatment) and/or distribution system is able to meet much of or most of the water demands of its customers in the immediate future.

The water conservation requirements in Table 5.1 are state mandated regardless of drought stages in an effort to reduce water consumption.

Table 5.1 Stage 1 Restrictions

Type Use	Restriction	Compliance
Hose Use	Free-flowing hoses for any use shall be prohibited. Customers shall use automatic shutoff devices on any hose or filling apparatus.	Mandatory
Fixtures	Faulty sprinklers and/or breaks within the customer's plumbing system shall be repaired within twenty-four (24) hours after the customer is notified or discovers the break.	Mandatory
Other	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.	Mandatory
Landscape Irrigation	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.	Mandatory
Landscape Irrigation	Irrigated landscaped areas shall include efficient irrigation systems (e.g., drip irrigation systems, timed sprinklers, rain sensors, low-flow spray heads, etc.).	Mandatory
Fixtures	All new development shall be required to install low flow devices (i.e., toilets and shower heads) pursuant to California Building Code standards.	Mandatory
Construction	The use of potable water for dust control shall be reduced to the greatest extent possible.	Mandatory

5.4 Stage 2 – Moderate Water Shortage

In Stage 2, there is an 11 to 20 percent reduction in the City's available water supply. There is a probability that the City's supply (treatment) and/or distribution system will not be able to meet all water demands of City customers with the City's available water supply for the current water year.

The water conservation requirements in Table 5.2 apply during a declared Shortage Level 2 in an effort to increase conservation by 10 percent above Stage 1. All measures from Stage 1 become mandatory in Stage 2 unless noted as more restrictive.

Table 5.2 Stage 2 Restrictions

Type Use	Restriction	Compliance
Water Features	Water use for ornamental ponds and fountains shall be prohibited.	Mandatory
Other	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)	Mandatory
Landscape Irrigation	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)	Mandatory
Landscape Irrigation	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)	Mandatory
Other	All City water customers who do not comply with the reduced consumption amount shall be required to install retrofit kits.(4)	Mandatory
Other	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.	Mandatory
Restaurants	Restaurants and other food establishments shall only serve and refill water upon request.	Voluntary(5)

Notes:
(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 hand-held 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.
(5) Unless mandated by State law.

5.5 Stage 3 – Emergency Water Shortage

In Stage 3, there is a 21 to 30 percent reduction in the City's available water supply. There is a probability that the City's supply (treatment) and/or distribution system will not be able to meet all water demands of City customers with the City's available water supply for the current water year.

The water conservation requirements in Table 5.3 apply during a declared Shortage Level 3 in an effort to increase conservation by 10 percent above Stage 2. All measures from Stages 1 and 2 become mandatory in Stage 3 unless noted as more restrictive.

Table 5.3 Stage 3 Restrictions

Type Use	Restriction	Compliance
Landscape Irrigation	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.	Mandatory
Landscape Irrigation	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)	Mandatory
Landscape Irrigation	Installation of irrigated landscaping for all new development shall be deferred pursuant to a written Agreement with the City.	Mandatory
Landscape Irrigation	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.	Mandatory
Hotels, motels, and bed and breakfasts	Must offer and clearly notify guests of a “limited linen/towel exchange” program.	Mandatory
Industrial and Commercial	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.	Mandatory

Notes:
(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 hand-held 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.

5.6 Stage 4 – Severe Water Shortage

In Stage 4, there is a 31 to 40 percent reduction in the City's available water supply. The City's supply (treatment) or distribution system will not be able to meet all demands of City customers with the City's available water supply for the current water year.

The water conservation requirements in Table 5.4 apply during a declared Shortage Level 4 in an effort to increase conservation by 10 percent above Stage 3. All measures from Stages 1, 2, and 3 become mandatory in Stage 4 unless noted as more restrictive.

Table 5.4 Stage 4 Restrictions

Type Use	Restriction	Compliance
General	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).	Mandatory
Swimming Pools	Swimming pools that have been filled prior to Stage 4 shall not be emptied and refilled.	Mandatory
Swimming Pools	Filling of new swimming pools is prohibited as of the effective date of the Stage 4 declaration.	Mandatory
Other	Flushing of sewers and fire hydrants shall be prohibited except in cases of emergency.	Mandatory
Construction	No potable water from the City system shall be used for construction purposes, such as dust control, compaction, or trench jetting.	Mandatory
Hotels, motels, and bed and breakfasts	Must limit linen/towel changes to once every two (2) nights or for the entire stay, whichever is shorter, except for health and safety.	Mandatory

5.7 Stage 5 – Critical Water Shortage Emergency

In Stage 5, there is a 41 to 50 percent reduction in the City's available water supply. The City's supply (treatment) or distribution system 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.

The water conservation requirements in Table 5.5 apply during a declared Shortage Level 5 in an effort to increase conservation by 10 percent above Stage 4. All measures from Stages 1, 2, 3, and 4 become mandatory in Stage 5 unless noted as more restrictive.

Table 5.5 Stage 5 Restrictions

Type Use	Restriction	Compliance
Residential Development	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)	Mandatory
Landscape Irrigation	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.	Mandatory
Hotels, motels, and bed and breakfasts	Must limit linen/towel changes to once every three (3) nights or for the entire stay, whichever is shorter, except for health and safety.	Mandatory
Vehicle and Equipment Washing	Non-commercial washing of vehicles and mobile equipment is prohibited. Only commercial facilities with water recycling systems may be used.	Mandatory

Notes:
(1) Building permit applications may proceed with a deferral of landscape installation , until the water shortage level has been lifted. Issuance of Temporary Certificate of Occupancy will be allowed in the interim.

5.8 Stage 6 – Catastrophic Interruption of Water Supplies

In Stage 6, there is a greater than 50 percent reduction in the City's available water supply. The City's supply (treatment) or distribution system 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 including flooding, major fire emergencies, earthquake, regional power outages, water contamination, and emergencies other than water shortage. The City is not able to meet all customer water requirements with Stage 5 measures.

The water conservation requirements in Table 5.6 apply during a declared Shortage Level 6.

Table 5.6 Stage 6 Restrictions

Type Use	Restriction	Compliance
General	City may establish mandatory water use budgets, if needed.	Mandatory
General	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.	Mandatory
Indoor Water Use	Wash only full loads of laundry and/or dishes.	Voluntary
Indoor Water Use	Shorten showers and turn off faucets while brushing teeth or shaving.	Voluntary
Landscape	No new landscape shall be installed until the appropriate water shortage level has been lifted. Exceptions are replacing landscaping with drought tolerant landscape material.	Mandatory
Swimming pools, hot tubs	All pools and tubs shall be covered when not in use to reduce evaporation.	Mandatory
Vehicle and Equipment Washing	Fleet managers are encouraged to only wash those vehicles as is necessary for health and safety.	Mandatory

5.9 Supply Augmentation and Other Methods

The methods to augment supply include the following:

- Transfers.
- Purchases.
- Emergency interties.

Actions the City can take to reduce consumption include the following:

- Expand public information campaign.
- Improve customer billing.
- Increase frequency of meter reading.
- Offer water use surveys.
- Provide rebates on plumbing fixtures and devices.
- Decrease line flushing.
- Reduce system water loss.
- Moratorium or net zero demand increase on new connections.
- Implement or modify drought rate structure or surcharge.
- Voluntary rationing.
- Mandatory rationing.

5.10 Operational Changes

During times of water supply shortage, the City can:

- Reduce system flushing.
- Monitor meter information to determine where water leaks may be.

5.11 Emergency Response Plan

During declared shortages, or when shortage declarations appear imminent, emergency regulations can be enacted by City Council.

The purpose of the City Emergency Response Plan (ERP) is to provide the City with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin. The ERP also describes how the City will respond to additional emergency response situations and includes specific action plans (APs) that will be used to respond to events and incidents.

The goals of the ERP are to:

- Rapidly restore water service after an emergency.
- Ensure adequate water supply for fire suppression.
- Minimize water system damage.
- Minimize impact and loss to customers.
- Minimize negative impacts on public health and employee safety.
- Provide emergency public information concerning customer service.

5.12 Hazard Mitigation Plan

The City's Hazard Mitigation Plan includes a seismic risk and vulnerability assessment and is included as an appendix in the Urban Water Management Plan (UWMP). The Hazard Mitigation Plan may be updated at any time. The most recent Hazard Mitigation Plan shall apply to the current WSCP.

5.13 Shortage Response Action Effectiveness

The effectiveness of the shortage response actions and the extent to which it reduces the gap between supply and demand can be determined through monitoring. The metered data will be analyzed on a month-by-month basis to monitor the effectiveness of reduction actions for each shortage level declarations.

CHAPTER 6 COMMUNICATION PROTOCOLS

The communication protocols contained herein for shortage level declarations reflect the procedures in the City ERP. Due to the sensitive nature of the information contained in the ERP only brief descriptions have been included. Communications will be provided to the customers, public, and partners established in the ERP for emergency planning and mutual aid.

The Water Conservation Coordinator will evaluate supply planning, operational, financial, and communication issues related to the WSCP as needed. The information provided to customers at each shortage level will answer the following:

1. What the customers need to do to save water.
2. Why they need to save water.
3. How long does the City estimate they will need to save water.
4. What the City is doing to correct/supplement the supply problem or address the situation.

The degree of communication will vary based on the shortage level, supply/regulatory conditions, seasonal impacts, and other factors. The key audiences the City will need to communicate with include:

- Public (water customers).
- Homeowners.
- Public officials.
- Multi-family property owners/managers.
- Commercial-industrial property managers.
- Landscape contractors/suppliers.
- Business/civic leaders.
- High-visibility or high-water-use industries (restaurants, hotels, construction, etc.).
- Land-use agencies.
- Environmental groups.
- Community-based service organizations.
- Non-English-speaking populations.
- Temporary residents (tourists, etc.).
- Coordinating agencies.

Depending on the conditions, some of these audiences may be prioritized for outreach.

6.1 Communication Protocol for Normal Water Supply Conditions

During normal water supply conditions, the City will promote water efficiency by sharing information on the City's website (www.cityofshastalake.org):

- Permanent water conservation restrictions.
- Water efficiency rebate and other efficiency programs.
- Water conservation tips.

6.2 Communication Protocol for Current and Predicted Shortages

The Water Conservation Coordinator and the City Manager will meet to review the outcome of the annual supply and demand assessment and determine steps to be taken for current and predicted shortages. The shortage levels will be communicated to the City Council and the City Manager or his/her designee will prepare for and establish timing for a declaration. Public notification is not part of this stage.

6.3 Communication Protocol for Stages 1 – 5 Declarations

In the event of a shortage level declaration 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 media campaign to remind consumers of the need to save water.
- Enforce the permanent water conservation restrictions.

6.4 Communication of a Catastrophic Emergency and Stage 6 Declaration

The City uses the Incident Command System (ICS) for its command structure during water emergencies. In the event of a catastrophic emergency, the City will fully implement the Emergency Response Plan, immediately initiate appropriate APs and fully activate the City Emergency Operations Center (EOC).

6.5 Public Notice Procedures

The City's Public Information Officer (PIO) is the official spokesperson for the City and is authorized to speak directly to public media representatives. The PIO will contact the news media to broadcast the necessary information. As a follow-up measure, the local newspaper(s) that serves the service area will be contacted.

The City of Shasta Lake has prepared a series of public notices and press releases for use during various emergency situations in accordance with Division of Drinking Water (DDW) guidance. If the water system is experiencing power outages, water outages, or low-pressure problems, a consumer alert may be issued to the public. The notice provides consumers information on conserving water.

CHAPTER 7 COMPLIANCE AND ENFORCEMENT

A violation of any requirement set forth in this WSCP shall be subject to the water service termination procedures and penalties as outlined in Section 7.2, as amended from time to time.

7.1 Enforcement

The City Manager, Building Official, Development Services Director, and Water Conservation Coordinator and each of their respective designees are each authorized to administer and enforce all provisions of the WSCP, including the issuance of citations.

7.2 Penalties

It is unlawful for any person to violate or cause or permit the violation of any of the provisions of this WSCP or provide false information to the City in response to City requests for information. The penalties for violations of any provision of this WSCP are as follows:

- First Violation: No penalty shall be imposed. The City shall provide notice of the violation and a copy of this WSCP to the current property owner and/or billing address.
- Second Violation: No penalty shall be imposed. The City shall issue a written notice of the violation by certified mail to the current property owner and/or billing address and provide notice that additional violations may result in penalties or termination of service.
- Third Violation: A third violation within 12 calendar months of the second violation shall result in a penalty not to exceed $100.00.
- Fourth Violation: A fourth violation within 12 calendar months of the third violation shall result in a penalty not to exceed $200.00.
- Fifth and Subsequent Violations: A fifth violation and subsequent violations within 12 calendar months of the fourth violation shall result in a penalty not to exceed $500.00.

For third and subsequent violations, the city shall issue a written notice of the violation by certified mail to the current property owner and/or billing address. The amount of the penalty shall be added to the next water bill 30 days after the date of the written notice of the violation, if not paid in full or protested pursuant to Section 7.2.4. If the penalty is added to the water bill, failure to pay the penalty shall be treated as nonpayment of the water bill and water service may be terminated as a result.

Each separate day or portion thereof in which any violation of this WSCP occurs or continues without a good faith effort by the customer to correct the violation shall constitute a separate violation.

7.2.1 Termination of Service

In addition to any penalties, the City may disconnect and/or terminate a customer's water service. If water service is disconnected, it shall be restored only upon payment of the connection charge fixed by City Council.

The City may not terminate service due to a customer's failure to comply with the rules and regulations unless the City first gives notice of the violation and the consequence of the violation.

7.2.2 Civil Enforcement

Violations of this WSCP may also be redressed by civil action. In addition to being subject to prosecution, any person who violates any of the provisions of this WSCP may be made the subject of a civil action. Appropriate civil action includes, but is not limited to, injunctive relief and cost recovery.

7.2.3 Remedies Cumulative

The remedies available to the City to enforce this WSCP are in addition to any other remedies available under the Shasta Lake Municipal Code or any state statutes or regulations and do not replace or supplant any other remedy but are cumulative thereto.

7.2.4 Protesting Penalties/Fines

A protest of penalties/fines shall be in writing on a form prescribed by the City and shall be filed with the City no later than 14 calendar days from the date of notice of a violation. The protest shall be accompanied by photographs, maps, drawings, or other information showing why the protest should be granted.

The City Manager or his/her designee shall consider all protests and make a determination on the request no later than 10 calendar days after submittal and may approve, conditionally approve, or deny the protest. The applicant shall be notified in writing of any action taken.

The decision of the City Manager or his/her designee may be appealed to the City Council by written notice within 10 calendar days of the date of action taken on the protest request. The appeal shall be scheduled for City Council consideration at the next possible City Council meeting. Upon granting any protest request, City Council may impose any conditions it determines to be appropriate. The decision of City Council shall be prepared in writing and provided to the applicant.

7.3 Hardship Variances

If, due to unique circumstances, a specific requirement of this WSCP would result in undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar properties or classes of water users, then the person may apply for a variance from the provisions of this WSCP.

