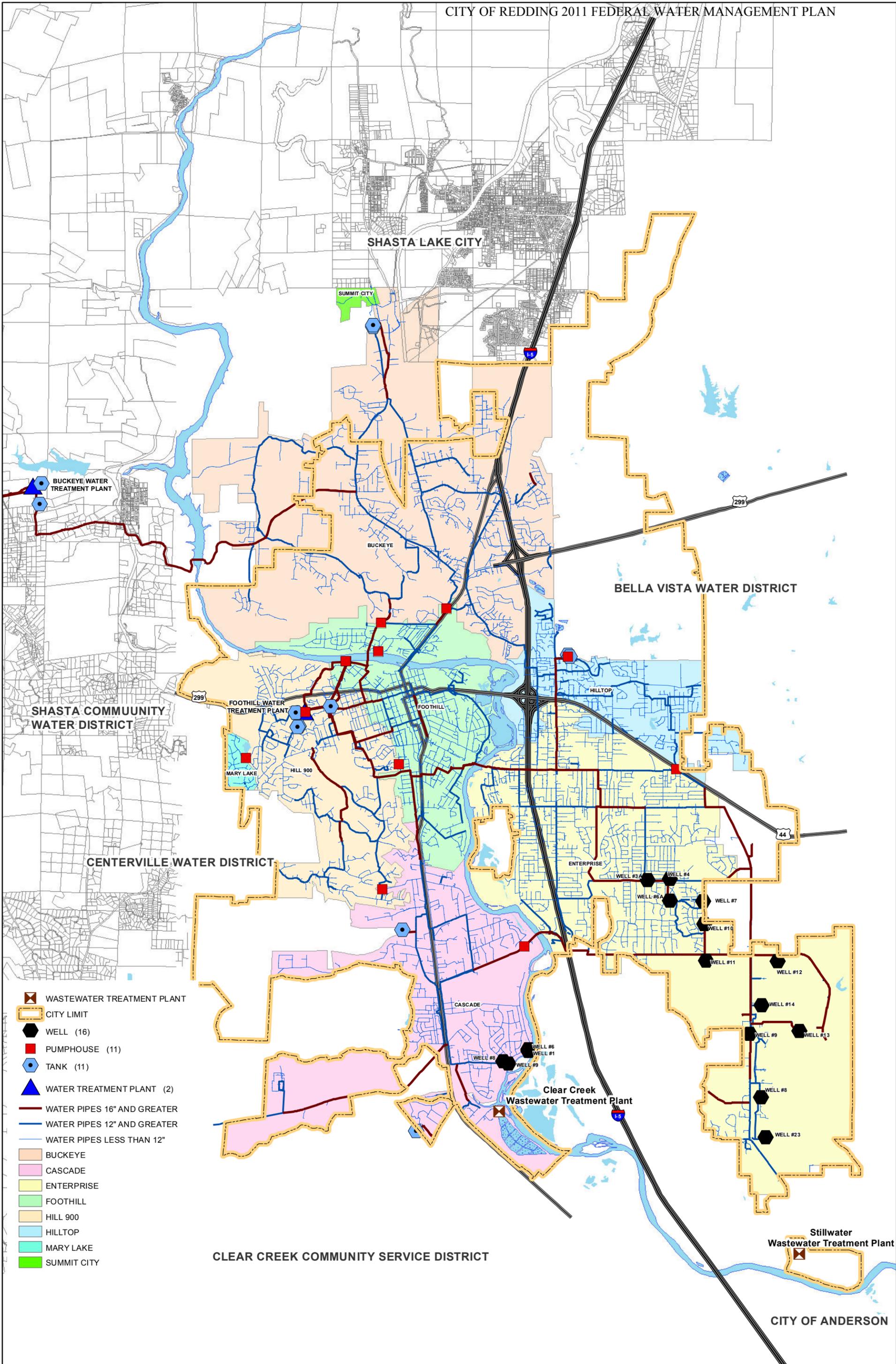


ATTACHMENT A

City of Redding Water Utility System Map

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- WASTEWATER TREATMENT PLANT
- CITY LIMIT
- WELL (16)
- PUMPHOUSE (11)
- TANK (11)
- WATER TREATMENT PLANT (2)
- WATER PIPES 16" AND GREATER
- WATER PIPES 12" AND GREATER
- WATER PIPES LESS THAN 12"
- BUCKEYE
- CASCADE
- ENTERPRISE
- FOOTHILL
- HILL 900
- HILLTOP
- MARY LAKE
- SUMMIT CITY

ATTACHMENT A.1

Redding Water Utility System Facilities

Water Treatment Plants (2):

Foothill WTP -- 3100 Foothill Blvd - 24 MGD - Sacramento River Supply

Buckeye WTP -- 11501 Benson Dr, Shasta, CA - 14 MGD - Whiskeytown Lake Supply

Raw Water Pump Station (1):

#1 -- 2300 Riverside Dr. (Sacramento River Trail) – 30.6 MGD

Booster Pump Stations (7):

Increasing pressure from:

#2 (Hill 900) -- 3100 Foothill Blvd Foothill Zone to Hill 900 Zone

#3 -- 299 Sulphur Creek Rd Foothill Zone to Buckeye Zone

#4 -- 1898 Benton Dr..... Foothill Zone to Buckeye Zone

#5 -- 995 Canby Rd (or 941 Springer Dr) Enterprise Zone to Hilltop Dana Zone

El Reno -- 2650 (or 2345) Howard Dr Cascade Zone to Hill 900 Zone

Goodwater -- 2600 Goodwater Ave..... Enterprise Zone to Hilltop Dana Zone

SP -- 56 Quartz Hill Rd. (Caldwell Park)

Standby Booster Pumps (3):

Mary Lake -- 1696 Lakeside Dr. Hill 900 Zone to Hill 900 Zone

Mercy – 2750 West St..... Foothill Zone to Hill 900 Zone

S Bonnyview -- 3601 S. Bonnyview Rd..... Enterprise Zone to Cascade Zone

Ground Water Wells (16):

Enterprise (12):

Well #3A -- 3995 Alta Mesa Dr

Well #4 -- 3985 Polaris Way

Well #6A -- 2505 Western Oak Dr

Well #7 -- 4602 Goodwater Ave

Well #8 -- 6751 Airport Rd

Well #9 -- 6300 Airport Rd

Well #10 -- 4222 Goodwater Ave

Well #11 -- 5055 Rancho Rd @ Goodwater Ave

Well #12 -- 5080 Old Oregon Trail

Well #13 -- 6030 Old Oregon Trail

Well #14 -- 5550 Airport Rd

Well #23 -- 3830 Meadowview

Cascade (4): Well #1 -- 3191 Island Dr

Well #6 -- 3191 Island Dr

Well #8 -- 7154 Creekside St

Well #9 -- 3023 Island Dr

Non-operating Wells:

Well #5 -- 7895 Eastside Rd. behind Girvan Lumber (Standby)

Westwood Manor Wells #2 & #3 (Out of Service) -- 1905 Meadowbrook Dr
(Standby)

Covered Reservoirs (11) – 32.72 Million Gallon Total Capacity:

FWTP Reservoir -- 3100 Foothill Blvd - 6 MG

Foothill Reservoir -- 1160 Hillcrest Place - 4 MG

Hill 900 Reservoirs -- 3095 Foothill Blvd - 2 x 2 MG

Buckeye Reservoirs -- West end of Press Rd - 2 MG & 0.22 MG

Buckeye Reservoir -- end of Bandana Trail off Benson Rd - 4 MG

Cascade Reservoir -- 1800 Kenyon Dr - 1 MG

Ranchette Reservoir -- 8590 Valley View Rd (end of Windsor Ln) - 2 MG

Enterprise Reservoirs -- 910 Bobwhite Dr or 941 Springer Dr - 3.5 MG & 6 MG

Supervisory Vaults (4):

Railroad Ave -- 3846 Railroad Ave

Cypress Ave -- 760 Parkview or 100 Park Marina Dr. (under Cypress Bridge)

S Bonnyview -- 3601 S Bonnyview Rd

Keswick Dam -- 17051 Keswick Dam Rd

Pressure Zones (7):

Buckeye Zone

Cascade Zone

Enterprise Zone

Foothill Zone

Hill 900 Zone

Hilltop Dana Zone

Summit City Zone

Inter-ties (5):

Centerville -- O'Conner Ave

Belle Vista (2) -- Edgewood Dr

Canby Rd (metered Standby)

Anderson -- Meadow View Dr

Shasta Lake -- Beltline Rd

Pressure Reducing Vaults (10):

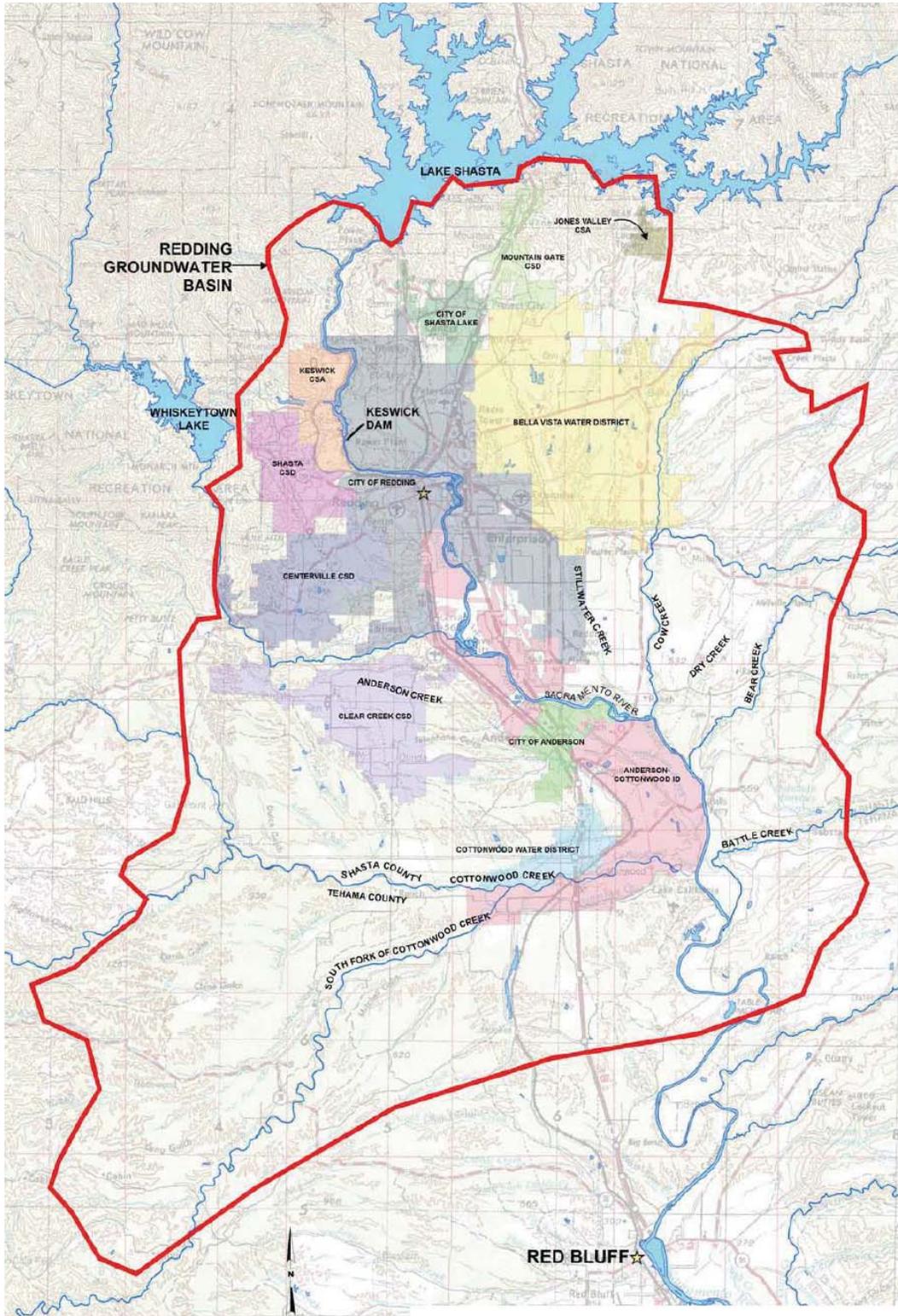
Pump House 3 -- 299 Sulphur Creek Rd
Pump House 4 -- 1898 Benton Drive
Linden Ave -- Linden Ave @ Olive Ave
Palisades #1 -- Palisades Ave @ Hilltop Dr
Palisades #2 -- 875 Riverbend Dr
Blossom Park -- Constitution Way @ Twin View Blvd -- Blocked Open
Candlewood -- 1650 Marigold Way -- Blocked Open
Railroad Ave -- 3846 Railroad Ave
Market St @ Fell St -- 2915 Market St
N Bechelli Ln -- Redcliff Dr @ N Bechelli Ln

Transfers (2): Sacramento River to Enterprise; Whiskeytown Lake to Hilltop/Dana;
Whiskeytown Lake to Foothill

last updated 08/21/12

ATTACHMENT A.2

Areal Map of Redding Groundwater Basin



Source: Redding Basin Water Resources Management Plan Environmental Impact Report (2007)

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ATTACHMENT B

Redding Municipal Code 14.08: Water

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CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Redding, California, Code of Ordinances >> Title 14 - UTILITIES >> Chapter 14.08 - WATER >>

Chapter 14.08 - WATER

Sections:

For the purpose of this chapter, certain words and phrases shall be construed as set forth in this section unless it is apparent from the context that a different meaning is intended.

- A. "AWWA" means the American Water Works Association.
- B. "Cross-connection" means any physical connection between the piping system from the city service and that of any other water supply or industrial process that is not or cannot be approved as safe and potable for human consumption, whereby water from the unapproved source may be forced or drawn into the city distribution mains.
- C. "Distribution mains" means city water lines in streets and rights-of-way used for general distribution of water from which service is available to the customer.
- D. "Premises" means an improved lot, piece or parcel of land or a legally divisible portion thereof.
- E. "Private fire protection service" relates to fire hydrants and/or fire sprinkler systems located on private property that are connected to the city's water distribution mains.
- F. "Regular service" means water service rendered for normal domestic, commercial, industrial or irrigation purposes on a permanent basis and for which the general rates and regulations are applicable.
- G. "Service connection" means the pipeline and appurtenant facilities, such as the curb stop, meter and meter box, used to extend water service from the distribution main to the premises. Where services are divided at the curb or property line to serve several customers, each such branch service shall be termed a separate service.
- H. "Water division" means the division which constructs, operates and maintains the city water distribution system and treatment facilities.
- I. "Household equivalent" means any premises served by a standard 5/8-inch water meter. Typically, this would include single-family residences, duplex dwelling units and small commercial businesses served by a standard 5/8-inch meter. Household equivalents for larger meters, 3/4-inch, 1-inch, 1 1/2-inch, 2-inch, 3-inch, 4-inch, 6-inch and 8-inch, have been computed using the ratio of the larger meter's AWWA rated capacity to the AWWA's rated capacity of a standard 5/8-inch meter.
- J. "Special benefit charge" means a charge applied to developing properties in addition to the normal connection charges to finance master water plan projects in water storage, transmission and supply where deficiencies are uniquely confined to specific geographical areas.
- K. "User" means any person or persons, all entities, public or private, residential, industrial, commercial, governmental or institutional, who receive water as defined by the California State Department of Health Services, Division of Drinking Water, as either potable or reclaimed at a service connection, fire hydrant, or fire service system that is further defined by the RMC.

(Ord. 2283 § 4(A), 2001; Ord. 1655 § 1 (part), 1983)

- [14.08.020 - Disposition of funds.](#)
- [14.08.030 - Distribution facilities, ownership.](#)
- [14.08.040 - Service, generally.](#)
- [14.08.050 - Service outside city.](#)
- [14.08.060 - Service—Payment of previous service required.](#)
- [14.08.070 - Service—Installation.](#)
- [14.08.075 - Temporary service \(construction water\).](#)
- [14.08.080 - Service—Location change.](#)
- [14.08.100 - Service—Discontinuance.](#)
- [14.08.110 - Water meters and meter boxes.](#)
- [14.08.120 - Curb cocks.](#)
- [14.08.130 - Extension of mains.](#)
- [14.08.135 - Encroachment permits and plan review.](#)
- [14.08.140 - Number of services for each premises.](#)
- [14.08.150 - Control valves.](#)
- [14.08.160 - Cross-connections.](#)
- [14.08.170 - Service interruption.](#)
- [14.08.180 - One premises from each connection.](#)
- [14.08.190 - Fire hydrants—Use.](#)

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

- [14.08.200 - Fire hydrants—Moving.](#)
- [14.08.220 - Several tenants served by one connection.](#)
- [14.08.230 - Customer responsibility for maintenance.](#)
- [14.08.240 - Unauthorized tampering with supply.](#)
- [14.08.245 - Prohibition on additives into the city water supply.](#)
- [14.08.250 - Supplying another property owner.](#)
- [14.08.260 - Shutting off water during emergency.](#)
- [14.08.280 - Drilling.](#)
- [14.08.290 - Proration of charges.](#)
- [14.08.300 - Billing of separate meters.](#)
- [14.08.310 - Establishment of connection charges and service rates.](#)
- [14.08.315 - Charges and rates.](#)
- [14.08.320 - Rates—Standard.](#)
- [14.08.330 - Rates—Nonregistering meter.](#)
- [14.08.340 - Due date—Shutoff for nonpayment.](#)
- [14.08.350 - Rates—Vacated premises.](#)
- [14.08.360 - Obstruction of hydrant or meter box.](#)
- [14.08.370 - Fire service lines.](#)
- [14.08.380 - Right of entry for inspection.](#)

14.08.020 - Disposition of funds.

No money, funds or receipts of the water division shall be used for any other purpose than to defray the cost of the service of water, and no money, funds or receipts in the water fund shall be transferred to any other fund of the city except to defray the cost of service of water.

(Ord. 1453 § 1 (part), 1979)

14.08.030 - Distribution facilities, ownership.

All distribution facilities, including all mains, valves, meters and related appurtenances shall be the property of the city.

(Ord. 1453 § 1 (part), 1979)

14.08.040 - Service, generally.

- A.** The city will furnish water service in accordance with regulations contained in this chapter and other applicable provisions of this code to any property within the city. When application is made for regular service through an existing previously paid service connection or discontinuance of service, no charge will be made for starting or discontinuing the service and no deposit will be required to establish credit for the service. Where the new use of the property is more dense than the prior use, the applicant shall pay those applicable charges for the increase in density. If application is made for service to property where no service connection has been installed or a part of a service connection has been installed but no regular service has been rendered to the property, the applicant, in addition to making application for the service, shall comply with the regulations governing the installation of service connections. The applicant shall, besides paying the charges for installing a new service connection, pay that water connection fee applicable to the type of service requested.
- B.** Where an extension of a distribution main is necessary to furnish the service requested, the applicant shall comply with the requirements of this section and also those of Section [14.08.130](#)
- C.** Each applicant for water or fire service shall sign an application form provided by the city. The execution of such application shall signify the customer's willingness and intention to comply with all regulations imposed and to pay for water service rendered.

(Ord. 1655 § 1 (part), 1983)

14.08.050 - Service outside city.

Within the authorized water service area set forth in that certain contract with the U.S. Bureau of Reclamation designated Contract No. 14-06-200-5272A, as amended by any subsequent amendments thereto, water service connections may be made beyond the city boundaries and both outside and inside the boundary limits of the former Buckeye County water district, subject to the following terms and conditions:

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

- A. The connection and any line extensions required shall be at no cost to the city. The applicant shall pay the total construction cost, and, if additional right-of-way acquisition is required in order to construct line extensions to the point of connection, the applicant shall pay all costs of such acquisition.
- B. The applicant shall pay a water connection fee equal to the fee paid by applicants for new connections in the city in effect at the time of the application.
- C. The applicant shall pay a monthly water service rate equal to the water service rate established in this chapter for service in the unincorporated portions of the former Buckeye County water district.
- D. The applicant shall be required to comply with the construction standards of the city for water line extensions and connections, to the satisfaction of the director of municipal utilities of the city.
- E. If the existing water line to which the applicant desires to extend is substandard in size, the applicant may be required to replace the substandard line with a water line of appropriate size in relation to the anticipated development of the area which will be served by the connecting extension. To the extent such line is larger than is required to serve the needs of the applicant, the city shall pay the costs of such oversizing.
- F. Where the real property requesting connection fronts on a substandard main in which the property owner or his or her predecessor in interest has a vested interest, the property owner shall be charged for connecting the existing established front footage charge minus a percentage credit determined by the ratio the diameter of the substandard main bears to the diameter of a six-inch water line. If the real property requesting connection fronts on a substandard main in which the property owner or his or her predecessor in interest has no vested interest, the full existing front footage charge in effect at the time of application shall be charged for connection.

(Ord. 2374 § 13 (part), 2006; Ord. 2200 § 2(A), 1997; Ord. 1453 § 1 (part), 1979)

14.08.060 - Service—Payment of previous service required.

An application for service will not be honored unless payment in full has been made for water service previously rendered to the applicant by the city.

(Prior code § 29-7)

14.08.070 - Service—Installation.

- A. Water services will be installed at size and at the location desired by the applicant where the request is consistent with city policy and ordinances. Service installations will be made only to property abutting on a public street or alley or water utility right-of-way at the convenience of the water division. Services installed in new subdivisions prior to the construction of streets or street improvements must be accepted by the applicant in the installed location.
- B. Title to all equipment and materials furnished shall remain with the city.
- C. Where state and federal cross-connection control laws require separation of dual water systems with back-flow protective devices (double-check valve system), the water division will install the back-flow device on city rights-of-way in a separate concrete box immediately adjacent to the water meter box.

(Ord. 1655 § 1 (part), 1983)

14.08.075 - Temporary service (construction water).

Temporary water service may be obtained through a fire hydrant and meter for the purpose of providing water for construction projects. Fire hydrant meters with control valves can be obtained from the water division. The rates charged for water service through a fire hydrant meter shall be the same as charged for a regular metered service. In addition to the charges for water used, an availability charge for the use of the fire hydrant and meter shall be due and payable at the time temporary service is requested.

(Ord. 1655 § 1 (part), 1983)

14.08.080 - Service—Location change.

Any person desiring to change the location of an existing water service shall make application to the water division for the change, and the division, if in its judgment deems the change to be necessary or advisable, will cause the change to be made. The applicant requesting the change shall become liable to the city for the cost of all labor, equipment and materials expended in the change, plus fifteen percent for supervision. A cash deposit in the amount estimated to be the cost of relocating facilities will be required at the time the work is requested. If the actual cost of work exceeds the cash deposit, the difference shall be due and payable upon completion of the job.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

(Ord. 1453 § 1 (part), 1979)

14.08.100 - Service—Discontinuance.

- A.** Water service may be refused or discontinued to any premises where apparatus or appliances are in use which will endanger the service to other customers, or damage the city's water system.
- B.** Water service may be refused or discontinued to any premises where there exists a cross-connection in violation of state or federal law.
- C.** Water service may be discontinued if necessary to protect the city against fraud practiced by the customer.
- D.** Customers desiring to discontinue service should notify the finance department two days prior to vacating the premises. Unless discontinuance of service is ordered, the customer shall be liable for charges whether or not any water is used.

(Ord. 1453 § 1 (part), 1979)

14.08.110 - Water meters and meter boxes.

All water meters and meter boxes installed by the city shall remain the property of the city, and where replacements, repairs or adjustments of any meter are rendered necessary by the act, negligence or carelessness of the consumer, any expense caused the city thereby shall be charged against, and collected from, the consumer. If the consumer or owner fails to pay the charges, the water may be shut off until the charges are paid. Each separate pipe connection in any meter box shall be separately metered.

(Ord. 1453 § 1 (part), 1979)

14.08.120 - Curb cocks.

There shall be a curb cock or valve in every attachment just inside the curb, at a point to be designated by the city, which curb cock and its box shall be supplied by the city and shall be for the city's exclusive use and under its exclusive control.

(Ord. 1453 § 1 (part), 1979)

14.08.130 - Extension of mains.

Applicants for service beyond the limits of the existing water system may secure service providing they comply with the following provisions:

- A.** A request shall be filed with the city engineer indicating the property proposed to be served and the use to be made thereof. The engineer shall analyze the request in respect to the city master water plan and engineering factors related to the site and the city's existing system.
- B.** The general policy concerning the assignment of construction costs for such service shall be as follows:
 - 1.** All water lines required for the orderly development of the applicant's property shall be constructed at the applicant's cost.
 - 2.** Where the city's master water plan requires a water line to be constructed greater in size than required for applicant's development, the city shall assume the cost of oversizing the water line to satisfy the master water plan. The city will pay the invoice pipe price difference between the size needed for the development and the size recommended in the master water plan, plus fifteen percent, provided an agreement is entered into with the city prior to commencement of work and when funds are available. All agreements and/or contracts shall be approved by the city council before work commences.
 - 3.** All in-tract construction in new subdivisions shall extend to the limits of the property and shall include all looping and other supplementary lines that are necessary in order that future contiguous subdivisions can connect directly onto such subdivisions, thus providing for the orderly development of the system.
 - 4.** If any additional construction is necessary to extend lines from existing mains to the applicant's property or subdivision, it shall be constructed at applicant's cost, unless the city council authorizes extension of such main at city expense because of special circumstances such as (a) size and nature of future service area, (b) distance from existing main, or (c) conformance to master water plan.
- C.** If a service connection is made directly into a main which has been constructed after the effective date of the ordinance codified in this section and which has not been constructed and financed through an assessment district or through any other means in which the applicant has vested

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

interest, there shall be paid by the applicant a front footage construction charge. The charge shall be computed on the front footage of the lot or logical divisible portion thereof, but in no case less than sixty feet. Corner lots shall be computed on the basis of the length of the front lot line. Flag lots, whether by easement or deeded access, shall be computed on the basis of the length of the narrow side of the lot, irrespective of the portion used for access. The front footage construction charge shall be in addition to any other charge prescribed in this chapter.

- D. Funds or money collected for installing service connections, water connection fees and the front footage construction charge shall be deposited into the water fund of the city.
- E. When it is necessary for the city to make an expenditure, the following interests of the city shall be considered:
 - 1. Will it improve service with respect to water quality, pressure, reliability of service and adequacy of water for fire protection?
 - 2. Will the investment prove to be a financial benefit to the water department operation?
 - 3. Is the investment a justifiable social or indirect economic benefit to the city?
 - 4. Does the investment benefit the city in contrast to the individual?
- F. The provisions set forth in subsection E of this section shall not prohibit the city council from approving or disapproving applications or making expenditures for other water line construction. Neither do these provisions apply to the replacement of old or undersized lines within the existing system.
- G. Where a parcel of real property fronts upon a substandard main less than six inches in diameter in which the property owner or his or her predecessor in interest has a vested interest, he or she shall pay a front footage construction charge at the established rate set forth in this chapter, minus a percentage credit in the same ratio as the diameter of the substandard main bears to the diameter of a six-inch water pipe. Where a parcel of real property requesting connection fronts on a substandard main in which it has no vested interest, it shall be charged the established front footage construction charge in effect at the time of application. It is the stated intention of the city to replace the substandard main as soon as economically practicable, and, in the event that such replacement is accomplished by means of an assessment district, those who have been charged a front footage construction charge in accordance with the provisions of this subsection shall not be assessed any additional sum in any subsequent assessment district proceedings for the replacement of the substandard main with one of adequate size.
- H. Reimbursement agreements may be made where a main is extended by a developer beyond the terminus of the existing system and which makes individual domestic service available to other property owners along the frontage of the extension. Funds reimbursed shall be from the front footage charges set forth in this chapter. Duration of the agreement is ten years.

(Ord. 2200 §§ 2(B) and (C), 1997; Ord. 1655 § 1 (part), 1983)

14.08.135 - Encroachment permits and plan review.

- A. It is unlawful for any person or organization to construct, enlarge, alter, repair, relocate, or demolish a city system water line, without first filing an application and obtaining an encroachment permit from the department of public works. An application shall be made by the owner of the property involved, or an authorized agent employed in connection with the proposed work.
- B. Encroachment permits are required and may be granted by the department of public works for the following improvement categories:
 - 1. Connection to the city water system;
 - 2. Improvements which are or will become public facilities owned and maintained by the city;
 - 3. Improvements within dedicated but unimproved street rights-of-way;
 - 4. Improvements which are, or will be, connected to the city water system.
- C. Connection to the city water system shall be performed only by contractors who meet the following requirements as a minimum:
 - 1. They shall possess a Class A or Class C-34 contractor's license as duly issued by the California Contractors State License Board;
 - 2. They have posted a bond with the city in the amount determined by the department of public works; and
 - 3. They provide insurance as required by the city's risk manager.

(Ord. 2359 § 1, 2006)

14.08.140 - Number of services for each premises.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

The applicant for water service may apply for as many services as may be reasonably required for his or her premises; provided, that the pipeline system from each service shall be independent of the others and that they not be interconnected.

(Ord. 1453 § 1 (part), 1979)

14.08.150 - Control valves.

The customer shall have a valve on his or her side of the service installation to control the flow of water to the piping on his or her premises. The customer shall not use the service curb stop to turn water on and off to his or her premises.

(Ord. 1453 § 1 (part), 1979)

14.08.160 - Cross-connections.

The customer must comply with state and federal laws governing the separation of dual water systems or installations of back-flow protective devices to protect the public water supply from the danger of cross-connections. Plans for installation of back-flow protective devices must also be approved by the water division prior to installation. Back-flow protective devices must be installed as near the service as possible and shall be open to test and inspection by the water division.

(Ord. 1453 § 1 (part), 1979)

14.08.170 - Service interruption.

The city shall not be liable for damage which may result from an interruption in service from a cause beyond the control of the city. In addition, as a condition precedent to service, the city reserves the right to make temporary shutdowns without liability in order to make improvements and repairs. Whenever possible and as time permits, all customers affected will be notified prior to making shutdowns.

(Ord. 1453 § 1 (part), 1979)

14.08.180 - One premises from each connection.

Not more than one premises shall be served from each service connection.

(Prior code § 29-19)

14.08.190 - Fire hydrants—Use.

Fire hydrants are for use by organized fire protection agencies and by the water division. Other parties desiring to use fire hydrants for any purpose must first obtain written permission from the water division prior to use and shall operate the hydrant in accordance with instructions issued by the water division.

(Ord. 1453 § 1 (part), 1979)

14.08.200 - Fire hydrants—Moving.

Fire hydrants will be moved at the request of property owners where such requests are reasonable and practicable in the sole judgment of the director of municipal utilities. All costs shall be borne by the party requesting the relocation.

(Ord. 2374 § 13 (part), 2006; Ord. 1453 § 1 (part), 1979)

14.08.220 - Several tenants served by one connection.

In all cases where water is supplied to several tenants from one connection or tap, the city contracts only with the owner of the property or his or her authorized agents, and on owner's failure to comply with these regulations or to pay the monthly charges, the services will be disconnected until regulations are complied with or the charges paid.

(Ord. 1453 § 1 (part), 1979)

14.08.230 - Customer responsibility for maintenance.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Customers shall prevent waste of water and shall keep their service pipes, fixtures, stopcocks and other apparatus, excepting the service installed and owned by the city, in good repair and free from leakage at customer's own expense, and each customer shall be liable for all damages which may result from his or her failure to do so. If property owners fail to make necessary repairs to prevent water loss and related nuisance, the city may disconnect the services upon ten days' notice to the occupant.

(Ord. 1655 § 1 (part), 1983)

14.08.240 - Unauthorized tampering with supply.

- A. No person other than a duly authorized employee of the city shall turn on water at any metered service. It is the duty of the director of utility customer service to report any violation of this section to the city attorney.
- B. No one except an authorized employee of the water division or the finance department shall turn the water on or off from any building or premises at city curb cock, or connect or disconnect or in any way tamper with any pipes in the meter boxes or with any other part of the water system of the city.

(Ord. 1934 § 1, 1990; Ord. 1453 § 1 (part), 1979)

14.08.245 - Prohibition on additives into the city water supply.

In order to ensure that the public water of Redding is safe to drink, it is unlawful and a public nuisance for any person, agent, or any public or private water system, to add any product, substance, or chemical to the public water supply for the purpose of treating or affecting the physical or mental functions of the body of any person, rather than to make water safe or potable, unless the substance meets the following criteria:

- A. The substance must have been specifically approved by the U.S. Food and Drug Administration for safety and effectiveness with a margin of safety that is protective for all adverse health and cosmetic effects at all ranges of unrestricted consumption.
- B. The substance, at maximum use levels, must contain no contaminants at concentrations that exceed U.S. Maximum Contaminant Level Goals or California Public Health Goals, whichever is more protective.

If any provision of this act or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the act which can be given effect without the invalid provision or application, and to this end the provisions of this act are severable.

(Ord. 2345 § 1, 2005)

14.08.250 - Supplying another property owner.

No user of water supplied by the city shall supply water to users on a piece of property owned by another.

(Ord. 1453 § 1 (part), 1979)

14.08.260 - Shutting off water during emergency.

All faucets, sprinklers, hose nozzles or other continuous streams must be shut off promptly upon the alarm of fire or other emergency or major disaster; the water not to be turned on again until the fire is known to be extinguished.

(Prior code § 29-27)

14.08.280 - Drilling.

No person shall drill for water within the corporate limits of the city without first obtaining a permit therefor from the city and without obtaining a permit from the Shasta County Environmental Health Department.

(Ord. 1453 § 1 (part), 1979)

14.08.290 - Proration of charges.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Opening and closing bills for less than the normal billing period shall be prorated as to minimum charges. Closing bills may be estimated by the finance department for the final period as an expediency to permit the customer to pay the closing bill at the time service is discontinued.

(Ord. 1244 § 1 (part), 1976: prior code § 29-31)

14.08.300 - Billing of separate meters.

Separate bills shall be rendered for each meter installation.

(Ord. 1453 § 1 (part), 1979)

14.08.310 - Establishment of connection charges and service rates.

Connection charges, service rates, and other fees schedules in connection with the water distribution system as set forth in this chapter shall be adopted by a resolution of the city council. Connection charges and front footage charges are established by RMC Section 16.20.080.

(Ord. 2283 § 4(B), 2001: Ord. 2200 § 2(D), 1997: Ord. 1655 § 1 (part), 1983)

(Ord. No. 2435, § 1, 6-2-2009)

14.08.315 - Charges and rates.

A service fee and other nondevelopment related fees in connection with the water distribution system shall be paid to the city in accordance with the rate schedule in effect, as duly adopted by resolution of the city council.

(Ord. 2359 § 2, 2006; Ord. 2317 § 2, 2003: Ord. 2296 § 3 (part), 2002: Ord. 2283 § 4(C), 2001: Ord. 2247 § 2(A), 1999; Ord. 2200 § 2(E), 1997)

(Ord. No. 2435, § 1, 6-2-2009)

14.08.320 - Rates—Standard.

In fixing and establishing water rates for service within the corporate limits of the city, the city council shall be guided by and must conform to and abide by the provisions of this section. Water rates shall be sufficient to produce sufficient revenue to pay all the costs of operation and maintenance of the water division and the water system, and to discharge and pay all costs in connection with the additions and betterments to the water system, and to discharge and pay all costs of depreciation and obsolescence of the water system, and to discharge and pay the bonded indebtedness, including the principal and interest amounts thereof incurred by the city to construct the water system, and to establish and maintain a reserve fund not to exceed ten percent of operating costs.

(Ord. 2247 § 2(B), 1999: Ord. 1453 § 1 (part), 1979)

14.08.330 - Rates—Nonregistering meter.

If a meter is found to be not registering, the charges for service shall be based on the estimated consumption. Such estimates shall be made from previous consumption for a comparable period or by some other equitable method.

(Prior code § 29-35)

14.08.340 - Due date—Shutoff for nonpayment.

All water rates and other fees set forth in this chapter are due and payable on the date of billing thereof, and become delinquent twenty days thereafter. If the bill remains unpaid thirty-five days after the billing date, the finance officer of the city shall have the discretionary power to cut off water for nonpayment if nonpayment continues after demand. This discretionary power shall not be exercised where good faith bases exist to dispute the correctness of the billing tendered.

(Ord. 2220 § 2 (F), 1997: Ord. 1453 § 1 (part), 1979)

14.08.350 - Rates—Vacated premises.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Water rates and other fees set forth in this chapter shall be charged for premises vacated, until the city is notified in writing of the vacancy and is requested to turn the water off.

(Ord. 2200 § 2(G), 1997; Ord. 1453 § 1 (part), 1979)

14.08.360 - Obstruction of hydrant or meter box.

No person shall place trash, dirt, building materials or other objects or obstructions on meter boxes or around or adjacent to city fire hydrants and no person shall allow the facilities to become obstructed or obscured by vines, trees, shrubs or other plants in any manner so as to make the location difficult to determine, or to in any way interfere with or render difficult free access to or use of city meter boxes and city fire hydrants. In the event of such obstruction, notice shall be given to the property served by the meter or adjacent to the hydrant. The notice shall contain the requirement that the obstruction, whether a growing thing or otherwise, be removed. Penalty for nonremoval within five days after such notice shall be twenty-five dollars, to be added to the water bill and collected in the same manner and under the same condition as water rates are collected.

(Ord. 2296 § 3(part): Ord. 1453 § 1 (part), 1979)

14.08.370 - Fire service lines.

- A.** Fire service systems shall be furnished in conformity with Uniform Building Code and Uniform Fire Code requirements applicable and as provided for herein:
- 1.** The installation of fire service lines through public rights-of-way to serve private fire hydrants or private sprinkling systems shall be the responsibility of the owner requesting such service, including all work required to install the fire service line from the city's distribution main to the city's right-of-way line, including installation of a gate valve and installation of a detector check valve, if required. All work on private rights-of-way shall be done in accordance with city standards for fire service construction and shall be performed by a licensed contractor approved by the city.
 - 2.** All fire service lines shall be equipped with a detector check valve or equivalent device. If a detector check valve is used, it shall be installed in accordance with city standards within city rights-of-way and become the property of the city.
 - 3.** There shall be no water used through the fire service line except to extinguish fires or for testing of fire fighting equipment.
 - 4.** There shall be no connection between a fire service line and any other water distribution system on the premises.
 - 5.** Any consumption recorded on the fire service line detector meter will be charged for at four times the regular service rates, except that no charge will be made for water used to extinguish fires where such fires have been reported to the fire department.
- B.** The city water department shall inspect and maintain all fire hydrants on public and private property. The property owner shall maintain free access at all times that the premises are open for business so that the water department can inspect and maintain the fire service and hydrant. All leads and hydrants located on private property shall be in an easement. The easement shall be defined as a fire hydrant extension easement.