An application for a variance shall be in writing on a form prescribed by the City. The application shall be accompanied by photographs, maps, drawings, or other information showing why the request should be granted.

The City Manager or his/her designee shall consider all variance applications and make a determination on the request no later than 10 calendar days after submittal and may approve, conditionally approve, or deny the variance request. The applicant shall be notified in writing of any action taken.

An application for a variance shall be denied unless the City Manager or his/her designee finds, based on the information provided in the application, supporting documents, or such additional information as may be requested by the City, and on water use information for the property as shown by the records of the City, all of the following:

1. Due to unique circumstances a specific requirement would result in undue hardship.
2. The variance does not constitute a grant of special privilege inconsistent with the limitations upon other residents and businesses.
3. Because of special circumstances applicable to the property or its use, the strict application of this WSCP would have a disproportionate impact on the property or use that exceeds the impacts to residents and businesses generally.
4. Granting the variance will not be of substantial detriment to adjacent properties and will not be detrimental to the general welfare of the public.
5. The conditions of the subject property or the intended use of the property for which the variance is sought is not common, recurrent or general in nature.
6. Proposed alternative water use restrictions for the property would result in equal or greater water savings than the existing water use restrictions and the customer has achieved the maximum practical reduction in water consumption.

7.3.1 Appeal Process

Any interested person may appeal the decision of the City Manager or his/her designee to the City Council by written notice within 10 calendar days of the date of the decision on the variance request. The appeal shall be scheduled for City Council consideration at the next possible City Council meeting. Upon granting any appeal, City Council may impose any conditions it determines to be appropriate. City Council's decision on the variance request shall be prepared in writing and provided to the appellant. The decision of City Council shall be final.

7.3.2 Previous Violations.

Any approved or conditionally approved variance is valid from the date it was approved or conditionally approved. Any previous violations and subsequent penalties associated with those violations are final and will not be reimbursed.

CHAPTER 8 LEGAL AUTHORITIES

The City Manager, Building Official, Development Services Director, and Water Conservation Coordinator and each of their respective designees are each authorized to administer and enforce all provisions of this WSCP, including the issuance of citations. The City Manager or a designated representative shall likewise be authorized to grant hardship variances from any provision of the WSCP as they deem appropriate under the circumstances. Any interested person may appeal the decision of the City Manager or their designee to the City Council. The decision of the City Council shall be final.

The WSCP will be adopted by City Council and authorize the City Manager to declare and adopt a water shortage emergency condition in accordance with California State law (Water Code Section Division 1, Chapter 3, Section 350).

The City will coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code (California Emergency Services Act, Article 2, Section 8558). Coordination protocols and a list of contacts is contained in the City ERP.

CHAPTER 9 FINANCIAL CONSEQUENCES OF WSCP

The City is fully metered and all City customers are billed volumetrically. Therefore, the City may experience a decrease in revenue with reduced water sales during a water shortage. Annually during the budget process, the City forecasts the revenues expected for the upcoming year. At that time, shortfalls in revenues relating to water shortage will be identified and rate adjustments recommended. The City shall monitor water revenues and expenses closely to evaluate whether "water shortage" adjustments to water rates are required.

The City's water rates and charges include drought surcharges for Stages 1 through 5. The drought surcharge for Stage 6 shall be the same as Stage 5. Additional costs are associated with increased monitoring during water shortage situations, namely due to an increase in the hours required to monitor customer accounts and enforce reduction actions. The additional costs associated with this effort, however, are not expected to significantly impact City revenues and expenditures.

The City does not expect to use financial reserves to address decreased water sales during a water shortage. The City will consider postponement of capital improvements to overcome impacts from water shortage contingency planning to revenues and expenditures. This evaluation would be considered during the annual supply and demand assessment.

CHAPTER 10 MONITORING AND REPORTING

The City is fully metered and all City customers are billed volumetrically. The City uses these meters to monitor City-wide use, individual customer use, and track actual reductions in water use. By periodic review of customer water use, the City is able to track the effectiveness of the shortage level reduction actions, educate customers regarding water use, and also identify leaks and other areas where additional conservation may be possible.

Monitoring will be used to ensure appropriate data is collected, tracked, and analyzed for purposes of determining:

- Customer compliance.
- Effectiveness of reduction actions.
- Potential leaks in the distribution system.
- Accurate monthly demand data for the annual supply and demand assessment.

Monitoring and reporting key water use metrics is fundamental to water supply planning and management and will be a critical part of the annual supply and demand assessment. Monitoring is also essential to ensure that the shortage level response actions achieve their intended water use reduction purposes or to determine if improvements or new actions are needed. Monitoring for customer compliance tracking is useful in enforcement actions. It should be noted that timing, frequency, and metrics will likely be variable, depending on the water shortage level and enforcement action logistics.

The City can compare meter data with water use in prior months and during non-drought years to determine if it is achieving specific percentage goals for water consumption associated with the drought response levels. If the goals are not being met, the City can implement additional shortage response actions at any time.

CHAPTER 11 WSCP REFINEMENT PROCEDURES

To evaluate the effectiveness of the WSCP and to ensure that procedures and practices developed under the WSCP are adequate and are being implemented properly, the Water Conservation Coordinator will perform audits of the program on a periodic basis, at least every five (5) years in coordination with the UWMP update. The Water Conservation Coordinator will also assess the effectiveness of the communication plan so that it may be modified as appropriate in the future.

The Water Conservation Coordinator will perform a thorough review of monitoring and reporting program data to determine the effectiveness of the reduction actions and whether the procedures and provisions of the WSCP need to be revised. The review will compare the expected percent demand reduction against actual reductions and shortage response actions.

City staff, customers, and other interested parties may have suggested actions or procedures to refine the WSCP. The Water Conservation Coordinator will evaluate these on a case-by-case basis for incorporation into the WSCP.

CHAPTER 12 SPECIAL WATER FEATURE DISTINCTION

The City restricts potable water use for the ornamental water features listed below unless the water is recirculated:

- Ponds.
- Lakes.
- Waterfalls.
- Fountains.

An ornamental or decorative water feature is defined as a design element where artificially supplied open water performs solely an aesthetic function. Ornamental water features do not include recreational water features, such as swimming pools and spas.

CHAPTER 13 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

Per the CWC, the following steps shall be performed prior to adoption of the WSCP:

- The City will issue a notification of a public hearing to customers, the county, and public:
  - The City will publish notification of the public hearing in a local newspaper for two consecutive weeks.
  - The City shall hold a public hearing to obtain public input.
  - Following the public hearing or a subsequent meeting, the City Council shall formally adopt the WSCP.
  - Per CWC Section 10632 (a)(c), the City will make the WSCP available on the City's website (www.cityofshastalake.org) within 30 days of the adoption.
- The City may choose to amend the WSCP at any time. If so, each of the steps above must be followed.

ATTACHMENT F NOT USED

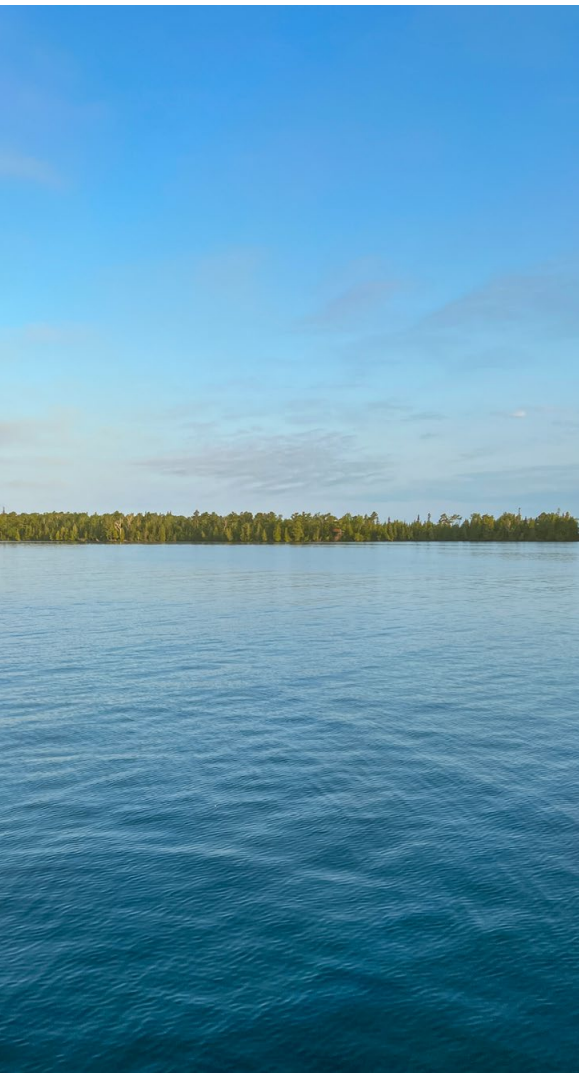
ATTACHMENT G NOT USED

ATTACHMENT H

ANNUAL POTABLE WATER QUALITY REPORT

ANNUAL WATER QUALITY REPORT

Reporting Year 2024



Presented By

City of Shasta Lake

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

PWS ID#: CA4510006

Our Commitment

We are pleased to present to you this year's annual water quality report. This report is a snapshot of last year's water quality covering all testing performed between January 1 and December 31, 2024. Included are details about your source of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and providing you with this information because informed customers are our best allies.

Where Does My Water Come From?

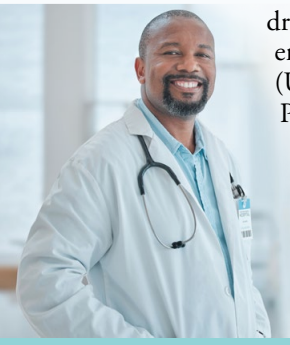
The City of Shasta Lake customers are fortunate because we enjoy an abundant water supply from one source. The water treatment plant draws water from the Shasta Lake Reservoir, which holds about 4.5 million gallons of water. The water treatment plant was constructed in 1988 to draw from this surface water supply and is capable of treating more than 9.7 million gallons of potable water a day. It consists of three multimedia Trident filters and produces, on average, 684 million gallons of potable water per year. The city also has two interconnects with Redding and Bella Vista water districts that are used for emergency purposes only.

Think Before You Flush!

Flushing unused or expired medicines can be harmful to your drinking water. Properly disposing of unused or expired medication helps protect you and the environment. Keep medications out of our waterways by disposing responsibly. To find a convenient drop-off location near you, please visit https://bit.ly/3IeRyXy.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health-care providers. U.S. Environmental Protection Agency (U.S. EPA)/Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or epa.gov/safewater.



What Are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals used worldwide since the 1950s to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. During production and use, PFAS can migrate into the soil, water, and air. Most PFAS do not break down; they remain in the environment, ultimately finding their way into drinking water. Because of their widespread use and their persistence in the environment, PFAS are found all over the world at low levels. Some PFAS can build up in people and animals with repeated exposure over time.

The most commonly studied PFAS are perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). PFOA and PFOS have been phased out of production and use in the United States, but other countries may still manufacture and use them.

Some products that may contain PFAS include:

- Some grease-resistant paper, fast food containers/wrappers, microwave popcorn bags, pizza boxes
- Nonstick cookware
- Stain-resistant coatings used on carpets, upholstery, and other fabrics
- Water-resistant clothing
- Personal care products (shampoo, dental floss) and cosmetics (nail polish, eye makeup)
- Cleaning products
- Paints, varnishes, and sealants

Even though recent efforts to remove PFAS have reduced the likelihood of exposure, some products may still contain them. If you have questions or concerns about products you use in your home, contact the Consumer Product Safety Commission at (800) 638-2772. For a more detailed discussion on PFAS, please visit bit.ly/3Z5AMm8.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Chris Carr, Water Department Superintendent, at (530) 275-7491.

Substances That Could Be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.

Radioactive Contaminants that can be naturally occurring or be the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the U.S. EPA and the State Water Resources Control Board (SWRCB) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Lead in Home Plumbing

Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. The City of Shasta Lake is responsible for providing high-quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may vary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter certified by an American National Standards Institute-accredited certifier to reduce lead is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure it is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling does not remove lead from water.

Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, or doing laundry or a load of dishes. If you have a lead or galvanized service line requiring replacement, you may need to flush your pipes for a longer period. If you are concerned about lead and wish to have your water tested, contact the City of Shasta Lake at [CONTACT INFORMATION]. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at epa.gov/safewater/lead.

To address lead in drinking water, public water systems were required to develop and maintain an inventory of service line materials by October 16, 2024. Developing an inventory and identifying the location of lead service lines (LSL) is the first step for beginning LSL replacement and protecting public health. The lead service inventory may be [PROVIDE ACCESS INFORMATION]. Please contact us if you would like more information about the inventory or any lead sampling that has been done.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. Here, we only show those substances that were detected in our water (a complete list of all our analytical results is available upon request). Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data is included, along with the year in which the sample was taken.

We participated in the fifth stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR5) program by performing additional tests on our drinking water. UCMR5 sampling benefits the environment and public health by providing the U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water to determine if it needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data is available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	PHG (MCLG) [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	2024	[4.0 (as Cl2)]	[4 (as Cl2)]	0.54	0.32–0.88	No	Drinking water disinfectant added for treatment
***E. coli* (State Revised Total Coliform Rule)** (positive samples)	2024	0	(0)	0	NA	No	Human and animal fecal waste
HAA5 [sum of 5 haloacetic acids] (ppb)	2024	60	NA	15	13–20	No	By-product of drinking water disinfection
Nitrate [as nitrogen] (ppm)	2024	10	10	0.14	NA	No	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
TTHMs [total trihalomethanes] (ppb)	2024	80	NA	31.8	24–39	No	By-product of drinking water disinfection
Turbidity[1] (NTU)	2024	TT	NA	0.44	NA	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting limit)	2024	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	PHG (MCLG)	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2021	500	NS	2.76	NA	No	Runoff/leaching from natural deposits; seawater influence
Copper (ppm)	2022	1.0	NS	0.08	NA	No	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Specific Conductance (µS/cm)	2021	1,600	NS	147	NA	No	Substances that form ions when in water; seawater influence
Sulfate (ppm)	2021	500	NS	3.780	NA	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (ppm)	2021	1,000	NS	99	NA	No	Runoff/leaching from natural deposits
Turbidity (NTU)	2024	5	NS	0.025	0.01–0.44	No	Soil runoff

UNREGULATED SUBSTANCES[2]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Calcium (ppm)	2021	12.5	NA	NA
Hardness, Total [as CaCO3] (ppm)	2021	53	NA	NA

[1] Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

[2] Unregulated contaminant monitoring helps U.S. EPA and the SWRCB determine where certain contaminants occur and whether the contaminants need to be regulated.

BY THE NUMBERS

3.4 BILLION

The daily volume in gallons of water recycled and reused in the U.S., reducing waste and conserving resources.

28%

The percent reduction in per capita water use in the U.S. since 1980, thanks to efficiency improvements.

99.99%

The percent effectiveness of modern water treatment plants in removing harmful bacteria and viruses from drinking water.