(Ord. 2296 § 3(part): Ord. 1655 § 1 (part), 1983)

14.08.380 - Right of entry for inspection.

Representatives from the water division shall have the right of ingress and egress to the customer premises at reasonable hours for reasonable or necessary purposes connected with the provision of water service to the premises.

(Ord. 1453 § 1 (part), 1979)

ATTACHMENT B.1

City of Redding Municipal Code 16.70:

Water Efficient Landscape Ordinance

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CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Redding, California, Code of Ordinances >> **Title 16 - BUILDINGS AND CONSTRUCTION** >> **Chapter 16.70 - WATER EFFICIENT LANDSCAPE** >>

Chapter 16.70 - WATER EFFICIENT LANDSCAPE

Sections:

- [16.70.010 - Purpose.](#)
- [16.70.020 - Applicability.](#)
- [16.70.030 - Definitions.](#)
- [16.70.040 - Landscape documentation package review and approval required.](#)
- [16.70.050 - Elements of landscape documentation package.](#)
- [16.70.060 - Certificate of completion.](#)
- [16.70.070 - Irrigation scheduling.](#)
- [16.70.080 - Landscape and irrigation maintenance schedule.](#)
- [16.70.090 - Irrigation audit, irrigation survey, and irrigation water use analysis.](#)
- [16.70.100 - Irrigation efficiency.](#)
- [16.70.110 - Recycled water.](#)
- [16.70.120 - Stormwater management.](#)
- [16.70.130 - Model homes.](#)
- [16.70.140 - Environmental review.](#)
- [16.70.150 - Provisions for existing landscapes.](#)
- [16.70.160 - Water-waste prevention.](#)
- [16.70.170 - Reserved.](#)
- [16.70.180 - Enforcement.](#)

16.70.010 - Purpose.

This chapter is intended to comply with the provisions of the California Water Conservation in Landscaping Act of 2006 (AB 1881), Chapter 3, Article 10.8, Government Code. The specific purposes of these regulations are to:

- A. Promote the values and benefits of landscapes, while recognizing the need to invest water and other resources as efficiently as possible.
- B. Retain flexibility and encourage creativity through appropriate design.
- C. Ensure the attainment of water efficient landscape goals by requiring that landscapes not exceed a maximum water demand.
- D. Establish a structure for designing, installing, and maintaining water efficient landscapes in new projects.
- E. Establish provisions for water-management practices and water-waste prevention for established landscapes.
- F. Establish the city's responsibilities for administering programs to ensure compliance with the provisions for this chapter and of the California Water Conservation in Landscaping Act of 2006.
- G.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Establish provisions for water-management programs that may include, but are not limited to: irrigation water use analyses, irrigation audits, and irrigation surveys for compliance with the maximum applied water allowance.

- H. Achieve water conservation by raising public awareness of the need for an effective management program through education and incentives.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.020 - Applicability.

This section shall apply to all the following landscape projects:

- A. New construction and rehabilitated landscapes for public-agency projects and private commercial or industrial development projects with a landscape area equal to or greater than two thousand five hundred square feet requiring a building or landscape permit, plan check, or design review.
- B. New construction and rehabilitated landscapes which are developer-installed in single-family and multiple-family projects with a common landscape area equal to or greater than two thousand five hundred square feet requiring a building or landscape permit, plan check, or design review.
- C. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multiple-family residential projects with a total project landscape area equal to or greater than five thousand square feet requiring a building or landscape permit, plan check, or design review.
- D. All subdivision model homes with front-yard landscape installed by the developer.
- E. Landscapes over one acre in size installed before January 1, 2010, are subject to the limited provisions in Section [16.70.150](#)
- F. Cemeteries. Recognizing the special landscape management needs of cemeteries, the following shall apply:
 - 1. New and rehabilitated cemeteries are subject to the limited provisions of Sections [16.70.050.B](#), [16.70.080](#), and [16.70.090](#)
 - 2. Existing cemeteries are subject to the limited provisions in Section [16.70.150](#)
- G. This chapter does not apply to:
 - 1. Registered local, state, or federal historical sites.
 - 2. Ecological restoration projects that do not require a permanent irrigation system.
 - 3. Mined land reclamation projects that do not require a permanent irrigation system.
 - 4. Plant collections, as part of botanical gardens and arboretums, open to the public.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.030 - Definitions.

For the purpose of this chapter, the following words shall have the meanings set forth below:

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Applied Water. The portion of water supplied by the irrigation system to the landscape.

Backflow Prevention Device. A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

Certificate of Completion. The document required under Section 16.70.060, Certificate of Completion.

Certified Landscape Irrigation Auditor. A person certified to perform landscape irrigation audits by an accredited academic institution; a professional trade organization; or other programs, such as the U.S. Environmental Protection Agency's WaterSense Irrigation Auditor Certification Program and the Irrigation Association's Certified Landscape Irrigation Auditor program.

Certified Irrigation Designer. A person certified to design irrigation systems by an accredited academic institution; a professional trade organization; or other programs, such as the U.S. Environmental Protection Agency's WaterSense irrigation designer certification program and the Irrigation Association's Certified Irrigation Designer program.

Check Valve or Anti-Drain Valve. A valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

Common Interest Developments. Community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

Controller. An automatic timing device used to remotely control valves to operate an irrigation system. A weather-based controller is a controller that uses evapotranspiration or weather data to determine when to irrigate. A self-adjusting irrigation controller is a controller that uses sensor data (i.e., soil-moisture sensor).

Conversion Factor (0.62). The number that converts acre-inches per acre per year to gallons-per-square-foot per year.

Drip Irrigation. Any nonspray low-volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low-volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

Ecological Restoration Project. A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

Effective Precipitation or Usable Rainfall (EPPT). The portion of total precipitation which becomes available for plant growth.

Emitter. A drip-irrigation emission device that delivers water slowly from the system to the soil.

Established Landscape. The point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Establishment Period of the Plants. The first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

Estimated Total Waster Use (ETWU). The total water used for the landscape as described in Section 16.70.050.B.

ET Adjustment Factor (ETAF). A factor of 0.7 that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant-factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is $(0.7) = (0.5/0.71)$. ETAF for a special landscape area shall not exceed 1.0. ETAF for existing, nonrehabilitated landscapes is 0.8.

Evapotranspiration Rate. The quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

Flow Rate. The rate at which water flows through pipes, valves, and emission devices measured in gallons per minute, gallons per hour, or cubic feet per second.

Hardscapes. Any durable material (pervious and nonpervious).

Homeowner-Provided Landscape. Any landscape either installed by a private individual for a single-family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this chapter, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.

Hydrozone. A portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or nonirrigated.

Infiltration Rate. The rate of water entry into the soil expressed as depth of water per unit of time (e.g., inches per hour).

Invasive Plant Species. Species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. "Noxious weeds" refers to any weed that is designated by the weed control regulations in the Weed Control Act and identified on a regional district noxious weed control list. Lists of invasive plants are maintained in the California Invasive Plant Inventory and U.S. Department of Agriculture's invasive and noxious weeds database.

Irrigation Audit. An in-depth evaluation of the performance of an irrigation system conducted by a certified landscape irrigation auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

Irrigation Efficiency (IE). The measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation-system characteristics and management practices. The minimum

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

average irrigation efficiency for purposes of this chapter is 0.71. Greater irrigation efficiency can be expected from well- designed and maintained systems.

Irrigation Survey. An evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

Irrigation Water Use Analysis. An analysis of water use data based on meter readings and billing data.

Landscape Architect. A person who holds a license to practice landscape architecture in the state of California (Business and Professions Code, Section 5615).

Landscape Area. All the planting areas, turf areas, and water features in a landscape design plan subject to the maximum applied water allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or nonpervious hardscapes, and other nonirrigated areas designated for nondevelopment (e.g., open spaces and existing native vegetation).

Landscape Contractor. A person licensed (with a valid C-27 license) by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

Landscape Documentation Package. The documents required under Section [16.70.050](#).

Landscape Project. Total area of landscape in a project as defined in "landscape area" for the purposes of the water efficient landscape chapter, meeting requirements under Section [16.70.020](#).

Lateral Line. The water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

Local Water Purveyor. Any entity, including a public agency, city, county, or private water company, that provides retail water service.

Low-Volume Irrigation. The application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters, such as drip, drip lines, and bubblers. Low-volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

Main Line. The pressurized pipeline that delivers water from the water source to the valve or outlet.

Maximum Applied Water Allowance (MAWA). The upper limit of annual applied water for the established landscaped area as specified in Section [16.70.050B.3](#). It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The estimated total water use shall not exceed the maximum applied water allowance. Special landscape areas-including recreation areas; area permanently and solely dedicated to edible plants, such as orchards and vegetable gardens; and areas irrigated with recycled water-are subject to the MAWA, with an ETAF not to exceed 1.0.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Microclimate. The climate of a small specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

Mine Land Reclamation Projects. Any surface mining operation with a reclamation plan approval in accordance with the Surface Mining and Reclamation Act of 1975.

Mulch. Any organic material (such as leaves, bark, or straw) or inorganic mineral materials (such as rocks, gravel, and decomposed granite) left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

New Construction. For the purposes of the water efficient landscape chapter, a new building with a landscape or other new landscape.

Operating Pressure. The pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

Overhead Sprinkler Irrigation Systems. Systems that deliver water through the air (e.g., spray heads and rotors).

Overspray. The irrigation water which is delivered beyond the target area.

Permit. An authorized document issued by the City of Redding for new construction or rehabilitated landscape.

Pervious. Any surface or material that allows the passage of water through the material and into the underlying soil.

Plant Factor or Plant Water Use Factor. A factor, when multiplied by ETo, that estimates the amount of water needed by plants. For purposes of the water efficient landscape chapter, the plant factor range for low-water-use plants is 0 to 0.3, the plant factor range for moderate-water-use plants is 0.4 to 0.6, and the plant factor range for high-water-use plants is 0.7 to 1.0. Plant factors cited in the water efficient landscape chapter are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

Precipitation Rate. The rate of application of water measured in inches per hour.

Project Applicant. The individual or entity submitting a landscape documentation package required under [Section 16.70.050](#) to request a permit, plan check, or use permit from the City of Redding. A project applicant may be the property owner or his or her designee.

Rain Sensor or Rain-Sensing Shutoff Device. A component which automatically suspends an irrigation event when it rains.

Record Drawing or As-Builts. A set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

Recreational Area. Areas dedicated to active play, such as parks, sports fields, and golf courses, where turf provides a playing surface.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Recycled Water, Reclaimed Water, or Treated Sewage Effluent Water. Treated or recycled wastewater of a quality suitable for nonpotable uses, such as landscape irrigation and water features. This water is not intended for human consumption.

Reference Evapotranspiration, or ETo. A standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Section [16.70.050.B.2.a](#), Water Efficient Landscape Worksheet, and is an estimate of the evapotranspiration of a large field of four- to seven-inch-tall cool-season grass that is well-watered. Reference evapotranspiration is used as the basis of determining the maximum applied water allowances, so that regional differences in climate can be accommodated.

Rehabilitated Landscape. Any re-landscaping project that requires a permit, plan check, or use permit; meets the requirements of Section 16.07.020, Applicability; where the modified landscape area is greater than two thousand five hundred square feet; and fifty percent of the total landscape area and the modifications occur within one year.

Runoff. Water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or where there is a slope.

Soil Moisture Sensing Device or Soil Moisture Sensor. A device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

Soil Texture. The classification of soil based on its percentage of sand, silt, and clay.

Special District. Bella Vista, Centerville, Clear Creek.

Special Landscape Area (SLA). An area of the landscape dedicated solely to edible plants; areas irrigated with recycled water; water features using recycled water; and areas dedicated to active play, such as parks, sports fields, golf courses, and where turf provides a playing surface.

Sprinkler Head. A device which delivers water through a nozzle.

Static Water Pressure. The pipeline or municipal water-supply pressure when water is not flowing.

Station. An area served by one valve or by a set of valves that operate simultaneously.

Swing Joint. An irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

Turf. A groundcover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermuda grass, Kikuyu grass, Seashore Paspalum grass, St. Augustine grass, Zoysia grass, and Buffalo grass are warm-season grasses.

Valve. A device used to control the flow of water in the irrigation system.

Water-Conserving Plant Species. A plant species identified as having a low plant factor.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Water Feature. A design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high-water-use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

Watering Window. The time of day irrigation is allowed.

WUCOLS. The Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.040 - Landscape documentation package review and approval required.

A complete landscape documentation package must be submitted and found to satisfy the requirements of this chapter prior to authorization for water service and the installation of a new water meter or a change in water service.

- A. City Water Applications. Landscape plans submitted as part of a building plan application through the building division shall be routed for review in accordance with procedures established by the building official for review.
- B. Water District Applications. Water conservation measures adopted by any special water district with jurisdiction within the city limits that are more restrictive than these standards shall supercede city standards.
- C. Plan Check Approval Process. The project applicant shall be notified in writing if plans are found to be incomplete or inconsistent with the standards and indicate where such additions or revisions are necessary.
- D. Application Fee. A filing fee set by resolution of the city council shall accompany each application.
- E. Upon approval of the landscape documentation package, the project applicant shall:
 1. Receive a building permit and record the date of the permit on the certificate of completion.
 2. Provide a copy of the approved landscape documentation package to the property owner or site manager.
 3. Submit a copy of the water efficient landscape worksheet to the municipal utility department or to the appropriate water district, whichever is applicable to the project site.
- F. In the event that a water-supply emergency is declared by a water purveyor, these landscape requirements shall be deferred for those projects served within the impacted area until such time as the water-supply emergency has been lifted.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

- c. A project's estimated total water use shall be calculated using the following formula:

$$ETWU = (ETo) (0.62) [(PF \times HA) \div IE + SLA]$$

Where:

ETWU = Estimated Total Water Use (gallons per year)

ETo = Reference Evapotranspiration (inches per year)

PF = Plant Factor from WUCOLS

HA = Hydrozone Area (square feet)

0.62 = Conversion Factor

IE = Irrigation Efficiency (minimum 0.71)

- C. Soil Management Report. In order to reduce runoff and encourage healthy plant growth, a soil management report satisfying the following criteria shall be submitted as a part of the landscape documentation package:

Results of a soils analysis prepared by a qualified professional or laboratory; soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

1. The soil analysis shall include the following:
 - a. Determination of soil texture, indicating the percentage of organic matter.
 - b. An appropriate soil infiltration rate determined by laboratory test or soil texture/infiltration rate tables.
 - c. Measure of pH.
 - d. Total soluble salts and sodium.
 - e. Recommendations.
2. The project applicant shall submit documentation verifying implementation of soil analysis report recommendations in the landscape plan.

- D. Landscape Design Plan. A landscape design plan meeting the following requirements shall be submitted as part of the landscape documentation package.

1. Plant Material.
 - a. Any plant may be selected for the landscape, providing the estimated total water use in the landscape area does not exceed the maximum applied water allowance. To encourage the efficient use of water, the following practices are highly recommended:
 - i. Protection and preservation of native species and natural vegetation.
 - ii. Selection of water-conserving plant and turf species.
 - iii. Selection of plants from local and regional landscape program plant lists.
 - b. Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use as specified in Section 16.70.050.E.1.d, Elements of Landscape Documentation Package - Irrigation Design Plan - Irrigation System.
 - c. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

of the project site. To encourage the efficient use of water, the following is highly recommended:

- i. Use the Sunset Western Climate Zone System, which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate.
 - ii. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, power lines).
 - iii. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
 - d. Turf is not allowed on slopes greater than twenty-five percent where the toe of the slope is adjacent to an impermeable hardscape and where twenty-five percent means one foot of vertical elevation change for every four feet of horizontal length (rise divided by run x 100 = slope percent).
 - e. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required in accordance with Public Resources Code Section 4291(a) and (b) and [Chapter 9.20](#) of the Redding Municipal Code. Avoid fire-prone plant materials and highly flammable mulches.
 - f. The use of invasive and/or noxious plant species is discouraged.
 - g. The architectural guidelines of a common-interest development, which includes community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water-use plants as a group.
2. Water Features.
 - a. Recirculating water systems shall be used for water features.
 - b. Where available, recycled water shall be used as a source for decorative water features.
 - c. Surface area of a water feature shall be included in the high-water-use hydrozone area of the water budget calculation.
 - d. Pool and spa covers are highly recommended.
 3. Mulch and Amendments.
 - a. A minimum two-inch layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting ground covers, or direct seeding applications.
 - b. Stabilizing mulching products shall be used on slopes.
 - c. The mulching portion of the seed/mulch slurry in hydroseeded applications shall meet the mulching requirement.
 - d. Soil amendments shall be incorporated according to recommendations of the soil management report and what is appropriate for the plants selected.
 - 4.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Landscape Plan. The project landscape plan shall, at a minimum, provide the following information, in addition to meeting the form and content of the city of Redding landscape plan standards adopted by the planning commission:

- a. Delineation and labeling of each hydrozone by number, letter, or other method.
 - b. Identification of each hydrozone as low, moderate, high, or mixed water use.
 - c. Identification of recreational areas.
 - d. Identification of areas permanently and solely dedicated to edible plants.
 - e. Identification of areas irrigated with recycled water.
 - f. Identification of type of mulch and application depth.
 - g. Identification of soil amendments, type, and quantity.
 - h. Identification of type and surface area of water features.
 - i. Identification of hardscapes (pervious and nonpervious).
 - j. Location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
 - i. Infiltration beds, swales, and basins that allow water to collect and soak into the ground.
 - ii. Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants.
 - iii. Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete) that minimize runoff.
 - k. Identification of any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.).
 - l. Contain the following statement: "I have complied with the criteria of the Water- Efficient Landscape chapter and applied it for the efficient use of water in the Landscape Design Plan."
 - m. The signature of a licensed landscape architect; licensed landscape contractor, who is a designer/builder; or as stipulated under the state business and professions code.
- E. Irrigation Design Plan. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturer's recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the landscape documentation package.
1. Irrigation System.
 - a. Dedicated landscape water meters are required for landscape projects greater than five thousand square feet to facilitate water management and are highly recommended for projects less than five thousand square feet.
 - b.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

- Weather-based irrigation controllers or soil moisture-based controllers or other self-adjusting irrigation controllers shall be required for irrigation scheduling in all irrigation systems.
- c. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
 - i. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices, such as in-line pressure regulators, booster pumps, or other devices, shall be installed to meet the required dynamic pressure of the irrigation system.
 - ii. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
 - d. Sensors (rain, freezing weather, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
 - e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required as close as possible to the point of connection to the water supply to minimize water loss in case of an emergency (such as a mainline break) or routine repair.
 - f. Backflow-prevention devices shall be required to protect the water supply from contamination by the irrigation system. Backflow-prevention devices shall be installed in accordance with the city of Redding public works construction standards and state building, plumbing, and health and safety codes.
 - g. High-flow sensors that detect and report high-flow conditions created by system damage or malfunction are recommended.
 - h. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto nontargeted areas, such as adjacent property, nonirrigated areas, hardscapes, roadways, or structures.
 - i. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
 - j. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
 - k. The irrigation system must be designed and installed to meet irrigation efficiency criteria as described in Section 16.70.050.B, Elements of Landscape Documentation Package - Water Efficient Landscape Worksheet, regarding the maximum applied water allowance.
 - l.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

- If water is being provided by a local water district (i.e., Bella Vista, Centerville, or Clear Creek Water District), the project applicant shall consult with the appropriate district about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
- m. In mulched planting areas, the use of low-volume irrigation is required to maximize water infiltration into the root zone.
 - n. Sprinkler heads and other emission devices shall have matched precipitation rates unless otherwise directed by the manufacturer's recommendations.
 - o. Head-to-head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
 - p. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high-traffic areas.
 - q. Check valves or anti-drain valves are required for all irrigation systems.
 - r. Narrow or irregularly shaped areas, including turf less than eight feet in width in any direction, shall be irrigated with subsurface irrigation or low-volume irrigation technology.
 - s. Overhead irrigation shall not be permitted within twenty-four inches of any nonpermeable surface. Allowable irrigation within the setback from nonpermeable surfaces may include drip, drip line, or other low-flow nonspray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if any of the following occur:
 - i. The landscape area is adjacent to permeable surfacing and there is no overspray or runoff.
 - ii. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscape.
 - iii. The irrigation designer specifies an alternative design or technology as part of the landscape documentation package and clearly demonstrates strict adherence to irrigation system design criteria in Section 16.70.050.E.1.h, Elements of Landscape Documentation Package - Irrigation Design Plan - Irrigation System. Prevention of overspray and runoff must be confirmed during an irrigation audit.
 - t. Slopes greater than twenty-five percent shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inch per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology as part of the landscape documentation package and clearly demonstrates that no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during irrigation audit.
 - u. Hydrozone.
 - i.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

- Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
- ii. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
 - iii. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
 - iv. Individual hydrozones that mix plants of moderate- and low-water-use or moderate- and high-water-use may be allowed if either of the following occurs:
 - (a) Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor.
 - (b) The plant factor of the higher-water-using plant is used for calculations.
 - v. Individual hydrozones that mix high- and low-water-use plants shall not be permitted.
 - vi. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, the areas irrigated by each valve shall be designated and assigned a number to each valve. This valve number shall be provided in the Hydrozone Information Table and used to assist with preinspection and final inspection of the irrigation system and programming the controller.
2. Irrigation Design Plan Specifications. The irrigation design plan shall, at a minimum, contain the following:
- a. Location and size of separate water meters for landscape.
 - b. Location, type, and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture-sensing devices, rain switches, quick couplers, pressure regulators, and backflow-prevention devices.
 - c. Static water pressure at the point of connection to the public water supply.
 - d. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station.
 - e. Recycled water-irrigation systems as specified in Section [16.70.110](#), Recycled Water.
 - f. The following statement: "I have complied with the criteria of the water efficient landscape chapter and applied it accordingly for the efficient use of water in the Irrigation Design Plan."
 - g. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor who is a designer/builder, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641 through 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

California Code of Regulations, and Section 6721 of the Food and Agriculture Code.

- F. Grading Design Plan. For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the landscape documentation package. A comprehensive grading plan prepared by a civil engineer for a grading permit satisfies this requirement.
1. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area, including the height of graded slopes, drainage patterns, pad elevations, finish grade percent or ratios of slope, and stormwater-retention improvements, if applicable.
 2. To prevent excessive erosion and runoff, the grading plan shall be designed to the extent practical to:
 - a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain onto nonpermeable hardscapes.
 - b. Avoid disruption of natural drainage patterns and undisturbed soil.
 - c. Avoid soil compaction in landscape areas.
 3. The grading design plan shall bear the signature of a licensed professional as authorized by law and contain the following statement: "I have complied with the criteria of the Water Efficient Landscape Chapter and applied it accordingly for the efficient use of water in the Grading Design Plan."

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.060 - Certificate of completion.

Upon completion of the installation of landscape and irrigation systems in compliance with the approved landscape design plan, a certificate of completion shall be submitted to the city or appropriate water district for review and to the owner of record. The city or appropriate water district shall review the certificate of completion and shall approve or deny the certificate. If the certificate of completion is denied, the city or appropriate water district shall provide information to the project applicant regarding reapplication, appeal, or other assistance. The certificate of completion shall include the following elements:

- A. Project Information. This shall include, but is not limited to, the date; project name; project address and location; project applicant's name, telephone number, and mailing address; and property owner's name, telephone number, and mailing address.
- B. Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed in accordance with the approved landscape documentation package. Where there have been significant approved changes made in the field during construction, "as-built" or record drawings shall be included with the certification.
- C. Irrigation scheduling parameters used to set the controller (see Section [16.70.070](#), Irrigation Scheduling).
- D.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Landscape and irrigation maintenance schedule (see Section [16.70.080](#), Irrigation Maintenance Schedule).

- E. Irrigation audit report (see Section [16.70.090](#), Irrigation Audit, Survey, and Water Analysis).
- F. Soil analysis report, if not submitted with landscape documentation package, and documentation verifying implementation of soil report recommendations (see Section [16.70.050](#).C, Elements of Landscape Documentation Package - Soil Management Report).

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.070 - Irrigation scheduling.

For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

- A. Irrigation scheduling shall be regulated by automatic irrigation controllers.
- B. Overhead irrigation shall be scheduled between eight p.m. and ten a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the city or water district, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- C. For implementation of the irrigation schedule, irrigation run times, emission device, flow rate, and current reference evapotranspiration shall be considered, so that applied water meets the estimated total water use. Total annual applied water shall be less than or equal to maximum applied water allowance (MAWA). Irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data or soil moisture sensor data.
- D. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
 - 1. The plant establishment period.
 - 2. The established landscape.
 - 3. Temporarily irrigated areas.
- E. Each irrigation schedule shall consider for each station all the following that apply:
 - 1. Irrigation interval (days between irrigation).
 - 2. Irrigation run times (hours or minutes per irrigation event to avoid runoff).
 - 3. Number of cycle starts required for each irrigation event to avoid runoff.
 - 4. Amount of applied water scheduled to be applied on a monthly basis.
 - 5. Application-rate setting.
 - 6. Root-depth setting.
 - 7. Plant-type setting.
 - 8. Soil-type setting.
 - 9. Slope-factor setting.
 - 10. Shade-factor setting.
 - 11. Irrigation-uniformity or efficiency setting.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN**16.70.080 - Landscape and irrigation maintenance schedule.**

Landscapes shall be maintained to ensure water use efficiency.

- A. A regular maintenance schedule shall be submitted with the certificate of completion. A regular maintenance schedule shall include, but is not limited to: routine inspection, adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas; and removing obstructions to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
- B. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.
- C. A project applicant is encouraged to implement sustainable or environmentally friendly practices for overall landscape maintenance.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.090 - Irrigation audit, irrigation survey, and irrigation water use analysis.

An irrigation audit is required for new construction and rehabilitated landscape projects installed after January 1, 2010. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor. The project applicant shall submit an irrigation audit report with the certificate of completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.100 - Irrigation efficiency.

For the purpose of determining maximum applied water allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.110 - Recycled water.

The installation of recycled water irrigation systems shall allow for the current and future use of recycled water unless a written exemption has been granted as described in Section 16.70.110(A).

- A. Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the city or water district, whichever is applicable, stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.
- B. All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and state laws.
- C. Landscapes using recycled water are considered special landscape areas. The ET adjustment factor for special landscape areas shall not exceed 1.0.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.120 - Stormwater management.

Stormwater management practices minimize runoff and increase infiltration, which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged.

- A. Project applicants shall refer to the city or regional water quality control board for information on any applicable stormwater ordinances and stormwater management plans.
- B. Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or on-site storage are recommended.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.130 - Model homes.

All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described this chapter.

- A. Signs shall be used to identify the model as an example of a water efficient landscape featuring elements, such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.
- B. Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.140 - Environmental review.

Projects subject to the Water Efficient Landscape chapter shall comply with the California Environmental Quality Act (CEQA), as appropriate.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.150 - Provisions for existing landscapes.

This section shall apply to all existing landscapes that were installed before January 1, 2010, and are over one acre in size.

- A. Landscapes that have a water meter are subject to a city irrigation or appropriate water district audit of irrigation water use to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the maximum applied water allowance for existing landscapes. The maximum applied water allowance for existing landscapes shall be calculated as: $MAWA = (0.8)(ET_o)(LA)(0.62)$. Landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
- B. Landscapes that do not have a water meter are subject to a city audit of irrigation water use to evaluate water use and provide recommendations, as necessary, in order to prevent water waste.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.160 - Water-waste prevention.

- A. It shall be unlawful for any responsible party (as defined in Section 1.14.020 of the Redding Municipal Code) to willfully permit runoff to leave the target landscape area due to low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways, parking lots, or structures.
- B. Restrictions regarding overspray and runoff may be modified if either of the following occurs:
 - 1. The landscape area is adjacent to permeable surfacing and no runoff occurs.
 - 2. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscape.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

16.70.170 - Reserved.**16.70.180 - Enforcement.**

A violation of any portion of this chapter and of guidelines adopted pursuant to this chapter is subject to the provisions in Redding Municipal Code Chapter 1.13, Administrative Citations, in addition to other civil or administrative remedies.

(Ord. No. 2449, §§ 1, 2, 1-19-2010)

ATTACHMENT B.2

City of Redding Operations and Maintenance Plan

CITY OF REDDING

WATER UTILITY DISTRIBUTION SYSTEM OPERATIONS & MAINTENANCE PLAN



TABLE OF CONTENTS

GENERAL INFORMATION	1
EMERGENCY RESPONSE	2
DISTRIBUTION SYSTEM FLUSHING	2
WATER MAIN REPAIR, MAINTENANCE & REPLACEMENT	2
FIRE HYDRANTS	3
CONSUMER COMPLAINT RESPONSE	4
VALVE EXERCISING PROGRAM	4
METER MAINTENANCE	5
CROSS-CONNECTION CONTROL	6
PERSONNEL TRAINING & QUALIFICATIONS	6
 ATTACHMENTS - EXHIBITS - A	

CITY OF REDDING WATER UTILITY

WATER DISTRIBUTION OPERATIONS & MAINTENANCE PLAN

GENERAL WATER UTILITY INFORMATION

The City of Redding's water supply comes from three sources, the Sacramento River, Whiskeytown Lake (via the Spring Creek Conduit) and groundwater wells from the Redding Groundwater Basin.

The Sacramento River raw water is pumped from Pump Station No.1 at 2300 Riverside Dr. to the Foothill Water Treatment Plant (FWTP) located at 3100 Foothill Blvd. The Whiskeytown Lake raw water is conveyed through the Spring Creek Conduit (between Whiskeytown Lake and Keswick Lake) to the Buckeye Water Treatment Plant (BWTP) located at 11501 Benson Road in Shasta, CA, as shown on the Redding Water System Map 2009, Exhibit "A".

Sixteen groundwater wells are located in the Cascade and Enterprise areas of the City. Four wells and one standby well located in the Cascade area, on the south side of the City limits and twelve wells are located in the Enterprise area, on the east side of the City limits. All the groundwater wells are also shown on the Redding Water System Map 2009, Exhibit "A."

The entire Redding Water System, with its seven pressure zones are all inter-tied with booster pump stations, pressure regulating stations, supervisory vaults and closed valves between the a joining pressure zones (depicted in Exhibit "A," with detailed drawings depicted in the Water System Atlas located in Redding Municipal Utilities Field Operations, 20055 Viking Way and carried in all Water Utility vehicles).

Purpose

The Redding Water Utility Distribution Division operates and maintains the distribution system piping network for the City of Redding. The Operations and Maintenance Plan (O&M) describes the general water system operating plans for the water distribution system which includes cross-connection control, distribution system flushing, water main repair and replacement, emergency response, customer complaint response, water main valve exercising program, large water meter program, water meter replacement program, and personnel education, training and qualification requirements.

PLAN LOCATION

This O&M Plan is prepared in compliance with the California Department of Public Health - Division of Drinking Water (CDPH-DDW). This plan is also intended to serve as a guide and reference for supervisory, operations and maintenance personnel. Copies of this plan will be available in the office of the Supervisor - Water Distribution, Redding Municipal Utilities, Field Operations, Water Utility Office at the City Corporation Yard, 20055 Viking Way, Redding and Department of Public Health - Division of Drinking Water, 415 Knollcrest Dr. Suite #110, Redding, CA.

GENERAL

The Distribution Division operates and maintains approximately 556 miles of water mains of various types and sizes, 4,817 fire hydrants, 28,123 water services, 13,517 water system valves and 2,719 backflow devices.

The most common O&M practices are linked to the distribution system. The key to keeping a water distribution system in good working order is a set of sound and exercised O&M practices. However, O&M practices are often the first to be abandoned when resource reductions (financial or personnel) are imposed upon a water system. Typical deficiencies have been the lack of effective flushing programs, inadequate disinfection of repaired depressurized water mains, ineffective or absent cross-connection control programs and the absence of emergency contingency plans.

The protection of the consumer from microbiological contamination entering the distribution system must not be compromised. Microbial contamination can enter a distribution system after the treatment process through cross-connection and broken/depressurized water mains.

O&M Programs Include:

- ☞ Installation of new water meters
- ☞ Maintenance of existing water meters
- ☞ Meter box maintenance program provides for inspection, adjustment, repair or replacement of meter boxes
- ☞ Installation of new water mains
- ☞ Installation of new water valves
- ☞ Maintenance of existing water valves
- ☞ Valve maintenance program involves inspection and exercising of each distribution valve once every two years. Any defects in the valves, valve boxes, valve collars and debris in the valve boxes are placed on a CorTRAX work order for repair
- ☞ Installation of complete water service
- ☞ Administration of Cross-connection Control Program
- ☞ Repair and replacement of water service lines.
- ☞ Fire Hydrant and blow-off flushing program
- ☞ Fire flow tests on the distribution water system
- ☞ Service Calls
 - ▶ Water quality
 - ▶ Meter leaks
 - ▶ Water main or service line leaks
 - ▶ High/Low pressure concerns
 - ▶ Temporary turn on and turn off
- ☞ The Fire Hydrant Program (Chapter 5) involves inspection, oiling and exercising of each fire hydrant in the water distribution system, either public or private. Any defects to the hydrants are placed on a CorTRAX work order for repair.
- ☞ The Fire Hydrant Flushing Program (Chapter 3) involves the routine, effective flushing of the water distribution system. It also results in the most improved water quality, for the effort required, by minimizing the potential for water in the water distribution system to become stagnant and degrade in quality. Flushing may also greatly reduce consumer complaints for taste and odor. Consideration must be given to both the order in which distribution system mains are flushed and the velocity at which they are flushed in order for flushing to be effective.