1.2 MILLION

The length in miles of drinking water pipes in the U.S. delivering clean water to millions of homes and businesses daily.

1.7 MILLION

The number of jobs supported by the U.S. water sector.

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

AL (Regulatory Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs (SMCLs) are set to protect the odor, taste, and appearance of drinking water.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. EPA.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable.

NS: No standard.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

PDWS (Primary Drinking Water Standard): MCLs and MRDLs for contaminants that affect health, along with their monitoring and reporting requirements and water treatment requirements.

PHG (Public Health Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

µS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

ATTACHMENT I

NOTICES OF EDUCATION PROGRAMS AVAILABLE TO CUSTOMERS

Thank you to all First Responders

The 2018 wildfire season has been the most devastating in California history. Lives, homes, communities lost, some forever. The Holiday season is a time for giving and the North State has many families in need of help. Food, toys, monetary gifts can be donated at the following: Salvation Army, Red Cross, United Way of Northern California. Tri Counties Bank has created a charity fund to help fire victims.

SHASTA STRONG!!

Even though it's the rainy season, the City has a limited number of 2019 water conservation calendars along with conservation kits available at City Hall. Rebates for water efficient clothes washers, hot water heaters, toilets and irrigation controllers (certain restrictions apply). The City also offers free whole house water audits and landscape surveys. Please contact Efficiency Services Group at 855-516-2105 to schedule your audit/survey. Rebate forms and conservation items can be picked up at City Hall, 4477 Main St., Shasta Lake, CA. Rebate forms can also be downloaded from the City website.

CITY OF SHASTA LAKE
1993 - 2018
25th ANNIVERSARY

www.cityofshastalake.org

WATER CONSERVATION NEWSLETTER

"Conserve… It's a California Way of Life"

September 2018

City Council:

- Mayor: Larry Farr
- Vice-Mayor: Greg Watkins
- Councilmember: Pamelyn Ann Morgan
- Councilmember: Richard Kern
- Councilmember: Janice Powell

John Duckett
City Manager

Tony Thomasy
Water Treatment Superintendent & Water Conservation Coordinator

City Office:

1650 Stanton Drive

Shasta Lake, CA 96019

Mailing Address:

PO BOX 777

Shasta Lake, CA 96019

(530) 275-7400

(530) 275-7414 Fax

Website:

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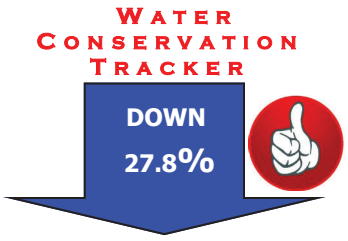

June 2015—March 2018

Governor signs Conservation Bills

SB 606 (Hertzberg) and AB 1668 (Friedman) were signed Thursday by Governor Brown. The package establishes a new and comprehensive framework for both agricultural and urban water conservation and water use efficiency. AB 1668 in particular states 'until January 1, 2025, would establish 55 gallons per capita daily as the standard for indoor residential water use, beginning January 1, 2025, would establish the greater of 52.5 gallons per capita daily or a standard recommended by the department and the board as the standard for indoor residential water use, and beginning January 1, 2030, would establish the greater of 50 gallons per capita daily or a standard recommended by the department and the board as the standard for indoor residential water use'. Read the Governor's announcement about signing the legislation.

"SHASTA DAM RAISE" gains momentum

Congress and the Trump administration are pushing ahead with a plan to raise a towering symbol of dam-building's 20th century heyday to meet the water demands of 21st century California — a project backed by San Joaquin Valley growers but opposed by state officials, defenders of a protected river and the local Wintu Indian tribe whose sacred sites would be swamped.

The fight is over Shasta Dam. At 602 feet it is the fourth-tallest dam in California and the cornerstone of the federal Central Valley Project. Shasta Dam provides water to cities and farms throughout the state. One of its biggest customers is the Westlands Water District in the arid western San Joaquin Valley, which distributes water to numerous large farms.

With enthusiastic support from Westlands, the Trump administration and Republicans in Congress want to raise the dam 18½ feet to store more water and guard against losing farmland to future droughts. Some farmers in the valley received no water at all from the Central Valley Project for two straight years during the five-year drought that ended with the winter of 2016-17.

Proponents also argue that raising Shasta would aid salmon runs decimated by its original construction in the 1940s, by storing more cold water to help the remaining downstream fish survive.

Last month, Congress gave the $1.3 billion project a $20 million cash infusion for design and other preliminary work, and the Interior Department declared that construction would start next year. Read the full story here.

https://www.sfchronicle.com/science/article/White-House-Congress-side-with-California-12834955.php

Free Conservation kits, Water Audits, and Landscape Surveys

The City of Shasta Lake continues to offer a limited number of free Water Audits and Landscape Surveys. Conservation items are available at the front desk at City Hall. Please call 530-275-7400 or visit our website at: www.cityofshastalake.org for more information. This Fall the City will have a limited number of 2019 water conservation calendars available for pick up.

What is a Water Audit?

With your permission we will gladly come to your home and determine the most efficient way for you to conserve water…... for free! While we are there, we can complete a landscape survey and offer advice on how to apply your outdoor water use more efficiently. Often we find faulty or worn sprinklers which causes some areas to receive too much water and other areas not enough.

Indoor Conservation Tips

- Fix leaks, including leaky toilets
- Install high-efficiency toilets, aerators on bathroom faucets, and water-efficient shower heads
- Take shorter (5 minute) showers
- Track your water bill and meter to curtail water use
- Turn off water when brushing teeth or shaving
- Use dishwashers and washing machines with full loads only

Outdoor Conservation Tips

- Plant drought-tolerant/resistant plants and trees
- Recycle indoor water to use on plants
- Refrain from watering your home landscape when it rains
- Replace your grass/turf with water-wise plants (check to see if rebates are available)
- Use a broom to clean driveways, patios, and sidewalks instead of water from a hose
- Water your outdoor landscape earlier in the day when the temperature is cooler

Here are some helpful Fall season tips

- Be aware that water needs of plants (including grass) drop dramatically in the fall. Overwatering in the fall can lead to plant disease.
- Outdoor watering should be cut back significantly. Cooler weather and seasonal rains make it possible to stop all supplemental irrigation.
- Avoid watering in the evening if possible. Fungal problems are more likely if plants are wet all night during fall months.
- Install efficient water appliances- water use can be reduced by nearly 1/3 just by switching to efficient appliances. Since summer is over, stores like Lowes and Home Depot will be empty, leaving the perfect opportunity to browse the store for the latest efficient appliances.

Visit our Website:
www.cityofshastalake.org
for more information on
Rebates and Conservation Tips

Although the City of Shasta Lake received 100% of its water allocation for 2019, water conservation should be a permanent part of your lives and we are here to help.

The City has new water conservation items including food cutting mats available for free, along with rebates for water efficient clothes washers, toilets and irrigation controllers (certain restrictions apply). The City also offers free whole house water audits and landscape surveys. To schedule a water audit or landscape survey, please call Efficiency Services Group at 855-516-2105. Rebate forms and conservation items can be picked up at City Hall, 4477 Main St. Shasta Lake, Ca. Rebate forms can be downloaded from:

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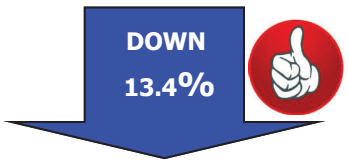
WATER CONSERVATION NEWSLETTER

"Conserve… It's a California Way of Life"

March 2019

STATEWIDE WATER CONSERVATION TRACKER



October 2013—October 2018

Shasta Raise

Shasta Lake is the largest reservoir in Bureau of Reclamation's Central Valley Project. Reclamation's feasibility study and reports have evaluated potential effects of an array of alternative plans to determine the technical, environmental, economic and financial feasibility of enlarging the existing Shasta Reservoir as a part of the Shasta Lake Water Resources Investigation. The Shasta Dam Raise and Enlargement Project timeline can be found at https://www.usbr.gov/mp/ncao/docs/sdrep-timeline.pdf.

Potential National Benefits

- Additional 630,000 acre-feet of stored water for the environment and for water users
- Improved water supply reliability for agricultural, municipal and industrial, and environmental uses
- Reduce the potential for flood damage
- Improved Sacramento River temperatures and water quality below the dam for Anadromous fish survival

All the current information and a link to signup to be on a Project Update email list can be found at https://www.usbr.gov/mp/ncao/shasta-enlargement.html.

Post Wildfire Update

2018 was the worst fire season in California in at least 15 years, with the Camp Fire (Paradise) being the deadliest in the state's history. Northern California in particular was hit hard by wildfires that included the Camp, Carr, Hirz, Delta fires and the Mendocino Complex which burned over 459,000 acres alone. Wildfires over the last decade have become more intense and dangerous. Many factors, some controversial, contribute to the intensity of these fires including drought, poor forest management, climate change and the state's ever growing population. Here are some helpful tips form CalFire as the 2019 Wildfire season approaches:

1. If possible, create a defensible space around your property by clearing any underbrush, weeds, and tall grass. Do this in the spring when vegetation is green.
2. If vegetation has dried out, avoid using any equipment that could cause a spark and possibly start a fire.
3. If there is a fire and you evacuate, do not turn on your sprinklers and leave. Not only does this reduce the amount of water available to fight a fire but also reduces the water pressure in the system.

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Making Conservation A Way Of Life

As changes in the climate occur over time – longer droughts, destructive wildfires, more intense flooding, and shrinking snowpack – California needs to make our water go as far as possible. To improve water conservation and drought planning the California legislature and governor passed Senate Bill 606(Hertzberg) and Assembly Bill 1668(Friedman) ----into law in 2018. Collectively, these efforts provide a road map for all Californians to work together to ensure that we will have enough water now and in the future. This new conservation legislation **DOES NOT** regulate personal water use. The new laws create water amounts for water districts, not individual water customers or businesses. The laws do not set any water use standards on individual customers, nor do they levy any fines on individuals. Individual water use standards are used to calculate a supplier's total water use objectives for their total customer base.

Free Conservation kits, Water Audits, and Landscape Surveys

The City of Shasta Lake continues to offer a limited number of free Water Audits and Landscape Surveys. Call Efficiency Services Group at 855-516-2105 to schedule your audit or survey.

Conservation items are available at the front desk at City Hall. Please call 530-275-7400 or visit our website at: www.cityofshastalake.org for more information.

The City also offers the following rebates:

- High Performance Low-Flush Toilet - $100
- High Performance Clothes Washer - $100
- Automatic Irrigation Controller - $100

(Certain restrictions apply. Call 275-7400 for more information)

Turf Replacement Rebates still available

California still offers rebates for turf replacement. Go to www.saveourwaterrebates.com for additional information.

OUTDOOR TIPS FOR SPRING

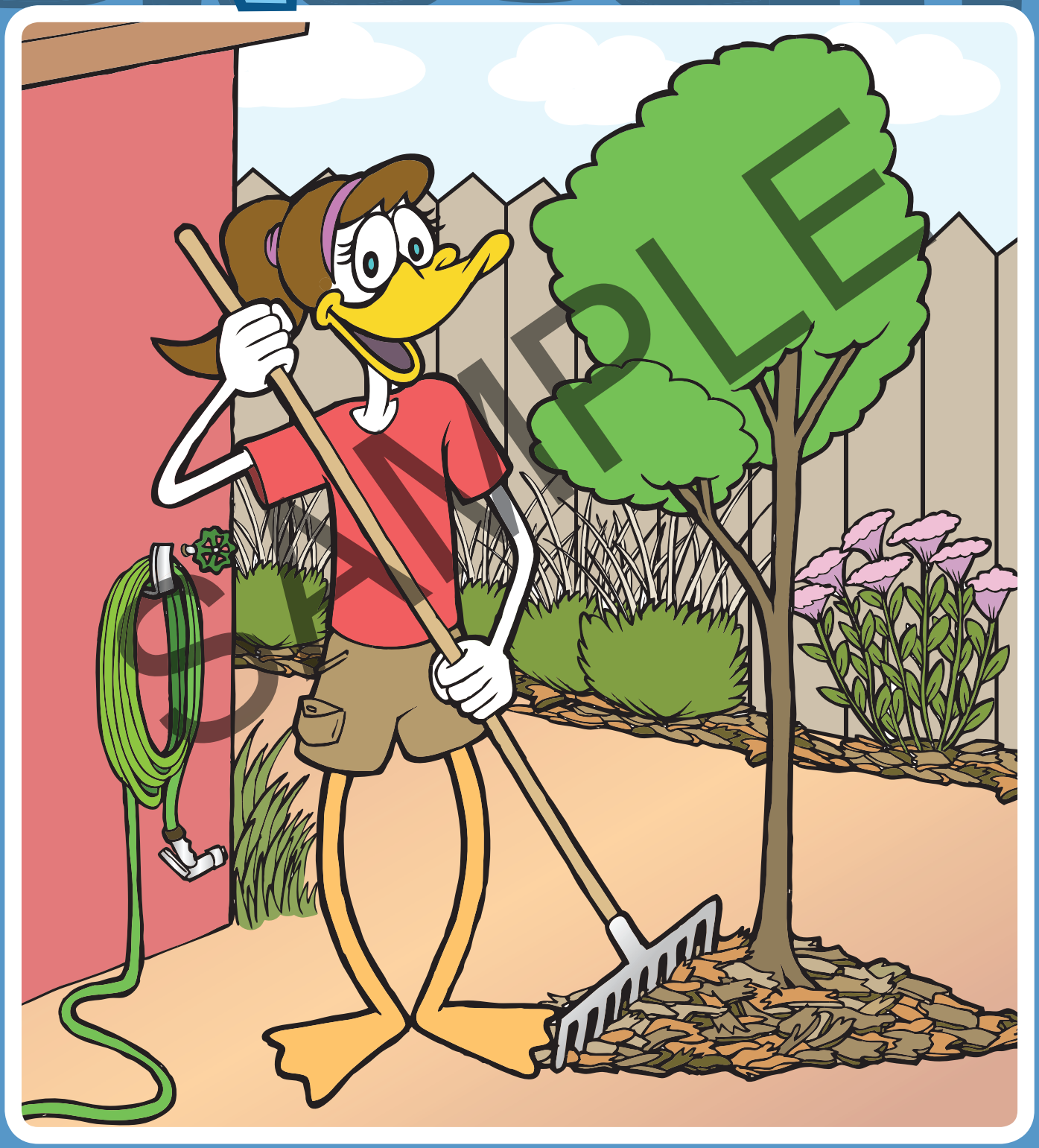
Here are some helpful Springtime tips

1. **Tune up your system.** Inspect irrigation systems and check for leaks and broken or clogged sprinkler heads. Fix sprinkler heads that are broken or spraying on the sidewalk, street, or driveway. Just one broken sprinkler head can waste up to 25,000 gallons of water over a six-month irrigation season.
2. **Separate your plants into zones.** When planting, assign areas of your landscape different hydro-zones depending on sun/shade exposure, soil and plant types, and type of sprinklers, then adjust your irrigation system or watering schedule based on those zones' specific needs. This helps you avoid overwatering some areas or under-watering others.
3. **Add a pre-emergent to your lawn.** A healthy, thick grass will use water more wisely once summer is here. Adding a pre-emergent to your lawn in the spring will help reduce, if not eliminate any weed growth.
4. **Keep it balanced.** Put measuring cups in various places around your lawn and run the sprinklers for 15 minutes. This will give you an idea of how much water the grass is getting and where. You're looking for about one to two inches—depending on the soil—evenly distributed.

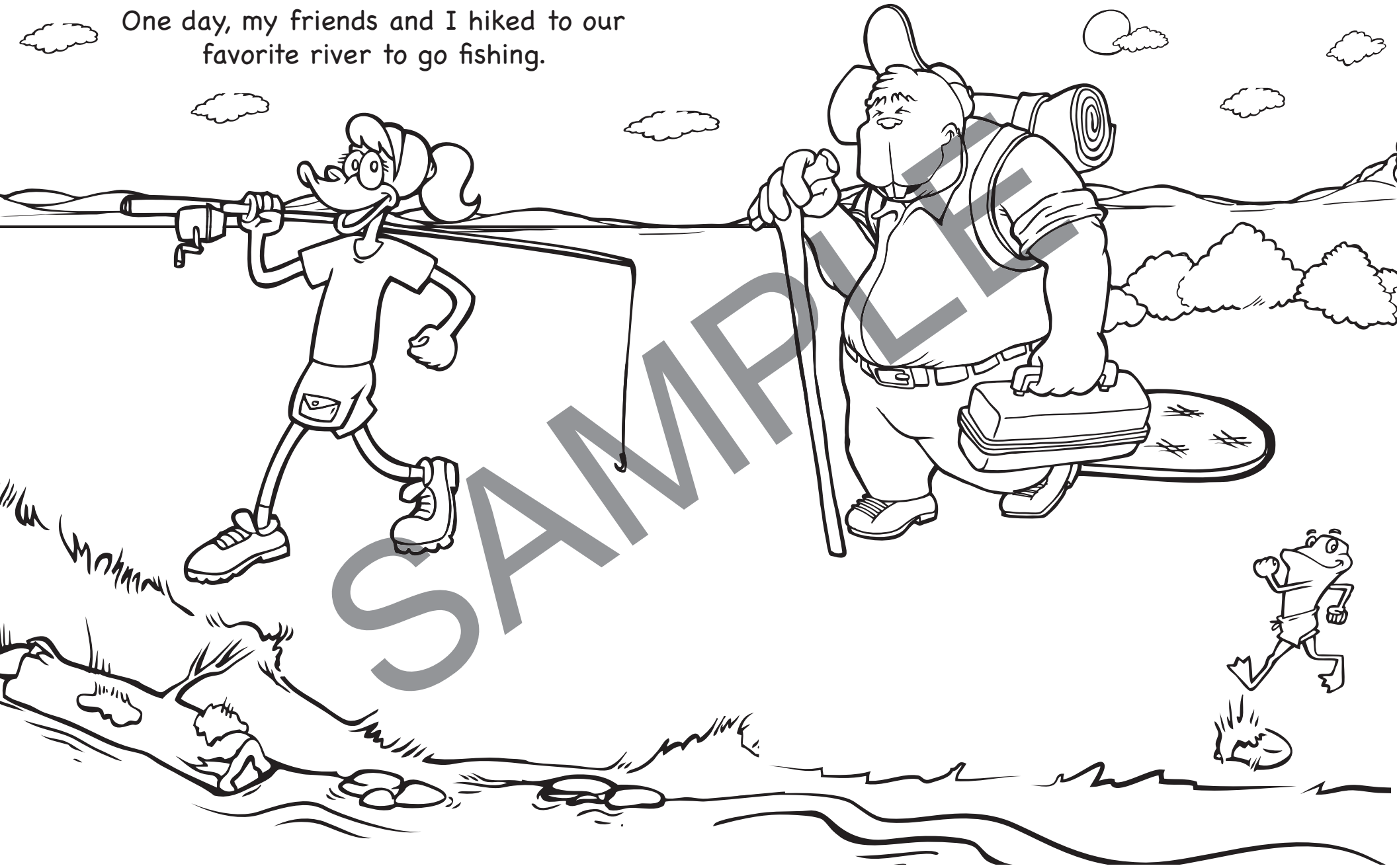
Visit our Website:
www.cityofshastalake.org
for more information on
Rebates and Conservation Tips

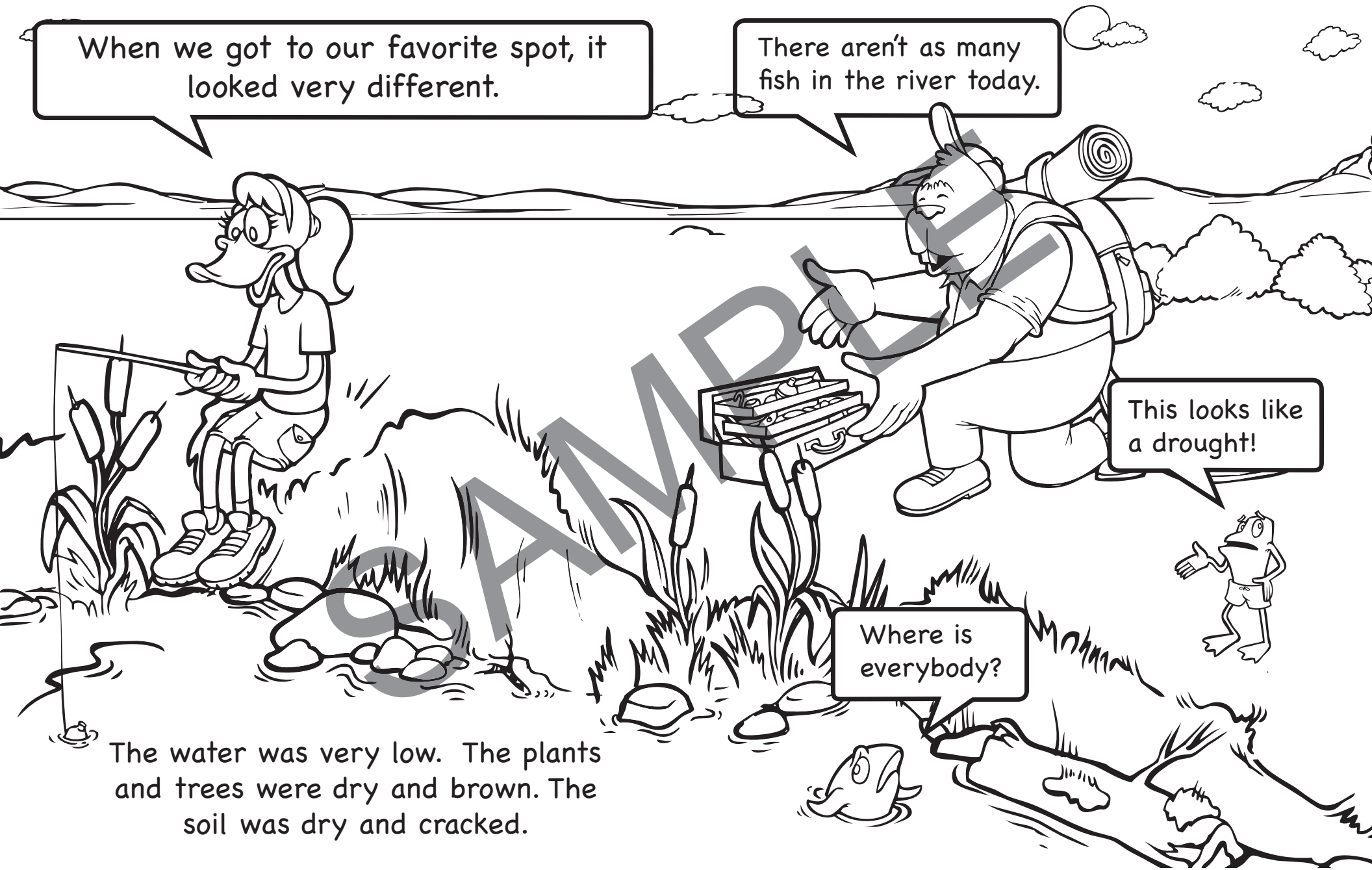
Penelope the Duck Learns About

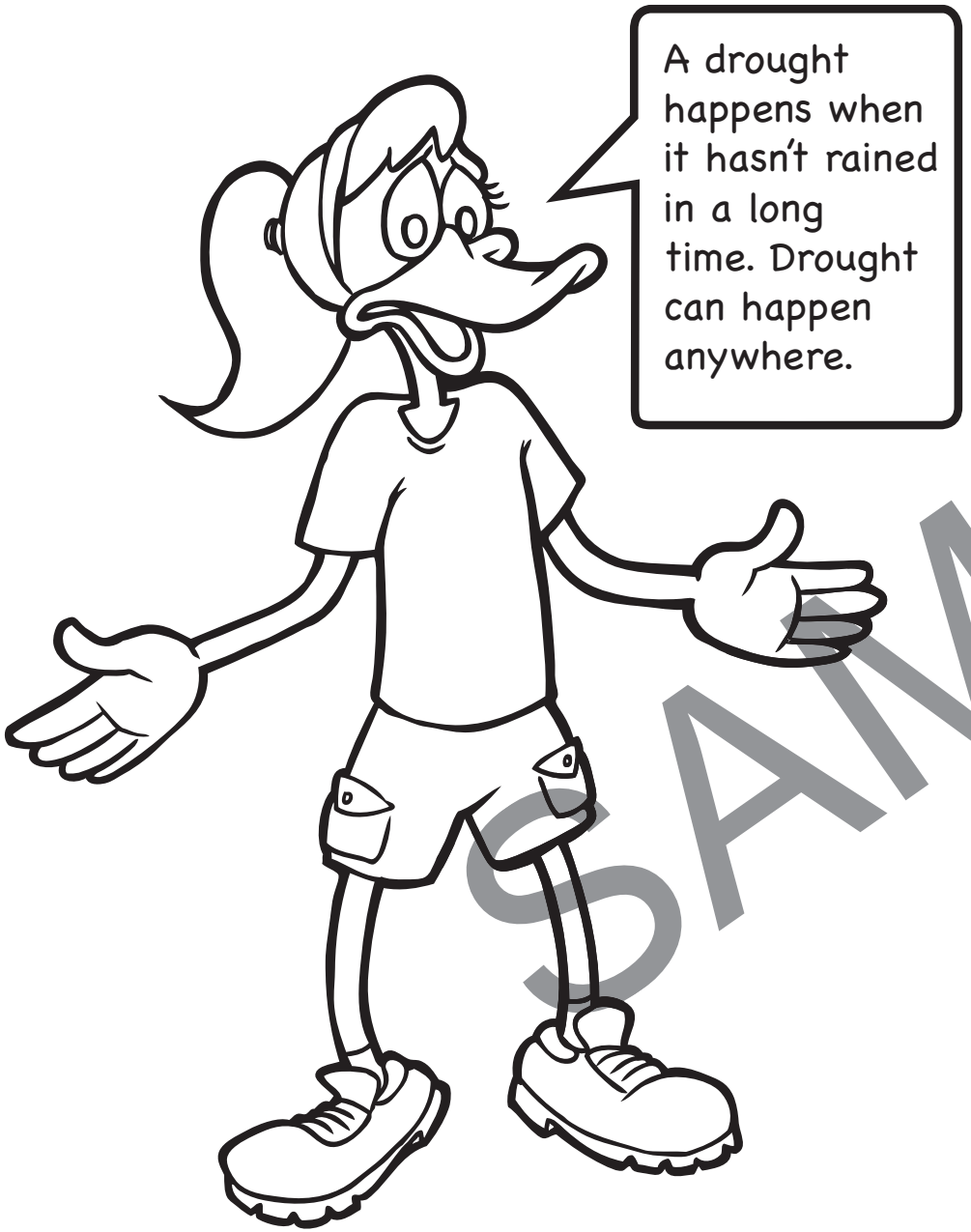
DROUGHT



One day, my friends and I hiked to our favorite river to go fishing.

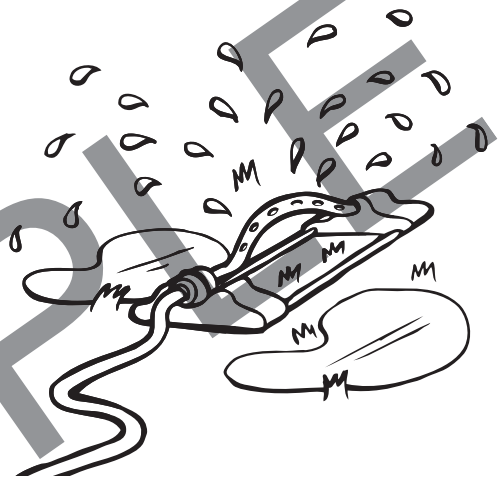



When we got to our favorite spot, it looked very different.
There aren't as many fish in the river today.
This looks like a drought!
Where is everybody?
The water was very low. The plants and trees were dry and brown. The soil was dry and cracked.