- ☞ Proper flushing must be performed systematically beginning with the mains closest to the water treatment plant or Enterprise groundwater well fields and working toward the outermost water mains of the water distribution system. Without careful consideration to the order of flushing the mains, poor quality water from one area of the water distribution system may end in another area of the water system. Flushing velocities must be great enough to completely dislodge and dispel any loose particles in the distribution system mains. The flushing velocity in the main shall not be less than 2.5 ft/s unless it is determined that conditions do not permit the required flow to be discharged to waste as required by the Titles 17 and 22 California Code of Regulations, California Regulations Related to Drinking Water. The flushing program should be performed at least annually, or more frequently if distribution system water quality warrants it. If the water distribution system through which the water is piped is not well maintained, the consumer has no guarantee of consistently safe and pleasing drinking water.
- ☞ Water Distribution Crews install new services for some developments, repair broken water mains, restore torn-up yards, replace concrete and asphalt (pavement). About 25 new services and 150 new meters are installed per year and many services and meters are repaired and replaced. All 28,123 water meters are read every month.
- ☞ Valves and Fire Hydrants (Chapter 7)
- ☞ All valves and fire hydrants are exercised, lubricated and repaired as necessary every two years. Fire hydrants are painted by contract with the Shasta County Probation Department. They paint fire hydrants on a fill in basis and as personnel are available.
- ☞ Warehouse

Operations-Maintenance-Plan

Electronic Version Location:

S:\Water Treatment Plant Files\Emergency-Plan-Updates\Operations-Maintenance -Plan

ATTACHMENT C

Summary of AWWA Water Meter Accuracy Standards



Redding Municipal Utilities
Water Utility
Water Meter Test Parameters
AWWA M6



Water Meter Size (in)	Displacement Water Meters AWWA C700									
	Minimum Rate		Intermediate Rate		Maximum Rate					
	Flow Rate GPM	Test Quantity CF	Accuracy Limits Percent	Flow Rate GPM	Test Quantity CF	Accuracy Limits Percent				
5/8 x 3/4	1/4	1	95.0	2	1	98.5	15	10	98.5	101.5
3/4	1/2	1	95.0	3	1	98.5	25	10	98.5	101.5
1	3/4	1	95.0	4	1	98.5	40	10	98.5	101.5
1 1/2	1 1/2	10	95.0	8	10	98.5	50	10	98.5	101.5
2	2	10	95.0	15	10	98.5	100	10	98.5	101.5

Water Meter Size (in)	Class I and Class II Turbine Water Meters AWWA C701									
	Minimum Rate		Intermediate Rate		Maximum Rate					
	Flow Rate GPM	Test Quantity CF	Accuracy Limits Percent	Flow Rate GPM	Test Quantity CF	Accuracy Limits Percent				
1 1/2	12	10	98.0	na	na	na	80	20	98	102
2	4	10	98.5	na	na	na	120	30	98.5	101.5

ATTACHMENT C.1

Representative Water Meter Accuracy Test Reports

AQUA SIERRA CONTROLS, INC.
1650 INDUSTRIAL DRIVE
AUBURN, CA 95603
(530) 823-3241 FAX (530) 823-3475

METER TEST REPORT

WATER SUPPLIER: CITY OF REDDING

CUSTOMER: EAST STREET PHYSICIANS CENTER -78

ADDRESS: 1555 EAST STREET

Straight Read Round Read: Magnetic Type: Geared Type:

Cubic Feet Gallon Size 3"x 5/8" Manufacturer: Neptune

Model: Compound Serial # 31936180

Low: High:

Test Before

Amount	Time		GPM
100.38	Min 1	Sec	100
100.83	Min 4	Sec	25
	Min	Sec	

Error			
.38%			
.83%			

Test After

Repair _____ Recalibration _____

Amount	Time		GPM
	Min	Sec	
	Min	Sec	
	Min	Sec	

Error			

CONDITION OF METER

GOOD CONDITION

Tested By

John Turner
 John Turner

Date

7-10-9

**AQUA SIERRA CONTROLS, INC.
 1650 INDUSTRIAL DRIVE
 AUBURN, CA 95603
 (530) 823-3241 FAX (530) 823-3475**

METER TEST REPORT

WATER SUPPLIER: CITY OF REDDING

CUSTOMER: CALTRANS -27

ADDRESS: 7561 BELTLINE

Straight Read Round Read: X Magnetic Type: X Geared Type:

Cubic Feet X Gallon Size 4"x 3/4" Manufacturer: Neptune

Model: Compound Serial # 70105119

Low: X High: X

Test Before

Amount	Time		GPM
101.72	Min 1	Sec	100
100.30	Min 4	Sec	25
	Min	Sec	

Error			
1.72%			
.30%			

Test After

Repair _____ Recalibration _____

Amount	Time		GPM
	Min	Sec	
	Min	Sec	
	Min	Sec	

Error			

CONDITION OF METER

GOOD CONDITION

Tested By John Turner Date 7-10-09

**AQUA SIERRA CONTROLS, INC.
 1650 INDUSTRIAL DRIVE
 AUBURN, CA 95603
 (530) 823-3241 FAX (530) 823-3475**

METER TEST REPORT

WATER SUPPLIER: CITY OF REDDING

CUSTOMER: PEPPERTREE APARTMENTS – 63

ADDRESS: 679 HILLTOP DRIVE

Straight Read Round Read: X Magnetic Type: Geared Type: X

Cubic Feet X Gallon Size 6" Manufacturer: Metron Farnier

Model: Single Jet Serial # 93000057

Low: X High: X

Test Before

Amount	Time		GPM
100.71	Min 1	Sec	100
100.72	Min 4	Sec	25
	Min	Sec	

Error			
.71%			
.72%			

Test After

Repair _____ Recalibration _____

Amount	Time		GPM
	Min	Sec	
	Min	Sec	
	Min	Sec	

Error			

CONDITION OF METER

GOOD CONDITION

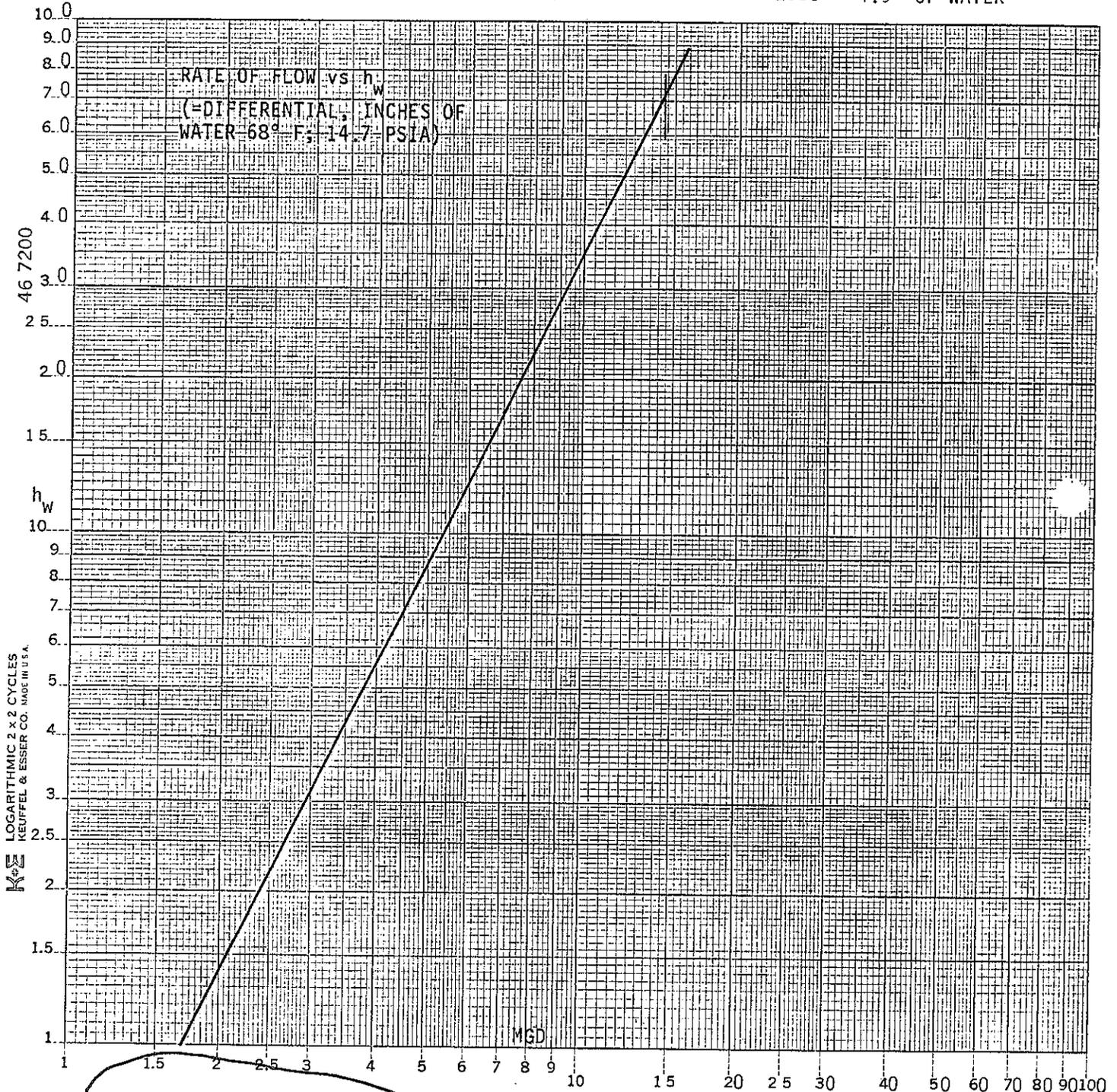
Tested By John Turner Date 7-10-9
 John Turner

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

PRIMARY FLOW SIGNAL, INC.
 6 BLACKSTONE VALLEY PLACE
 SUITE 402
 LINCOLN, RI 02865-1145
 (401) 334-7710

FOR: 24" B HVT-FC
 SERIAL: 2074
 TAG: RFC-250
 SIZE: 24.00" x 14.00"
 BETA: 0.5833

AT: 14.0 MGD WATER FLOW
 60 PSIG, 60°F
 $h_w = 69.11"$ OF WATER
 HEAD LOSS = 4.9" OF WATER



ACCURACY WITH NORMAL FLOWPATTERN: $\pm 0.50\%$ OF C.

CERTIFIED BY:

D. Wyatt
 D. WYATT - ENGINEER

DATE: 7/14/93

REV.B: 3/25/94

Primary Flow Signal Inc.
Rhode Island USA

NAMEPLATE **RFC-250**

Model: **24" B HVT-FC**
Size: **24.00" x 14.00"**
Ser. No: **2074**

INSPECTION HOLE (IF REQUIRED)

THROAT TAPS

INLET TAPS

HOLES STRADDLE TOP

20" DIA. BUTTERFLY VALVE

NAMEPLATE ON TOP

1.68

11.70

0.38

6.30

12.60

5°

12.60

32.0 DIA.

20.0 DIA.

2.25

8.0

19.25

1.69

27.20

6.0

64.10

±0.25

20.25

125

125

20

20

1.38

1.25

29.50

29.50

FLANGE DRILLING FOR PSI

NO OF HOLES

DIA OF HOLES

DIA OF BOLT CIRCLE

INLET

OUTLET

MC TAP

HOLE EQUALLY SPACED STRADDLE TOP

STD

SPECIAL

MATERIALS:

1.) BODY: CAST IRON, ASTM DES. A - 126 GRADE B
 OTHER:

2.) THROAT LINER: BRONZE ASTM DES. B-61-63
 304 STAINLESS STEEL
 OTHER:

3.) BUSHINGS: PAINT:

ON IRON SURFACES ONLY!

INSIDE: } (2) COATS (MIN.) **PLASITTE 7133**

OUTSIDE: }

HYDROST. TEST: 70° F. **150** PSIG, 15 MINUTES.

ACCESSORIES:

20" PRAIR 2 F II BFV, EIM SERIES

2000 ACTUATOR, FUTRONIC III PKG.

DESIGN PRESSURE: 50 PSIG OTHER

TAG NUMBER: **RFC-250**

SERIAL NUMBER: **2074**

CERTIFIED BY: **D.W.** ENGINEER:

RFI

6 BROADWAY, VALLEY FLOOR, CHICAGO
LINCOLN PARK, ILLINOIS 60655-1145
TEL 401 334 7710 FAX 401 334 7713

FC-24-Bx20-2074

24.00" x 14.00" HVT-FC

DESIGNED BY DATE: **D.W. 7/19/93**

DATE: **11-22-93**

REV: **3-25-94**

REVISED BY DATE: **D.W. 7/19/93**

ATTACHMENT D

City of Redding Sample Customer Service Bill

Please detach and return this stub with your payment.

Name	Account	Service Address	Billing Date
			12/14/11

Next Read Date: 1/13/12

UTILITIES ACCOUNT SUMMARY

See reverse side of bill for detail.

Balance Forward	\$433.35
Payments Received (Thank You)	\$435.90CR
CURRENT CHARGES	
REU - Electric Utility	\$119.13
Water Utility	\$27.15
Solid Waste Utility (Garbage)	\$21.07
Storm Drain Utility	\$1.32
Wastewater Utility (Sewer)	\$40.95
Current Charges (Due By 01/11/12)	\$209.62
Account Balance	\$207.07

PAYMENTS

Payment of current charges must be received within twenty days of the bill date. If payment of the current charges is not received by 11:59PM on the due date of the bill, a Late Notice will be issued and a \$16.00 Residential, or 3% Commercial Fee will be applied to the account. If a payment is not received within 15 days of issuance of the Late Notice, then a Final Disconnection Notice will be issued and a \$20.00 Residential or \$20.00 Commercial fee will be applied to the account. If full payment of the delinquent charges is not received by 11:59PM on the due date of the Final Disconnection Notice, then services will be subject to disconnection without further notification.

PAYMENT METHODS

1. PHONE: Payments can be made using a Credit Card or Debit Card by calling (530) 339-7200
2. MAIL: P.O. Box 496081, Redding CA 96049-6081
3. IN-PERSON 777 Cypress Ave (City Hall West Entrance) Business Hours M-F, 8:00 AM - 5:00 PM (Except Holidays).
4. AUTO PAY: Monthly payments can be electronically deducted from your bank account. Please call (530) 339-7200 for more information.
5. ONLINE: Please visit our website at www.ci.redding.ca.us to pay online with a Debit Card or a Credit Card.
6. PAYMENT DROP BOXES: Located at the City Hall Circle Driveway (777 Cypress Ave).

Power to Seniors Program (SHARE PROGRAM)

Simply Helping Another Receive Energy (SHARE) contributions are provided to Golden Umbrella's Power to Seniors Program to help Redding seniors pay their energy bills. Contributions are voluntary. You may make a tax deductible contribution with your utility payment.

CARES PROGRAM

Community Assistance for Redding Electric Service (CARES) is a shut-off prevention and assistance program that provides financial aid to income qualified customers. Contributions are voluntary. You may make a tax deductible contribution with your utility payment.

INFORMATION AND ASSISTANCE

For bill inquiries, questions, or for more information regarding your utility services, please call: (530) 339-7200, Toll Free 1-866-267-8845
Power Outage (530) 245-7000 * Solid Waste (530) 224-6201 * Water/Wastewater/Storm Drain (530) 224-6068

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

UTILITIES ACCOUNT DETAIL

ACCOUNT ACTIVITY	DATE	DESCRIPTION	AMOUNT
Previous Balance			\$433.35
Payment - Thank You	11/15/11	Credit Card	\$200.00CR
	12/14/11	Unposted Cash	\$235.90
Current Services Charges			\$209.62
Total Amount Due			\$207.07

REU - Electric Utility

Meter Number	Cust Type	Service From	Service To	Billing Days	Demand Read	Current Meter Read	Previous Meter Read	Meter Multiplier	Current kWh	1 Year Ago kWh
*0005490	E1	11/10/11	12/13/11	33		46790	45922	1	868	1194

DESCRIPTION	QUANTITY	USAGE	RATE	AMOUNT
Network Access Charge				\$8.50
Energy Charge		868 kWh	\$0.12390	\$107.55
Federal Environmental Charge		868 kWh	\$0.00200	\$1.74
State Surcharge		868 kWh	\$0.00029	\$0.25
Solar Program Surcharge		868 kWh	\$0.00125	\$1.09
Total Electric Charges				\$119.13

Water Utility

Meter Number	Cust Type	Service From	Service To	No. Billing Days	Current Meter Read	Previous Meter Read	Meter Multiplier	Current CCF	1 Year Ago CCF
45382431	WR58	11/10/11	12/13/11	33	4571	4555		16	13

DESCRIPTION	QUANTITY	USAGE	RATE	AMOUNT
Water Service Charge - 5/8"				\$10.34
Water Commodity Charge		16 CCF	\$0.95000	\$15.20
Pump Hse 1 Repl Svc Surcharge				\$0.65
Pump Hse 1 Repl Com Surcharge		16 CCF	\$0.06000	\$0.96
Total Water Charges				\$27.15

Solid Waste Utility - Collection & Recycling (Garbage Service)

DESCRIPTION	AMOUNT
Landfill Monitor Residential 1.00 @ .2200000	\$0.22
96 Gallon Residential Wheeler 1.00 @ 20.8500000	\$20.85
Total Solid Waste Utility (Garbage) Charges	\$21.07

Storm Drain Utility

DESCRIPTION	AMOUNT
Storm Drain, Monthly S/Family 1.00 @ 1.3200000	\$1.32
Total Storm Drain Utility Charges	\$1.32

Wastewater Utility - Collection & Treatment (Sewer Service)

DESCRIPTION	AMOUNT
Sewer Single Family Resident 1.00 @ 40.9500000	\$40.95
Total Wastewater Utility (Sewer) Charges	\$40.95

ACCOUNT BALANCE \$207.07

ATTACHMENT D.1

City of Redding Water Utility Schedule of Rates

Figure W-3
(Existing and Proposed Rates)

City of Redding
Water Utility

Rate Revenue for Operation and Maintenance

Meter Size	Existing	07/01/2009	07/01/2010	07/01/2011
5/8"	\$ 8.68	\$ 9.20	\$ 9.75	\$ 10.34
3/4"	\$ 13.02	\$ 13.80	\$ 14.63	\$ 15.51
1"	\$ 21.70	\$ 23.00	\$ 24.38	\$ 25.85
1.5"	\$ 43.40	\$ 46.00	\$ 48.76	\$ 51.69
2"	\$ 69.44	\$ 73.61	\$ 78.02	\$ 82.70
3"	\$ 138.88	\$ 147.21	\$ 156.05	\$ 165.41
4"	\$ 217.00	\$ 230.02	\$ 243.62	\$ 258.45
6"	\$ 434.00	\$ 460.04	\$ 487.64	\$ 516.90
8"	\$ 694.40	\$ 736.06	\$ 780.23	\$ 827.04
10"	\$ 1,258.60	\$ 1,334.12	\$ 1,414.16	\$ 1,499.01
12"	\$ 1,866.20	\$ 1,978.17	\$ 2,096.86	\$ 2,222.67
Commodity charge per CCF	\$ 0.80	\$ 0.85	\$ 0.90	\$ 0.95

Restricted Rates for Relocation of Pump House #1

Meter Size	Existing	07/01/2009	07/01/2010	07/01/2011
5/8"	\$ 0.65	\$ 0.65	\$ 0.65	\$ 0.65
3/4"	\$ 0.98	\$ 0.98	\$ 0.98	\$ 0.98
1"	\$ 1.63	\$ 1.63	\$ 1.63	\$ 1.63
1.5"	\$ 3.25	\$ 3.25	\$ 3.25	\$ 3.25
2"	\$ 5.20	\$ 5.20	\$ 5.20	\$ 5.20
3"	\$ 10.40	\$ 10.40	\$ 10.40	\$ 10.40
4"	\$ 16.25	\$ 16.25	\$ 16.25	\$ 16.25
6"	\$ 32.50	\$ 32.50	\$ 32.50	\$ 32.50
8"	\$ 52.00	\$ 52.00	\$ 52.00	\$ 52.00
10"	\$ 94.25	\$ 94.25	\$ 94.25	\$ 94.25
12"	\$ 139.75	\$ 139.75	\$ 139.75	\$ 139.75
Commodity charge per CCF	\$ 0.06	\$ 0.06	\$ 0.06	\$ 0.06

Total Rates Combined O&M and Restricted for Relocation of Pump House #1

Meter Size	Existing	07/01/2009	07/01/2010	07/01/2011
5/8"	\$ 9.33	\$ 9.85	\$ 10.40	\$ 10.99
3/4"	\$ 14.00	\$ 14.78	\$ 15.61	\$ 16.49
1"	\$ 23.33	\$ 24.63	\$ 26.01	\$ 27.48
1.5"	\$ 46.65	\$ 49.25	\$ 52.01	\$ 54.94
2"	\$ 74.64	\$ 78.81	\$ 83.22	\$ 87.90
3"	\$ 149.28	\$ 157.61	\$ 166.45	\$ 175.81
4"	\$ 233.25	\$ 246.27	\$ 260.07	\$ 274.70
6"	\$ 466.50	\$ 492.54	\$ 520.14	\$ 549.40
8"	\$ 746.40	\$ 788.06	\$ 832.23	\$ 879.04
10"	\$ 1,352.85	\$ 1,428.37	\$ 1,508.41	\$ 1,593.26
12"	\$ 2,005.95	\$ 2,117.92	\$ 2,236.61	\$ 2,362.42
Commodity charge per CCF	\$ 0.86	\$ 0.91	\$ 0.96	\$ 1.01

ATTACHMENT D.2

Account Information Available to Customers Online (Web shot)

Online Account Access

Page 1 of 1

Account: **

Usage Comparison: Water

<u>Year</u>	<u>Month</u>	<u>Usage</u>	<u>Year</u>	<u>Month</u>	<u>Usage</u>	<u>Year</u>	<u>Month</u>	<u>Usage</u>
2012	Feb	9.00	2011	Feb	13.00	2010	Feb	8.00
2012	Jan	9.00	2011	Jan	9.00	2010	Jan	9.00
	Dec	16.00		Dec	13.00		Dec	15.00
	Nov	26.00		Nov	27.00		Nov	15.00
	Oct	30.00		Oct	52.00		Oct	43.00
	Sep	48.00		Sep	48.00		Sep	63.00
	Aug	49.00		Aug	48.00		Aug	61.00
	Jul	34.00		Jul	47.00		Jul	56.00
	Jun	24.00		Jun	29.00		Jun	43.00
	May	27.00		May	20.00		May	27.00
	Apr	16.00		Apr	12.00		Apr	25.00
2011	Mar	10.00	2010	Mar	10.00	2009	Mar	14.00
Total:		298.00	Total:		328.00	Total:		379.00

ATTACHMENT E

City of Redding Drought Management Plan

The following is the actual Ordinance that appears in the City of Redding Municipal Code and would become effective should a water shortage condition be declared.

**CITY OF REDDING
DROUGHT MANAGEMENT PLAN
Redding Municipal Code
Chapter 14.09**

14.09.010 Purpose.

The purpose of this chapter is to establish a drought management plan to equitably distribute the available water to the city's customers and to ensure an adequate supply for human consumption, sanitation, and fire protection. The purposes of this plan are met by the establishment of a four-stage plan of management. (Ord. 1957 § 1 (part), 1991)

14.09.020 Stage I—Volunteer conservation program--Fifteen percent reduction in normal usage.

The following represent the elements of Stage I of the drought management plan:

A. Notification to customers by direct mailing, newsletters, press releases, public meetings, etc., that a drought condition exists and the city must reduce its water consumption;

B. Provide educational literature for conservation practices regarding waste, over watering, leaks, etc. Provide information and assistance to customers on reading their water meter and monitoring water usage;

C. Encourage the use of native plants or other water conserving vegetation. Information on landscaping is available at the customer services office or the parks and recreation office;

D. Encourage the use of efficient landscaping systems (drip, timed sprinkler, etc). Encourage evening and early morning watering to reduce evaporation;

E. Discourage the emptying and refilling of swimming pools, ponds, etc.;

F. Informational/educational warnings for water, over watering, and leaks;

G. City to reduce the flushing of water mains required for water quality;

H. Start the Enterprise and Cascade Wells earlier in the season to conserve the use of surface water;

I. Encourage water-reducing methods in household use (full loads for dishwasher and clothes washer, low-flow showerhead, patio sweeping, use shut-off valve on hose for car washing and watering, etc.)

(Ord. 1957 § 1 (part), 1991)

14.09.030 Stage II—Mandatory twenty-five percent reduction.

All Stage 1 requirements apply, plus the following:

A. All customers must reduce their consumption in accordance with the following provisions: For all customers (residential, commercial, retail, and industrial) a base allotment will be determined. That base allotment will be the lesser of the following: (1) the four-year average usage for the winter months of November through March; or (2) the four-year average usage for that month. Customers' monthly allotment will consist of the base allotment plus seventy-five percent of the difference between the previous four-year average usage for that month and the base allotment. That corresponds to a twenty-five percent reduction of the previous four-year average for the month usage over the base allotment. Such water will be charged at the current rates in effect.

A penalty of two dollars and fifty cents per one hundred cubic feet, or any part thereof, will be charged on any water used above the amount allocated.

B. New service applications may be granted upon the condition that the water shall be used for internal household purposes only, and that landscaping must be delayed until drought conditions are lifted. The following consumption conditions will be applicable:

1. New services will be limited to one thousand five hundred cubic feet of water per month, and such water will be charged at the current rates in effect;
2. A penalty of two dollars and fifty cents per one hundred cubic feet, or any part thereof, in addition to the current rate, will be charged on any water used above the maximum stated in subsection B1 of this section.

C. Water service to landscape maintenance districts, parks, cemeteries, or other services, which fall in this category, will be required to comply with same restrictions as the other customers.

D. Water service for construction projects will be handled on a case-by-case basis. A written request detailing water needs, time of use, etc., will be required and reviewed by staff. Final approval for service in this category will be granted by the director of public works. Services in this category will be monitored on a project basis.

(Ord. 1957 § 1 (part), 1991)

14.09.040 Stage III—Mandatory thirty-five percent reductions.

All Stage I requirements apply, plus the following:

A. All customers must reduce their consumption in accordance with the following provisions: For all customers (residential, commercial, retail, and industrial) a base allotment will be determined. That base allotment will be the lesser of the following: (1) the four-year average usage for the winter months of November through March; or (2) the four-year average usage for that month. Customers' monthly allotment will consist of the base allotment plus sixty-five percent of the difference between the previous four-year average usage for that month and the base allotment. That corresponds to a thirty-five percent reduction of the previous four-year average for the month usage over the base allotment. Such water will be charged at the current

rates in effect.

A penalty of five dollars per one hundred cubic feet, or any part thereof, will be charged on any water used above the amount allocated.

B. New service applications may be granted upon the condition that the water shall be used for internal household purposes only, and that landscaping must be delayed until drought conditions are lifted. The following consumption conditions will be applicable:

1. New services will be limited to one thousand five hundred cubic feet of water per month, and such water will be charged at the current rates in effect;
2. A penalty of five dollars per one hundred cubic feet, or any part thereof, in addition to the current rate, will be charged on any water used above the maximum stated in subsection B1 of this section.

C. Water service to landscape maintenance districts, parks, cemeteries, or other services, which fall in this category, will be required to comply with same restrictions as the other customers.

D. Water service for construction projects will be handled on a case-by-case basis. A written request detailing water needs, time of use, etc., will be required and reviewed by staff. Final CITY OF REDDING 2010 URBAN WATER MANAGEMENT PLAN approval for service in this category will be granted by the director of public works. Services in this category will be monitored on a project basis.

E. Water mains will only be flushed to solve severe water quality problems.

F. Watering of parks, cemeteries, etc., will be restricted to nights.
(Ord. 1957 § 1 (part), 1991)

14.09.050 Stage IV—Mandatory fifty percent reduction.

All Stage 1 requirements apply, plus the following:

A. All customers must reduce their consumption in accordance with the following provisions: For all customers (residential, commercial, retail, and industrial) a base allotment will be determined. That base allotment will be the lesser of the following: (1) the four-year average usage for the winter months of November through March; or (2) the four-year average usage for that month. Customers' monthly allotment will consist of the base allotment plus fifty percent of the difference between the previous four-year average usage for that month and the base allotment. That corresponds to a fifty percent reduction of the previous four-year average for the month usage over the base allotment. Such water will be charged at the current rates in effect. A penalty of seven dollars and fifty cents per one hundred cubic feet, or any part thereof, will be charged on any water used above the amount allocated.

B. New service applications granted under Sections 14.09.030(B) and 14.09.040(B) will continue to receive service under the following provisions:

1. New services will be limited to one thousand cubic feet of water per month and such water will be charged at the current rates in effect;
2. A penalty of seven dollars and fifty cents per one hundred cubic feet, or any part thereof, in addition to the current rate, will be charged on any water used above the maximum stated in Subsection B1 of this section.

C. Any additional new service applications must be reviewed and approved by the city council.
1. If accepted for service, they will be limited to one thousand cubic feet of water per month, and such water will be charged at the current rates in effect;

2. A penalty of seven dollars and fifty cents per one hundred cubic feet or any part thereof, in addition to the current rate, will be charged on any water used above the base amount allowed in Subsection C1 of this section.

D. Water service to landscape maintenance districts, parks, cemeteries, or other services, which fall in this category, will be required to comply with same restrictions as the other customers.

E. Water service for construction projects will be handled on a case-by-case basis. A written request detailing water needs, time of use, etc., will be required and reviewed by staff. Final approval for service in this category will be granted by the director of public works. Services in this category will be monitored on a project basis.

(Ord. 1957 § 1 (part), 1991)

14.09.060 Special conditions.

Special conditions:

A. When available, actual previous four-year average usage will be used to determine allocations. For any situations when a full four years of data is not available, the available data will be used. If previous data is not available, the allocation will be based on histories of a comparable-type customer.

B. Previous four-year average consumptions will be used to determine allocations available to each service address (customer). When a new customer transfers a service address into their name, the four-year average consumption for that address will be used to determine their allocation.

C. No transfer of water will be allowed between billing cycles, customers, or service addressees.

D. Any customer who willfully neglects to adhere to the provisions of the mandatory stages of this drought management plan will be issued a written warning. Continued negligence will be reviewed by the director of public works for corrective action necessary to insure compliance. Compliance measures may include the installation of a flow restrictor at the meter.

(Ord. 1957 § 1 (part), 1991)

14.09.070 Exceptions, variances and appeals.

For hardship cases only, variances may be granted for any of the above regulations upon application in writing stating, in detail, the circumstances warranting special consideration. Appeals of decisions made by the director of public works may be taken to the city council by written request. (Ord. 1957 § 1 (part), 1991)

ATTACHMENT F

Coordinated AB 3030 Groundwater Management Plan for the Redding Groundwater Basin

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**Coordinated AB 3030
Groundwater Management Plan
For the
Redding Groundwater Basin**

**Prepared for the
Redding Area Water Council**

**Prepared by
Shasta County Water Agency**

November 1998

TABLE OF CONTENTS

Chapter 1 - Introduction	-1-
Background and Authority of AB3030	-1-
Purpose of the Plan	-2-
Coordinated Implementation	-2-
Chapter 2 - Plan Area	-4-
Location	-4-
Physiography and Geology	-4-
Climate	-8-
Economy	-10-
Local Interest	-10-
List of Participants	-10-
Legal, Financial and Political Considerations	-10-
Condition of the Groundwater Basin	-12-
Redding Groundwater Basin and Sub-Basins	-12-
Existing Monitoring	-12-
Historic Variations in Groundwater Levels	-12-
Historic Groundwater Pumpage	-13-
Groundwater Quality	-13-
Need for Groundwater Management Plan	-13-
Chapter 3 - Elements of the AB 3030 Plan	-21-
AB 3030 Plan Elements	-21-
Data Development/Groundwater Monitoring	-21-
Public Entity Coordination and Reporting	-22-
Public Information and Education	-22-
Export Limitations	-23-
Water Quality	-23-
Wellhead protection	-23-
Land Use	-23-
Conjunctive Use Operations	-23-
Groundwater Management Facilities	-24-
Groundwater Overdraft and Well Interference	-24-
Chapter 4- Implementation	-25-
Procedure	-25-
Plan Administration	-25-
Chapter 5 - Plan Amendments	-26-

LIST OF TABLES

Table 1. Redding Area Water Council -3-
Table 2. Historic Climatic Data for Redding, California -8-
Table 3. Current Annual Water Needs Summary, Redding Basin -11-
Table 4. Procedure to Implement Groundwater Management Plan -24-

INDEX OF FIGURES

Figure 1. Redding Groundwater Basin -5-
Figure 2. Water Purveyor Boundaries -6-
Figure 3. Generalized Cross-Section Across the Sacramento River Valley -7-
Figure 4. Mean Annual Precipitation in Shasta County -9-
Figure 5. Well Number 29N/03W—06P010 -14-
Figure 6. Well Number 29N/05W—26N01M -15-
Figure 7. Well Number 30N/03W—29K01M -16-
Figure 8. Well Number 30N/04W—15R03M -17-
Figure 9. Well Number 31N/03W—06H01M -18-
Figure 10. Well Number 31N/03W—29N01M -19-
Figure 11. Well Number 31N/04W—16H01M -20-

APPENDICES

Appendix "A"

Chapter 1 - Introduction

Background and Authority of AB 3030

Section 1.01. On January 1, 1993, California Assembly Bill 3030, the Groundwater Management Act, was codified into California law. California Water Code Sections 10750 et seq., allow local water agencies to adopt local groundwater management plans. Local public and private entities are encouraged by Water Code Section 10755.2 to adopt and implement a coordinated AB 3030 Plan, such as this plan for the Redding Groundwater Basin.

Section 1.02. Development of an AB 3030 Plan under Water Code Sections 10750, et seq., allows local entities to efficiently manage groundwater supplies, assure long-term water supplies, and distribute costs, benefits, and water sharing in a locally determined equitable manner.

Section 1.03. The Department of Water Resources ("DWR") defines a "Groundwater Management Plan" as "planned use of the groundwater basin yield, storage space, transmission capability, and water in storage."

Section 1.04. Water Code Section 10750 et seq., defines "Groundwater Management Program" as "a coordinated and ongoing activity undertaken for the benefit of a groundwater basin pursuant to a Groundwater Management Plan as specified in AB 3030."

Section 1.05. The Redding Area Water Council ("Water Council") is an association of numerous public and private entities within the Redding Groundwater Basin area who have determined by Memorandum of Understanding (MOU) dated August, 1998 to jointly prepare, adopt and implement an AB3030 Plan for the Redding Basin.

The Shasta County Water Agency (SCWA), an authorized groundwater management agency as defined in Water Code Section 10753, was authorized by the Water Council MOU to serve as the lead agency in preparing, adopting, and implementing this AB 3030 Groundwater Management Plan. The MOU also designated the Water Council to serve in a policy making oversight capacity for this planning effort. Accordingly, this plan has been undertaken by agreement of the public and private entities comprising the Water Council, as permitted by Water Code Sections 10750.7, 10753 and 10755.2. (See Table 1 for a list of Water Council members.)

Section 1.06. By executing the MOU, each of the participating entities has found and declared that management of the groundwater within their combined jurisdictions, by joint preparation, adoption and implementation of this AB3030 Plan, is in the public interest and will be of common benefit to water users within the Plan Area described in Chapter 2 of this Plan.

Section 1.07. The Water Council has determined that the adoption of this plan will provide immediate and long-term benefits for all beneficial uses of water.

Purpose of the Plan

Section 1.08. The purposes of this Groundwater Management Plan can be summarized as follows:

- A. To avoid or minimize conditions that would adversely affect groundwater availability and quality within the Plan area.
- B. To develop a groundwater management program which addresses data collection and which protects and enables reasonable use of the groundwater resources of the Redding Basin.
- C. To implement the elements of the Groundwater Management Plan by achieving Basin-wide consensus, where possible.

Section 1.09. The Plan will not intrude upon, diminish, or negate in any manner, the existing authority of each affected agency, except as may be expressly provided. This Plan is intended to supplement and strengthen individual agency authority, while building on coordination efforts through the public/private entity partnership established by the above-referenced MOU.

Coordinated Implementation

Section 1.10. The Water Council shall implement this AB 3030 Plan, with SCWA serving as the lead agency, consistent with the MOU establishing the Water Council. Accordingly, SCWA, working with and at the direction of the Water Council Steering Committee, will coordinate with all affected water purveyors and other interested parties to implement this Plan within the defined Plan Area.

Section 1.11. This Plan will be effective within the entire jurisdictional boundary of each participating public entity, however, the Plan will not be effective within those portions of Shasta County lying outside of the jurisdictional boundaries of the other participating public agencies and also lying outside of the Redding Groundwater Basin (shown schematically on Figure 1, upon its adoption by majority vote of the Water Council, and upon meeting all regulatory prerequisites.

TABLE 1
Redding Area Water Council

Member Agencies

City of Anderson
City of Redding
City of Shasta Lake
Shasta County Water Agency
Anderson-Cottonwood Irrigation District
Bella Vista Water District
Clear Creek Community Services District
Centerville Community Services District
Cottonwood Water District
Shasta Community Services District
Mountain Gate Community Services District
Simpson Paper Company
McConnell Foundation

Chapter 2 - Plan Area

Location

Section 2.01. The AB 3030 Plan Area encompasses the cities of Shasta Lake, Redding, and Anderson, and the lands served by the numerous other water districts, agencies and purveyors in Shasta County and northern Tehama County comprising the Water Council. The Plan Area is the Redding Groundwater Water Basin (shown on Figure 1), including the service areas of the public water purveyors (shown on Figure 2).

Physiography and Geology

Section 2.02. The Redding Basin is bounded on the east by the dissected alluvial terraces which form the foothills of the Cascade Range. The low hills and dissected uplands of the Coast Range stretch for the length of the western Shasta and Tehama County borders. The interior of the Redding Basin is characterized by stream channels, floodplain, and natural levees of the Sacramento River and its tributaries. Alluvial fans are also present near the confluence of tributaries with the Sacramento River.

Section 2.03. The geology of the Redding Basin is complex. The Basin is a structural trough formed from downwarped marine sedimentary deposits of the Chico Formation. Overlying the Chico Formation is a thick section of interfingering sedimentary deposits that have been transported from highlands surrounding the east, north, and west sides of the Redding Basin. These sedimentary materials form the principal aquifers of the Redding Basin. They range in thickness from a feather edge at the margins of the Redding Basin to over 3,000 feet near the confluence of the Sacramento River and Cottonwood Creek. The sedimentary deposits that came from the east are predominantly of volcanic origin and are referred to as the "Tuscan Formation."

On the highlands east of the Redding Basin, the Tuscan Formation is dominated by volcanic mudflows. The mudflow deposits are generally of low permeability and are characterized by a bouldery surface appearance. However, in the Redding Basin itself, the volcanic mudflows were eroded, sorted, and redeposited shortly after eruption. These reworked deposits are composed of thick, highly permeable sand and gravel strata. These units of the Tuscan Formation are the most prolific aquifers of the Redding Basin. Materials that were derived from the finer-grained sediments of the Coast Ranges are termed the Tehama Formation. The Tehama Formation deposits are considerably less permeable than the Tuscan Formation, but still accommodate a good aquifer. (See Figure 3 for an illustrative depiction of a typical geologic cross-section view looking from west to east across the Redding Basin.)

Section 2.04. The oldest rock unit exposed in the area is the Upper Cretaceous Chico Formation. This unit consists of sandstone, conglomerates, and shale which are of marine origin. In most areas of the Redding Basin, the Chico Formation contains salt water under artesian pressure.

Section 2.05. In the eastern portion of the Redding Basin, the Chico Formation is overlain by the Pliocene Tuscan Formation. The Tuscan Formation's pyroclastic and sedimentary rocks consist of reworked volcanic mudflows. Along the eastern margin of the Sacramento Valley, the Tuscan Formation is the major water-bearing unit.

Section 2.06. The Tehama Formation overlies the Chico Formation in the western portion of the Redding Basin. These sediments consist of sand, gravel, and clay which were deposited by the ancestral Sacramento River and its west slope tributary streams. While parts of the Tehama Formation appear to be younger than the Tuscan Formation, fingers of the two formations are inter-layered beneath the central valley floor, which indicates that portions of the two formations are equivalent in age.