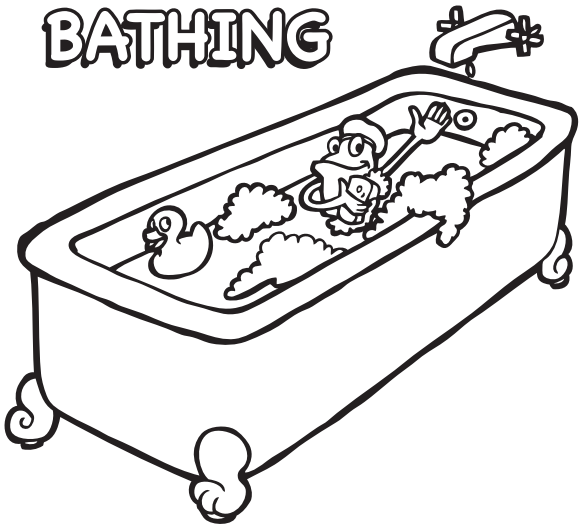
During a drought, there's less water for all of these things:

PLAYING

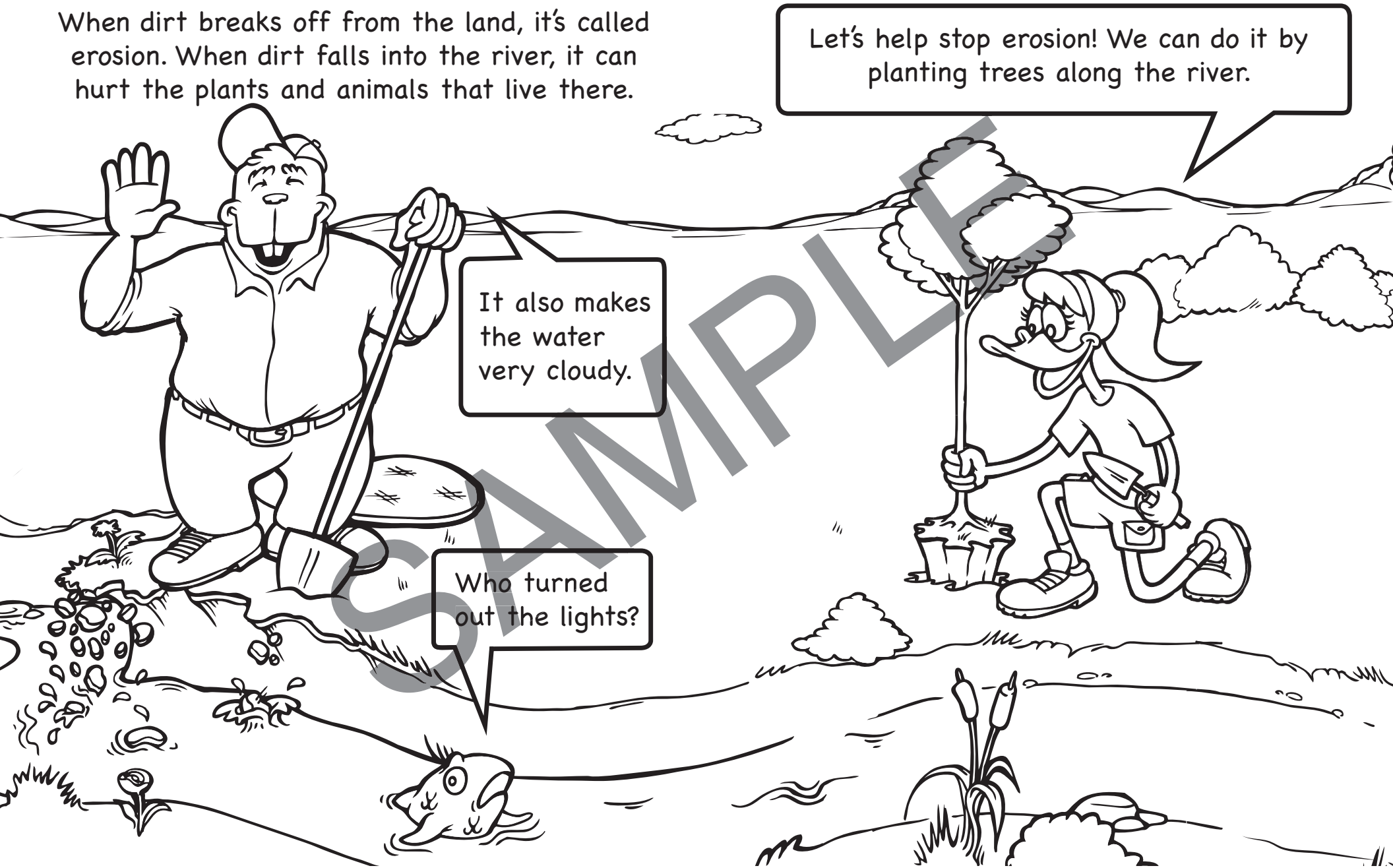


DRINKING

BATHING

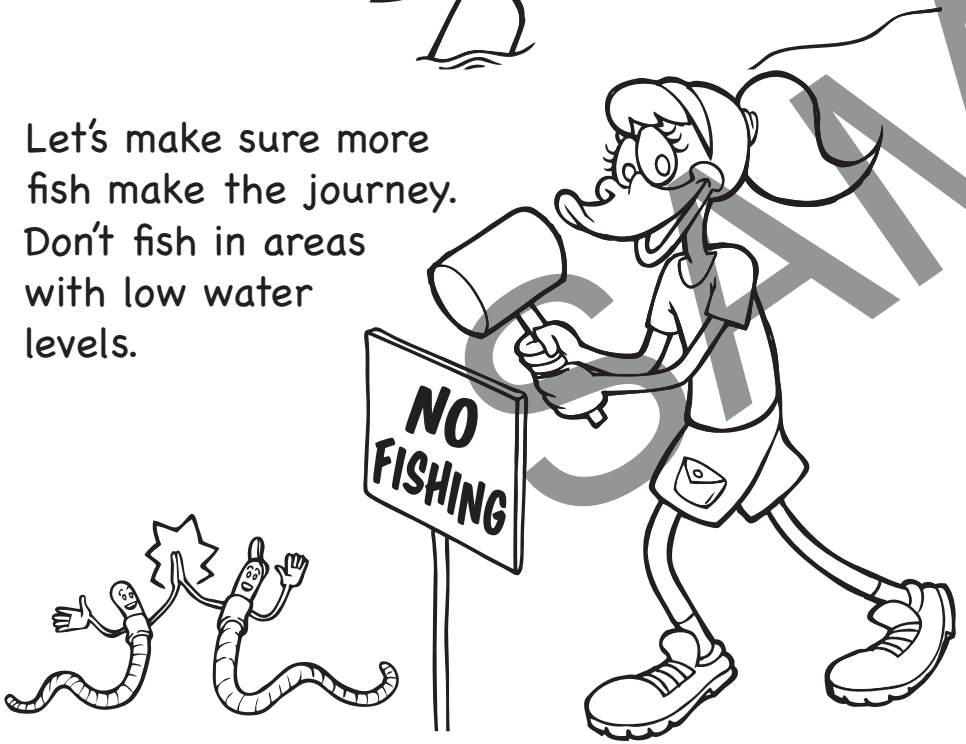


We can't make it rain, but we can do a lot to help during a drought!

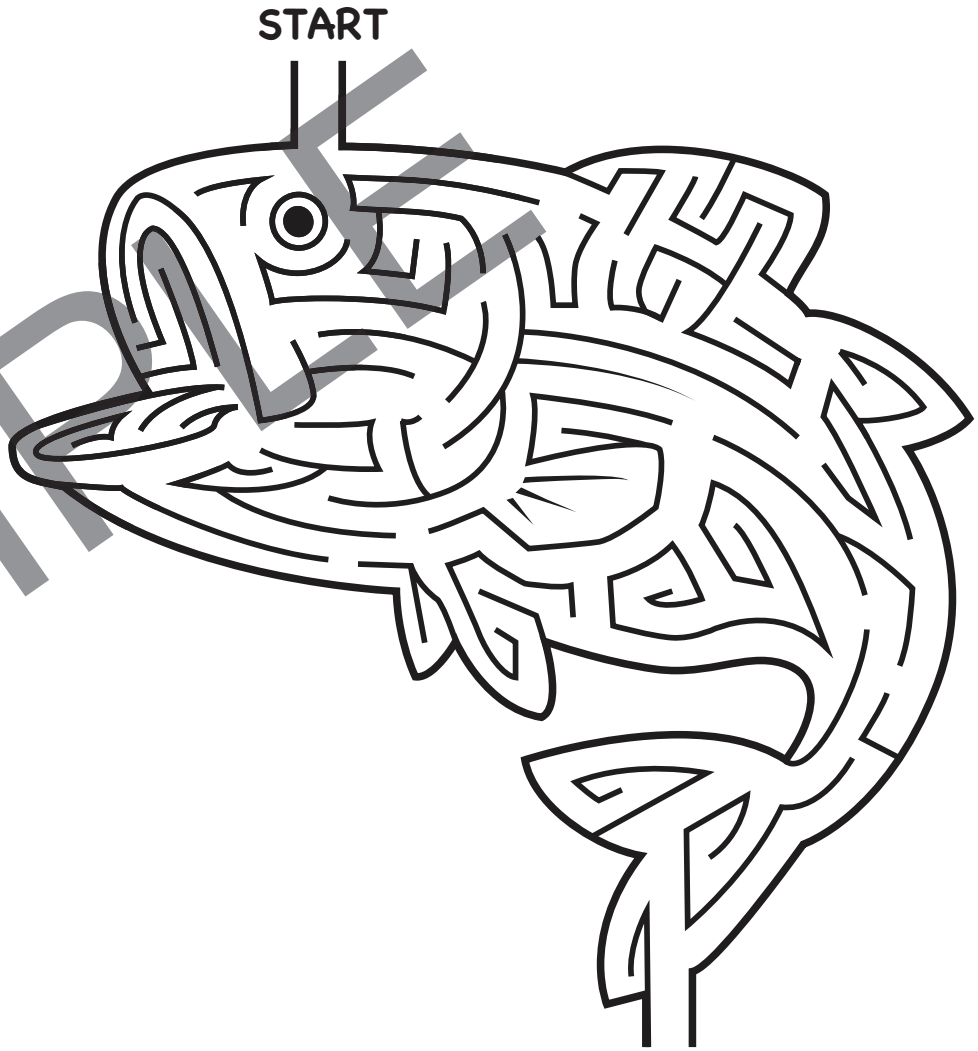

When dirt breaks off from the land, it's called erosion. When dirt falls into the river, it can hurt the plants and animals that live there.
Let's help stop erosion! We can do it by planting trees along the river.
It also makes the water very cloudy.
Who turned out the lights?

Every year, fish swim up this river to lay their eggs. When the water is low, not as many fish can make the journey.

Let's make sure more fish make the journey. Don't fish in areas with low water levels.

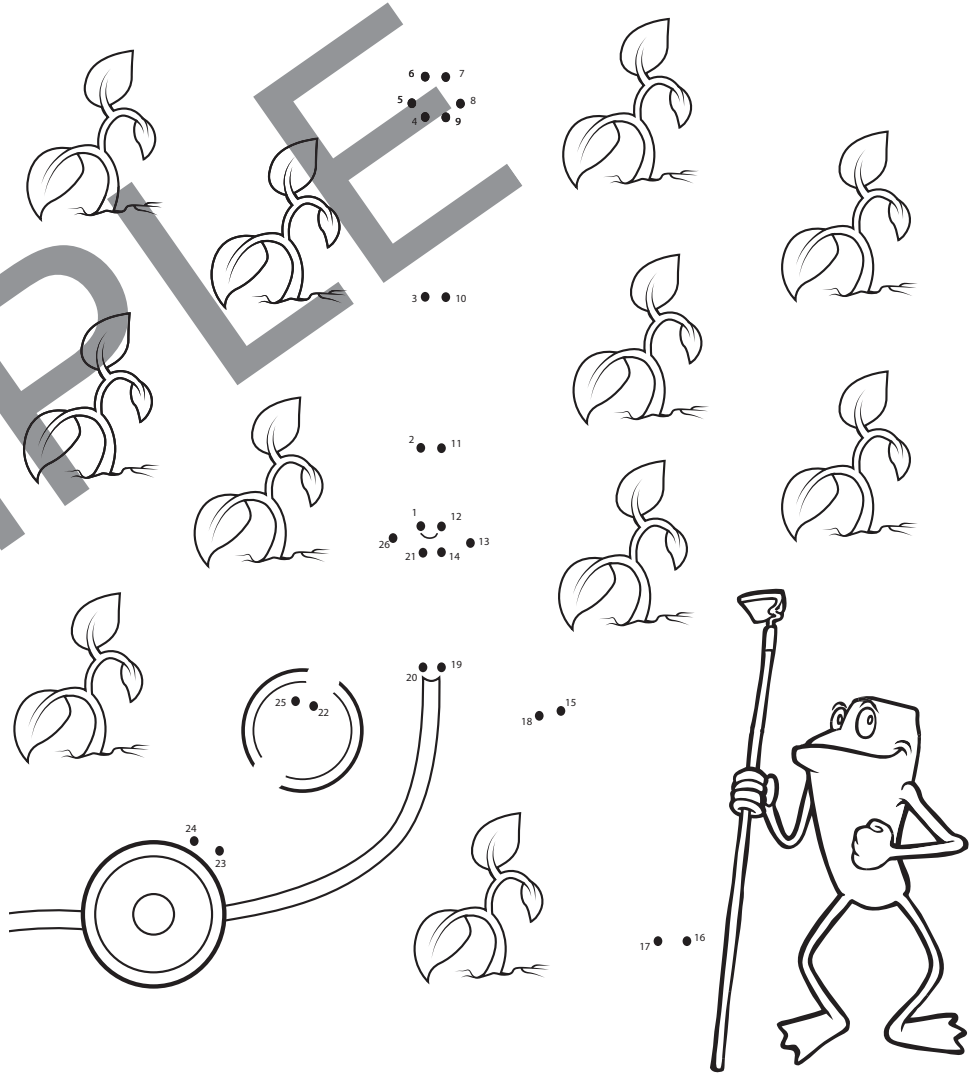


Can you find your way through this "fishy" maze?



If the soil becomes too dry, it can be difficult for farmers to grow crops. Farmers harvest these crops for food.

Irrigation brings water to dry soil and crops. Connect the dots to bring water to these thirsty plants!

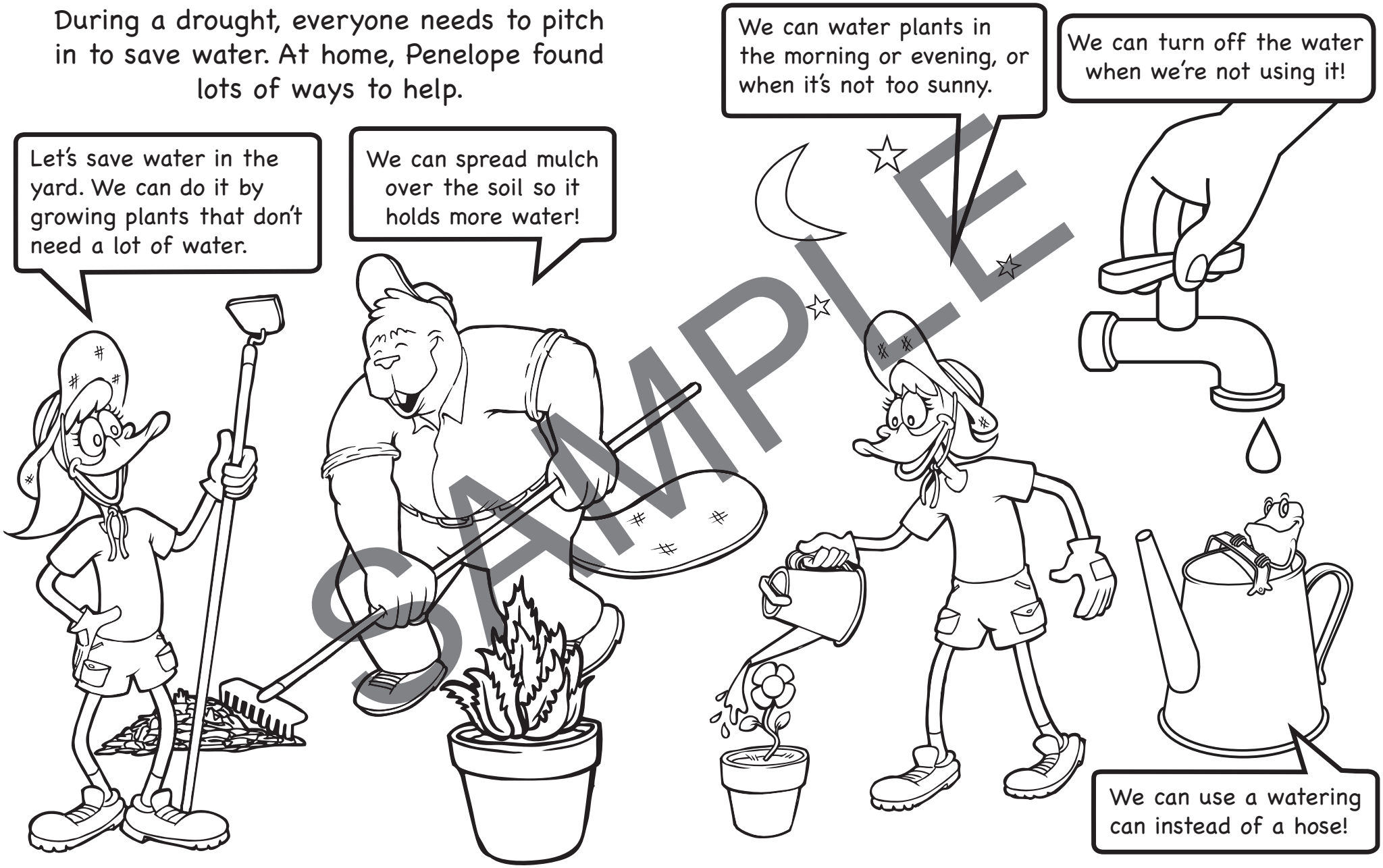


During a drought, forest fires can start very quickly. All it takes is one spark for dry leaves to catch on fire.