Section 2.07. The Red Bluff Formation rests primarily on the Tehama Formation to the west of the Sacramento River and is approximately the same age as the conglomerates. This formation consists of coarse gravel, commonly with large boulders in a red sandy clay matrix of low permeability. These materials may have been originally deposited by the debris-laden, turbid streams draining glacial areas. (Bulletin 118-6, DWR, 1978)

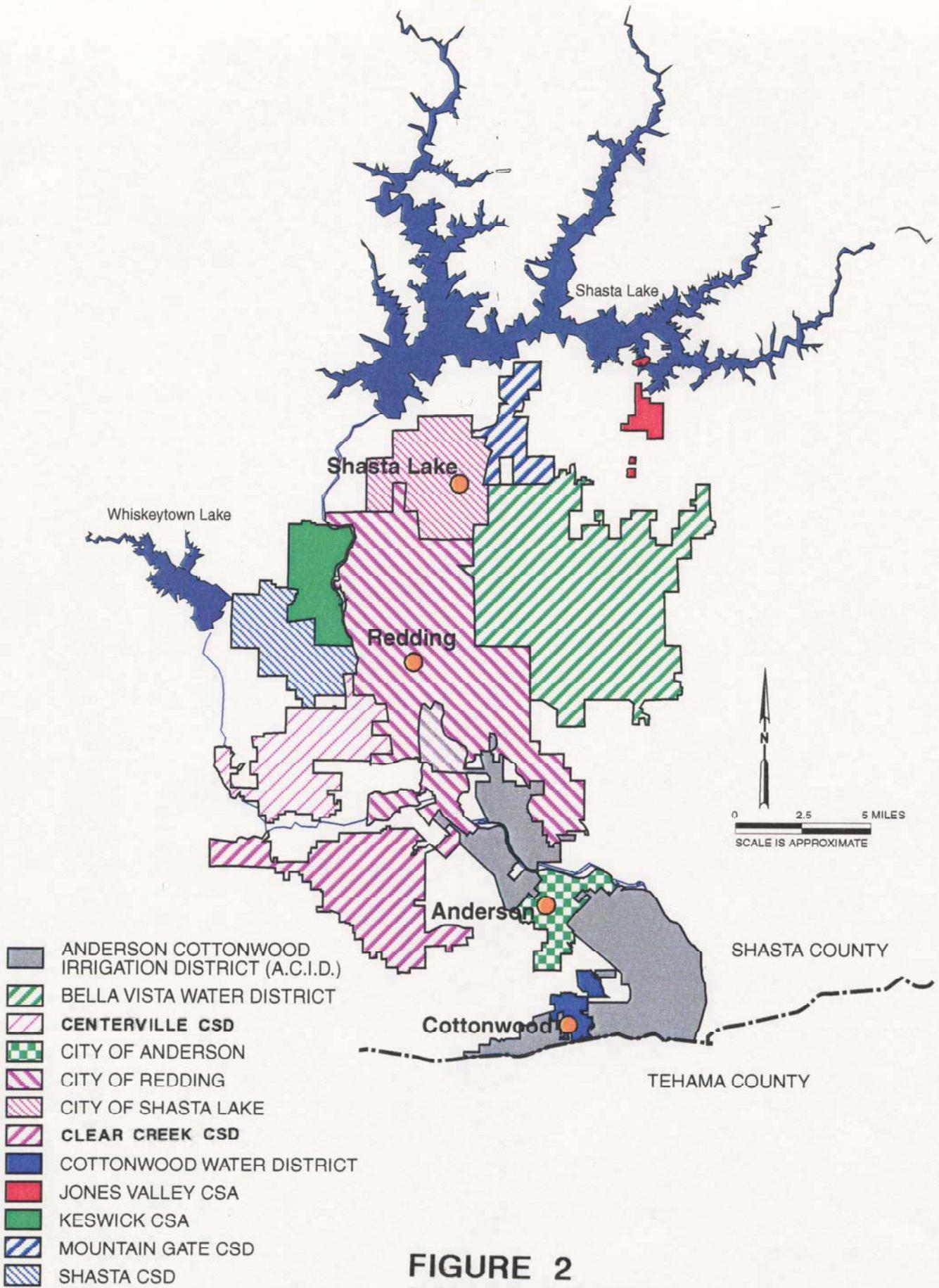
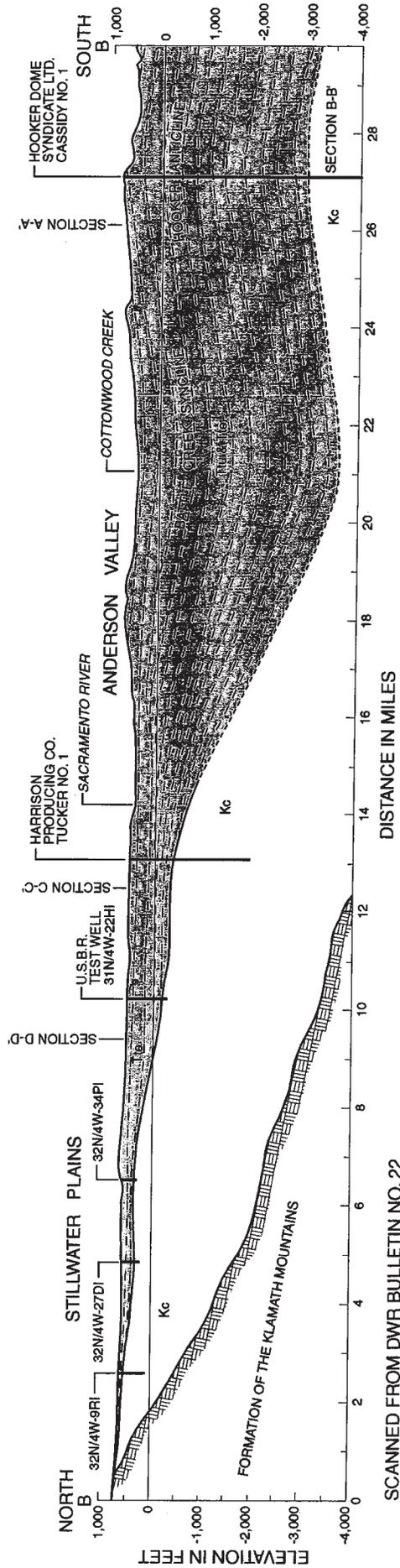


FIGURE 2
WATER PURVEYOR BOUNDARIES
 REDDING GROUNDWATER BASIN, SHASTA COUNTY



SCANNED FROM DWR BULLETIN NO. 22

FIGURE 3

**GENERALIZED CROSS SECTION
ACROSS THE SACRAMENTO VALLEY**
REDDING GROUNDWATER BASIN, SHASTA COUNTY

Section 2.08. Alluvial deposits of varying age underlie the floodplain along the Sacramento River and its tributaries. These flood-deposited materials generally appear as thin layers of gravel, sand, silt, and clay which occur in thicker beds along the channel of the Sacramento River.

Climate

Section 2.09. Shasta County exhibits a wide range of precipitation and temperature due to the relatively large elevation difference between the valley floor and the highlands in the extreme eastern and western portions of the County adjacent to the Redding Basin. Precipitation and temperature data from Redding, representing typical valley floor climate parameters in the Redding Basin, demonstrate that the valley lands encompassing the Redding Basin experience hot dry summers and mild winters.

Section 2.10. Typical temperatures in the Redding area are summarized in Table 2. Mean annual precipitation in Shasta County (from the Shasta County Hydrology Manual) is shown on Figure 4.

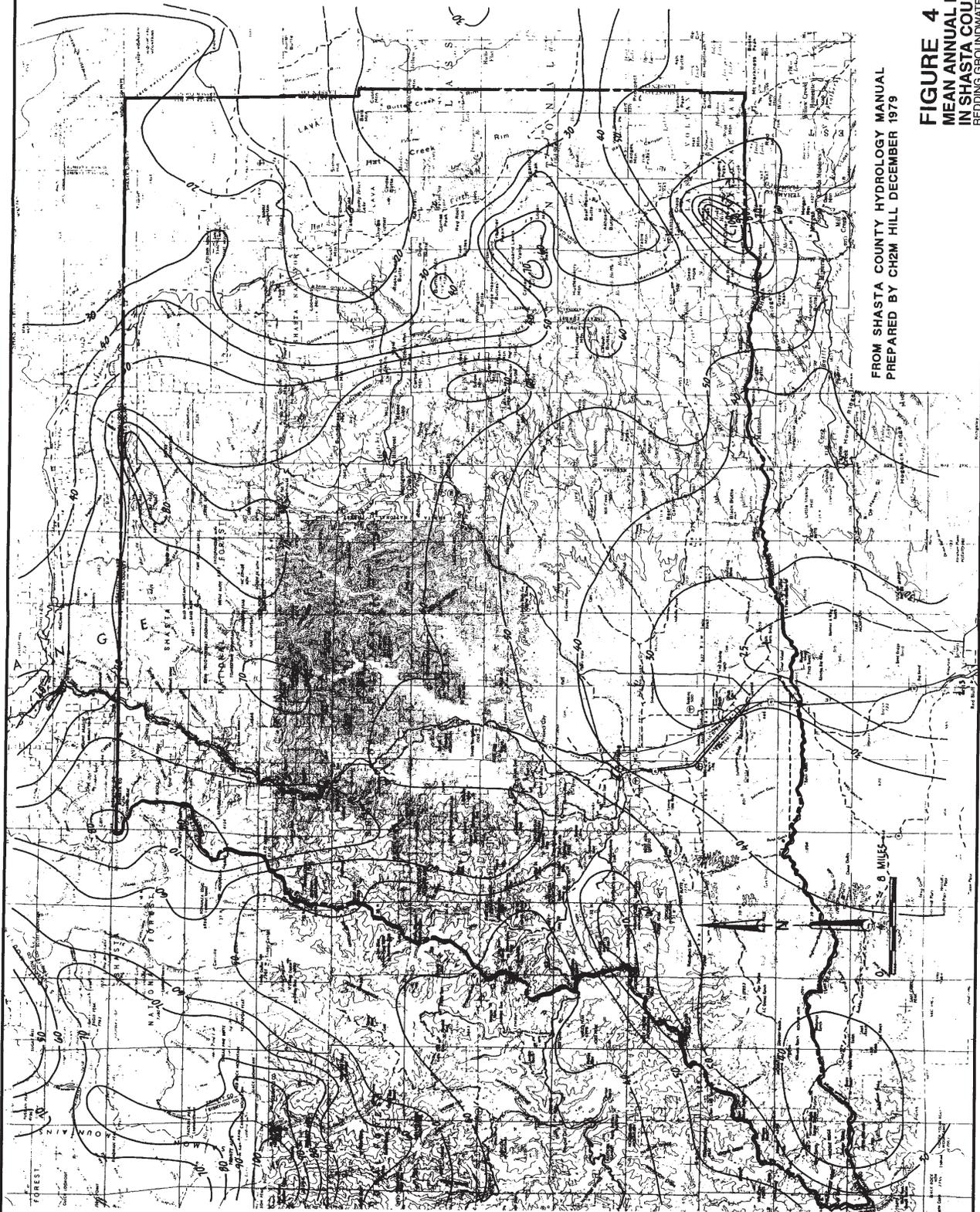
Section 2.11. The major portion of annual precipitation generally occurs from November through April; very little rainfall typically occurs between May and October. Average annual rainfall in the Redding Basin varies from approximately 25 to 50 inches.

**TABLE 2
Historic Climatic Data for Redding, California**

Month	¹ Normal Mean Temperature (°F)	² Highest Temperature of Record (°F)	² Lowest Temperature of Record (°F)	² Average Sunshine
Jan	45.5	77	19	73%
Feb	50.7	83	21	83%
Mar	52.2	85	28	84%
Apr	58	94	33	90%
May	66.4	104	36	91%
Jun	76.1	111	42	94%
Jul	81.5	118	54	97%
Aug	79.5	115	51	97%
Sep	74.1	116	40	94%
Oct	63.5	105	33	92%
Nov	51.8	88	23	84%
Dec	45	74	17	73%
Annual Average	62	118	17	88%

¹Period of record: 1961 through 1990

²Data through 1995



FROM SHASTA COUNTY HYDROLOGY MANUAL
PREPARED BY CH2M HILL DECEMBER 1979

FIGURE 4
MEAN ANNUAL PRECIPITATION
IN SHASTA COUNTY
REDDING GROUNDWATER BASIN, SHASTA COUNTY

Section 2.12. The population within the Redding Basin is growing at a much higher rate than in the surrounding areas, in part because of the availability of public services, including public water supplies. The development of public water systems has resulted in a variety of high intensity land uses, including urban, residential, agriculture, riparian and native vegetation, and recreation. The three incorporated cities in the Redding Basin—Redding, Shasta Lake, and Anderson—currently account for about sixty-six percent (66%) of the total population within the Redding Basin. (See Shasta County Water Resources Master Plan—Phase 1 Report, SCWA (1997), Appendix C). Long term population growth rates in the Redding Basin have been relatively uniform since World War II.

Economy

Section 2.13. The economy of Shasta County and the Redding Basin is directly tied to water supply. Lack of reliability in the water supplies has resulted in severe impacts within the service areas of purveyors who rely on federal water contracts for all or a major portion of their water supplies. Since 1991, there have been cutbacks of as much as 75 percent of agricultural allocations and 25 percent of municipal and industrial allocations. These cutbacks have resulted in substantial uncertainty and related constraints on the short-term and long-term planning needed for the orderly development of the Redding Basin.

Local Interest

Section 2.14. In late 1996, the SCWA, acting as a lead agency in this coordinated planning process, hired CH2M HILL, a water resources consulting firm, and retained legal counsel specializing in water, environmental, and regulatory law to assist with development and implementation of the Groundwater Management Plan. Working together, the Water Council members prepared the “Shasta County Water Resources Master Plan Phase 1 Report” (October 1997), which addresses current and future water needs in Shasta County and the Redding Basin. The Water Council members, by terms of the June 1998 MOU, have agreed to continue with this joint planning effort, including the preparation of an integrated surface and groundwater management plan for the Redding Groundwater Basin.

List of Participants

Section 2.15. The Water Council includes the major public and private water users in the Redding Basin. Water use for 1995 by type of use and purveyor or major user in the Redding Basin is shown in Table 3.

Section 2.16. In addition to the above referenced public and private stakeholders, key interest groups will be encouraged to participate in Plan implementation, including public education.

Section 2.17. The success of this Groundwater Management Plan, as prepared pursuant to Water Code Section 10750 et seq., will largely be dependent on the extent of coordination between all affected public entities and other interested parties. As required under Water Code Section 10750 et seq., a notice of public hearing will be published to consider whether to implement a Groundwater Management Plan.

Legal, Financial and Political Considerations

Section 2.18. In Shasta County, as in other parts of California, water resources management is governed by a complex system of local, state, and federal laws. Water use, development, and allocation are controlled by legal contracts and agreements, common law principles, statutes, constitutional provisions, and court decisions. These legal considerations, in combination with the jurisdictional powers of the various local governing agencies and the private property rights of groundwater users, form the framework which governs water resources management in Shasta County and the Redding Basin. A more thorough overview of the institutional framework for water resource management in California is provided in Chapter 2 of *The California Water Plan Update* (DWR Bulletin 160-98) reviewed.

TABLE 3
Current Annual Water Needs Summary
Redding Basin
(acre-feet x 1,000, except as noted)

	Major Public Purveyors			Small Purveyors			Private Users		Totals	
	ACID Gravity	BVWD Pressure	Clear Creek CSD Pressure	Anderson City Pressure	Redding City Pressure	Shasta Lake City Pressure	Others ^a Pressure	HWUJ ^b Pressure		Irrigators 50% Gravity, 50% Pressure
Water- Using Lands										
Irrigated Agriculture										
Permanent Crops	5.40	0.24	3.10	0.00	0.14	0.00	0.00	0.00	0.04	8.92
Grain and Field Crops	1.04	0.63	0.09	0.00	0.45	0.00	0.00	0.21	1.31	3.73
Pasture	45.93	10.35	3.57	0.00	0.04	0.04	0.10	1.38	13.82	75.19
Truck	0.14	0.02	0.04	0.00	0.04	0.00	0.00	0.00	0.30	0.54
Rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rural Urban (1 to 5 acres)	8.48	4.18	0.00	0.00	0.00	0.00	0.08	0.00	0.00	12.74
Total	60.99	15.42	6.80	0.00	0.63	0.04	0.18	1.59	15.47	101.12
Urban										
Urban	0.00	2.07	0.56	1.34	15.66	2.06	0.93	0.00	2.44	25.06
Rural Urban Domestic (1 to 5 acres)	0.00	0.98	0.95	0.09	1.51	0.02	1.44	0.00	1.63	6.62
Total	0.00	3.05	1.51	1.43	17.17	2.08	2.37	0.00	4.07	31.68
Commercial And Industrial										
Commercial Industrial	0.00	0.25	0.07	0.16	1.16	0.02	0.04	0.00	0.11	1.81
Total	0.00	1.70	0.14	0.07	0.60	0.00	0.12	14.67	0.71	18.01
Recreation And Environmental										
Water Bodies	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00
Parks and Golf Courses	0.00	0.68	0.00	0.16	0.87	0.08	0.02	0.00	0.24	2.05
Riparian Vegetation	4.67	0.30	0.03	0.00	3.53	0.00	0.00	0.00	3.14	11.67
Total	4.67	0.98	0.03	0.16	4.40	0.08	0.02	0.00	3.38	13.72
Diversions to Other Counties										
Total	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00
Total Water Delivery Demands, acre-feet per year^c	95.66	21.40	8.55	1.82	23.96	2.23	2.73	16.26	23.74	196.34
Conveyance Losses (acre-feet per year)	79.34	1.06	0.43	0.09	1.02	0.11	0.14	0.81	1.16	84.16
Current Diversion Requirements (acre-feet per year) ^c	175.00	22.46	8.98	1.91	24.98	2.34	2.87	17.07	24.93	280.46

a. Centerville CSD, Shasta County CSD, Keswick CSA, Mountain Gate CSD, Cottonwood Water District and Jones Valley CSA.

b. Heavy Water Usage Industrial (Simpson Paper Company, Sierra Pacific Industries, and Wheelabrator).

c. Includes 20,000 acre-feet per year delivered to Tehama County and 10,000 acre-feet delivered to downstream users.

Section 2.19. The Water Council will adopt rules and regulations to implement provisions of this AB 3030 Plan. All such rules and regulations shall be adopted pursuant to Water Code Section 10753.8.

Section 2.20. Though permitted pursuant to Water Code Section 10754 et seq., no fees or assessments to finance AB 3030 Plan expenses, such as administrative and operating costs, will be considered by the Water Council unless a future need is demonstrated.

Condition of the Groundwater Basin

Redding Groundwater Basin and Sub-Basins

Section 2.21. The boundaries of the Redding Basin roughly approximate the eastern and western edges of the Sacramento Valley floor. (See Figure 1, showing the Basin and Plan Area.) The foothill areas which constitute the eastern and western portions of Shasta and Tehama Counties adjacent to the Redding Basin are designated as "highland" areas, and are noted for their relative scarcity of groundwater resources. Sub-basins and areas within the Redding Basin with unique characteristics will be identified and evaluated in AB 3030 Plan implementation.

Existing Monitoring

Section 2.22. Since the late 1920s, the State Department of Water Resources (DWR) and the United States Bureau of Reclamation have measured groundwater levels for 48 wells in the Redding Basin. Currently, 35 wells are monitored semi-annually and 5 wells are measured on a quarterly basis.

Section 2.23. The DWR issues periodic reports which relate to the monitoring program in the Redding Basin. These reports include groundwater hydrographs for the monitored wells. The most recent report, entitled *Ground Water Levels in the Sacramento Valley Groundwater Basin, Shasta County*, was released by DWR in November 1996. Figures 4 through 10 show examples of hydrographs throughout the Redding Basin.

Section 2.24. Most wells in the monitoring program are measured by DWR semi-annually, usually in March and October. These monitoring periods provide an indication of groundwater levels before and after the typical agricultural irrigation season.

Section 2.25. In addition to recording water levels, the DWR reports also include, for each well, information on the producing aquifer(s), degree of certainty associated with the groundwater body classification, the hydrogeologic unit, and the applied use of the extracted groundwater.

Section 2.26. The data from these historic and ongoing monitoring wells will be considered and reflected in the development of a Redding Basin computer model, expected to be completed during further Water Council groundwater study efforts.

Historic Variations in Groundwater Levels

Section 2.27. Groundwater levels fluctuate on an annual basis in response to extraction; infiltration and downward percolation from precipitation, surface-water sources, and irrigation; and subsurface inflows and outflows. In parts of the Redding Basin, groundwater levels vary seasonally due to higher recharge during winter months and pumpage during summer months.

Section 2.28. Monthly measurements of groundwater show that water levels start dropping in early spring (usually April) and continue to decline through the summer until early September. Maximum levels are usually reached by February.

Section 2.29. Over the long term, groundwater levels in the Redding Basin have remained steady. There are seasonal fluctuations (summer to winter), and there are some fluctuations caused by wet or dry years, but overall, groundwater levels have not changed significantly throughout the period of record.

Historic Groundwater Pumpage

Section 2.30. In the earlier parts of this century, little groundwater was used in Shasta County and the Redding Basin. The Sacramento River and its primary tributaries provided the source for most irrigation. A notable exception is along Cottonwood Creek, where substantial extractions were made over several decades, largely ending in the 1980s.

Section 2.31. In the early 1970s, approximately 5 percent of all irrigation water came from groundwater, and approximately 95 percent came from surface-water sources. In 1995, approximately 12.5 percent of all water used in the Redding Basin was derived from groundwater. The vast majority of groundwater extracted is put to municipal and industrial uses.

Groundwater Quality

Section 2.32. For the most part, groundwater in the Redding Basin is of excellent quality. However, certain areas have experienced water quality problems, especially at the northern and northwestern perimeters of the Redding Basin where wells penetrate the Chico Formation.

Section 2.33. Additional review of existing and potential groundwater quality problems in the Redding Basin is needed. This will occur in AB 3030 Plan implementation.

Need for Groundwater Management Plan

Section 2.34. There is a substantial, but undefined, supply of groundwater in the Redding Basin. The Redding Basin does not appear to be in a state of groundwater overdraft; however, at this time there is no certainty as to how close the Redding Basin is to overdraft, what constitutes a "safe annual yield," and when and how frequently well interference problems may arise in the future.

Section 2.35. The need for an AB 3030 Plan is documented in the Shasta County Water Resources Master Plan Phase 1 Report (October 1997) "Phase 1 Report," which was prepared for the Water Council. As indicated in that report, additional study of the Redding Basin's characteristics is needed to better understand and evaluate the occurrence, movement, origin, and destination of groundwater in the Redding Basin, and what constitutes reasonable use thereof.

Section 2.36. This plan is intended to provide a mechanism for both the public and private stakeholders in the Redding Basin to evaluate, manage, protect, and preserve this valuable local groundwater resource.

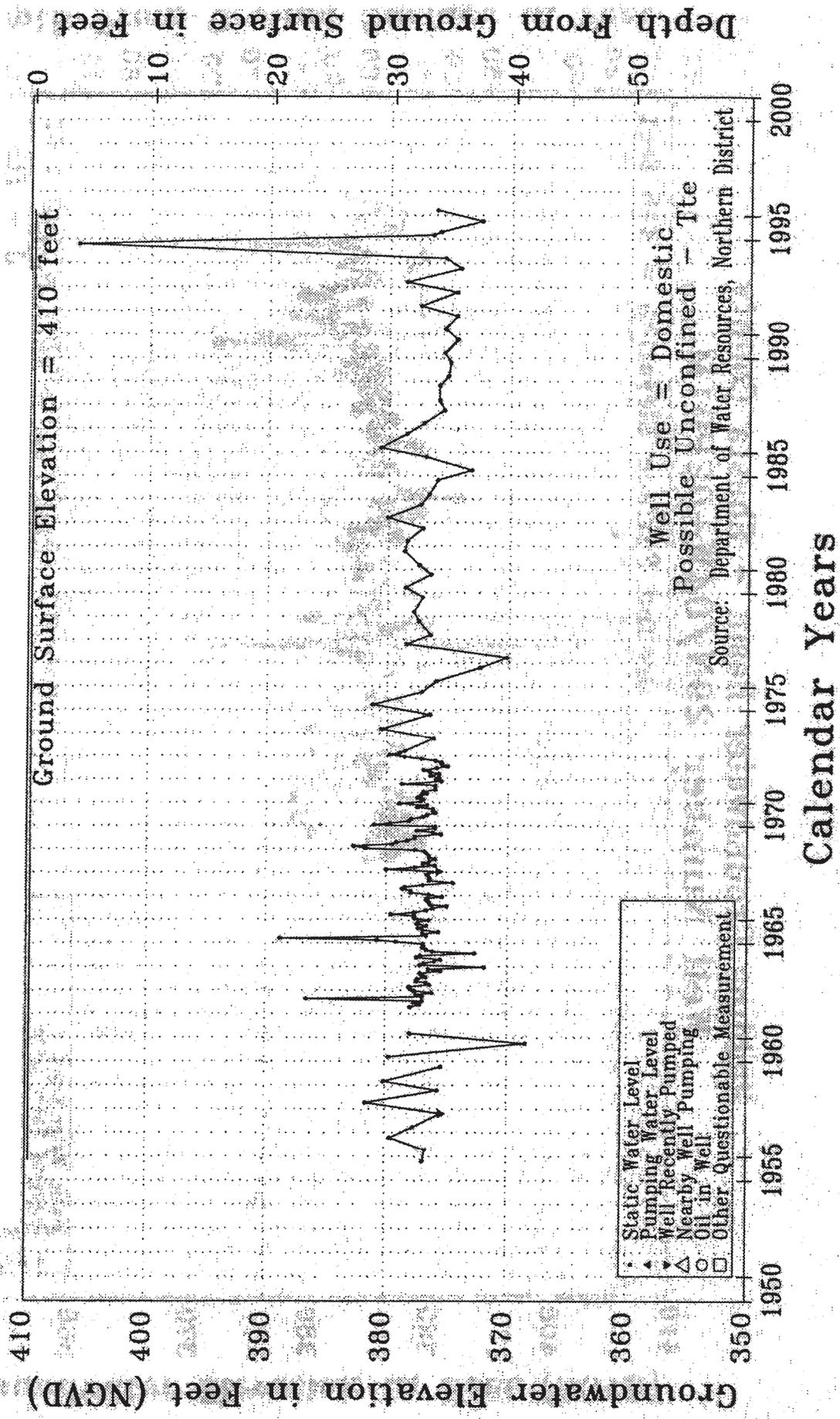


FIGURE 5
WELL NUMBER 29N/03W-06P01M
 REDDING GROUNDWATER BASIN, SHASTA COUNTY

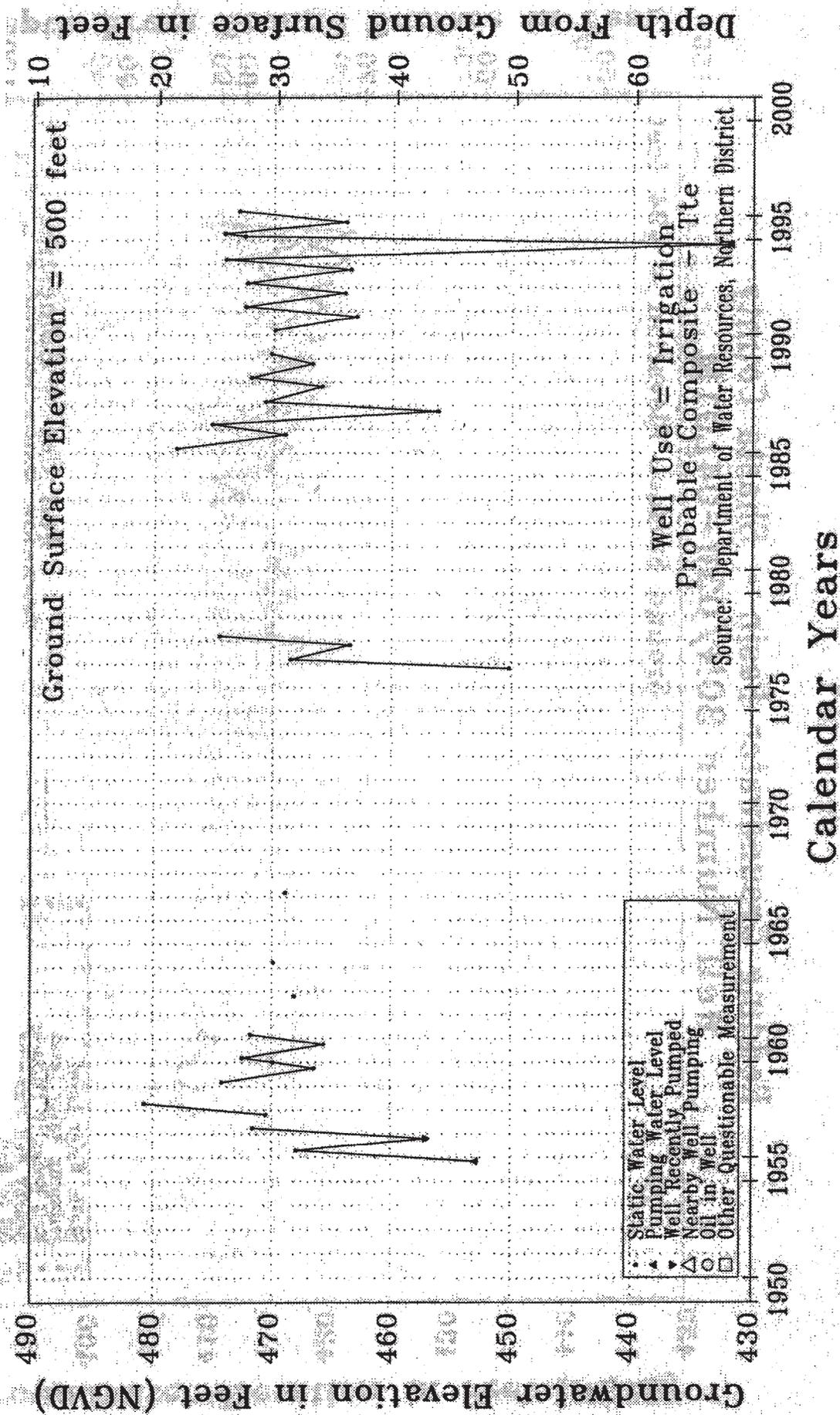


FIGURE 6
WELL NUMBER 29N/05W-26N01M
REDDING GROUNDWATER BASIN, SHASTA COUNTY

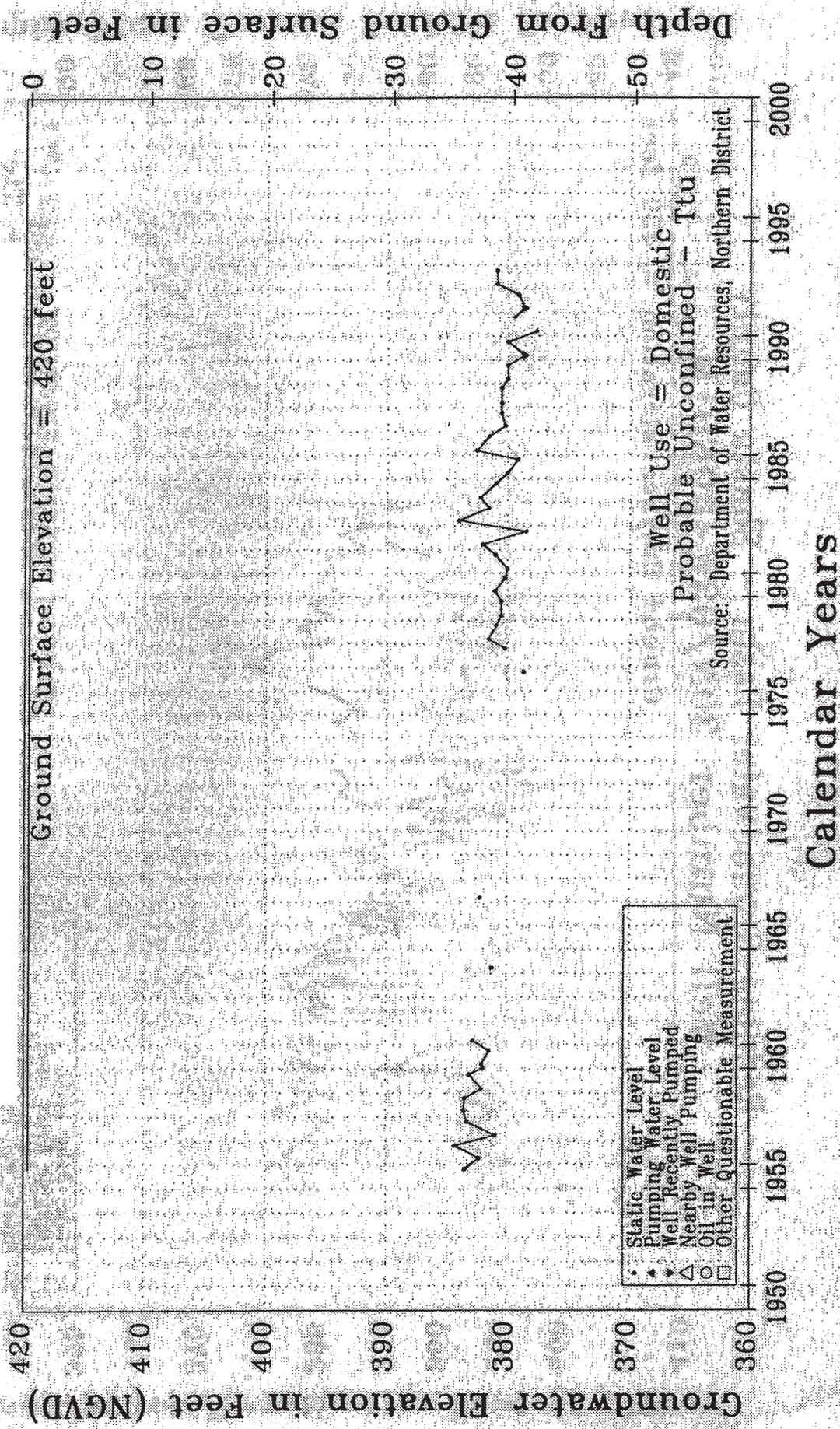


FIGURE 7
WELL NUMBER 30N/03W-29K01M
 REDDING GROUNDWATER BASIN, SHASTA COUNTY

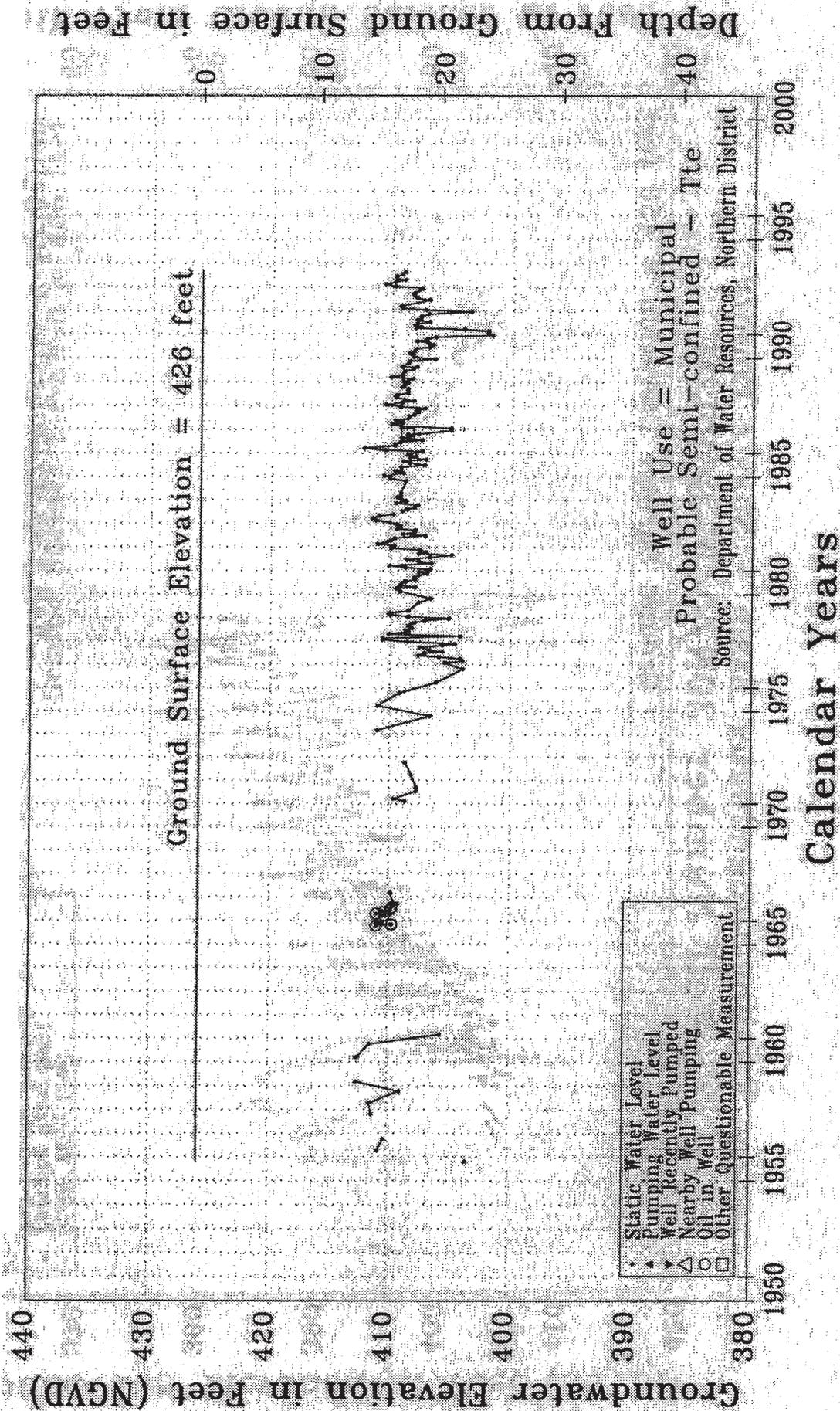


FIGURE 8
WELL NUMBER 30N/04W-15R03M
REDDING GROUNDWATER BASIN, SHASTA COUNTY

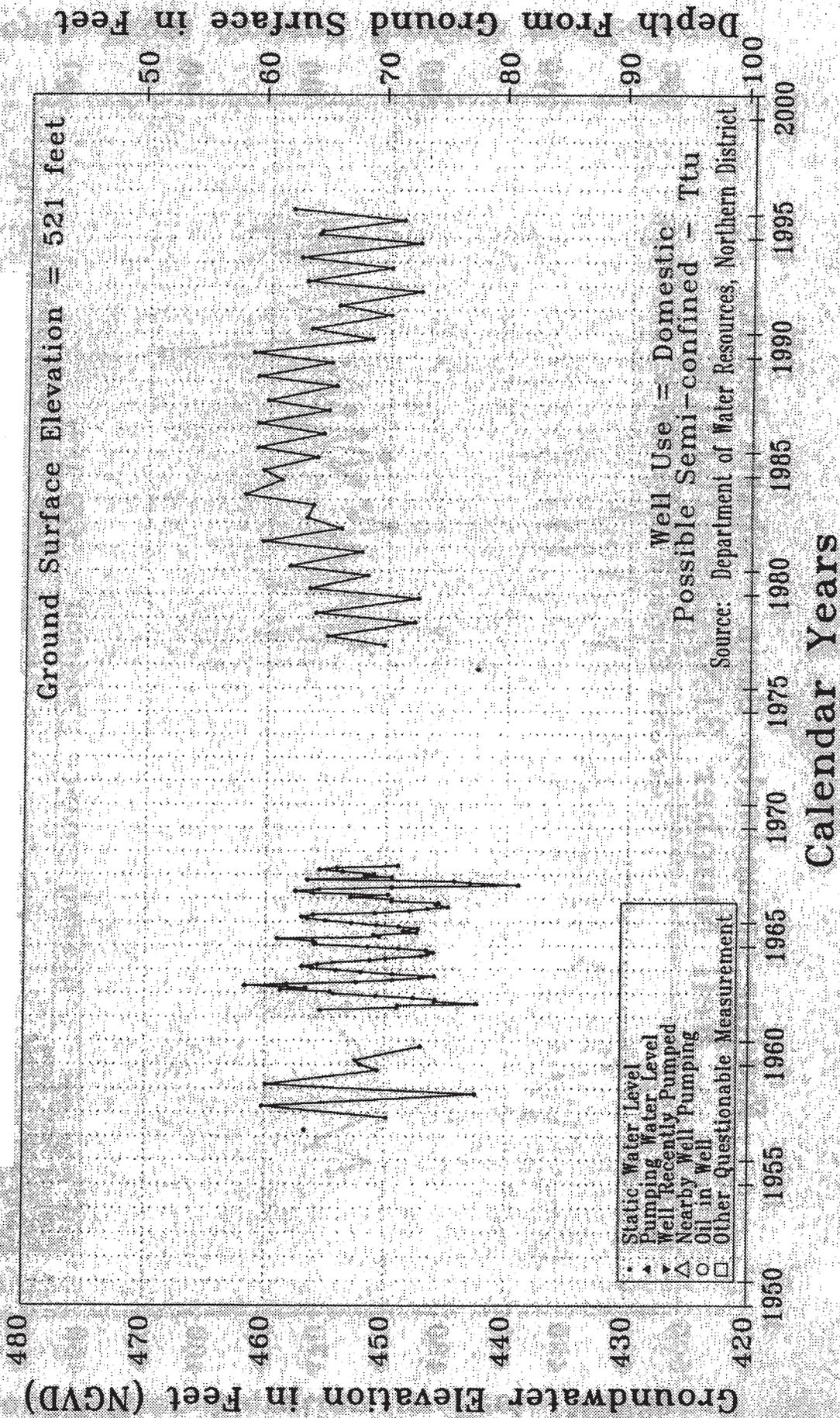


FIGURE 9
WELL NUMBER 31N/03W-06H01M
 REDDING GROUNDWATER BASIN, SHASTA COUNTY

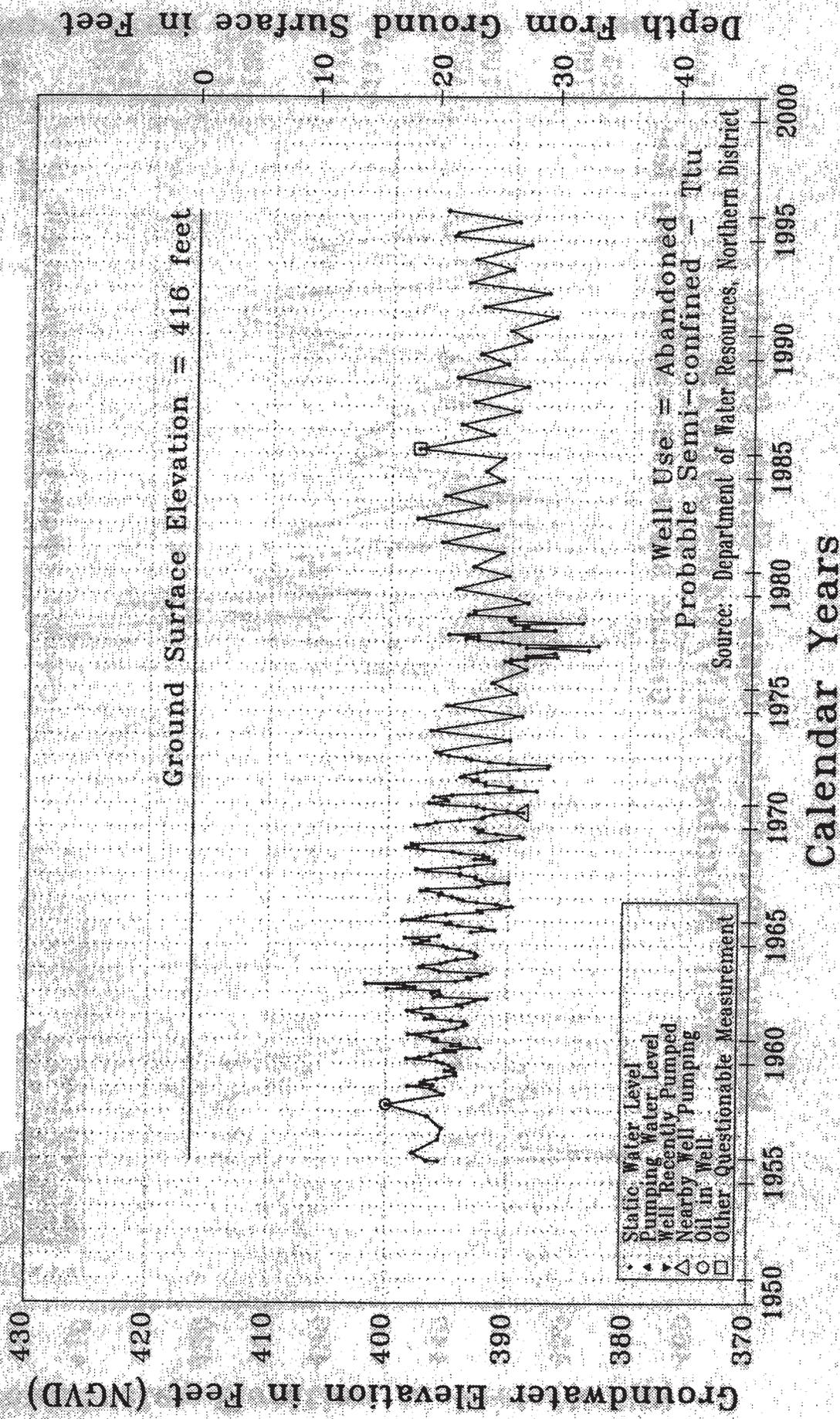


FIGURE 10
WELL NUMBER 31N/03W-29N01M
 REDDING GROUNDWATER BASIN, SHASTA COUNTY

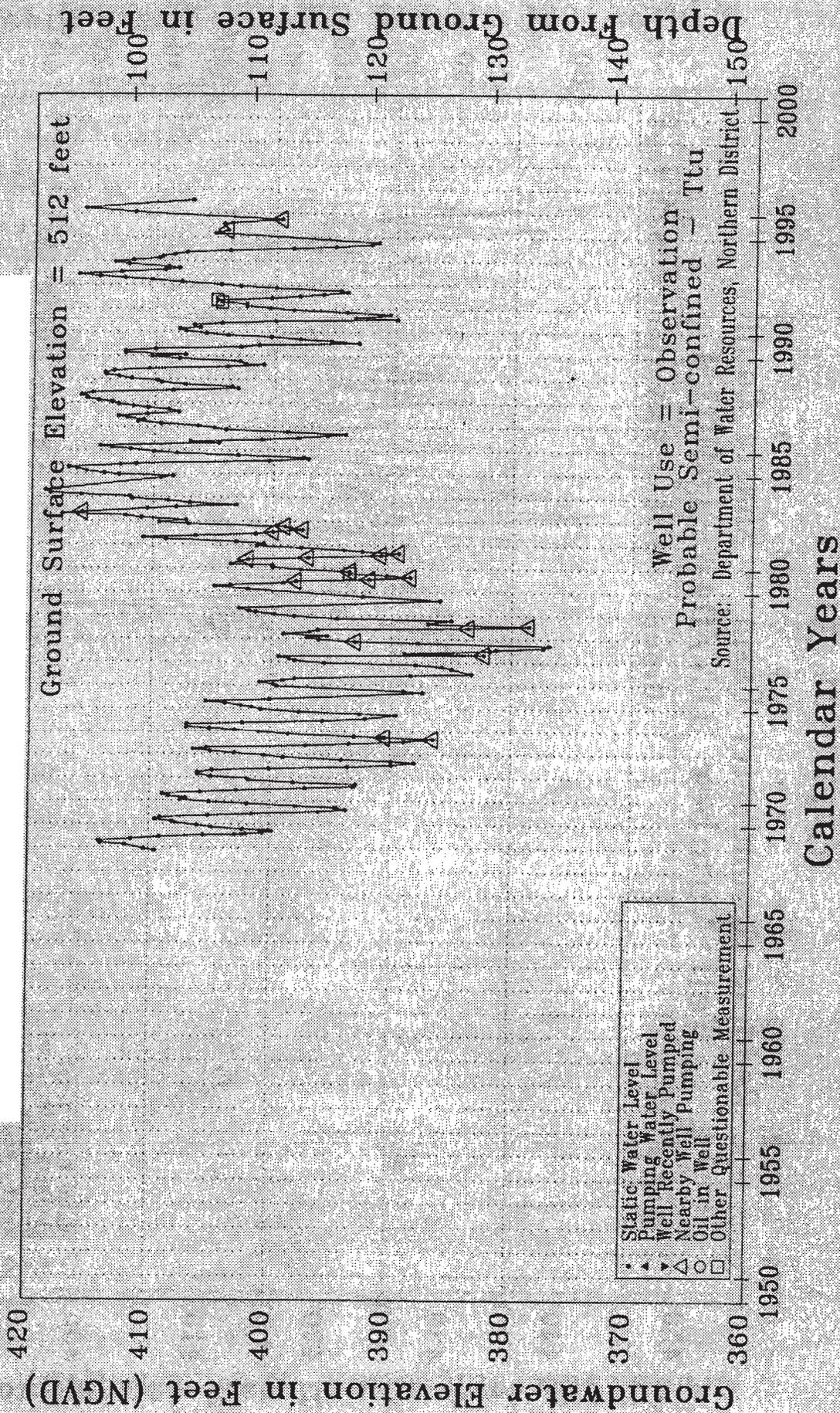


FIGURE 11
WELL NUMBER 31N/04W-16H01M
 REDDING GROUNDWATER BASIN, SHASTA COUNTY

Chapter 3 - Elements of the AB 3030 Plan

AB 3030 Plan Elements

Section 3.01. The approach to groundwater management reflected in this AB 3030 Plan will generally be based on voluntary cooperation between water agencies, purveyors, and interested private parties in the Redding Basin, with an information-gathering and monitoring emphasis. This plan includes the following elements: (1) Data Development/Groundwater Monitoring; (2) Public Entity Coordination and Reporting; (3) Public Information and Education; (4) Export Limitations; (5) Water Quality; (6) Wellhead Protection; (7) Land Use; (8) Conjunctive Use Operations; (9) Groundwater Management Facilities; and (10) Groundwater Overdraft and Well Interference. These elements are further described below.

Data Development/Groundwater Monitoring

Section 3.02. To ensure that its actions are taken in accordance with the public interest, and to further prevent the use of unnecessary and potentially burdensome management techniques, SCWA will work with Water Council participants to collect data and will conduct or receive necessary and relevant studies, for the purpose of further documenting the existing quality and quantity of groundwater within the Redding Basin. This SCWA activity will be undertaken in a scope and manner consistent with the Water Council MOU, including the preparation and maintenance of a linked surface water and groundwater computer-based model.

Section 3.03. SCWA will serve as the Water Council's information and data collection coordinator, and will collect and conduct, or have conducted, technical investigations to carry out this plan, including computer model development. All data collection and technical investigations authorized under this plan shall be carried out by SCWA in consultation with the Water Council Steering Committee.

Section 3.04. One of the goals in the data collection and evaluation process will be to determine the Redding Basin's long-term safe annual yield. For the purpose of this plan, "long-term safe annual yield" shall be as defined in Appendix A, which defines this and other key AB 3030 Plan and implementing regulation terms. The determination shall estimate the safe annual yield of the total Redding Basin under various hydrologic conditions and the probable boundaries of the sub-basin hydrologic units.

Section 3.05. The Water Council shall prepare a report on the status of the Redding Basin no less than bi-annually. The report shall include an estimate of annual recharge, pumping, and groundwater discharge to surface streams. The report shall include any other information which the Water Council deems relevant and necessary to the effective management of groundwater within the Plan Area, including estimated changes in water levels and the amount of water in storage.

- A. Collection and Analysis of Data/Preparation of Reports on Hydrologic Conditions. Data related to the hydrologic inventory of the Redding Basin will be collected and reviewed as a component of the periodic report to be prepared by the Water Council. Principal factors to be considered will include surface water imported to and exported from the Redding Basin, evapotranspiration, the estimated groundwater recharge, discharge, and extractions from the Redding Basin, and subterranean outflow.
- B. Preference for Use of Existing Databases. To avoid incurring unnecessary costs, the Water Council shall utilize Phase 1 Report data and further determine the status of additional studies and monitoring programs carried out within the Redding Basin by federal, state, and local agencies. Where possible, information from pre-existing data collection programs, and new data derived from the computer model to be developed for the Water Council and other sources, will be incorporated into the report.
- C. Expansion of Data Collection Efforts. Where significant and important data are missing or incomplete, the Water Council will determine methods to acquire a more complete database.

Section 3.06. The Water Council, using its Technical Advisory Committee as it determines appropriate, may prepare or receive reports on groundwater and supplemental water supplies, groundwater quality, and other conditions within the Plan Area. The Water Council may identify information useful to a water replenishment or conjunctive use project and prepare reports on the utility of these types of projects within the Plan Area.

Section 3.07. To protect and/or enhance the quality and quantity of water within the Redding Basin, the Water Council shall develop and implement a Redding Basin monitoring program. The monitoring program may consist of the measures identified in these sections and will be implemented by the adoption of rules and regulations, as determined appropriate by the Water Council Steering Committee.

- A. **Monitoring Redding Basin Conditions.** The previous and ongoing collection and analysis of basic hydrologic data are important elements of the Management Plan. Monitoring is essential to characterize Redding Basin conditions and to provide the technical information needed to make decisions regarding the optimal use and management of the Redding Basin. Monitoring of the Redding Basin will allow the Water Council to: (1) identify reliable sources of information; (2) identify changing conditions; (3) develop and implement specific groundwater management programs as may be determined necessary in the future; and (4) document the accomplishments of the management program.
- B. **Use of Existing Monitoring Data.** The Water Council shall coordinate with the DWR, Northern District Office, to use and supplement their existing semi-annual well water level measurement program. Monitoring of water levels will allow the Water Council to gauge the status of the groundwater resource in response to changing hydrologic conditions and water use practices. The number and location of these wells will be determined by the Water Council Steering Committee.
- C. **Monitoring Groundwater Quality Conditions.** The Water Council shall include one or more monitoring wells within the Redding Basin, and in each sub-basin where feasible, for the purpose of measuring water quality conditions within the Redding Basin. The number and location of these wells will be determined by the Water Council Steering Committee. Efforts will be made to use existing wells that are subject to water quality testing to minimize costs associated with the water quality monitoring program.

Section 3.08. The Water Council shall prepare an annual estimate of the amount of water extracted within the Plan Area and of the total cumulative groundwater extractions within the Redding Basin.

Public Entity Coordination and Reporting

Section 3.09. The Water Council shall strive at all times to coordinate with all agencies having jurisdiction over water-related matters in and adjacent to the Redding Basin.

Section 3.10. The Water Council will coordinate with the Regional Water Quality Control Board, U.S. Environmental Protection Agency, the State Office of Drinking Water, and other state and local regulatory agencies to monitor and develop information concerning groundwater quality compliance with applicable standards, and to otherwise manage and ensure reasonable use of Plan Area groundwater.

Public Information and Education

Section 3.11. It is essential to involve the public, agricultural, industrial, and business communities early in the development of the Groundwater Management Plan. Throughout the implementation of this plan, public education and community relations will be integral to successful groundwater management in the Redding Basin.

Section 3.12. The Water Council shall provide public outreach through public presentations, published information items, and references to groundwater data available through other public agencies, as determined by the Steering Committee.

Export Limitations

Section 3.13. In order to preserve and protect Redding Groundwater Basin resources, and to ensure their reasonable and beneficial use in a way that is not detrimental to the Basin and its local users, County of Shasta Ordinance No. SCC 98-1, as adopted by the Shasta County Board of Supervisors on January 27, 1998, is fully incorporated into this AB 3030 Plan by reference, and shall apply throughout the AB 3030 Plan area except: (1) as otherwise provided by this Plan; or (2) as it may be superceded by adoption of one or more local ordinances within individual public agency boundaries. That groundwater extraction and export ordinance, which is codified as Chapter 18.08 of the Shasta County Code, is attached to this Plan as Appendix A.

The term "Shasta County" as used in Exhibit "A" for the purpose of requiring a permit for the export of ground water outside of the County, shall mean the AB 3030 Plan area.

The term "Commission" as used in Exhibit "A" shall be the Water Council Technical Advisory Committee, as established by MOU, unless otherwise designated and appointed by the Water Council.

The terms "Clerk of the Board" and "Board" as used in Exhibit "A" for the purpose of appeals from Commission actions on permit applications, shall mean the "Director" as therein defined and the full Water council, Respectively.

Water Quality

Section 3.14. The Water Council, working with members and non-member entities shall develop a program to assess, monitor, and protect the quality of groundwater in the Redding Basin to ensure the quality is acceptable for all beneficial uses.

Wellhead Protection

Section 3.15. Abandoned wells provide the potential for pollutants or contaminants to enter and/or spread into the Redding Basin groundwater. As such, well abandonment represents a key concern in groundwater management. The Water Council shall coordinate with the County Division of Environmental Health to obtain written notice concerning well abandonment projects.

Section 3.16. Improperly constructed and abandoned wells can impair yields and increase the potential for groundwater contamination. The Water Council supports the California Model Well Code standards, and the Shasta County well construction and destruction ordinance and regulations, and will work with the County Division of Environmental Health to provide information to well owners throughout the Basin regarding proper well construction and abandonment procedures.

Land Use

Section 3.17. The Water Council members with local land-use jurisdiction will strive to coordinate their respective land use and water supply management decisions in the Plan Area. The Water Council will also strive to develop and maintain ongoing working relationships with all water purveyors in and around Redding Basin relative to land use and water supply decisions.

Section 3.18. Moved to 4.06

Conjunctive Use Operations

Section 3.19. The Water Council shall evaluate options and develop a program for conjunctive use of Redding Basin water sources in an effort to increase or maintain Redding Basin water supplies.

Groundwater Management Facilities

Section 3.20. The Water Council will assess the need for short- and long-term facilities, such as conjunctive use facilities, and develop a proposed facilities plan as may be determined appropriate.

Groundwater Overdraft and Well Interference

Section 3.21. A mitigation and prevention program will be developed to address potential overdraft, well interference, and similar problems that would adversely affect the groundwater resources in the Plan area. This program will identify strategies and actions that will promote reasonable groundwater usage in the Redding Basin.

Section 3.22. The Water Council Steering Committee shall review this AB 3030 Plan and its implementation on a bi-annual basis and shall report its findings to all MOU participants.

Chapter 4 - Implementation

Procedure

Section 4.01. A Groundwater Management Plan developed pursuant to Water Code Section 10750 et seq., must be conducted according to the procedure show in Table 4.

TABLE 4
Procedure to Implement
Groundwater Management Plan

1. Publish notice of public hearing to consider whether to adopt resolution of intent.
 2. Conduct a hearing on whether to adopt a resolution of intent to adopt a Groundwater Management Plan.
 3. Adopt a resolution of intention to adopt a Groundwater Management Plan.
 4. Publication of notice.
 5. Prepare a Groundwater Management Plan within 2 years.
 6. Hold a second hearing after plan preparation is complete.
 7. Consider protests at conclusion of second hearing.
 8. If protests are received from landowners representing more than 50% of assessed value of property in the County occurs, the Plan shall not be adopted.
 9. If protests are received from landowners representing less than 50% of assessed value of property in the Redding Basin Plan area occurs, the AB 3030 Plan may be adopted within 35 days after Step 6.
-

Plan Administration

Section 4.02. The Water Council will administer the AB 3030 Plan throughout the Plan Area in accordance with the adopted Water Council MOU. As reflected in that MOU, successful implementation of the AB 3030 Plan must involve the ongoing participation of, and coordination between, all Redding Basin agencies which are empowered with groundwater-related duties and other interested local entities.

Section 4.03. Consistent with Water Council objectives in preparing this AB 3030 Plan, it is intended that this Plan will apply to the service areas of all local water purveyors within its stated boundaries. However, any local agency, investor-owned utility, or mutual water company which may decline to have the plan made applicable within its service area will be exempt from this plan within its jurisdiction, as stated in the MOU or applicable law.

Section 4.04. Any local water agencies within the boundaries of the AB 3030 plan area that decline to participate in cooperative management of the Redding Basin within its agency boundary shall be encouraged to adopt their own groundwater management plans and coordinate with the Water Council to the extent possible.

Section 4.05. This AB3030 Plan shall be funded, with respect to implementation and maintenance, as provided in the Water Council MOU as may be amended.

Section 4.06. In accordance with the California Groundwater Management Act, the Water Council will develop rules and regulations from time to time, to implement provisions of this plan, as it may be amended consistent with the Water Council MOU. These rules and regulations shall be adopted by the Water Council by resolution.

Chapter 5 - Plan Amendments

Section 5.01. This AB3030 Plan shall be periodically updated, based on changed circumstances within the Redding Basin, as determined by the Water Council.

Section 5.02. Plan Amendments shall occur in the manner established in the Water council MOU, as may be amended.

Section 5.03. The Water Council shall endeavor to publicly distribute, and educate the public concerning, any AB3030 Plan amendments adopted resulting in more than mere technical changes.

ORDINANCE NO. SCC 98-1

**AN ORDINANCE OF THE COUNTY OF SHASTA
REPEALING ORDINANCE NO. SCC 97-6 AND ADOPTING
CHAPTER 18.08 "GROUNDWATER MANAGEMENT"
REGARDING THE EXTRACTION AND EXPORTATION OF
GROUNDWATER FROM SHASTA COUNTY**

The Board of Supervisors of the County of Shasta does ordain as follows:

SECTION 1. GROUNDWATER MANAGEMENT. Chapter 18.08, entitled "Groundwater Management" is hereby added to Title 18 of the Shasta County Code to read as follows:

Chapter 18.08. Groundwater Management.

Section 18.08.010. Declaration of Findings and Purpose.

The Board hereby finds and declares:

(A) The groundwater underlying Shasta County has historically provided the people and lands of Shasta County with water for agricultural, domestic, municipal/industrial and other purposes;

(B) The Board recognizes that the principle of California law that water may be appropriated from a groundwater basin if the groundwater basin is in a surplus condition and such appropriation would not impair the reasonable and beneficial needs of overlying users;

(C) It is essential for the protection of the health, welfare, and safety of the residents of the County, that the groundwater resources of Shasta County be protected from harm resulting from the extraction of groundwater for use on lands outside of the County, until such time as needed additional surface water supplies are obtained for use on lands of the County, or as further and more accurate quantification of groundwater resources within the County is developed and groundwater management plans for affected basins have been adopted;

(D) Much of the economic production of the County depends upon the use of groundwater;

(E) The groundwater of Shasta County provides a significant amount of water for domestic uses throughout the County;

(F) The groundwater of Shasta County has been and will continue to be a vital part of the economic well-being and stability of the County;

(G) Because of the need for increased water supply to meet future needs within the county, and because surface water supplies obtained in the future may need to be used conjunctively with available local groundwater for reasonable and beneficial local uses, it is vital that the County's ground water supply and quality be preserved;

(H) Although the County intends to jointly undertake with affected local agencies to develop an integrated water resources management plan for each of the various regions of Shasta County to further plan and implement prudent water management practices, interim measures addressing the extraction of groundwater for export are needed to protect the existing groundwater basins;

(I) It is essential for information gathering and monitoring purposes, and for the protection of the County's groundwater resources, that the County adopt a permit process addressing the extraction of groundwater for use outside of the County; and

(J) In adopting and codifying this groundwater management ordinance the County does not intend to limit other authorized means of managing Shasta County groundwater, and intends to work cooperatively with interested local agencies to further develop and implement joint groundwater management practices.

Section 18.08.020. Definitions.

(A) "Annual yield" means the maximum quantity of water which can be withdrawn annually from a groundwater supply without causing a significant adverse impact on the affected basin or adverse water quality conditions, including the amount of water which can be extracted without:

(1) Exceeding in any calendar year the long-term mean annual water supply of the basin (considering all sources of recharge and withdrawal);

(2) Lowering water levels so as to make further drilling of water wells uneconomical;

(3) Causing water pumped from the basin to deteriorate below established drinking water quality standards;

(4) Violating water rights or restrictions in pumpage in the groundwater basin as established by court adjudication or application of state or federal law.

(B) "Aquifer" means a geologic formation that stores, transmits and yields significant quantities of water to wells and springs.

(C) "Board" means the Board of Supervisors of Shasta County.

(D) "Commission" means a nine (9) person decision-making body which shall be appointed, with membership serving at the pleasure of the appointing authority, as follows: one (1) representing the County of Shasta; three (3) representing the cities of Redding, Anderson and Shasta Lake, to be appointed by the City Selection Committee established pursuant to state law; three (3) representing independent water districts, including one such district located in Eastern Shasta County, to be appointed by the Special District Selection Committee established pursuant

to state law; one (1) representing agricultural users, to be nominated by the Shasta County Farm Bureau and appointed by the Board of Supervisors; and one (1) representing industrial users, to be appointed by the Board of Supervisors.

(E) “County” means the County of Shasta.

(F) “Director” means the Chief Engineer of the Shasta County Water Agency, or his designee.

(G) “Export” means the transportation of water from within Shasta County to any location outside of the County *by pipe, canal, stream, river or similar conveyance method*. *The transportation of bottled water outside of the County by vehicle shall not constitute an “export” as that term is used in this chapter.*

(H) “Groundwater management plan” means a plan prepared pursuant to the California Groundwater Management Act (commencing with Water Code Section 10750 et seq.) or California Water Code Section 1220, and adopted by the Board.

(I) “Groundwater” means all water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water which flows in known and definite channels.

(J) “Historical practice” means the consistent or predominant practice of an applicant within seven (7) years preceding the operative date of this chapter.

(K) “Hydraulic gradient” means the slope of the water table.

(L) “Hydrology” means the origin, distribution, and circulation of water through precipitation, stream flow, infiltration, groundwater storage, and evaporation.

(M) “Integrated water resources management plan” means a comprehensive surface and groundwater planning and management program involving affected local agencies.

(N) “Interested party” means any local agency or any property owner overlying an aquifer from which groundwater is proposed to be, or has been pumped, which is subject to the permit requirements of this chapter.

(O) “Local Agency” means a city located within Shasta County, or an independent special district wholly or in part located within the boundaries of the County, which is a purveyor of waters for agricultural, domestic, or municipal use.

(P) “Overdraft” means the condition of a groundwater supply in which the amount of water extracted by pumping exceeds the amount of water replenishing the supply, and the point at which extractions from the supply exceed its annual yield.

(Q) “Percolation” means the movement of water through the soil to the groundwater table.

(R) “Permeability” means the capability of the soil or another geologic formation to transmit water.

(S) “Piezometric surface” means the surface to which the water in a confined aquifer will rise.

(T) “Porosity” means void or open spaces in alluvium and rocks that can be filled with water.

(U) “Recharge” means flow to groundwater storage from precipitation, irrigation, infiltration from streams, spreading basins and other sources of water.

(V) "Specific capacity" means the volume of water pumped from a well in gallons per minute per foot of draw down.

(W) "Spreading water" means discharging native or imported water to a permeable area for the purpose of allowing it to percolate to the zone of saturation including well injection and other forms of artificial recharge and replenishment.

(X) "Transmissivity" means the rate of flow of water through an aquifer.

(Y) "Usable storage capacity" means the quantity of groundwater of acceptable quality that can be economically extracted from storage.

(Z) "Water table" means the surface or level where groundwater is encountered in a well in an unconfined aquifer.

(AA) "Water agency" means the Shasta County Water Agency.

(BB) "Water year" means the year beginning October 1 and ending the last day of the following September.

(CC) "Zone of saturation" means the area below the water table in which the soil is saturated with groundwater.

Section 18.08.030. Permit Required for Export for Use Outside County.

It shall be unlawful to extract groundwater underlying lands in Shasta County for export of that groundwater, either directly or indirectly, without first obtaining a permit as provided in this chapter. For purposes of this section, the extraction of ground water to replace a surface water supply which has been, is being, or will be exported for commercial purposes shall be considered an extraction of groundwater that is subject to this ordinance.

Section 18.08.040. Exclusions From Permit Requirements.

This chapter shall not apply to the extraction of groundwater in the following circumstances:

- (A) To prevent the flood of lands; or
- (B) To prevent the saturation of the root zone of agricultural land; or
- (C) For use within the boundaries of a local agency which is located in part within County and located in part in another County where such extraction quantities and use are consistent the with historical practice of the local agency; or
- (D) For extractions to boost heads for portions of local agency facilities, consistent with the historical practice of the local agency; or
- (E) To enable water export that is expressly permitted by terms of an adopted groundwater management plan; or
- (F) Where the person or entity demonstrates to the satisfaction of the Director that its water management practices will result in an average annual groundwater basin recharge which is equal to or in excess of its extraction of groundwater for export uses.

The person or entity asserting that one or more of the exclusions of this section applies shall have the burden of supporting its assertion that no permit is required.

Section 18.08.050. Application for a use Permit.

An application for a permit shall be filed with the Water Agency on a form specified by the Director, which shall include all information specifically requested thereon and other information requested by the Director to address specific aspects of the proposed groundwater export. Concurrently, the applicant shall consent to the commencement and financing of

appropriate environmental review as may be required by the California Environmental Quality Act ("CEQA"; Public Resources Code §21000 et seq.) and applicable guidelines. The application for a permit and required environmental review shall be accompanied by the deposit of fees for these purposes, as shall be established by Board resolution.

Section 18.08.060. Procedures for Processing.

(A) Within ten (10) calendar days of filing of a complete permit application, which shall include all of that information and the deposit of fees required by section 18.08.050, the Director shall post a notice on the County Public Works Department public bulletin board that an application has been filed, and shall send a copy of the notice to all local agencies within the County which have jurisdiction over lands overlying or adjacent to the location of the proposed extraction, and to any interested party who has made a written request to the Director for such notice within the last twelve (12) calendar months, seeking written comments. Upon posting and otherwise providing notice of the application, the Director shall review the application to determine whether it is complete for purposes of proceeding pursuant to CEQA requirements and shall thereafter commence environmental review as may be appropriate.

(B) The Director may review the matter of the application with affected County departments, staff of the State Department of Water Resources, staff of the Regional Water Quality Board - Central Valley Region, and any interested local water agency within whose boundary the proposed activity is proposed to occur. If the applicant is proposing to extract groundwater from within or adjacent to an area within the County for which a groundwater management plan has been adopted, but which plan does not expressly permit the export of water, the Director shall consider the contents of any such plan and other relevant information provided

by each affected local agency. Any interested person or agency may provide written comments relevant to the matter of the proposed extraction of groundwater, which shall be submitted within thirty (30) days of the date of posting and mailing the notice of filing the permit application.

(C) The environmental review shall be undertaken in accordance with CEQA and implementing guidelines. All costs of the environmental review determined appropriate by the Water Agency shall be the responsibility of the applicant.

(D) Upon completion of the required environmental review the Director shall forward the application, together with any written comments received, environmental documentation and the Director's recommendations, to the Commission. Upon receipt of the Director's recommendations, the Commission shall immediately schedule a public meeting to consider the permit application, which shall be noticed pursuant to Government Code Section 6061.

Section 18.08.070. Public Review Concerning Issuance of Permit.

(A) Formal rules of evidence shall not apply in the Commission's public review proceeding for the application, but the Commission may establish such rules as will enable the expeditious presentation of the matter and receipt of relevant information thereto. At the Commission's public review, which may be continued from time to time as determined appropriate by the Commission, the applicant shall be entitled to present any oral or documentary evidence relevant to the application, and the applicant shall have the burden of proof of establishing the facts necessary for the Commission to make the required findings. The Commission shall also hear relevant evidence presented by other interested persons and entities, the Director, other County staff, and the public.

(B) The Commission, in considering each permit application, shall consider all potential impacts the proposed export would have on the affected aquifer, including but not limited to potential hydraulic gradient, hydrology, percolation, permeability, piezometric surface, porosity, recharge, annual yield, specific capacity, spreading waters, transmissivity, usable storage capacity, water table and zone of saturation impacts.

(C) The Commission may request any additional information it deems necessary for its decision. The cost of such additional information shall be borne by the applicant.

Section 18.08.080. Findings Required for Granting of Permit Approval or Denial.

The permit may only be granted if there is a majority of the total membership of the Commission present at the required public meeting and a majority of the total membership of the Commission finds that the proposed groundwater extraction will not have significant detrimental impacts on the affected groundwater basin by determining that:

(A) The proposed extraction will not cause or increase an overdraft of the groundwater underlying the County;

(B) The proposed extraction will not adversely affect the long term ability for storage or transmission of groundwater within the aquifer;

(C) The proposed extraction will not exceed the annual yield of the groundwater underlying the County and will not otherwise operate to the injury of the reasonable and beneficial uses of overlying groundwater users;

(D) The proposed extraction will not result in an injury to a water replenishment, storage, or restoration project operating in accordance with statutory authorization;

(E) The proposed extraction is in compliance with Water Code Section 1220; and

(F) The proposed extraction will not be otherwise detrimental to the health, safety and welfare of property owners overlying or in the vicinity of the proposed extraction site(s).

If the Commission determines that one or more of the findings required by this section cannot be made, upon considering the proposed export together with potential conditions of permit issuance, it shall deny the permit application. The basis for any such denial shall be reflected in the Commission's official record of proceedings.

The applicant shall be notified in writing of the Commission's decision on the application, including the basis for denial where applicable, within fifteen (15) days of the final Commission action on the application.

Section 18.08.090. Conditions of Permit Approval.

If the permit is to be approved, the Commission shall impose appropriate conditions of permit issuance so as to prohibit overdraft or other adverse conditions, and may impose other conditions that it deems necessary to promote or maintain the health, safety, and welfare of Shasta County residents. Such other conditions of permit issuance may include, but shall not be limited to, requirements for observation and/or monitoring wells. Notwithstanding the foregoing, the Commission may issue the permit if the Commission finds that the applicant will provide adequate mitigation to offset all adverse effects that would otherwise result from the proposed extraction.

Section 18.08.100. Reapplication After Commission Denial.

Reapplication for a permit which has been denied by the Commission may not be filed with the Water Agency until the water year following the denial. For any such reapplication to be accepted as complete, and for it to be further reviewed in accordance with the procedures set forth in sections 18.08.060 through 18.08.090, it must be accompanied by information that

demonstrates a significant change in those circumstances which represented the factual basis for the previous permit application denial.

Section 18.08.110. Appeal of Commission Action on Application.

(A) The applicant and any interested party may appeal a decision of the Commission by filing a written request with the Clerk of the Board within (15) days of issuance of the decision to be appealed from. Any such appeal shall specifically set forth the procedural and substantive reasons for the appeal or be deemed incomplete and ineffectual. The Clerk shall set a Board hearing time within ten (10) days of receipt of a complete request for appeal which shall be heard within twenty (20) days of notice thereof. Written notice of the appeal shall be given to the Commission, the permit applicant, the appellant, and all other interested parties, and the appeal hearing shall be published pursuant to Government Code Section 6061.

(B) The Board shall hear the appeal as to those disputed matters which were heard by the Commission and are specifically set out in the appeal request, but may continue such hearing from time to time as determined appropriate by the Board. The appeal before the Board shall not be conducted with formal rules of evidence, but rather shall be conducted under such rules as set by the Board for the expeditious presentation of the matter and relevant information pertaining thereto by the appellant and by other parties interested in the Commission decision appealed from. An appeal decision by the affirmative vote of a majority of Board members shall be the final administrative decision in the matter.

(C) In any appeal taken under this section the permit applicant who is proposing to extract groundwater for exportation outside of the County shall have the burden of proving to the satisfaction of the Board, that such extraction is either exempt from permit requirements pursuant

to Section 18.08.040 or will not have significant detrimental impacts based on the criteria set forth in Section 18.08.080.

Section 18.08.120. Challenge to Approved Permit.

(A) Any interested party may challenge the ongoing extraction of groundwater pursuant to an approved permit during the term of the permit based on allegations that one or more of the following circumstances exists:

(1) there has been or is an ongoing violation of one or more conditions of an approved permit; or

(2) the extraction of groundwater pursuant to this chapter has caused or increased an overdraft in the basin; has adversely affected the long term ability for storage or transmission of groundwater in the affected aquifer; exceeds the annual yield of the affected groundwater basin; operates to the injury of the reasonable and beneficial uses of overlying groundwater users; is in violation of Water Code Section 1220; or results in an injury to a water replenishment, storage, or restoration project operating in accordance with statutory authorization; or

(3) the continued extraction of groundwater pursuant to a previously approved permit will be detrimental to the health, safety and welfare of one or more affected local agencies or other interested parties.

(B) A challenge pursuant to this section shall be commenced by filing a written request with the Director on a form prescribed by the Director. Such a challenge shall allege one or more of the circumstances specified by this section and shall generally describes facts in support of those alleged circumstances. In such event the Director shall, within ten (10) days of receipt of such challenge in a completed form, give notice of the challenge to the Commission, the

permittee, the appellant, all affected local agencies, and to any other interested party which has requested such notice. A Commission review shall be held on the matter following the procedures set out in Section 18.08.070. The Commission's decision may be to deny the challenge and leave the previously issued permit unchanged, to grant the challenge and terminate the permit, or to impose modified conditions to the permit, which the permittee shall be obligated to adhere to if continued extraction for export purposes is to occur, based on findings addressing the criteria specified in Section 18.08.080.

(C) The standard for review in any such challenge proceeding shall be substantial evidence. The burden of proof shall be upon the person or entity extracting the groundwater that is the subject of the challenge.

(D) Appeals from Commission decisions on challenges may be made to the Board in accordance with the procedures in Section 18.08.110.

Section 18.08.130. Permit Term.

Except as may be modified pursuant to Section 18.08.110, all approved permits shall be valid for a term not to exceed three (3) water years from the date of the issuance of the permit, as determined by the approving body; however, if the permit is for extraction as part of a conjunctive use program that has been approved by the Board the permit shall not exceed the length of the term of that program. For the purpose of calculation, the water year in which the permit is granted shall not be counted in determining the three year time period if less than four (4) months remain in the water year at the time of final permit approval.

Section 18.08.140. Limitation of Permit.

(A) Nothing contained in this chapter nor in the conditions an issued permit shall be construed as giving the permittee an exclusive right to groundwater extraction, nor as establishing a compensable right in the event the permit is subsequently terminated or modified following a challenge to the permit.

(B) The issuance of a permit pursuant to this chapter shall evidence that the health, welfare, and safety of County residents will not be harmed by the extraction and exportation of local groundwater outside the County boundaries.

(C) Any issued permit shall not exempt, supersede, or replace any requirements of federal, state, and local laws and regulations, including but not limited to California Water Code section 1220, the Groundwater Management Act, and any other statutes governing California groundwater law, well drilling and maintenance or building permit requirements, and is to be construed and applied in harmony with applicable existing law.

(D) Upon the adoption of a groundwater management plan or similar plan affecting a particular groundwater basin or aquifer within Shasta County, as approved the Board of Supervisors in concert with other local agencies having jurisdiction, any provisions of such plan or permits issued thereunder shall supersede the provisions of this chapter and permits approved hereunder, in the event of any inconsistency.

Section 18.08.150. Inspection.