Can you find all 13 dry leaves in the forest?

Let's help the forest! We can do it by not lighting a campfire.

During a drought, everyone needs to pitch in to save water. At home, Penelope found lots of ways to help.



Draw a circle around the things that help you save water. Draw an X through the water wasters.

Remember, kids, we can save water every day!

For Parents & Guardians

Here are some simple questions and answers to help you talk to your child about drought.

What is it called when it hasn't rained in a long time?

Answer: A drought.

What are the signs of drought?

Answer: The water in lakes and rivers is very low. Plants and trees turn brown. The soil is dry and cracked.

What is erosion?

Answer: Erosion is when dirt breaks off from the land and falls into rivers and lakes.

What is irrigation?

Answer: Irrigation is when farmers bring water to their crops.

What are some ways you can help during a drought?

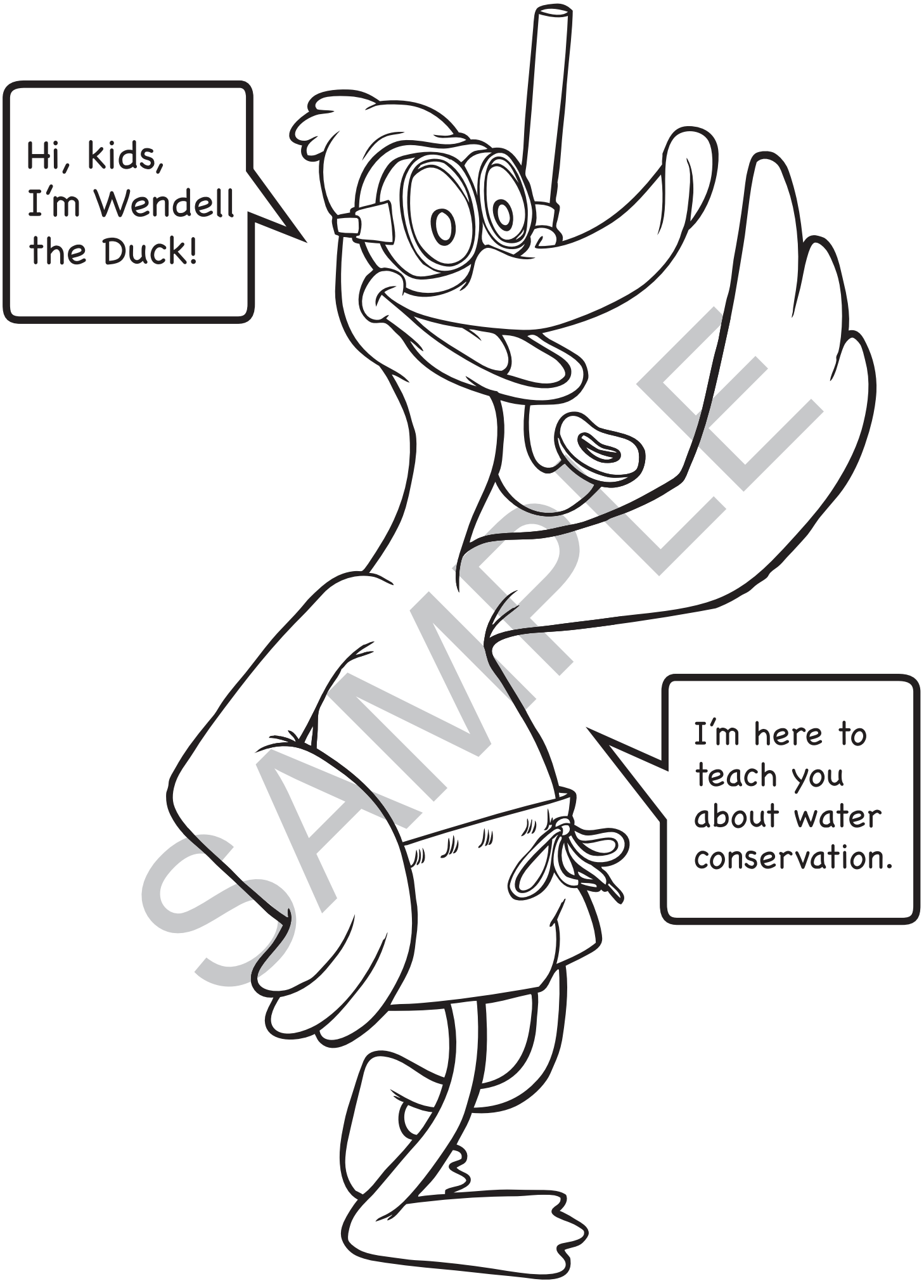
- Don't fish in areas with low water levels
- Don't light campfires
- Water plants in the morning or evening, or when it's not sunny
- Turn off the water when you're not using it
- Spread mulch over the soil so it holds more water

This book is published by Water Education Group. For information about Water Education Group, go to www.watereducationgroup.com

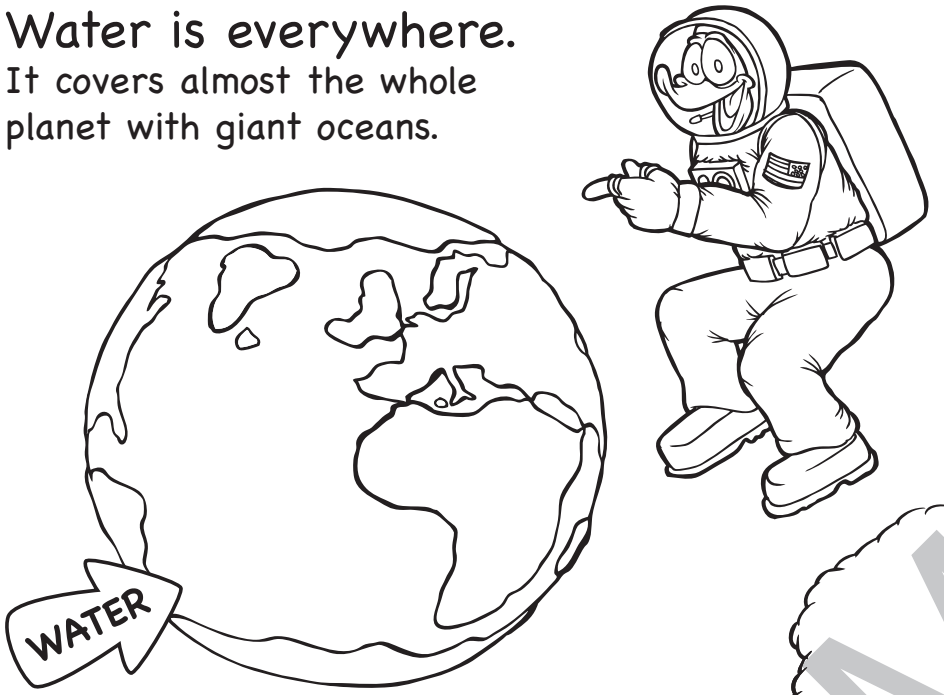
Wendell the Duck's Guide to

SAVING WATER

Coloring and Activity Book

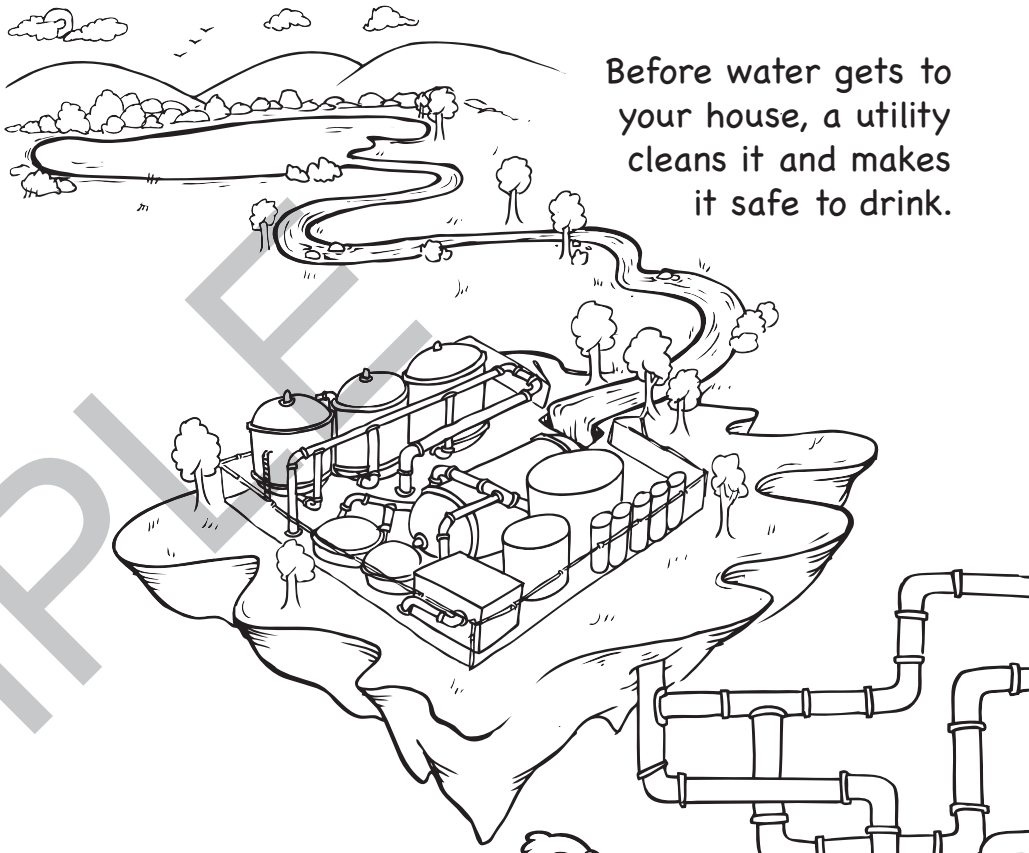

Hi, kids,
I'm Wendell
the Duck!
I'm here to
teach you
about water
conservation.

Water is everywhere.
It covers almost the whole planet with giant oceans.

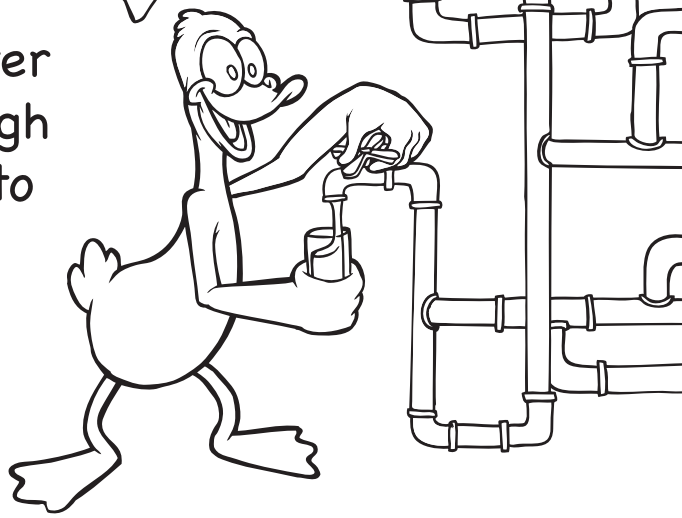


It's also in lakes, rivers, streams, and ponds.

Before water gets to your house, a utility cleans it and makes it safe to drink.

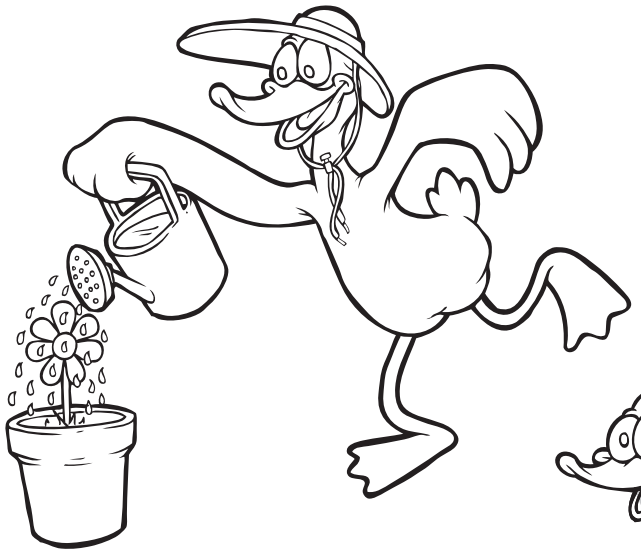


Then the water travels through pipes to get to your faucet.