The Director, with good cause, may at any and all reasonable times enter any and all places, property, enclosures and structures, for the purpose of making examinations and investigations to determine whether any provision of this chapter has been violated.

Section 18.08.160. Civil Penalty.

Upon determining that a violation of this chapter has occurred or is ongoing, the County may elect to proceed with a civil action against a violator, including, but not limited to, injunctive relief. Any person or entity who violates this chapter shall also be subject to fines of up to five thousand dollars (\$5,000) per separate violation. A person shall be deemed to have committed separate violations for each and every day or portion thereof during which any such violation is committed, continued, or permitted, as well as for each and every separate groundwater well within which any such violation is committed, continued or permitted.

SECTION 2. If any section, subsection, sentence, clause or phrase of this chapter is for any reason held illegal, invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions hereof.

SECTION 3. This ordinance shall take effect and be in full force and effect thirty (30) days after its passage, and prior to the expiration of fifteen (15) days from the passage thereof shall be published once in one or more newspapers of general circulation, printed and published in the County of Shasta.

DULY PASSED AND ADOPTED this 27th day of January, 1998, by the Board of Supervisors of the County of Shasta by the following vote:

AYES: Supervisors Clarke, Dickerson, Fust, Hawes, and Wilson

NOES: None

ABSENT: None

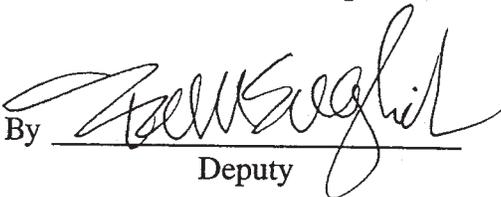
ABSTAIN:



PATRICIA A. CLARKE, Chairman
Board of Supervisors
County of Shasta
State of California

ATTEST:

CAROLYN TAYLOR
Clerk of the Board of Supervisors

By 
Deputy

ATTACHMENT H

2010 Consumer Confidence Report

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CITY OF REDDING

PUBLIC WORKS DEPARTMENT

WATER UTILITY

2011

To our Customers:

Attached you will find the **2010 Consumer Confidence Report (CCR)** brought to you by the City of Redding Water Utility. The purpose of this report is to provide our water customers with summary information on the water quality of the City's water supply sources, the levels of any detected contaminants, and compliance with drinking water regulations. The CCR is prepared and distributed to the City's water customers each year, in accordance with State and Federal regulations. The information contained in this report was taken from water analysis performed through December 2010. We test the drinking water quality for many constituents as required by State and Federal Regulations to ensure that the water supplied to our customers consistently meets both Federal and State Water Quality Standards. Last year your tap water met all U.S. Environmental Protection Agency and State drinking water health standards.

We would like all our customers to have current and factual information about our drinking water. To that end, water customers who receive this report are asked to share this information with any tenant or water user on the premise. The CCR can also be accessed from the Water Utility web page at <http://www.ci.redding.ca.us/water/index.html>.

We welcome public participation in water quality issues. Information that deals with decisions about our water system is addressed during Redding City Council Meetings. These meetings are held the first and third Tuesday of each month at 6:00 p.m. in the City Council Chambers at City Hall. The address is 777 Cypress Avenue, Redding.

We are available to answer questions and provide information if needed. Please see the contact information below.

How to contact us:

Utility Customer Service & Billing:	(530) 339-7200	Leak Reports:	(530) 224-6068
Water Conservation Materials:	(530) 224-6032	Water Quality Concerns:	(530) 224-6068
General Information:	(530) 224-6068	Water Quality Information:	(530) 225-4475

Website: www.ci.redding.ca.us/water/index.html

Este informe contiene información muy importante sobre su agua potable.

Tradúzcalo ó hable con alguien que lo entienda bien

2010 Consumer Confidence Report

Water Supply Sources

Water sources include surface water from the Sacramento River and Whiskeytown Reservoir which made up 68% of the treated water supply, or approximately 5.43 billion gallons. The groundwater from the Redding Groundwater Basin made up 32% of the treated water supply, or approximately 2.52 billion gallons. The two surface water treatment plants and sixteen groundwater wells supply water to the City of Redding service area. The water system is divided into six pressure zones: Enterprise (east), Cascade (south), Foothill (central), Hilltop-Dana (northeast), Hill 900 (west), and Buckeye (north). The Hill 900 and Foothill zones are supplied with surface water from the Sacramento River via the Foothill Water Treatment Plant (FWTP). The Enterprise and Cascade zones are supplied by a blend of well water and water from the Foothill zone. The Buckeye zone is supplied with surface water from Whiskeytown Reservoir via the Buckeye Water Treatment Plant (BWTP) and water from the Foothill Zone. The Hilltop-Dana zone is supplied with water from both the Enterprise and Buckeye zones. City water is considered soft, with low to moderate alkalinity, and comparatively trace levels of disinfection byproducts.

Groundwater Quality

Six of the wells in the Enterprise zone have elevated iron and manganese levels that can form black mineral deposits in the distribution system. A sequestrant/corrosion inhibitor (blend of orthophosphate and polyphosphate) is added at these wells to keep the minerals dissolved and minimize deposits in the piping. Areas supplied by well water are flushed each spring to remove accumulated deposits that can cause “discolored water”.

The groundwater source of your drinking water meets the federal and state standards for arsenic, but it does contain low levels of arsenic below the MCL of 10 parts per billion (ppb). The arsenic MCL was reduced from 50 ppb to 10 ppb on January 23, 2006 by the USEPA.

Source Water Assessment

The City of Redding conducted source water assessments for its surface water in July 2001 and groundwater sources in May 2002. The sanitary survey for our surface water sources was updated in December 2010. For more information, please call (530) 224-6068.

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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants* which can be naturally-occurring or be the result of oil and gas production and mining activities. *According to the U.S. Nuclear Regulatory Commission (NRC), Japan's nuclear emergency presents no danger to California. California Department of Public Health (CDPH) is working closely with state and federal partners, including NRC, the U.S. Environmental Protection Agency, the U.S. Department of Energy, FEMA Region IX, and the California Emergency Management Agency (CalEMA). CDPH-RHB maintains air monitoring stations throughout California.*

- *Arsenic*. While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. Environmental Protection Agency continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.
- *Nitrate* in drinking water at levels above 45 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

Water Quality Standards and Testing Results

In order to ensure that tap water is safe to drink, the United States Environmental Protection Agency (USEPA) and the California Department of Public Health (CDPH) Division of Drinking Water (DDW) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. CDPH-DDW regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

The City's water supplies must meet stringent water quality standards that are set forth by the USEPA and the CDPH-DDW. The tables on the following pages list all of the drinking water contaminants that were detected during sampling over the past several years. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. *CDPH-DDW allows monitoring for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.*

Additional General Information on Drinking Water

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline (1-800-426-4791) or on their website at <http://www.epa.gov/safewater>.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Redding Water Utility is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the USEPA's Safe Drinking Water Hotline (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>.

TERMS USED IN THIS REPORT

To help you better understand these terms, the following definitions are provided:

Maximum Contaminant Level (MCL): 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 are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): 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. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): 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 Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): 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.

Maximum Residual Disinfectant Level Goal (MRDLG): 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. MRDLGs are set by the USEPA.

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

Secondary Drinking Water Standards (SDWS): Secondary Maximum Contaminant Levels (SMCLs) for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the SMCL levels.

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

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

Variations and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

NA: not applicable

ND: not detectable at testing limit

NTU: Nephelometric Turbidity Units

ppm: parts per million or milligrams per liter (mg/L)*

ppb: parts per billion or micrograms per liter (ug/L)*

ppt: parts per trillion or nanograms per liter (ng/L)

pCi/L: picocuries per liter (a measure of radiation)

**Analogies that may put ppm and ppb into better perspective.*

One ppm is equal to:

- One inch in 16 miles
- One second in 11.5 days
- One minute in two years

One ppb is equal to:

- One second in nearly 32 years
- One pinch of salt in 10 tons of potato chips

Sampling Results

SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES	
Treatment Technique (Type of approved filtration technology used):	Conventional treatment (coagulation, sedimentation, and filtration) and direct filtration (coagulation and filtration) in combination with chlorination
Turbidity Performance Standards (that must be met through the water treatment process)	<u>Turbidity of the filtered water must:</u> 1 – Be less than or equal to 0.5 NTU in 95% of measurements in a month 2 – Not exceed 1.0 NTU for more than eight consecutive hours 3 – Not exceed 5.0 NTU at any time
Lowest monthly percentage of four-hour samples that met Turbidity Performance Standard No. 1.	Foothill WTP: 99.9% were less than or equal to 0.3 NTU Buckeye WTP: 99.9% were less than or equal to 0.3 NTU
Highest single instantaneous turbidity measurement during the year.	0.69 NTU (0.02 to 5.0 NTU range) for Foothill Water Treatment Plant 2.41 NTU (0.02 to 5.0 NTU range) for Buckeye Water Treatment Plant
Number of violations of any surface water treatment requirements.	None

Note: Turbidity (measured in NTU) is a measurement of the cloudiness of water. Monitoring turbidity is a good indicator of water quality and to verify compliance and effectiveness of our water filtration systems.

SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA					
Microbiological Contaminants	Highest No. of Detections	No. of Months in Violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria (Total Coliform Rule)	1 (In a month)	0	Greater than 5% of monthly samples positive.	0	Naturally present in the environment
Fecal Coliform or <i>E. coli</i> (Total Coliform Rule)	0 (In the year)	0	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or <i>E. coli</i>	0	Human and animal fecal waste
Fecal Indicators (<i>E. coli</i> , enterococci or coliphage) (Federal Groundwater Rule)	0 (In a month)	0	Treatment Technique (TT) for untreated groundwater	N/A	Human and animal fecal waste

Note: The City of Redding analyzes a minimum of 23 water samples per week throughout the year in the water distribution system for coliform bacteria.

SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER						
Lead and Copper	No. of Samples Collected	90 th Percentile Level Detected	No. Sites Exceeding AL	AL	PHG	Typical Source of Contaminant
Lead (ppb) [August 2010]	30	ND	0	15	< 2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm) [August 2010]	30	0.32	0	1.3	< 0.17	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

SAMPLING RESULTS FOR SODIUM, HARDNESS, AND GENERAL CHEMISTRY						
Contaminant (and reporting units)	Sample Dates	Average Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	1/10 – 12/10	34.8	34.8 to 104.5	N/A	N/A	Generally found in ground & surface water
Hardness (ppm as CaCO ₃)	1/10 – 12/10	83	35 to 125	N/A	N/A	Generally found in ground & surface water
Calcium (ppm)	1/10 – 12/10	15	.40 to 23	N/A	N/A	Naturally occurring dissolved mineral
Magnesium (ppm)	1/10 – 12/10	10	4 to 19	N/A	N/A	Naturally occurring dissolved mineral
pH	1/10 – 12/10	7.5	6.8 to 8.5	N/A	N/A	pH 6.5 to 8.5 is typical for drinking water
Alkalinity (ppm as CaCO ₃)	1/10 – 12/10	91	34 to 127	N/A	N/A	Measures the buffering capacity of the water

DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD						
Contaminant (and reporting units)	Sample Date	Level (or Average) Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Chlorine (Distribution System)	1/10 – 12/10	0.8	0.5 to 0.9	4.0	4.0	Disinfectant required by regulation to be added to drinking water
Arsenic (ppb) ⁽¹⁾	1/10 – 12/10	5.8	0 to 9.4	10	0.004	Erosion of natural deposits; runoff from orchards; glass and electronics production wastes. Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.
Nitrate (ppm as NO ₃) (Wells and Surface Water)	2010	4.3	0 to 12.2	45	45	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits. Infants below the age of six months who drink water containing nitrate in excess of the MCL may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin. High nitrate levels may affect the oxygen-carrying ability of the blood of pregnant women.
Total Trihalomethanes (ppb) (Distribution system)	Quarterly 2010	24	0 to 40.7	80	N/A	By-product of drinking water disinfection

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

Contaminant (and reporting units)	Sample Date	Level (or Average) Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Total of Five Haloacetic Acids – HAA5 (ppb) (Distribution system)	Quarterly 2010	35	0 to 49.2	60	N/A	By-product of drinking water disinfection
Total Organic Carbon (TOC) ⁽²⁾	Quarterly 2010	0.98	0.5 to 1.3	N/A	N/A	Various natural and man made sources
Gross Alpha (pCiL)	2010	1.25	1.0 to 1.5	15	(0)	Erosion of natural deposits.
Asbestos (MFL)	1/98 to 6/08	0.27	0.2 to 0.4	7	7	Internal corrosion of asbestos cement water mains; erosion of natural deposits
Fluoride	2010	0.1	0.1 to 0.2	2.0	1	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories

1. Only Enterprise Wells 11 and 13 have had detections above the arsenic standard. These wells blend with other wells in the Enterprise pressure zone and operate on a limited basis during the summer. Blending reduces the arsenic concentration below the MCL in the water distribution system. In 2010, EW-11 and EW-13 were not operated or pumped into the water distribution system. The arsenic MCL was reduced from 50 ppb to 10 ppb on January 23, 2006 by the USEPA.

2. Total organic carbon is a precursor for disinfection byproduct formation. The TT requirement applies to water filtered from the Buckeye Water Treatment Plant and Foothill Water Treatment Plant.

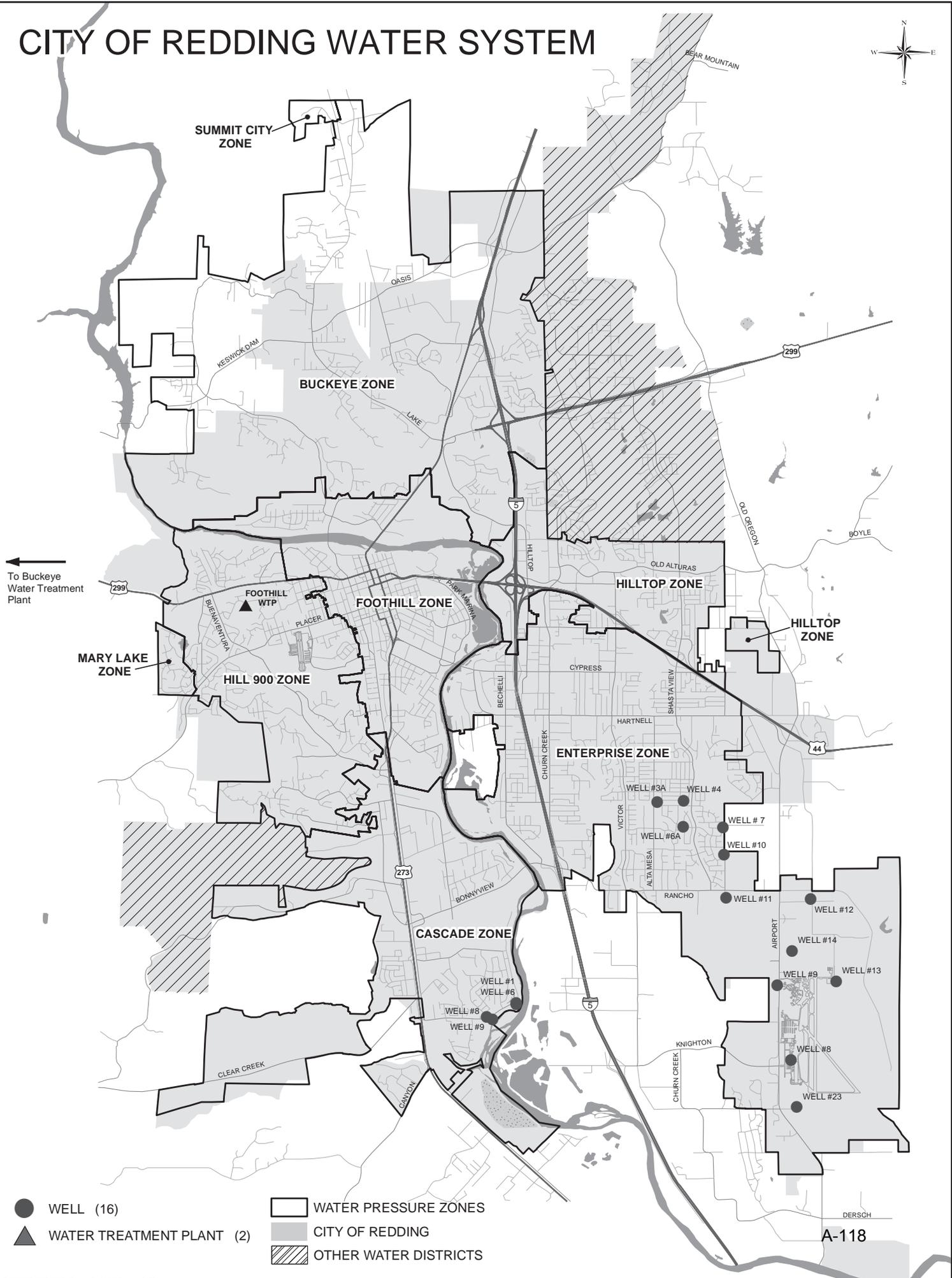
DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Contaminant (and reporting units)	Sample Date	Level (or Average) Detected	Range of Detections	SMCL	PHG (MCLG)	Typical Source of Contaminant
Manganese (ppb)*	1/10 – 12/10	19	0.1 to 66	50	N/A	Leaching from natural deposits
Sulfate (ppm)	1/10 to 12/10	4.8	2.6 to 7.8	500	N/A	Runoff/leaching from natural deposits; industrial waste
Chloride (ppm)	1/10 to 12/10	28	10 to 85	500	N/A	Runoff/leaching from natural deposits; seawater influence
Total Dissolved Solids (ppm)	1/10 – 12/10	125	41 to 177	1000	N/A	Runoff/leaching from natural deposits
Specific Conductance	1/09 – 12/09	267	94 to 360	1600	1600	Substances that form ions when in water; seawater influence
Iron (ppb)*	1/10 – 12/10	18.6	6.6 to 45	300	N/A	Leaching from natural deposits; industrial wastes

* Several wells in the Enterprise pressure zone have elevated iron and manganese. Polyphosphate is added to sequester these minerals and minimize brown water complaints.

As a division of Public Works, the Water Utility's mission is to provide our customers with a reliable supply of high quality drinking water now and in the future. Towards that end, 26 full time employees maintain approximately 558 miles of water mains, 28,165 metered services, one 24 MGD treatment plant, one 14 MGD treatment plant, 16 groundwater wells, ten pump stations, eleven reservoirs, six pressure zones and serve approximately 90,000 people within a service area of approximately 60 square miles. We are proud of the fact that our water quality not only meets Federal and State Standards each and every day of the year, but in most cases, contaminant levels fall far below published Primary and Secondary Standards. This means you, as the consumer, are assured of the safest water we can deliver to your tap. Water System map on back of page 7.

CITY OF REDDING WATER SYSTEM



← To Buckeye Water Treatment Plant

- WELL (16)
- ▲ WATER TREATMENT PLANT (2)
- WATER PRESSURE ZONES
- CITY OF REDDING
- ▨ OTHER WATER DISTRICTS

ATTACHMENT I

Notices of City of Redding Water Utility

Education Programs & Services Available to Customers

**Pages A-121 to A-159:
Educational Resources Catalog
available to schools and community organizations**

**Pages A-160 to A-161:
Water waste door hangar**

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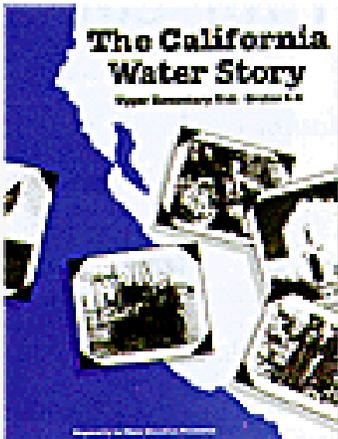


Water Education Resources
Shasta County Schools
2010

Pam Clackler
Water Education
Conservation Specialist
Redding Municipal Utilities
530-224-6032
pclackler@ci.redding.ca.us

Martha Vuist
Stormwater Education
N.P.D.E.S. Coordinator
Redding Municipal Utilities
530-224-6030
mvuist@ci.redding.ca.us

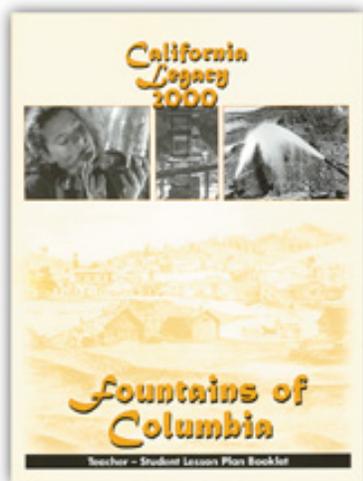
CURRICULUM MATERIALS



California Water Story: Grades 4 - 6

A multi-disciplinary approach to teaching about water as one of California's most important resources, California Water Story is designed for use in grades 4-6. The lessons integrate many subject areas (geography, history, science, math and art) and are designed to help students develop specific skills (critical thinking, organizing data, predicting, mapping and graphing). The program set includes a 24-page lesson plan booklet with worksheets and evaluation devices which may be duplicated, teacher instructions and background material, a video, the California Water Map, the Layperson's Guide to California

Water, Water Fact Card, Hydrologic Cycle Poster and water awareness stickers.



Fountains of Columbia: Grades 4 - 6

This DVD/lesson plan package teaches students about the importance of water during California's Gold Rush. Based on the actual diary of 11-year-old Mary Leary who lived during the Gold Rush era, the Fountains of Columbia docudrama is part of the California 2000 Sesquicentennial Legacy Project. The 11-minute DVD, shot on the location at Columbia State Historic Park, tells the story of a mining town struggling to manage its resources as miners, farmers and townspeople wrangle over water issues. This innovative film, created by Cambria Productions, was funded by Metropolitan Water District of Southern California in cooperation with California State Parks

and the Water Education Foundation. The interdisciplinary lesson plan booklet is correlated with the new state frameworks for History/Social Science, Language Arts and Sciences and has hands-on activities involving: world timelines, erosion experiments, primary source readings, including Mark Twain's "Jumping Frog of Calaveras County", art analysis of famous Nahl painting "Sunday Morning in the Mines", a role playing town hall meeting, a map-reading lesson about the overland routes to the gold fields.



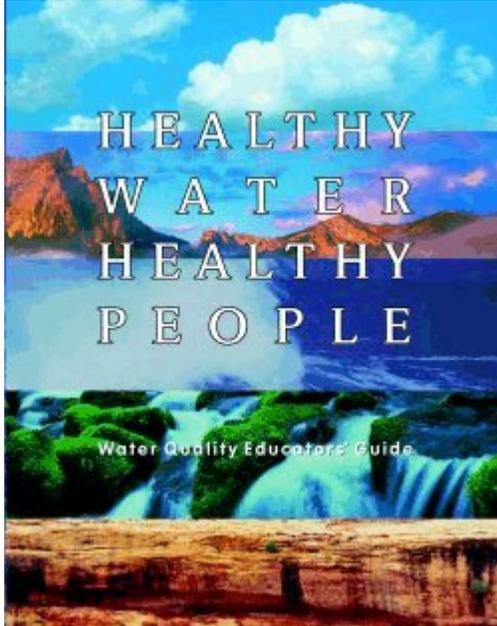
A Child's Place in the Environment (ACPE) Series, Unit 4: Caring for Aquatic Systems

An integrated hands-on environmental education curriculum with children's literature connections: Grades 4-5

Environmental education curriculum guide for elementary school teachers that integrates science, English-language arts, and selected children's literature, and culminates with student projects which enhance the environment. The lessons have been correlated to California's content standards in science and English-language arts.

Through 20 interdisciplinary and thematic lessons using the constructivist process, fourth- and fifth-grade teachers help their students to learn the importance of balancing the use of water to meet the needs of all living things. Literature is integrated into the curriculum and Marjory Stoneman Douglas and John Muir are the featured heroes. Students participate in projects that enhance their environment. The lessons support the following subconcepts:

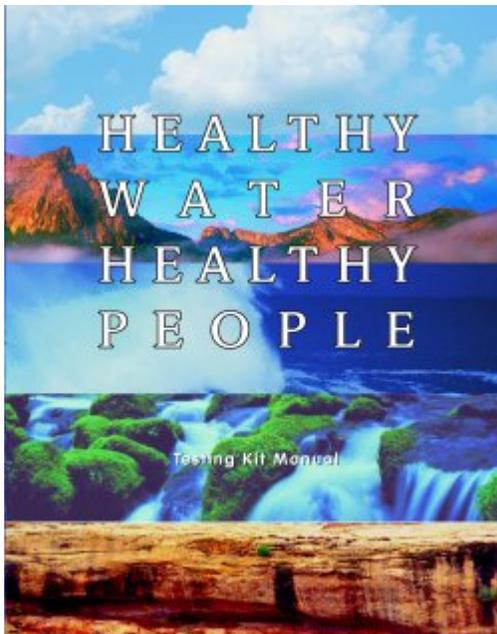
- Water cycles through living and nonliving things.
- Water is essential to all living things.
- The ways people acquire and use water affect living things.
- People can choose to conserve water, maintain or improve its quality, and protect specific bodies of water.



Healthy Water, Healthy People Water Quality Educators Guide: Grades 6-12

25 hands-on, science-based activities cross-referenced to the testing kits, testing kit manual, Web sites, and National Science Education Standards. The 200-page activity guide published by The Watercourse is designed to raise the awareness and understanding of water quality topics and issues and their relationship to personal, public, and environmental health. Healthy Water, Healthy People will help educators address science standards through interactive activities that interpret water quality concepts and promote diverse learning styles, with foundations in the scientific method. This guide contains 25 original activities that

link priority water quality topics to real-life experiences of educators and students.

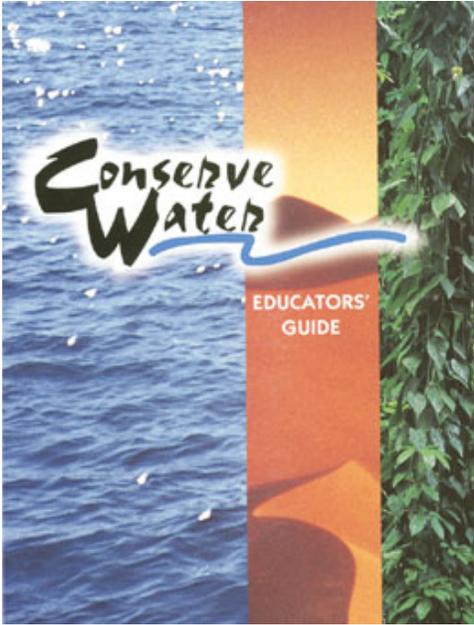


This 100-page technical reference manual is an excellent companion text that supports all of the Healthy Water, Healthy People publications and materials. It includes:

- In-depth background information on 10 water quality parameters
- Test kit activities and demonstrations
- Case studies relate concepts to real-world applications
- Helpful water monitoring information and specifics about sources and remedies
- Works with all types of test kits.

This manual serves as a technical reference for the Healthy Water, Healthy People Water Quality Educators Guide and the Healthy Water, Healthy People Testing Kits, yielding in-depth information about ten water quality parameters. The manual answers questions about water quality testing using technical overviews, data interpretation guidelines, case studies, chemical formulas, testing kit

activities, laboratory demonstrations, and much more.



Conserve Water Educators' Guide: Grades 6 - 12

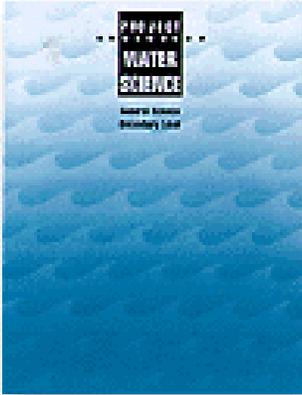
Designed to teach studies how to conserve water, this 300 page book contains a collection of innovative water conservation activities and case studies that are easy to use, interactive, challenging and fun.



Groundwater Education: Grades 7 - 10

This school program teaches junior high and high school students about groundwater and the prevention, reduction and elimination of groundwater pollution. The 52-page teacher's booklet contains lesson plans, lectures, demonstrations, laboratory exercises, games and assessment activities. Each lesson has clearly defined objectives and complete teacher instructions, and is coordinated with the California State Department of Education's Frameworks for Science, Math and Social Science. Student lab and worksheet pages, overhead masters and teacher instructions can be easily duplicated year

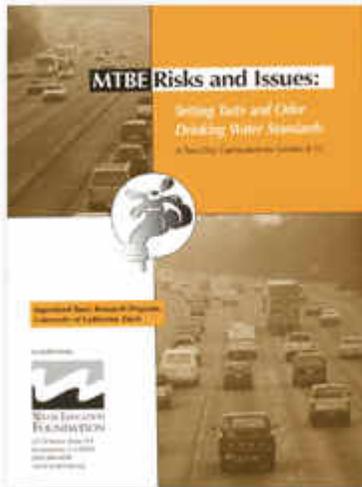
after year so there are no annual replacement costs. The lessons are designed to teach students the following concepts: What is groundwater? What is an aquifer? The relationship between ground and surface water. How water is discharged and recharged in an aquifer. The importance of conserving groundwater. How to protect aquifers and groundwater from pollution. The Water Wonder Workout game inside is a fun way for students to learn about groundwater, water quality issues and how their activities can affect drinking water quality. The game can be duplicated. Groundwater Education for Secondary Students is packaged with the California Groundwater Map.



Water Science: Grades 7 - 12

A general science program, Project Water Science offers lesson plans for the study of water chemistry and how water relates to the environment. Also included are two lesson plans that focus on nonpoint source pollution. Project Water Science includes a 38-page lesson plan book for teachers with 14 laboratory exercises suitable for junior high and high school science classes in either physical or earth sciences, or integrated science. The labs explore the chemical nature of water, as well as the relationship of water ecosystems. Bound inside the book and suitable for photocopy

reproduction is the No-Know Game, a fun way for students to learn about nonpoint source pollution. Also included is the Layperson's Guides to Drinking Water, the Water Fact Card and the California Water Map. The program is designed to be reused by teachers through several classes and for several terms.



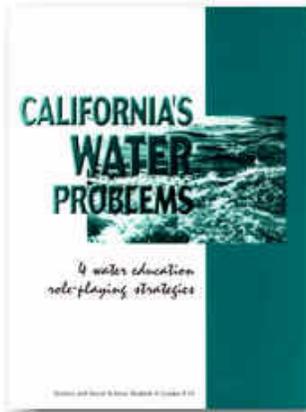
MTBE Risks and Issues: Setting Taste and Odor Drinking Water Standards:

Grades 8 - 12

This program teaches students about MTBE, methyl tertiary butyl ether, in drinking water. The 28-page teacher's booklet teaches students about MTBE as a drinking water contaminant through discussions of the physiology of taste and odor, how taste tests are conducted, how drinking water standards are set and the role of science in public policy. Officials are now in

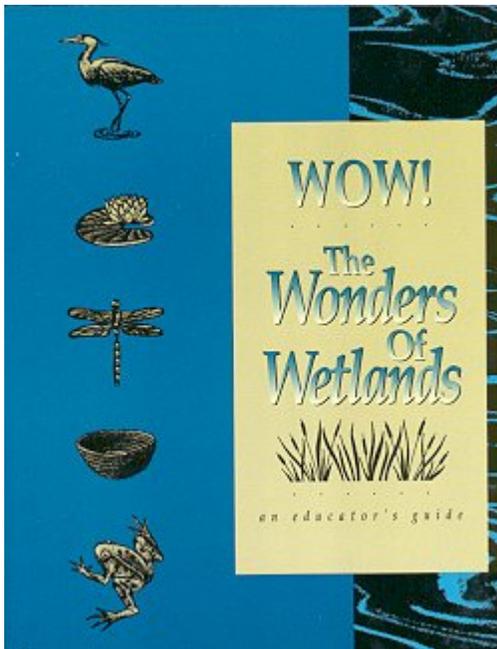
the process of phasing out use of the gasoline additive MTBE, which helps help fuel burn cleaner, because it has contaminated groundwater wells throughout the country. This program was developed by the Civil and Environmental Engineering Department at UC Davis, and edited and formatted by the Foundation. The MTBE curriculum includes the Layperson's Guide to Drinking Water and the July/August 1998 Western Water "The Challenge of MTBE: Clean Air vs. Clean Water?"

California's Water Problems: Grades 9 - 14



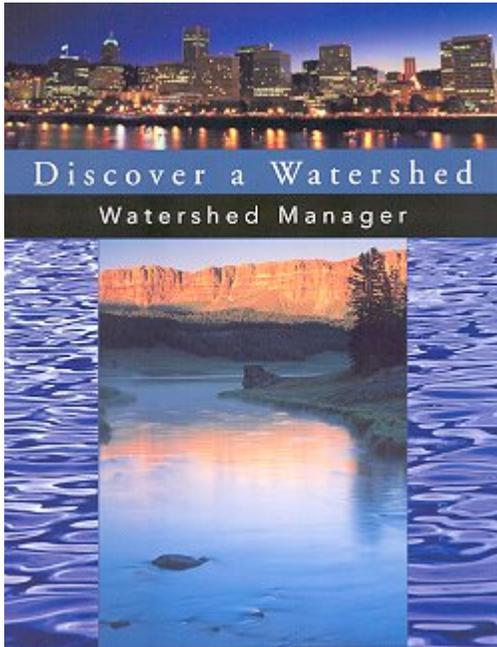
California's Water Problems is a series of four role-playing scenarios designed to give students first-hand experience at working out a solution to a real-life problem involving the management of California's water. The cooperative learning exercises give students the opportunity to improve research techniques, practice group interaction skills, and sharpen their reasoning abilities. The unit is ideal for a social science class studying management of natural resources or a science class studying the interaction of humans and the environment. Included in the program is a 56-page lesson plan book with student

worksheets and evaluation devices, the Layperson's Guides to the Delta, Colorado River, Agricultural Drainage and Groundwater; the California Water Map; and the California Water System Poster.



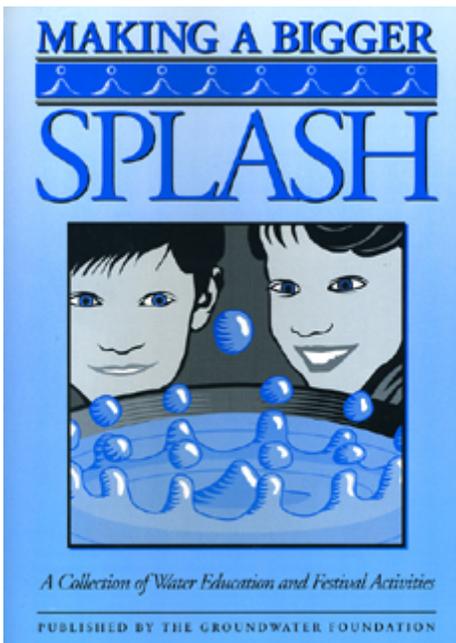
WOW! The Wonders of Wetlands: Grades K-12

This 330-page guide features 70 pages of background material followed by more than 40 cross-referenced activities. Each page is thoughtfully laid out with core text, great photographs, side bars, maps, and illustrations to make information clear and quick to use. Activities are organized into five sections: wetlands definitions, wetlands plants and animals, water quality and supply issues, soils, and people. The appendix offers instructions for planning and developing a schoolyard wetland habitat. Published by The Watercourse.



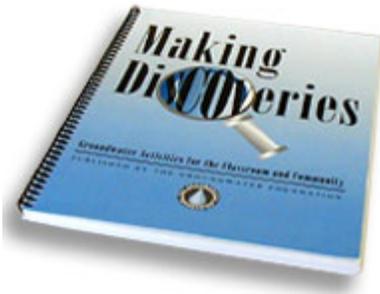
Discover a Watershed: The Watershed Manager Educators Guide

A 193-page guide that contains 19 science-based, multidisciplinary activities that teach what a watershed is, how it works, and why we must all consider ourselves watershed managers. An extensive background section introduces readers to fundamental watershed concepts. Each activity adapts to your local watershed, contains e-links for further internet research, and is correlated to the National Standards for Science. Includes a 26"x38" Map of Selected North American Rivers and Watersheds.



Making a Bigger Splash - A Collection of Water Education and Festival Activities: Grades K - 12

These field tested activities are perfect for developing water education programs. Over 37 different activities, all easily implemented with minimal supplies and equipment. Each features background information, key topics, subject areas, age levels, duration, materials, learning objectives, instructions, variations and extensions plus sources and contact information for each activity.



Making Discoveries Groundwater Activities for Classroom and Community: Grades K-12

What is an aquifer? How does groundwater get contaminated? Find the answers to these questions and more in this publication from The Groundwater Foundation. Through interactive water education experiences, students learn concepts in science, math, language arts, social science, fine arts, and physical science. This activity guide helps you teach others about groundwater, surface water, wetlands, and pollution through entertaining, hands-on experiments and activities.

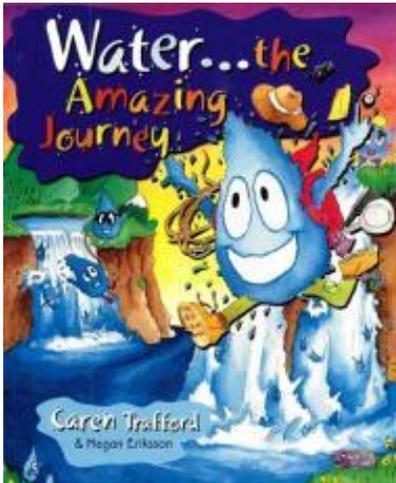
Making Discoveries is perfect for someone planning a Water Awareness Day, water festival, or teaching a classroom about groundwater contamination. Making Discoveries helps you to broaden the scope and depth of knowledge about our planet's most precious resource--water! "



The No Waste Anthology: A Teacher's Guide to Environmental Activities: K-12

Provides teachers with interdisciplinary, action oriented environmental activities concerning the issue of waste. The activities are organized into three sections and several subsections. The first section contains 29 activities pertaining to natural resources and pollution in subsections involving needs and wants, natural resources, cycles, water, water pollution, oil, and air pollution. The second section contains 31 activities pertaining to solid waste in subsections involving the nature of the solid waste problem; litter; current solutions; and the concepts of reduce, reuse, and recycle. The third section contains 29 activities pertaining to hazardous waste in subsections involving industrial wastes, decision-making, and household hazardous substances. Each activity provides background information about the issue and procedures to carry out the activity. Six appendices contain a list of activity sources and the activities listed by source, by age group, by school subject, by topic, and alphabetically.

Water...the Amazing Journey: Grades K-6



Water is our most precious resource. It covers more than 70% of our planet. Read about water and discover all the ways that you can help to save it. The Water Cycle, recycling, water management, re-use and a myriad of other water facts in a humorous, easy to read, brightly illustrated format.

This Water book provides insights into the chemistry of water; its vital place for life and how civilizations have flourished and failed because of it.

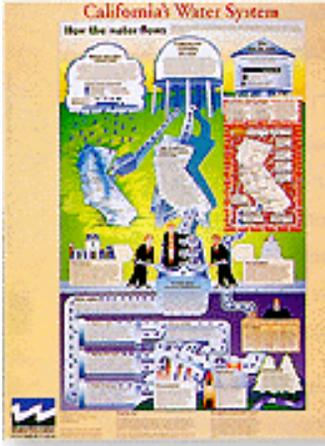
Topics include modern and ancient water storage, good management & misuse, treatment, reticulation and conservation.

In today's climate of drought and extreme weather conditions, water conservation is necessary to benefit everyone. Find out how to help manage water, so that there is enough for the future generations.

MAPS & POSTERS

All maps and posters are laminated and
mounted on foam board

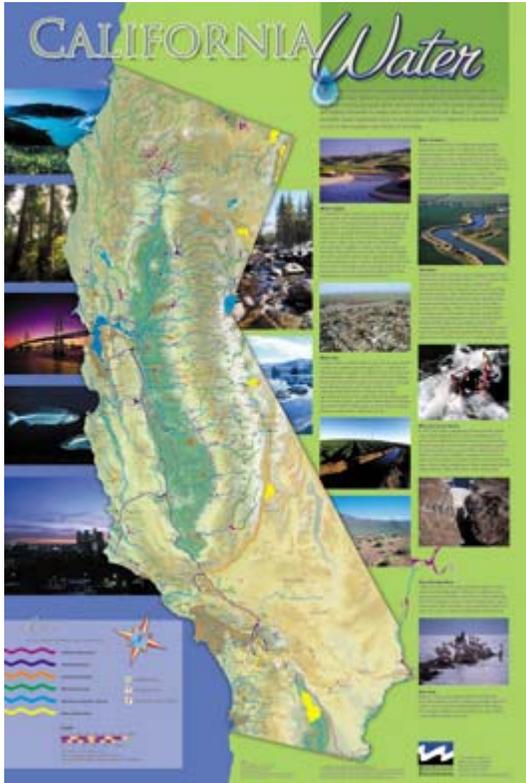




California's Water System

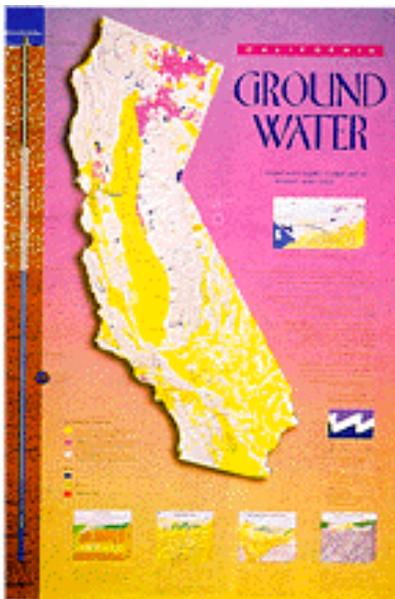
This 18x24 inch poster explains both the literal and legal flow of California water. It illustrates the sources of water in the state and how and where it is distributed. The poster includes charts showing where precipitation falls in California, the drainage basins and the major water users. The poster contrasts the intricacies of the physical system with the equally complex authority system which governs and challenges the distribution of water in California. The governor, Legislature, State Water Resources Control Board and the courts all have changing positions in the control of California's water. The roles of the three prominent

interest groups in water (urban, agricultural and environmental), their influence and concerns, are also described. The poster is an excellent tool for use in junior and high school social studies and environmental studies classes and as supporting material for the Foundation's existing school programs. It also complements the California Water Map and Layperson's Guide to California Water by graphically illustrating the interconnected network of water rights, distribution and authority.



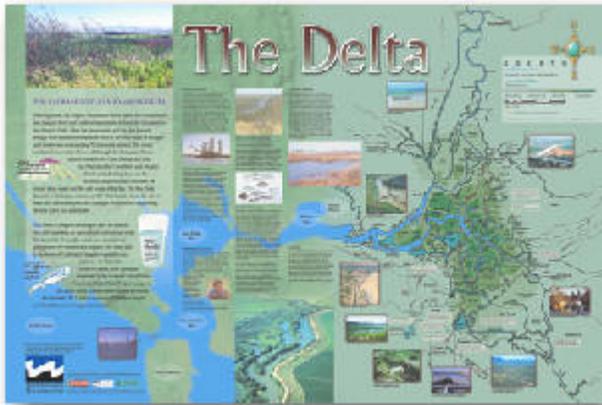
California Water Map

Updated August 2007 - Completely redesigned, this 24x36 inch poster includes beautiful photos of California's natural environment, rivers, water projects, wildlife, and urban and agricultural uses. New text focuses on key California water issues: water supply, water use, water projects, the Delta, wild and scenic rivers and the Colorado River. The map features natural and manmade water resources throughout the state, including the wild and scenic rivers system, federally funded projects, state funded projects, locally funded projects and saline or alkaline lakes.



California Groundwater Map

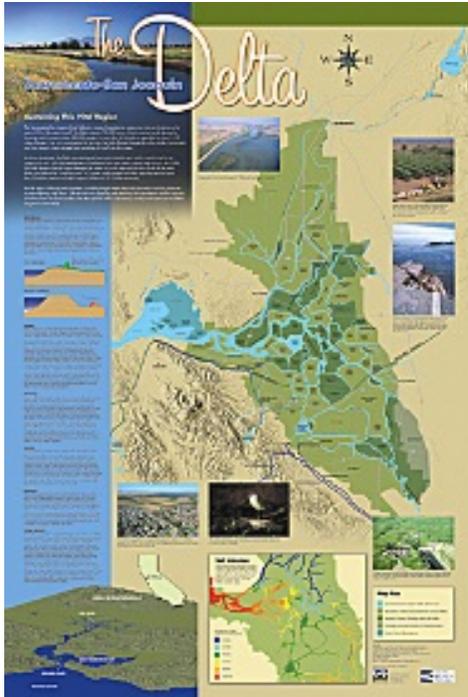
Fashioned after the popular California Water Map, this 24x36 inch map shows where groundwater is in California, and explains the different types of water-bearing formations. Cut-aways of different areas in California illustrate the problems of salt water intrusion, contamination, overdraft and fractured rock. With changes in the way surface water is allocated in California, water users have turned to groundwater to help meet the state's needs. The Layperson's Guide to Groundwater complements the map



The Delta

Released Oct. 2001. The Delta, convergence of California's two great water delivery systems and major rivers is depicted in this 36x24 inch map. The map graphically depicts the importance of the Delta -- what it is, where it is and how water flows through the area. The 2001 map now includes Delta waterways, pumping facilities and canals, Los Vaqueros Reservoir, and many proposed projects and

studies in CALFED's 2000 Record of Decision. Accompanying text explains Delta levees, agriculture, fish and wildlife, drinking water issues, and the importance of the Delta to all Californians. Complementing the map are the Layperson's Guides to the Delta and San Francisco Bay.

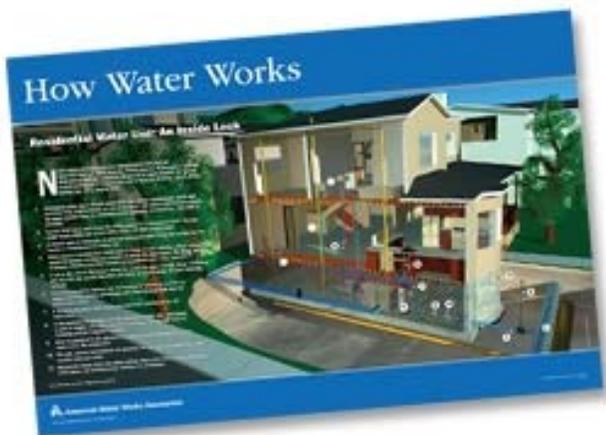


Delta Sustainability Map

Published in 2006. This beautifully illustrated 24x36 inch poster, suitable for framing and display in any office or classroom, focuses on the theme of Delta sustainability. The text, photos and graphics explain issues related to land subsidence, levees and flooding, urbanization and fish and wildlife protection. An inset map illustrates the tidal action that increases the salinity of the Delta's waterways.

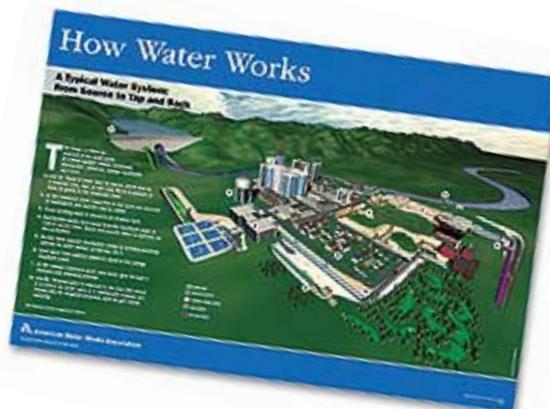
CLASSROOM PRESENTATIONS & TOURS



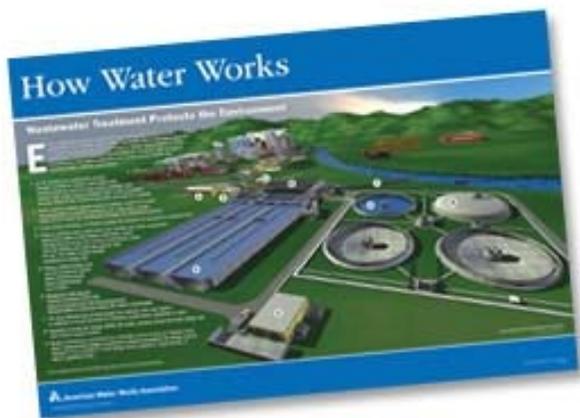


How Water Works Residential Water Use

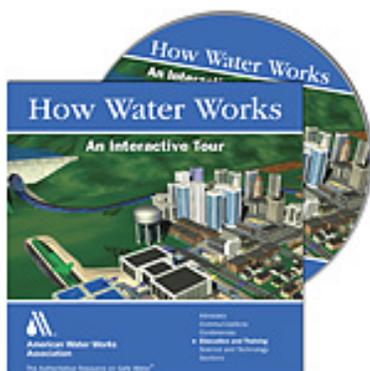
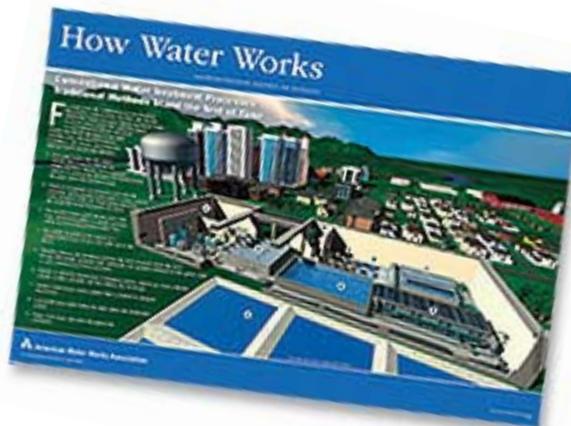
How Water Works Water Treatment & Distribution System



How Water Works Wastewater Treatment Process



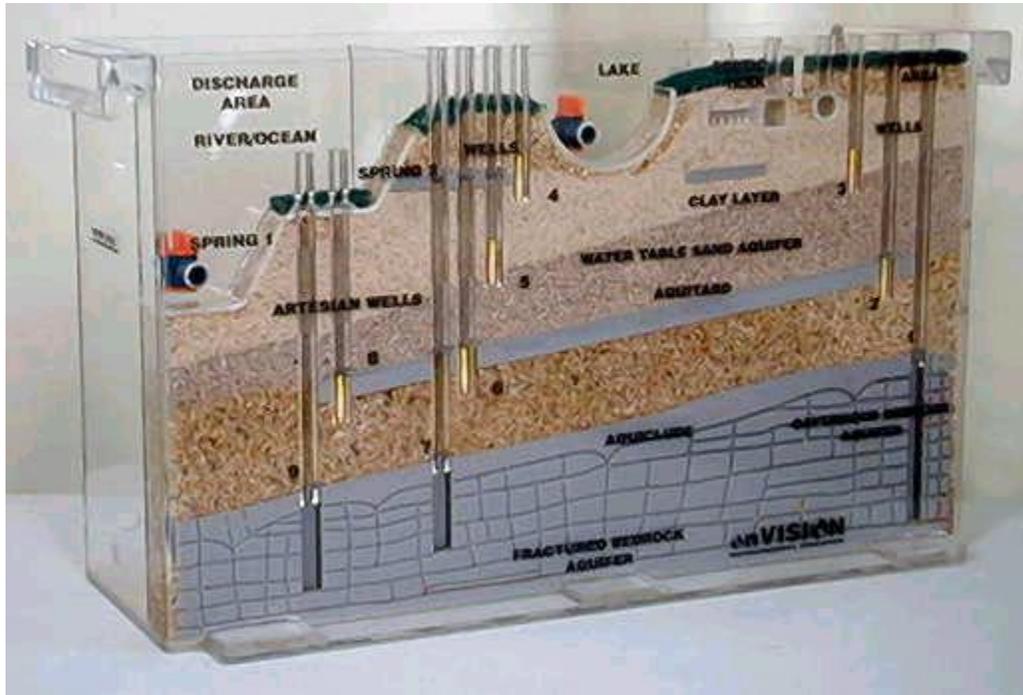
How Water Works Water Treatment Process



How Water Works - An Interactive Tour

This is an interactive virtual tour of how water is collected, treated, and used in a typical municipal water supply system. Beginning with the reservoir and wells and continuing through a wastewater plant, the tour provides close-up descriptions of the various components of how water works

Groundwater Model Demonstration and Presentation



This interactive model demonstrates how water flows through the ground and how different land uses may affect the quality and quantity of groundwater. This model allows upper elementary students through adults to visualize the out-of-sight underground portion of the water (hydrologic) cycle. Concepts include recharging groundwater by precipitation and discharging into rivers where water is contained, and how it moves in soil and rock, and how human activities may affect groundwater.

EnviroScape® Watershed/Nonpoint Source Model



Portable, table-top environmental education model provides unique, interactive learning experiences for all cultures and ages, helping people see how they can make a difference.

Makes the connection between what we do on earth and environmental quality. The EnviroScape® Watershed model demonstrates pollution prevention and creates a real sense of understanding through hands-on demonstrations. The Model will allow the demonstrator to track pollution sources including: Residential areas, Storm water, Forestry areas, Transportation, Recreation, Agriculture and Construction and Industrial sources.

City of Redding

Wastewater Treatment Plant Tour

Tours of the Stillwater Wastewater Treatment Plant are available with notice. Please call the following personnel to make arrangements:

John Szychulda, Public Works Supervisor	530-378-6702	jszychulda@ci.redding.ca.us
Dennis McBride, Municipal Utility Manager	530-224-6063	dmcbride@ci.redding.ca.us
Martha M. Vuist, NPDES Coordinator	530-224-6030	mvuist@ci.redding.ca.us

Water Treatment Plant Tour

Tours of the Buckeye Water Treatment Plant are available with notice. Please call the following personnel to make arrangements:

Conrad Tona, Public Works Supervisor	530-225-4475	ctona@ci.redding.ca.us
Pam Clackler, Water Conservation Specialist	530-224-6032	pclackler@ci.redding.ca.us

DVD/VIDEO PROGRAMS



History Channel – Modern Marvels

❖ **Aqueducts: Man-made Rivers of Life**

- From the continent-spanning constructions of ancient Rome to the lifeline that quenches Los Angeles's thirst, this DVD takes a probing look at the history and technology of aqueducts.
- 50 minutes

❖ **City Water**

- Examines how clean water gets to millions of taps in Chicago, New York City, and Los Angeles, and it tells the colorful history of those cities' water systems.
- 50 minutes

❖ **Plumbing: The Arteries of Civilization**

- Traces the long and surprising history of plumbing, from ancient Rome to present.
- 50 minutes

❖ **Sewers**

- Explore this less-than-polite topic, and examine the network of underground pipes and tunnels that carries human waste (and much else) away.
- 50 minutes

❖ **Water**

- We take it for granted, yet compared to other natural compounds, water a genuine oddity. This DVD paints a vivid portrait of this common entity that's anything but.
- 50 minutes



The Adventures of Ethel Mermaid and Tad Pole: Grades 3 - 5

They're explorers. Investigators. Amphibians. They're Ethel Mermaid and Tad Pole.

In this five-part series, grade-schoolers can learn and laugh along with this splashy duo as they set out to discover everything they can about water. Live-action video, computer animation, and special effects add lots of kid-pleasing visual interest.

Part 1: The Hydrologic Cycle. Ride the wild hydrologic cycle and learn about how Earth recycles water over and over.

Part 2: Source to Tap. Follow a water drop from its source far away to the water treatment plant to your home.

Part 3: Water Treatment. Take a fascinating tour of the water treatment plant.

Part 4: Source Water Protection. Learn why it is important for everyone to keep lakes and rivers clean and unpolluted.

Part 5: Fun Facts About Water. Test your knowledge about water

DVD each approximately 8 minutes

Professor Water & The Amazing Water Cycle: Grades 3 - 8

Teacher's Guide



Includes:

- Real science experiments for home and school
- Outcome based learning lessons
- Fun, games, and activities
- Water glossary for young scientists
- And much, much more!

Meets National Science Education Standards.

Fantastic Facts About H₂O

Join zany Professor Water and his sidekick as they explore Niagara Falls, the South Pole, and Death Valley. Along the way, viewers learn a world of information about drinking water treatment, water conservation, and other wonders of water.

DVD 28 minutes

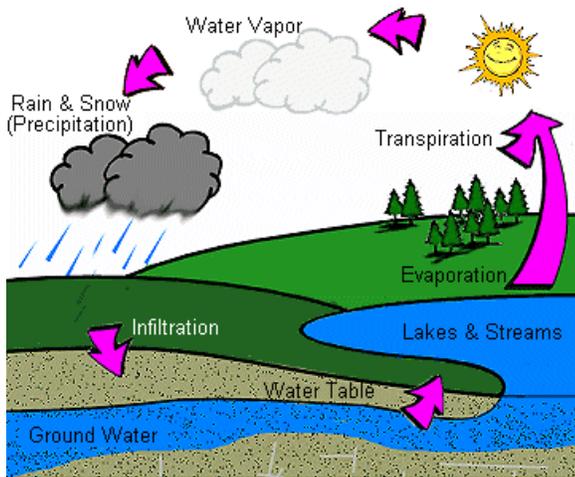
The Amazing Water Cycle

Question: "What's the formula for water?"

Answer: "H, I, J, K, L, M, N, O." (You know, "H" to "O")

He's weird! He's wacky! He's Professor Water! Join the zany professor and a cohort of kids as they go for a wild ride on the wondrous water cycle.

DVD 28 minutes



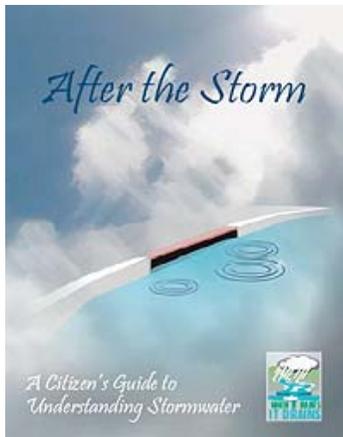
Our Water Cycle: Grade 4 - 6

All living things on earth need water, so why don't we run out of water? This exciting video takes you on the wildest ride of all -- the earth's water cycle! You'll go up miles into the troposphere as water vapor, then plummet back down to earth as rain or snow -- and eventually ride the cycle all the way to the ocean or even soak down, deep under the earth's surface.

You will learn what percentage of much water is in oceans, rivers and lakes, polar ice caps, and underground . . . how little of earth's water is actually available for all the earth's people, animals, and plants to drink . . . how hydrogen and oxygen molecules combine to form water. You'll learn why water becomes liquid, vapor, or ice . . . how water evaporates into the atmosphere to form clouds . . . and why it falls back to earth thousands of miles away as rain, snow, or hail. Viewers see where all the precipitation goes --- either landing on plants, infiltrating into the ground, or running into rivers, lakes, and oceans --- in a never ending cycle of evaporation, condensation, transpiration and precipitation!

~Use with *The Water Cycle Map*

DVD 12 minutes



After the Storm: Grade 1 - 12

All across America people live, work, and play in watersheds, without knowing it. As this DVD shows, protecting the nation's water resources will take the awareness and effort of individual citizens. Three case studies focus on the interconnections between water supply, water quality and the economic vitality and quality of life in our communities.

Co-produced by EPA and The Weather Channel

DVD 22 minutes



California Department of Water Resources Children's Programs

Department of Water Resource's children's' programs are available on one educational, fun filled DVD. Fun and easy way to teach children about the water cycle, water use, conservation & safety, as well as how a fish hatchery operates & the life cycle of the Chinook Salmon. Historical footage of California's earliest water projects demonstrates water's importance in California's economic development.

Programs on DVD include:

"The Water Cycle"	Grade K-6	DVD 11:48 minutes
"Albert and Einstein: Aqueduct Safety"	Grade K-6	DVD 30 seconds
"Water, Who Needs It?"	Grade K-6	DVD 14 minutes
"A Visit to the Feather River Hatchery"	Grade 4-8	DVD 9 minutes
"The California Water Story"	Grade 4 – Adult,	DVD 17 minutes

Water Facts, Groundwater Foundation: Grade 2- Adult

Water Facts is a collection of about 200 miscellaneous facts about water, including terms, basic hydrology, conservation tips, inspiring quotes, and fun facts about water. Links to sources are included, so you can check the source yourself or check for updated information. Please remember the Water Facts are a snapshot in time; all facts were the most current available and all links included were valid as of October 2004. Water Facts can be used for festivals, reports, speeches and trivia games. CD



The Water Works – From Source to Tap:

Grades K -1 2

This fun-filled youth-education video takes kids on a tour of a municipal water plant. Basic scientific principles involved in water treatment are explained. Great for school visits. A classroom field trip has never been so much fun!

DVD 12 minutes

BOOKS & REFERENCE MATERIALS



The Comprehensive Water Education Book: Grade K – 6

The activities in this manual will help students develop a scientific attitude. By using activities, children can begin to learn cause and effect relationships, increase their natural curiosity, suspend judgment, develop a desire to search for answers, and approach problems with open minds.

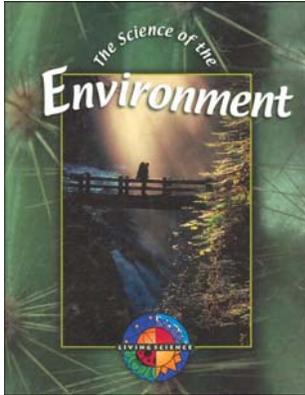


335 pages

Content covered includes:

1. The Physical and Chemical Properties of Water – 17 lessons
2. The Hydrologic Cycle – 18 lessons
3. All Living Things Are Dependant on Water to Maintain Life – 13 lessons
4. Water is Essential to Human Activities – 15 lessons
5. Fun & Games – 34 activities
6. Field Methods and Equipment

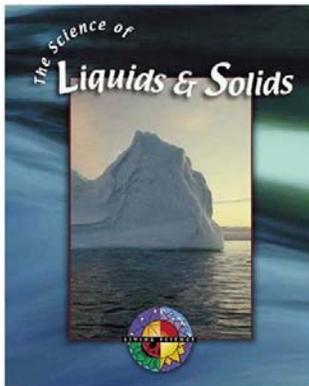
Living Science Series



The Science of the Environment: Grades 2 - 4

Takes an up-close, exciting look at the fundamental relationship between every living thing and its surroundings. Includes sections on Deserts, Forests, Grasslands, Watery Places, Endangered Habitats, Saving the Environment, Glossary, and more. Includes activities.

32 pages



The Science of Liquids & Solids: Grades 2 - 4

Takes an up-close, exciting look at the changeable nature of liquid and solid matter and how liquids and solids interact to shape our world. Includes sections on Using Liquids and Solids, What is Matter? Go With the Flow, Sink or Swim, Glossary, and more. Includes activities.

32 pages

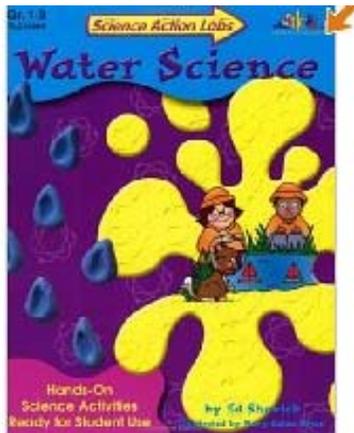
Thinking About Science Series

Ecology: Grades 4 – 8

Covers the following topics: • Ecology: What Is It? • Biomes • Niches • Chains, Webs, and Pyramids • Partnerships, Good and Bad • Ecosystems • Coniferous and Deciduous Forests • Tropical Rain Forests • Grasslands • The Desert • Aquatic Ecosystems.

48 pages

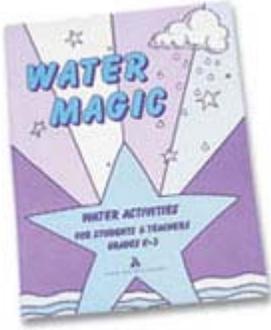
Science Action Labs



Water Science: Grades 4 - 8

Provides opportunities for students to discover for themselves the wonder of water (it covers three-fourths of the Earth's surface, it is a part of all living things, it is the only substance on Earth that exists in three forms, it dissolves, it evaporates, it has a skin and much more). Students will enjoy conducting a variety of experiments with water, solving challenges, competing with one another in simple games and taking quizzes to review what they have learned.

64 pages



Water Magic

Water Activities for Students and Teachers: Grades K – 3

Water Magic helps educators explore the exciting topic of water with their students in grades kindergarten through third.

This book describes 23 hands-on activities. Each lesson identifies a specific objective, the curriculum area, and cognitive taxonomy. Every curriculum area used in the lower primary grades is covered by at least one activity in this book.

Activities include

- The Water Planet
- Every Living Thing Needs Water
- Pocket Garden
- Oceans
- Sink or Swim
- Fresh Water
- Groundwater
- The Popular Kind of Water
- Frozen Solid
- Solid Language
- Water Is a Gas
- Water Evaporation
- Water Cycle
- Polluted Water
- Water Cohesion
- Small Boat Float
- Community Workers
- Wastewater Treatment
- Water Distribution
- Fire Hydrants
- Water Wise Use
- Water Conservation Outdoors

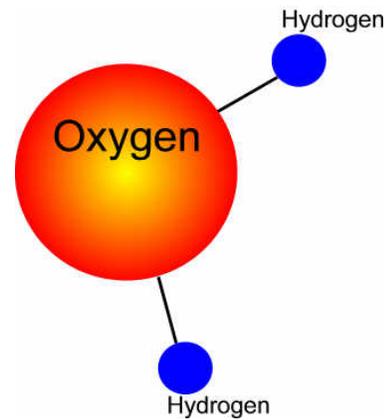
48 pages

Water Can Be Fun!

How to Create A Successful Science Fair

**Features 34 Water-Related Projects Ideas to Share
With Students: Grades K- 8**

The book contains detailed information on how to create a science fair, forms used to coordinate a science fair, sample news releases, sample letters to parents and actual experiments. Experiments are all water-related and organized by age group.

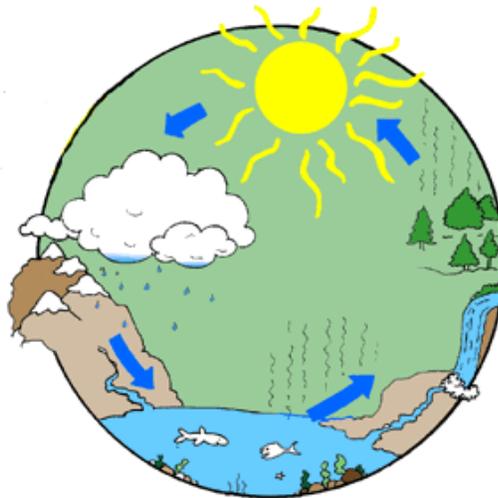


WATER AWARENESS MATERIALS

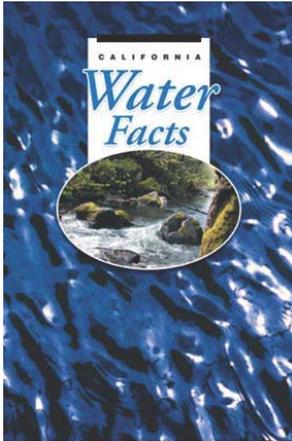


&

FUN FOR KIDS



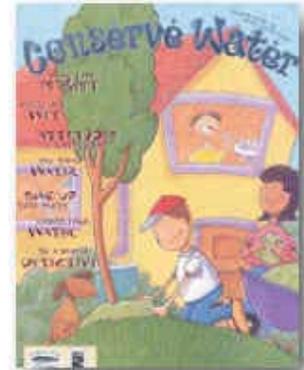
California Water Facts Brochure



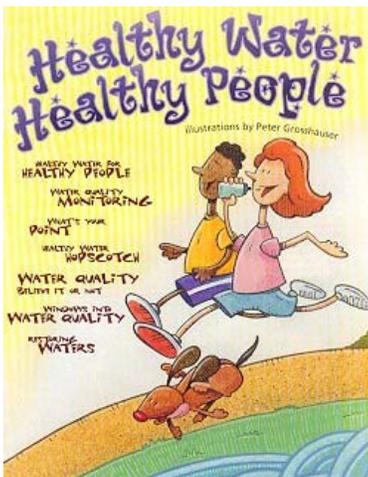
The 12-page, full-color brochure contains eye-catching charts and photos explaining California's surface and groundwater use and delivery system, the state, federal and local water projects, and environmental protection issues. Alternative water sources such as water recycling, desalination and groundwater recharge are described. A "Water Trivia" section includes figures on indoor and outdoor household water use, and how much water is used to produce certain foods such as tomatoes, oranges and pasta. A section on water efficiency in the home and issues such as climate change and water quality are also included.

Conserve Water Student Booklet: Grades 4 - 8

This full-color, 16-page booklet contains games, puzzles and activities designed to teach students about water conservation.



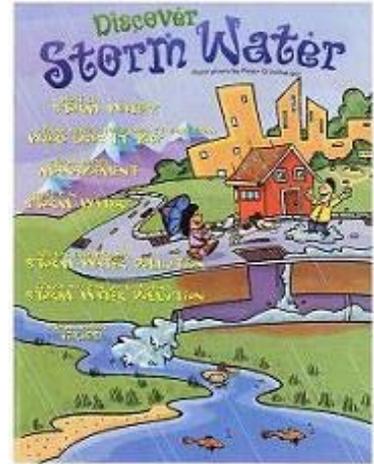
KIDSs - Healthy Water, Healthy People: Grades 4 - 7



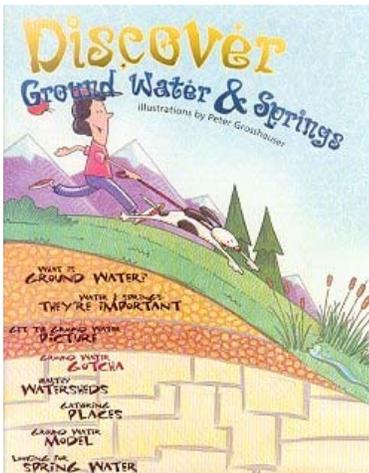
This colorful, 16-page activity book features informative text, activities, investigations, and experiments designed to teach water quality monitoring, watershed restoration, and pollution prevention. Students also learn how the body uses water in sports, digestion, breathing, and even thinking.

KIDS - Discover Storm Water: Grades 4 - 7

This colorful, 16-page activity book features informative text, activities, investigations, and experiments designed to teach awareness of storm water and how to prevent pollution. Pull on your rain boots and try to imagine what your town would be like without storm drains. Readers can calculate runoff on permeable and impermeable surfaces, follow the maze of nonpoint source pollution, and apply best management practices.



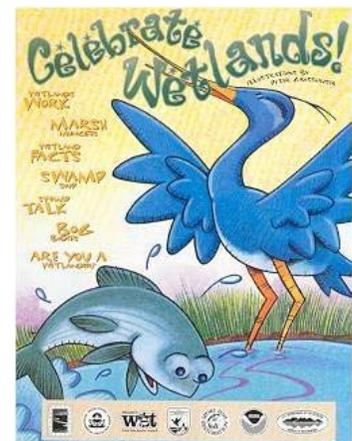
KIDS – Discover Ground Water and Springs: Grades 4 - 7



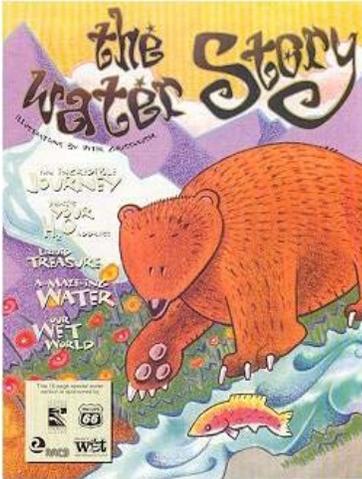
This colorful, 16-page activity book features interactive lessons such as filling glasses with sand, gravel, and clay designed to show readers principles related to water flow. Watershed animals, hot and cold springs, and everyday ground water uses are vividly illustrated and demonstrated. Part of the KIDS Series, published by The Watercourse, which feature creative and hands-on investigations, demonstrations, science experiments, educational games and stories designed to stimulate understanding of booklet's topic.

KIDS – Celebrate Wetlands: Grades 4 - 7

This colorful, 16-page activity book uses everyday tools such as coffee, filters, sponges, celery and food coloring to teach students about the life of wetlands. An 11 x 16 poster reminds kids of the many spectacular plant and animal species of the wetlands.



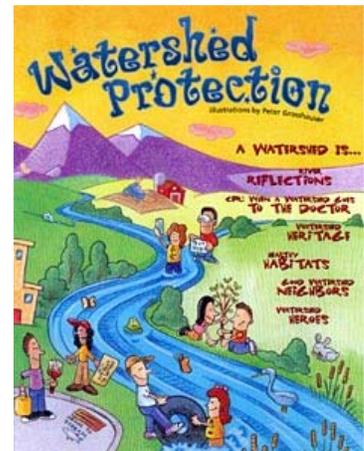
KIDS – The Water Story: Grades 4 - 7



This colorful, 16-page activity book features games and exercises to introduce water artifacts and cultural celebrations, water friendly cleaning alternatives, and the maze from water source through treatment plant to homes and out again.

Watershed Protection: Grades 4 – 7

This colorful, 16-page, interactive booklet helps children learn the answers to a host of questions. What is a watershed? How can you protect a watershed using simple, everyday actions? Who manages a watershed? What watershed habitats support different plants and animals? Kids can even become a certified Watershed Hero! Features creative and hands-on investigations, demonstrations, science experiments, educational games and stories designed to stimulate understanding of booklet's topic.



BE WATER WISE



Over-watering your landscape or using an automated irrigation system with broken sprinkler heads will waste water and cost you money. That excess water can find its way into the street where it collects oil residue, trash, and other debris before finding its way into a storm drain. Storm drains empty directly into local creeks and rivers contaminating our water supply.

**Please check your
irrigation equipment,
including sprinklers
and controllers to
avoid over-watering
your landscape.**

Please see City of Redding Municipal Code, Section 14.08.230 printed on the reverse for more information.



A public education
project by
Redding Municipal
Utilities
(530) 224-6068

City of Redding Municipal Code Chapter 14.08 Water

Section 14.08.230

Customer Responsibility for Maintenance

Customers shall prevent waste of water and shall keep their service pipes, fixtures, stopcocks and other apparatus, excepting the service installed and owned by the city, in good repair and free from leakage at customer's own expense, and each customer shall be liable for all damages which may result from his or her failure to do so. If property owners fail to make necessary repairs to prevent water loss and related nuisance, the city may disconnect the services upon ten days' notice to the occupant. (Ord. 1655 § 1 (part), 1983)

Irrigation Tips:

- Apply only enough water to moisten the root zone of your plants, then allow the soil to dry before watering again.
- Water in the late evening or early morning to minimize evaporation.
- Use drip irrigation for shrub beds and gardens where water goes directly to the root.
- Direct sprinklers towards your lawn and away from sidewalks and driveways.



A public education
project by
Redding Municipal
Utilities
(530) 224-6068

ATTACHMENT L

City of Redding 2000-2020 General Plan Natural Resource Element

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NATURAL RESOURCES ELEMENT

Introduction

PURPOSE AND CONTENT

The City of Redding is fortunate to have a wide range of resources within its Planning Area. These include the Sacramento River, creeks, ponds, wetlands, vernal pools, and groundwater resources; a variety of vegetation types and communities; wildlife; archaeological, historical, and cultural resources; mineral resources; and agricultural lands.

These resources contribute to the City's economy and are important elements of Redding's quality of life. Both responsible management and protection of these resources are needed. This Plan seeks to balance the need to accommodate growth with the need for the conservation, protection, and enhancement of the area's natural resources.

Most of the background data and information related to this element are contained within Chapter 9 of the City of Redding *General Plan Background Report*. Information regarding archaeological, historical, and cultural resources is contained in Chapter 8 of the same document.

Specific topics addressed within the Policy Document include:

- ▶ Surface Water.
- ▶ Groundwater.
- ▶ Biological Resources.
- ▶ Open Space.
- ▶ Archaeological, Historical, and Cultural Resources.
- ▶ Mineral Resources.
- ▶ Energy Resources and Conservation.
- ▶ Agricultural Lands.

Air quality, which is also considered a resource, is addressed in a separate Air Quality Element. Park and recreation facilities and programs are addressed within the City's Recreation Element.

AUTHORITY

In accordance with Government Code Sections 65302(d) and 65302(e), a general plan is required to include both a Conservation and an Open Space Element.