You might not realize it, but you use water all the time. For things like:

WATERING PLANTS

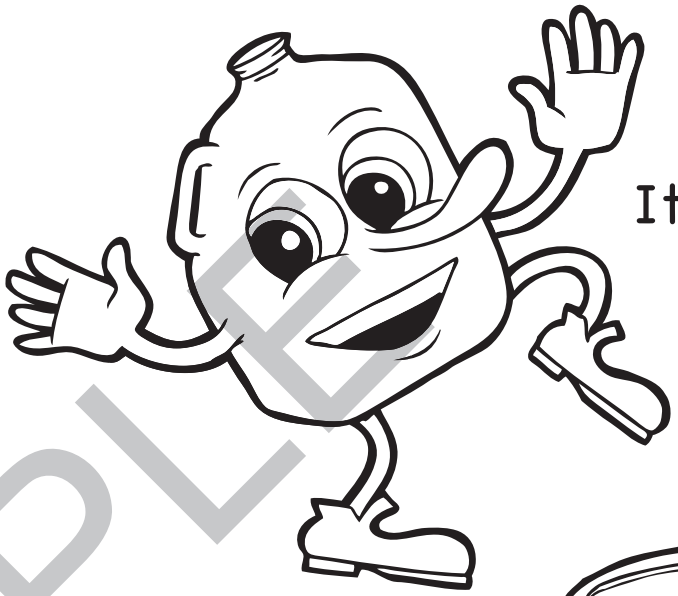


TAKING BATHS

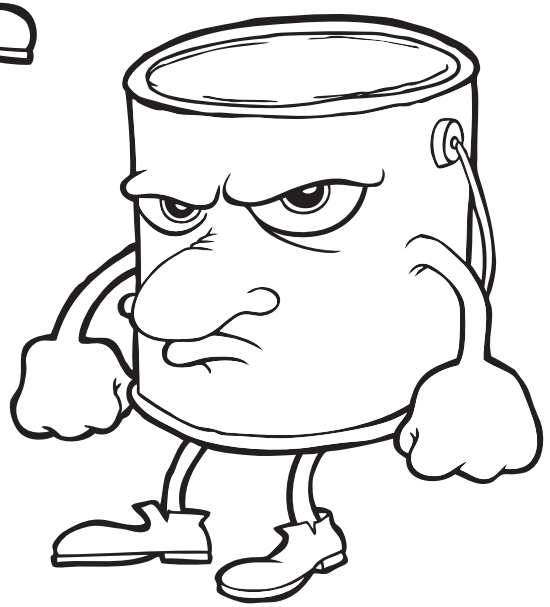
DRINKING

FLUSHING

BRUSHING TEETH

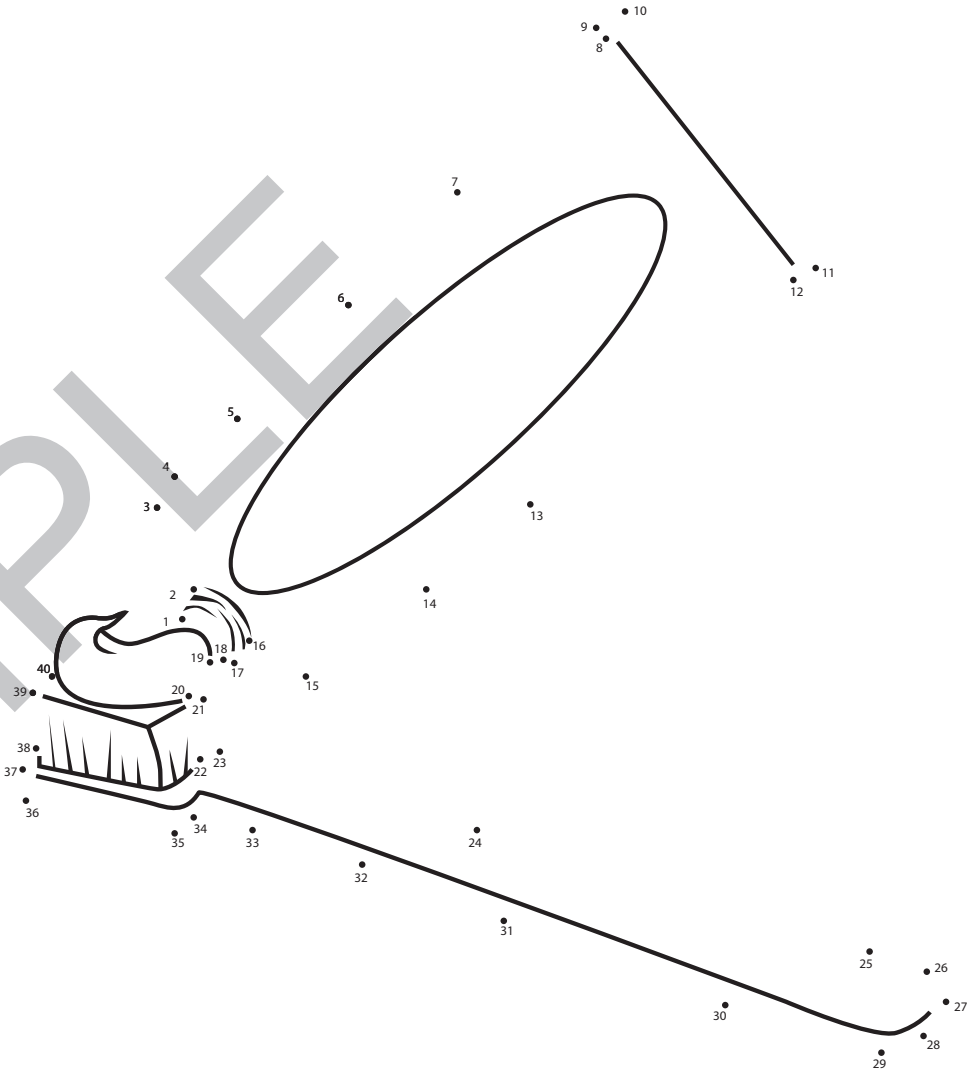


It's the size of a big bottle of milk . . .

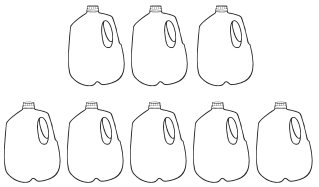


or a big can of paint.

Let's find out how we can save lots of gallons of water!

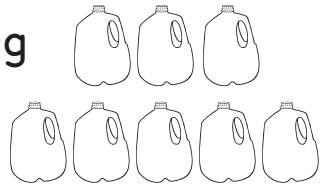


Turn off the faucet when you brush your teeth. You'll save 8 gallons of water a day.

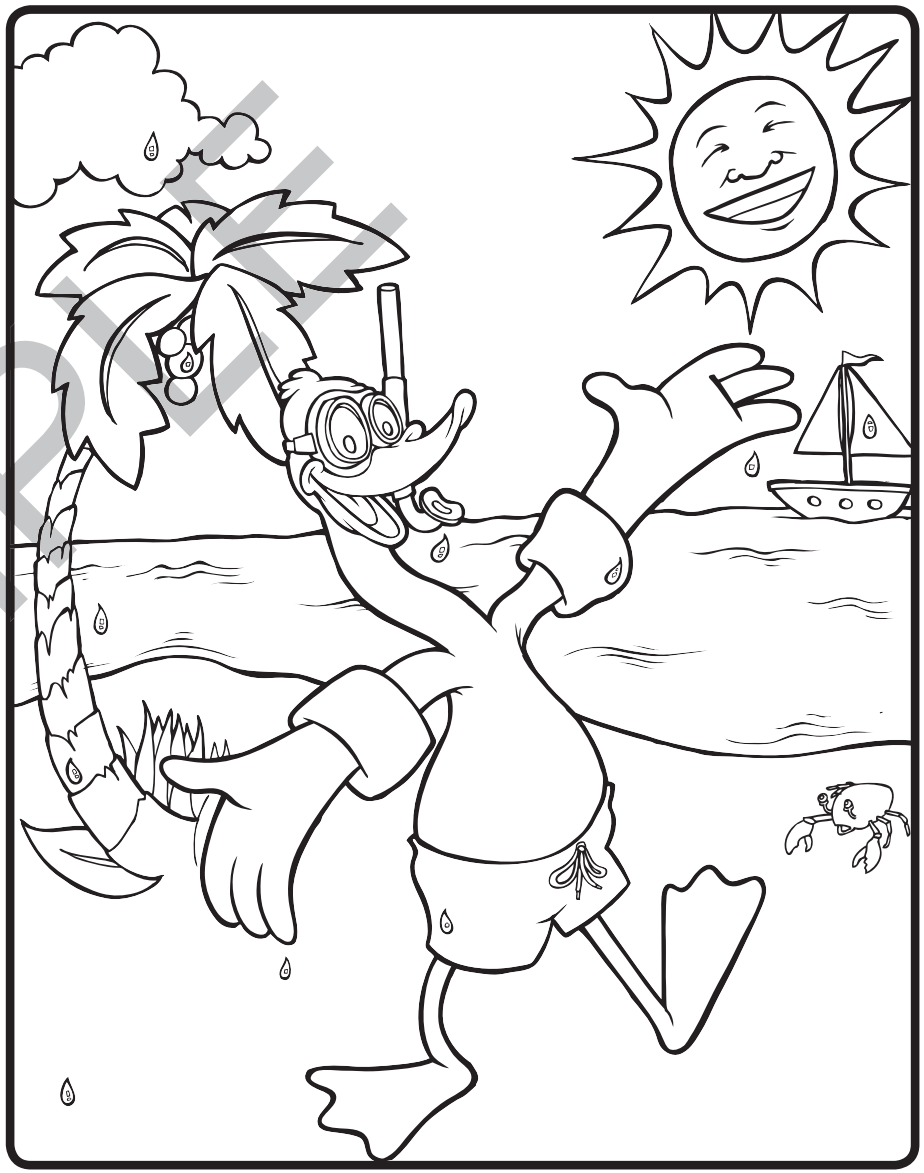


Can you connect the dots to help Wendell brush his teeth?

Be a leak detective. A dripping faucet wastes 8 gallons of water a day.

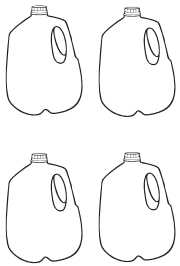


Can you find all 11 water drops in this picture?



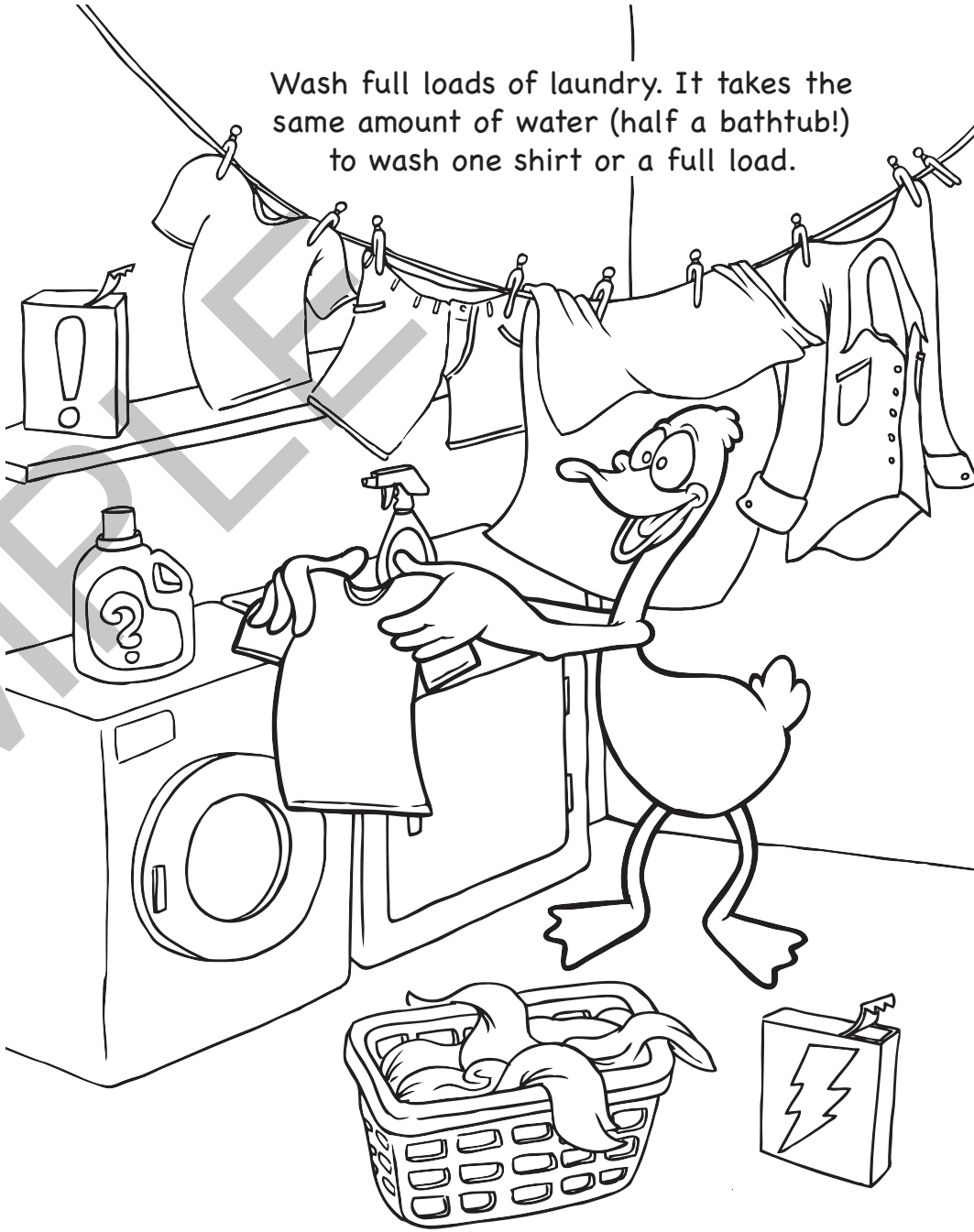
Take a speed shower.

Every minute in the shower equals 4 gallons of water.



If Wendell takes a shower that's 2 minutes shorter, how much water does he save?

Wash full loads of laundry. It takes the same amount of water (half a bathtub!) to wash one shirt or a full load.

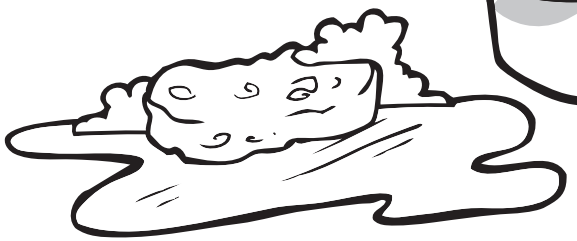


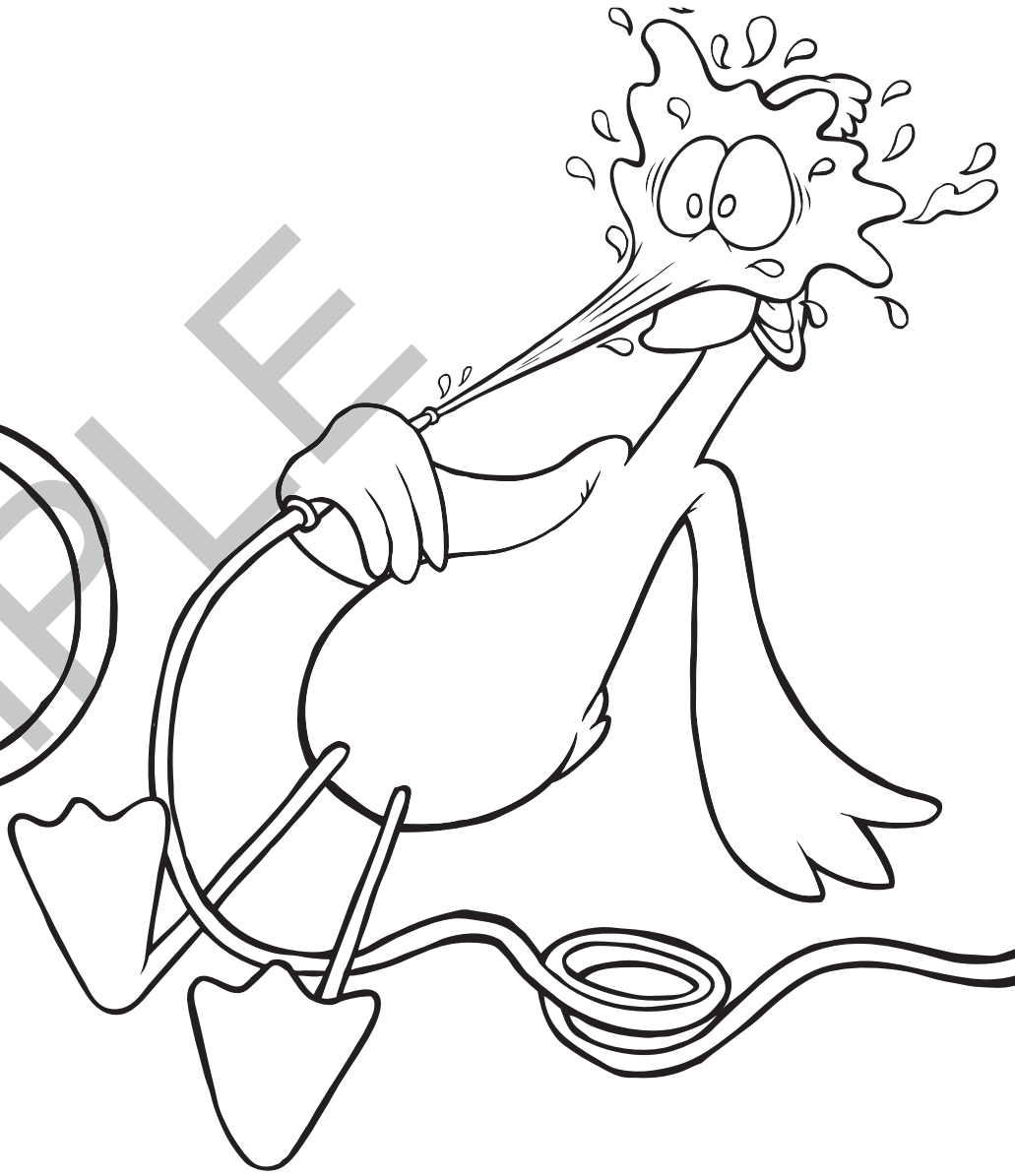
Check the toilet for a leak. Put a drop of food coloring in the back of the toilet and wait 15 minutes. If it shows up in the bowl, you found a leak!

That leak could fill up two whole bathtubs every day!

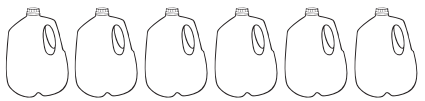
Can you help Wendell figure out if there's a leak in the tank?

Use a bucket to wash your bike.



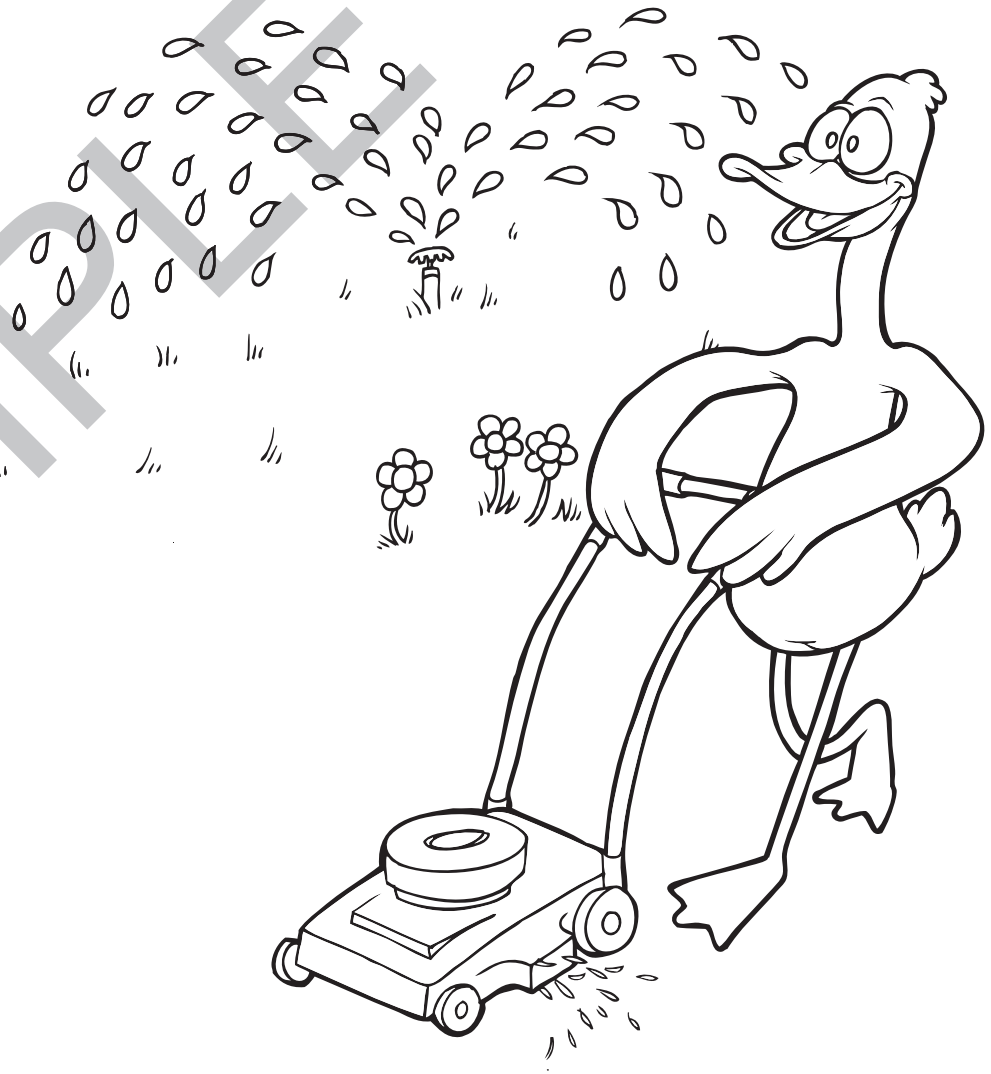


A hose uses 6 gallons of water every minute.



Fill your glass halfway.
That way you won't throw away water if
you can't drink a whole glass.

Get sprinkler smart.
Make sure the water goes on the grass,
not on the house or driveway.



Follow the tips in this book, and in one year you could save enough water to fill a swimming pool!

This book is published by Project Energy Savers. For information about Project Energy Savers, go to www.projectenergysavers.com

ATTACHMENT J NOT USED

ATTACHMENT K NOT USED

ATTACHMENT L NOT USED

ATTACHMENT M

URBAN WATER INVENTORY TABLES

Year of Data	2024

Table 1

Surface Water Supply

2024 Month	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (define) (acre-feet)	Other Water (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
Method	M1							
January	109.3	0	0	0	0	0	0	109
February	84.1	0	0	0	0	0	0	84
March	95.3	0	0	0	0	0	0	95
April	114.2	0	0	0	0	0	0	114
May	186.2	0	0	0	0	0	0	186
June	237.1	0	0	0	0	0	0	237
July	190.7	0	0	0	0	0	0	191
August	240.7	0	0	0	0	0	0	241
September	215.9	0	0	0	0	0	0	216
October	192.6	0	0	0	0	0	0	193
November	123.4	0	0	0	0	0	0	123
December	116.4	0	0	0	0	0	0	116
TOTAL	1,905.9	0	0	0	0	0	0	1,906

Table 2

Ground Water Supply

2024 Month	Groundwater (acre-feet)	Urban Groundwate *(acre-feet)	Private Agric Groundwater *(acre-feet)
Method			
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
TOTAL	0	0	0

*normally estimated

Table 3

Total Water Supply

2024 Month	Surface Water Total (acre-feet)	District Groundwater (acre-feet)	Recycled M&I Wastewater (acre-feet)	Total District Water (acre-feet)
Method			M2	
January	109	0	0.0	109
February	84	0	0.0	84
March	95	0	0.0	95
April	114	0	1.0	115
May	186	0	6.0	192
June	237	0	7.8	245
July	191	0	14.6	205
August	241	0	13.8	254
September	216	0	10.8	227
October	193	0	12.6	205
November	123	0	1.1	125
December	116	0	0.0	116
TOTAL	1,906	0	67.7	1,974

*Recycled M&I Wastewater is treated urban wastewater that is used for irrigation and log deck wetdown.

Precipitation Worksheet					Evaporation Worksheet				
2024	inches precip	ft precip	acres	AF/Year	2024	inches evap	ft evap	acres	AF/YEAR
Jan	0.00	0.00	0.00	0.00	Jan	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	Feb	0.00	0.00	0.00	0.00
Mar	0.00	0.00	0.00	0.00	Mar	0.00	0.00	0.00	0.00
Apr	0.00	0.00	0.00	0.00	Apr	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	May	0.00	0.00	0.00	0.00
Jun	0.00	0.00	0.00	0.00	Jun	0.00	0.00	0.00	0.00
Jul	0.00	0.00	0.00	0.00	Jul	0.00	0.00	0.00	0.00
Aug	0.00	0.00	0.00	0.00	Aug	0.00	0.00	0.00	0.00
Sept	0.00	0.00	0.00	0.00	Sept	0.00	0.00	0.00	0.00
Oct	0.00	0.00	0.00	0.00	Oct	0.00	0.00	0.00	0.00
Nov	0.00	0.00	0.00	0.00	Nov	0.00	0.00	0.00	0.00
Dec	0.00	0.00	0.00	0.00	Dec	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	0.00	0.00	TOTAL	0	0.00	0.00	0.00

Table 4

Agricultural Distribution System

2024 Canal, Pipeline, Lateral, Reservoir	**Length** (feet)	**Width** (feet)	**Surface Area** (square feet)	**Precipitation** (acre-feet)	**Evaporation** (acre-feet)	**Spillage** (acre-feet)	**Seepage** (acre-feet)	**Total** (acre-feet)
N/A	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	0.0	0.0	0	0	0
	0	0	0	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

Urban Distribution System

2024 Area or Line	Length (feet)	Leaks (acre-feet)	Breaks (acre-feet)	Flushing/Fire (acre-feet)	Total (acre-feet)
0.75" pipe	180	0.0	0.0	0.0	0.0
1" pipe	1,597	0.1	0.0	0.1	0.2
1.25" pipe	90	0.0	0.0	0.0	0.0
1.5" pipe	175	0.0	0.0	0.0	0.0
2" pipe	23,018	1.3	0.0	1.3	2.7
2.5" pipe	575	0.0	0.0	0.0	0.1
3" pipe	979	0.1	0.0	0.1	0.1
4" pipe	55,844	3.3	0.0	3.3	6.5
6" pipe	147,585	8.6	0.0	8.6	17.2
8" pipe	92,529	5.4	0.0	5.4	10.8
10" pipe	71,952	4.2	0.0	4.2	8.4
12" pipe	23,906	1.4	0.0	1.4	2.8
14" pipe	7,324	0.4	0.0	0.4	0.9
16" pipe	10,274	0.6	0.0	0.6	1.2
18" pipe	6,968	0.4	0.0	0.4	0.8
20" pipe	3,319	0.2	0.0	0.2	0.4
24" pipe	341	0.0	0.0	0.0	0.0
TOTAL	446,656	26.0	0	26.0	52.0

Notes:
1. There were twelve (12) main line breaks in 2024. The City does not track water lost from breaks.
2. Leaks and Flushing/Fire volumes are estimates.

Table 5

Crop Water Needs

2024 Crop Name	Area (crop acres)	Crop ET (AF/Ac)	Leaching Requirement (AF/Ac)	Cultural Practices (AF/Ac)	Precipitatio n (AF/Ac)	Appl. Crop Water Use (acre-feet)
N/A	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
	0	0.0	0.0	0.0	0.0	0
Crop Acres	0					0

Total Irrig. Acres ____________ (If this number is larger than your known total, it may be due to double cropping)

Table 6

2024 District Water Inventory

Type of Water	Location of Information		
Water Supply	Table 3		1,974
Environmental Consumptive Use	(Distribution, Drain, etc.)	minus	
Groundwater recharge	(intentional - ponds, injection)	minus	
Seepage	Table 4	minus	0
Evaporation - Precipitation	Table 4	minus	0
Spillage	Table 4	minus	0
Leaks, Breaks, Flushing / Fire	Table 4	minus	52
Transfers out of District		minus	
Water Available for sale to customers			1,922
Actual Agricultural Water Sales	2024 From District Sales Records		
Private Groundwater	Table 2	plus	0
Crop Water Needs	Table 5	minus	0
Drainwater outflow	(tail and tile not recycled)	minus	0
Percolation from Agricultural Land	(calculated)		0
M&I Actual Water Sales	2024 From District Records		1,908
Inside Use	Feb urban use x 12		1,009
Landscape / Outside Use	(calculated)		899
Unaccounted for Water	(calculated)		14

Table 7

Influence on Groundwater and Saline Sink

2024	
Agric Land Deep Perc + Seepage + Recharge - Groundwater Pumping = District Influence	0
Estimated actual change in ground water storage, including natural recharge)	0
Irrigated Acres (from Table 5)	0
Irrigated acres over a perched water table	0
Irrigated acres draining to a saline sink	0
Portion of percolation from agri seeping to a perched water table	#DIV/0!
Portion of percolation from agri seeping to a saline sink	#DIV/0!
Portion of On-Farm Drain water flowing to a perched water table/saline sink	0
Portion of Dist. Sys. seep/leaks/spills to perched water table/saline sink	0
Total (AF) flowing to a perched water table and saline sink	#DIV/0!

Table 8

Annual Water Quantities Delivered Under Each Right or Contract

Year	Federal Ag Water (acre-feet)	Federal non-Ag Water. (acre-feet)	State Water (acre-feet)	Local Water (define) (acre-feet)	Other Water (acre-feet)	Transfers into District (acre-feet)	Upslope Drain Water (acre-feet)	Total (acre-feet)
2015	1,679	0	0	0	0	0	0	1,679
2016	1,827	0	0	0	0	0	0	1,827
2017	2,035	0	0	0	0	0	0	2,035
2018	2,183	0	0	0	0	0	0	2,183
2019	2,054	0	0	0	0	0	0	2,054
2020	2,220	0	0	0	0	0	0	2,220
2021	2,116	0	0	0	0	0	0	2,116
2022	1,894	0	0	0	0	0	0	1,894
2023	1,861	0	0	0	0	0	0	1,861
2024	1,906	0	0	0	0	0	0	1,906
Total	19,775	0	0	0	0	0	0	19,775
Average	1,977	0	0	0	0	0	0	1,977

ATTACHMENT N ADOPTION RESOLUTION