Conservation Element

The Conservation Element is required to address the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. The Conservation Element may also cover:

- ▶ The reclamation of land and waters.
- ▶ Prevention and control of the pollution of streams and other waters.
- ▶ Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- ▶ Prevention, control, and correction of the erosion of soils, beaches, and shores.
- ▶ Protection of watersheds.
- ▶ The location, quantity, and quality of rock, sand, and gravel resources.
- ▶ Flood control.

Assembly Bill 162 (adopted in 2007) amended certain sections of the Government Code pertaining to land use planning. As relates to the Conservation Element, Section 65302.d.(3) requires that the Element identify rivers, creeks, streams, flood corridors, riparian habitats, and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management.

Open Space Element

It is the intent of the Legislature that cities preparing general plans recognize open space as a limited and valuable resource to be conserved whenever possible.

The Open Space Element is specifically required to consider open space for the preservation of natural resources (fish and wildlife habitat); open space used for the managed production of resources (food and fiber); open space for outdoor recreation, including areas of scenic, historical, and cultural value; and open space necessary to maintain the public health and safety.

The Conservation and Open Space Elements are commonly combined because of the overlapping topics each is required to address. *The City of Redding has chosen to prepare a Natural Resources Element which effectively meets the statutory requirements of both documents.*

Goals and Policies

SURFACE AND GROUNDWATER RESOURCES

The availability, quantity, and quality of water resources are vital to natural processes and human activities within any urban area. Water is essential to the development of housing, commerce and industry, agricultural operations, recreation, and the maintenance of high-quality fish and wildlife habitats.

Surface water within the Planning Area consists of the Sacramento River and numerous tributary creeks. There are also a number of ponds, most of which are in private ownership.

Municipal Water Sources

The City of Redding has two major sources of drinking water: surface water and groundwater. The Sacramento River and Whiskeytown Lake provide approximately 71 percent of the City's water usage. This translates into approximately 5.61 billion gallons per year. The remaining 29 percent, or 2.32 billion gallons per year, is groundwater, which comes from 14 wells drilled into the Redding Groundwater Basin.

In addition to the City of Redding, a number of water districts provide domestic and agricultural water within the Planning Area. These districts also obtain their supplies from a variety of sources, including the Sacramento River, Spring Creek Conduit, Muletown Conduit (which is also connected to Whiskeytown Lake), and wells.

The quality and quantity of water resources can be affected by a variety of activities, including, but not limited to:

- ▶ Sedimentation and siltation resulting from erosion caused primarily by grading, construction, and the removal of vegetation.
- ▶ Increased stormwater runoff and reductions in groundwater recharge created by covering the soil with buildings, pavement, and other impervious surfaces.
- ▶ Excessive pumping of groundwater.
- ▶ Excessive water consumption.
- ▶ Contamination resulting from the improper or excessive use of pesticides, herbicides, and fertilizers in conjunction with large agricultural operations, golf courses, and other urban uses.
- ▶ Contamination resulting from improperly managed urban stormwater runoff, which often contains pesticides, herbicides, oil, grease, and heavy metals.
- ▶ Discharge of various chemicals and compounds into surface water, groundwater, or storm-drain systems through improper handling and disposal by businesses, industries, or individuals.
- ▶ Contamination resulting from high concentrations of on-site sewage-disposal systems or systems installed in areas with unsuitable soils.
- ▶ Leaching of soils that have been contaminated by hazardous materials or substances.

Stormwater Management/Groundwater Recharge

The Sacramento River, its tributary streams and their collective floodplains provide many benefits to the community beyond their scenic, recreational, and habitat values. Because the City's development regulations largely protect these areas from development (see the Community Development and Design Element and the Health and Safety Element), they also represent significant opportunities for stormwater management and groundwater recharge. In addition to basic floodplain protection, the City also requires new development to establish river- and

creek-corridor buffer areas, which are to remain in their natural state to protect riparian vegetation, ensure streambank stabilization, and to provide public access to these waters.

The following figures of this Element and the Health and Safety Element depict the areas available for stormwater management and groundwater recharge as required by Government Code Section 65302.d.(3):

- ▶ Natural Resources Element, Figure 3-3, "River and Creek Corridor Buffer Widths"
- ▶ Health and Safety Element, Figure 4-3, "100 year floodplain"
- ▶ Health and Safety Element, Figure 4-4, "Stormwater Detention/Retention Feasibility Areas"

Issues

Erosion and sedimentation control are the primary issues in the Redding area from a water-quality perspective. While the City recognizes the economic importance of allowing grading and other site-development activities to occur during what is considered the "rainy season" (typically October 15 through April 15), of equal or greater importance is the protection of our surface-water resources. Siltation of our waterways has dramatic negative effects on aquatic wildlife, including federally protected species of anadromous fish. The following policies strike a balance between these objectives.

GOAL NR1

MINIMIZE SOIL EROSION AND SEDIMENTATION PROBLEMS RESULTING FROM DEVELOPMENT ACTIVITIES; IMPROVE THE QUALITY OF STORMWATER RUNOFF.

Policies to achieve this goal are to:

- NR1A. Establish a process for the development, review, and approval of erosion- and sedimentation-control plans of single-family residential construction and similar small projects.
- NR1B. Require development applicants to submit and receive Public Works Department approval for erosion- and sediment-control plans prior to undertaking grading activities.

- NR1C. Minimize soil erosion and sedimentation created during and after construction activities to the fullest extent practicable, using Best Management Practices (BMPs).
- NR1D. Make project monitoring and enforcement activities a priority to ensure that erosion-control measures are in place prior to the start of the rainy season and function properly and effectively:
 - ▶ Installed properly.
 - ▶ In place prior to the start of the rainy season.
 - ▶ Functional and effective.
- NR1E. Aggressively pursue immediate remediation when erosion damage is discovered and/or initial control measures fail.
- NR1F. Establish and levy fines for failure to comply with the requirements of the Grading Ordinance and/or an approved erosion- and sediment-control plan.
- NR1G. Support and/or jointly sponsor erosion- and sedimentation-control training and education activities in conjunction with the development community.
- NR1H. Ensure that employees responsible for monitoring and enforcing the City's Grading Ordinance receive adequate training regarding erosion- and sediment-control practices.
- NR1I. Work with Shasta County and other regional, state, and federal agencies to reduce the amount of toxic chemicals and other agents or pollutants entering the surface water system from agriculture, golf course, and urban runoff.
- NR1J. Encourage neighboring jurisdictions to adopt and enforce consistent erosion- and sediment-control measures.

GOAL NR2

DEVELOP AND MAINTAIN ADEQUATE WATER SUPPLIES FOR DOMESTIC AND FIRE-SUPPRESSION PURPOSES.

Policies to achieve this goal are to:

- NR2A. Continue to evaluate options for increasing the City's and other water providers' water supplies, including, but not limited to, acquiring additional allocations from the Sacramento River, development of additional wells, and enhancement of water-storage and treatment facilities.
- NR2B. Encourage water-conservation practices including, but not limited to, use of:
- ▶ A tiered pricing system for water which is tied to the amount consumed by a household or business.
 - ▶ Native plants or other plants with low water requirements in public and private development projects.
 - ▶ Drip irrigation systems.
 - ▶ "Gray water" for landscape irrigation if approved by Shasta County.
- NR2C. Utilize water-reclamation projects in landscape and agricultural uses if approved by the California Regional Water Quality Control Board and State Department of Health Services.
- NR2D. Support efforts to limit exportation of surface water to other areas of the state and to protect local water rights.

GOAL NR3

PRESERVE AND PROTECT THE QUANTITY AND QUALITY OF GROUNDWATER RESOURCES WITHIN THE PLANNING AREA.

Policies to achieve this goal are to:

- NR3A. Provide maximum groundwater-recharge opportunities by maintaining the natural

condition of waterways and floodplains to the extent feasible, given flood-control requirements.

- NR3B. Comply with the Regional Water Quality Control Board's regulations and standards to maintain and improve groundwater quality in the Planning Area.
- NR3C. Support the preparation of a groundwater management plan for the Redding Groundwater Basin that will address long-term sustainability of the resource.
- NR3D. Support efforts to prevent exportation of groundwater to other areas of the state and to retain local control over the resource.
- NR3E. Work with appropriate state, federal, and local agencies to protect, improve, and enhance groundwater quality in the region.

GOAL NR4

PREVENT AND REMEDY SURFACE-WATER, GROUNDWATER, AND SOIL CONTAMINATION.

Policies to achieve this goal are to:

- NR4A. Discourage the establishment of any new septic systems, except in areas where residential densities are low (1–5 acres per unit and larger) and soils are suitable for septic system use.
- NR4B. Continue to accept, recycle, and/or properly dispose of household hazardous waste through ongoing operation of the City's Household Hazardous Waste Collection Program.
- NR4C. Work with appropriate local, state, and federal agencies to ensure that those responsible for soil, surface-water, and/or groundwater contamination are required to initiate, monitor, and complete full remediation activities.
- NR4D. Work with Shasta County and other appropriate agencies to educate the public and business owners regarding proper handling and disposal of hazardous materials and household hazardous waste.

NR4E. Establish and enforce penalties for illegal dumping of both hazardous and nonhazardous materials.

BIOLOGICAL RESOURCES

Unlike many urban areas, the Redding Planning Area contains a variety of biological and wildlife resources. Generalized habitat mapping of the Planning Area has been completed through the use of three different processes: Satellite Imagery Mapping, Riparian Mapping, and Vernal Pool Complex Mapping. Methodology for both the Riparian and Vernal Pool Complex mapping efforts involved the use of infrared aerial photos and field surveys. Although this data should not be considered site-specific, it does provide a reasonably accurate composite of basic habitat types and their general distribution throughout the Planning Area.

Major habitat types or communities within the Planning Area include:

- ▶ Woodland (Blue Oak-Grey/Digger Pine).
- ▶ Annual Grasslands.
- ▶ Mixed Chaparral.
- ▶ Riparian.
- ▶ Aquatic.
- ▶ Vernal Pools.
- ▶ Wetlands.
- ▶ Irrigated Agriculture and Urban Vegetation.

For purposes of this General Plan, the following habitat types are considered sensitive and require special consideration when developing within or in proximity of them: riparian, vernal pools, aquatic, and wetlands.

These habitats support a variety of both plant and animal species, some of which are classified as special status species. Special-status species include:

- ▶ Species that are listed or proposed for listing as Threatened or Endangered under the State or Federal Endangered Species Acts.
- ▶ Species that meet the definition of rare, unique, or endangered under the California Environmental Quality Act (CEQA).
- ▶ Species listed as "Species of Special Concern" by the California Department of Fish and Game (DFG).

Potential impacts to sensitive habitats and/or special-status species must be mitigated in accordance with the requirements of the California Environmental Quality Act.

Because the potential for finding special-status species is particularly high in vernal pools and vernal pool complexes, Figure 3-1 shows the approximate locations of known vernal pool resources. These resources are located within the Stillwater Creek and Clover Creek basins. Note that this figure is not intended to represent the locations of all vernal pools within the Planning Area. Proper field documentation by a qualified biologist or botanist must be provided with all development proposals located in areas considered to have a high probability of containing vernal pools.

GOAL NR5

PRESERVE AND PROTECT THE SIGNIFICANT HABITATS, PLANTS, AND WILDLIFE THAT EXIST IN THE PLANNING AREA.

Policies to achieve this goal are to:

NR5A. Minimize the disruption of sensitive habitat caused by new development by encouraging innovative design and site planning and establishing performance standards for habitat protection.

NR5B. Work to preserve and enhance fisheries in the Sacramento River and those streams or stream segments identified on Figure 3-2.

NR5C. Maintain and update data and information regarding areas of significant biological value within the Planning Area to:

- ▶ Provide critical information to the community.
- ▶ Facilitate resource conservation.
- ▶ Facilitate appropriate management of development activities.

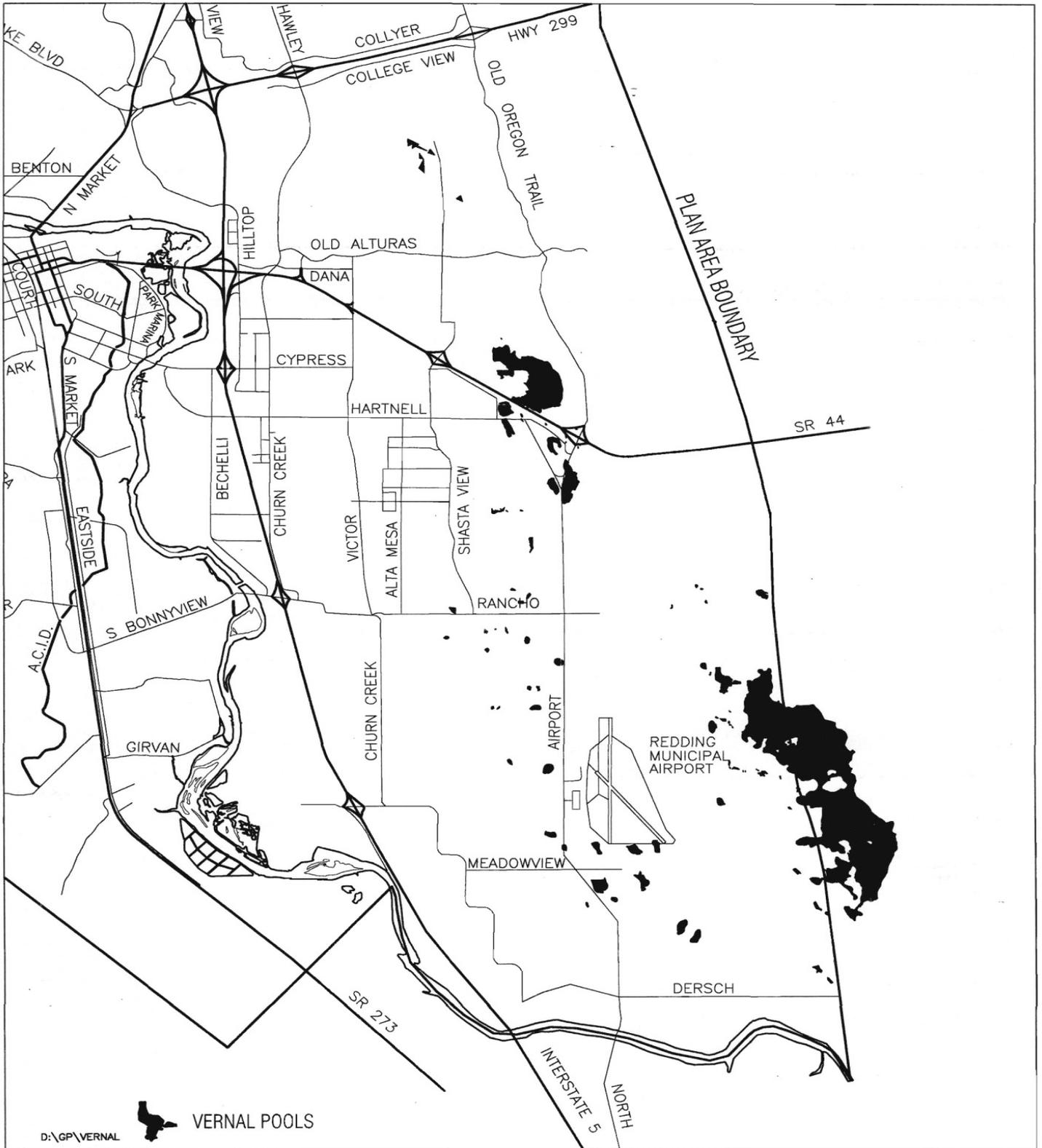


Figure 3-1 Major Vernal Pool Complexes

Natural Resources

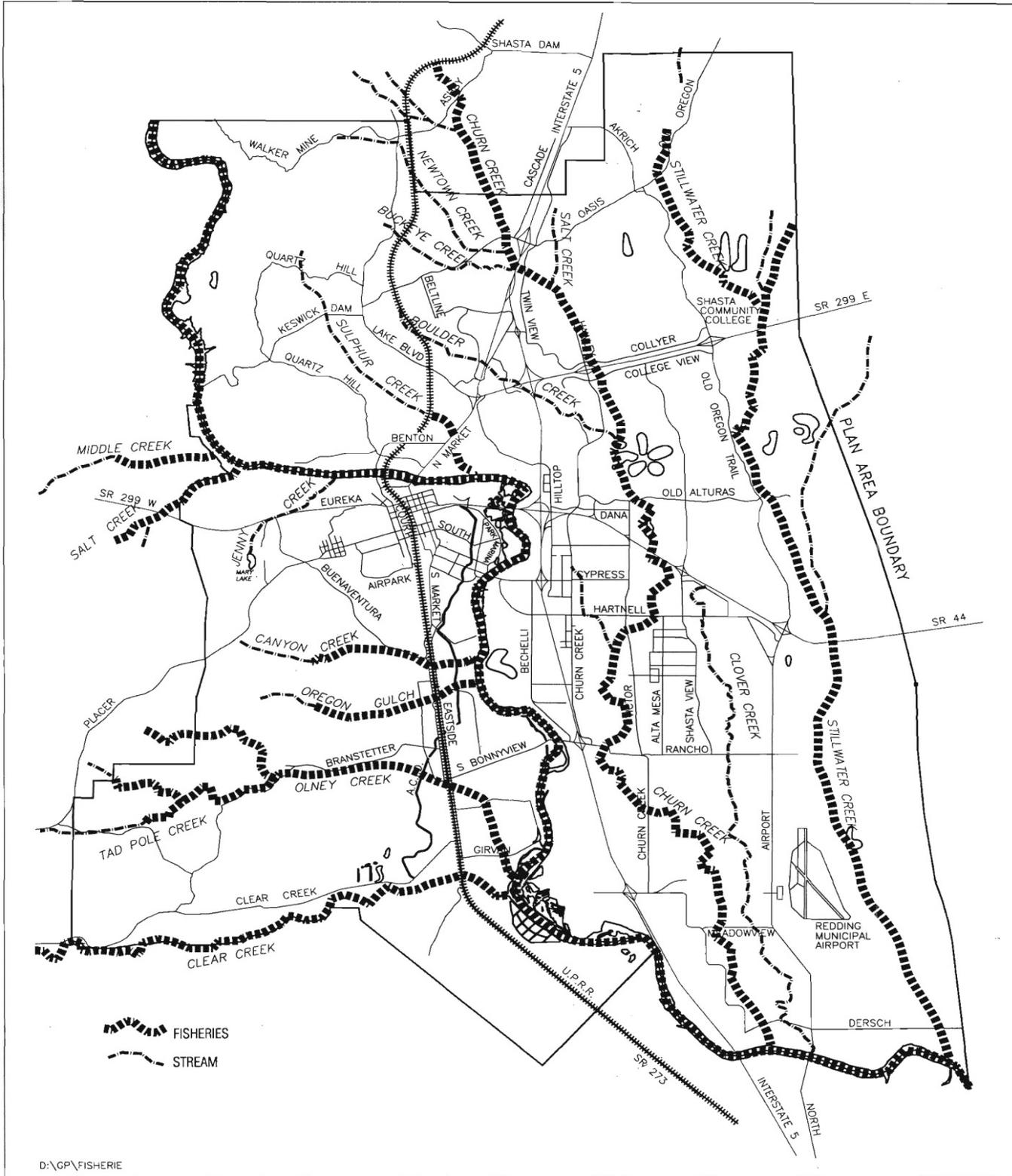


Figure 3-2 Fisheries



Natural Resources Element

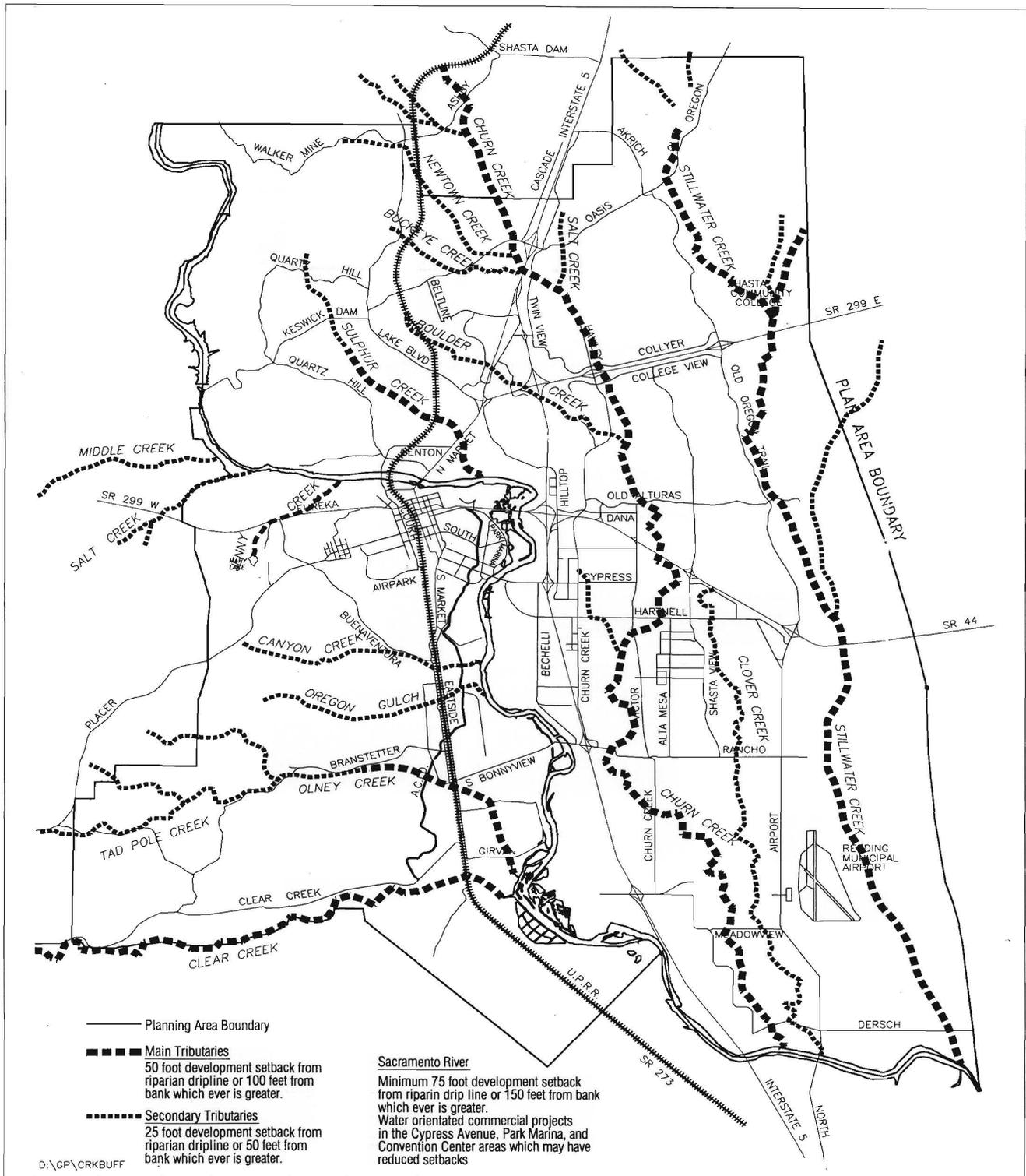
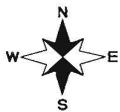


Figure 3-3 River And Creek Corridor Buffer Widths



Natural Resources Element

GOAL NR6

PROTECT "SPECIAL STATUS" PLANT AND ANIMAL SPECIES; PRESERVE AND PROTECT CREEK CORRIDORS, RIPARIAN AREAS, VERNAL POOLS, AND WETLANDS.

Policies to achieve this goal are to:

- NR6A. Preserve watercourses, vernal pools, riparian habitat, and wetlands in their natural state to the extent feasible. Fully mitigate unavoidable adverse impacts such as wetland filling or disturbance.
- NR6B. Provide adequate buffering of sensitive habitats whenever necessary. Buffer size should be based upon the type of habitat as well as its size and habitat value.
- NR6C. Ensure that uses allowed within riparian corridors:
- ▶ Minimize the creation of erosion, sedimentation, and increased runoff.
 - ▶ Emphasize retention and enhancement of natural riparian vegetation.
 - ▶ Provide for unimpaired passage of fish and wildlife.
 - ▶ Avoid activities or development of new features that result in disturbance or dispersal of wildlife.
 - ▶ Avoid channelization.
 - ▶ Avoid substantial interference with surface and subsurface flows.
 - ▶ Incorporate natural vegetation buffers.
- NR6D. Continue to require new development to provide minimum river and creek-corridor development setbacks (buffer areas) in accordance with Figure 3-3 and Zoning Code Chapter 18.48. These setbacks may be modified based on project/resource-specific circumstances and appropriate mitigation. These buffer areas should be dedicated or a permanent conservation easement granted to the City as a condition of development approval.

NR6E. Strive to conserve all "special-status species" within the Planning Area. Ensure implementation of statutory protection for these species.

NR6F. Support public and private efforts to establish habitat mitigation banks, habitat conservation plans, conservation easements, and other mechanisms that serve to protect sensitive habitats and species.

NR6G. Ensure implementation of policies and regulations for protection of those wildlife species having statutory protection under local, state, and/or federal laws.

GOAL NR7

RECOGNIZE THE AESTHETIC AND BIOLOGICAL VALUES OF OAK WOODLANDS AND OTHER NATURAL VEGETATION.

Policies to achieve this goal are to:

- NR7A. Promote existing native oaks, especially valley oaks, by establishing standards for the design of development projects. The preservation of stands of trees within developments is preferred over preservation of individual trees, with the exception of special-status species and heritage trees.
- NR7B. Identify and establish appropriate "tree mitigation areas" to be used for the planting of native trees in concert with development project mitigation.

GOAL NR8

RECOGNIZE AND PROTECT HABITAT LINKAGES AND MIGRATORY CORRIDORS.

Policies to achieve this goal are to:

- NR8A. Maintain, where possible, the habitat linkages/wildlife corridors and sensitive habitats that are created by the open-space ("Greenway") network established by this General Plan. Require development in areas depicted as "Greenway" on the General Plan Diagram to consider corridor impacts and, where necessary, provide alternate usable

links between habitat types or areas and/or provide alternate development plans that avoid the open-space network and sensitive habitats.

- NR8B. Maintain and preserve other natural habitat linkages and wildlife corridors in the City where feasible. Discourage development impacts to these linkages and corridors and fully mitigate associated unavoidable adverse impacts.

**GOAL NR9
PROMOTE AND FACILITATE HABITAT
PRESERVATION, RESTORATION, AND
ENHANCEMENT.**

Policies to achieve this goal are to:

- NR9A. Encourage the acquisition, preservation, restoration, and enhancement of native vegetation with a focus on wetlands and riparian habitat that will improve the biological value and integrity of the City's natural resources. Encourage native landscape in unvegetated, manmade areas, such as along streets and in abandoned lots.
- NR9B. Encourage education and community involvement in the protection and enhancement of local biological resources.

OPEN SPACE

In addition to protecting life and property, open-space areas are essential to the health and livability of a community. Open space may consist of developed and undeveloped parklands (see Recreation Element). Open-space lands also include natural areas, either public or private, that have been set aside in perpetuity for their ecological, visual, or safety-related aspects.

Redding is fortunate to have an extensive open-space network. The heart of this network is the Sacramento River. Into the river flows numerous tributary streams that, for the most part, originate in steep terrain to the west and north of the city. Policies of this and past General Plans have set aside these slope and stream-side areas from development. Together, they represent many square miles of open space. These lands are depicted on the General Plan Diagram as "Greenway" and are subject to the development constraints proposed by this Plan.

While open space is valuable in and of itself, connectivity and public accessibility enhance this value appreciably. Policies contained in the Community Development and Design Element address the need to provide public access to these open-space corridors. The Recreation Element addresses the development of a comprehensive trail system largely utilizing creek corridors.

As discussed in detail within the Health and Safety Element, the Redding Planning Area contains several natural features which are considered hazardous for development. These include natural areas containing excessive slopes (greater than 20 percent) and areas within the 100-year floodplain of the Sacramento River or its tributaries. In the interest of public safety and to reduce the potential for loss of life or property damage from wildland fires or floods, it is essential that development restrictions be applied within these hazard areas.

**GOAL NR10
PRESERVE AREAS CONTAINING EXCESSIVE
SLOPES OR 100-YEAR FLOODPLAINS AS OPEN
SPACE TO PREVENT LOSS OF LIFE AND
PROPERTY DAMAGE AND TO PROVIDE
VALUABLE HABITAT AND RECREATIONAL
OPPORTUNITIES.**

Policies to achieve this goal are to:

- NR10A. Require as a condition of development approval public dedication of flood-prone lands adjacent to the Sacramento River and those tributary streams identified on Figure 3-3. Exceptions to this policy may be made based on: (1) the provisions of any adopted specific plan or (2) approval by the City in consideration of special circumstances unique to a flood-prone area where the extent of flooding is largely dictated by inadequate drainage improvements, where an entire parcel is constrained by floodplain, and/or where the flooding occurs within a developed area.
- NR10B. Preserve land publicly dedicated under Policy NR10A as open space. Development in these areas, except as required to provide public facilities, such as roads, utilities, and trails, will be restricted to passive,

low-impact uses that minimize removal of existing vegetation and maintain or increase the existing habitat value, while providing adequate protection from wildland fires.

- NR10C. Require, as a condition of development approval, that private open-space easements be established for significant areas of nondeveloped lands that exceed a slope of 20 percent. Use public dedications and/or trail easements when necessary to connect these areas to existing or proposed public open space.

GOAL NR11

PROMOTE THE PRESERVATION AND APPROPRIATE PUBLIC USE OF KEY OPEN-SPACE LANDS WITHIN THE COMMUNITY.

Policies to achieve this goal are to:

- NR11A. Continue to use the Parks, Trails, and Open Space Master Plan to implement various policies of this General Plan that address the:
- ▶ Framework for open-space lands.
 - ▶ Role of public and private open-space lands.
 - ▶ Preservation of important ecological areas.
 - ▶ Acquisition and management of public open-space land.

ARCHAEOLOGICAL, HISTORIC, AND CULTURAL RESOURCES

Due to the presence of the Sacramento River and its numerous tributary creeks, the Redding Planning Area has a relatively high potential for cultural resources. The river, creeks, and old river terraces are prime locations for cultural resource sites, both prehistoric and historic. Through records kept at the Northeast Information Center at California State University, Chico, 213 prehistoric sites have been located and documented. Two archaeological sites have been listed on the National Register of Historic Places. Many more sites are likely to exist and could be susceptible to inadvertent destruction during construction and development activities if precautions are not implemented.

Redding also has numerous historic structures dating from the late Victorian period and good examples of architecture dating from the 1920s to the 1940s, including Art Deco and Works Progress Administration (WPA)-period buildings. Only four of the City's historic structures (Old City Hall—1313 Market Street; Pine Street School—1135 Pine Street; the Frisbie House—1246 East Street; and the Cascade Theatre — 1725 Market Street) have been listed on the National Register of Historic Places. However, many more of the City's historic structures would likely qualify for nomination to the National Register, or other state and local registers, either as individual structures or as historic districts.

GOAL NR12

PROTECT AND ENHANCE HISTORICAL AND CULTURALLY SIGNIFICANT RESOURCES WITHIN THE PLANNING AREA.

Policies to achieve this goal are to:

- NR12A. Ensure protection of prehistoric, cultural, and archaeological resources during the development process.
- NR12B. Refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory, Northeast Information Center, at Chico State University.
- NR12C. Encourage public and private efforts to identify, preserve, protect, and/or restore historic buildings, structures, landmarks, and important cultural resources.
- NR12D. The City shall not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting the Archaeological Inventory, Northeast Information Center, conducting a site evaluation as may be indicated, and attempting to mitigate any adverse impacts according to the recommendations of a qualified archaeologist. City implementation of this policy shall be guided by Appendix "K" of the *CEQA Guidelines*.

MINERAL RESOURCES

Mineral deposits within the Planning Area consist of copper, gold, tungsten, and gravel. In addition, the area around the Redding Municipal Airport contains gas-bearing strata. The westerly portion of the Planning Area has been mined in the past for placer and lode gold, tungsten, and copper. Most previous mining efforts did not prove to be economically viable. However, this is likely to change in the future as the value of precious metals continues to increase. Gravel-bearing deposits exist along the Sacramento River, Clear Creek, Olney Creek, Churn Creek, and Stillwater Creek.

In 1997, the California Department of Conservation, Division of Mines and Geology (DMG) published a DMG Open File Report 97-03 entitled, *Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite Within Shasta County, California*. The primary purpose of the report is to identify the known or inferred mineral potential of lands within the county to ensure that the mineral potential of land is recognized by local government decision makers and considered before land use decisions are made that could preclude future mining. The report also contains 50-year projections for population and per capita consumption of aggregate and a comparison between the estimated 50-year aggregate demand and current reserves.

The findings of the report indicate that current known concrete-grade alluvial aggregate reserves within Shasta County are calculated to be approximately 30.3 million tons. Based on a historic aggregate consumption rate of 8.0 tons per person per year, the report estimates that current known reserves are likely to be depleted within 17 years. This information highlights the importance of protecting both known and inferred deposits from encroachment by potentially incompatible land uses.

Land classifications utilized in the referenced DMG report are presented in the form of Mineral Resource Zones (MRZs). Each zone type relates to the degree of knowledge about a mineral resource occurrence and the economic characteristics of the deposits. Areas of identified mineral-resource significance, either demonstrated/measured or inferred, are classified as MRZ-2a or MRZ-2b.

Although most areas along the Sacramento River are classified as MRZ-2a or 2b in the 1997 DMG Report,

the presence of existing incompatible development will preclude mineral-extraction activities in those locations. Conversely, areas classified as MRZ-2a and 2b, where mineral-extraction activities are considered feasible, have been designated with a "Critical Mineral Resources Overlay" on the General Plan Diagram.

GOAL NR13

**ENSURE AN ADEQUATE SUPPLY OF
MINERAL RESOURCES TO MEET LONG-TERM
REGIONAL NEEDS.**

**PROTECT CRITICAL MINERAL-RESOURCE
AREAS FROM ENCROACHMENT BY
INCOMPATIBLE LAND USES.**

Policies to achieve this goal are to:

- NR13A. Focus mineral resource-protection efforts in areas identified with a "Critical Mineral Resource Overlay" on the General Plan Diagram. Remove the "Critical Mineral Resource Overlay" when the mineral resource is exhausted and reclamation completed.
- NR13B. Maintain current information regarding the status and location of mineral deposits within the Planning Area.
- NR13C. Prohibit incompatible development in or near areas designated "Critical Mineral Resource Overlay." Residential uses within overlay areas should be limited to 1.0 dwelling unit per 40 acres.
- NR13D. Require a use permit to establish new mining operations. The use permit shall contain conditions necessary to protect the public health, safety, and welfare; to minimize impacts on adjacent land uses; and to mitigate other potential adverse environmental impacts.
- NR13E. Outside Critical Mineral Resource Overlay areas (but within areas classified as Mineral Resource Zones MRZ2a and/or MRZ2b by the State Division of Mines and Geology), mining may be permitted in the in-stream, floodplain, or gravel-bar areas of a river or creek provided removal of sand and gravel is:

1. Conducted during a declared civil or hazardous material emergency or natural disaster to relieve or correct potential hazards to the public health, safety, or welfare caused by such emergency or disaster.
2. For removal of dredger tailings for reclamation purposes only.
3. To protect a public structure, such as a bridge, when it is determined to be necessary by the public entity responsible for said structure.
4. To remove a buildup of sand and gravel to maintain the channel capacity to prevent flooding.

For Items 2, 3, and 4 above, the use permit and reclamation plan for mining of said areas shall be based on a stream-management program, prepared by qualified professionals in appropriate disciplines, which includes data and analysis to show that:

- There will be no significant adverse impact on in-stream habitat; riparian habitat; wetlands; or rare, threatened, or endangered species of fish, wildlife, or plants.
- There will be no significant adverse impact on existing structures, including bridges or levees.
- There will be no significant increase in bank erosion, deposition, or flooding.
- There will be no significant adverse impacts to surrounding properties, including, but not limited to, noise, visual impacts, dust, and similar impacts.

ENERGY RESOURCES AND CONSERVATION

Electricity within the City limits is provided by the City of Redding through its transmission and distribution system. Natural gas—and electric service within the remainder of the Planning Area—is provided by Pacific Gas and Electric Company (PG&E). The City's goal is to provide electric service to both residents and businesses at the lowest possible rates, while maintaining system reliability in an

environmentally responsible manner. System planning and needed facilities are addressed in the Public Facilities and Services Element. However, there is also a need to encourage conservation and the use of alternative forms of energy, such as solar, to ensure that energy resources are utilized responsibly and long-term demands can be met. A similar emphasis on conservation should be promoted for all nonrenewable energy sources.

Another important energy-conservation strategy is to actively pursue the benefits obtained from resource-recovery and recycling programs. It is well-documented that in most instances, the reuse of materials utilizes less energy (and resources) than producing products from raw materials.

GOAL NR14

REDUCE CONSUMPTION OF NONRENEWABLE ENERGY SOURCES AND SUPPORT THE DEVELOPMENT AND UTILIZATION OF NEW ENERGY SOURCES.

Policies to achieve this goal are to:

- NR14A. Provide an electric-usage analysis and efficiency recommendations for those customers who request the service.
- NR14B. Encourage electric utility customers to alter their consumption of electric power to reduce the City's overall and peak electric load.
- NR14C. Explore the commercial viability of extracting natural gas resources within the vicinity of the Redding Municipal Airport.
- NR14D. Continue current source-reduction, recycling, and composting programs that are contained in the joint County of Shasta, City of Redding, and City of Anderson Source Reduction and Recycling Element. (This element is not a part of this General Plan.)
- NR14E. Encourage design that takes advantage of solar orientation and access.

AGRICULTURAL LANDS

The source of information on soils within the Planning Area used for this General Plan is limited to the soil maps prepared by the Natural Resource Conservation

Service (NRCS) and the California Department of Conservation (CDC) Important Farmland Series Mapping and Monitoring Program.

The NRCS classification system organizes soils into eight major capability classes designated by Roman numerals I through VIII. Class I and II soils are considered "prime" and have the fewest limitations in terms of range of use. The other soil classifications have progressively greater natural limitations.

The CDC Important Farmland Series Mapping and Monitoring Program designates important farmlands in California based on NRCS soil surveys and available land use data. This system is also classified into eight categories, including Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban Land, Other Land, and Land Committed to Incompatible Uses. Acreages associated with each CDC system category and its percentage of the total acreage of the Planning Area are summarized in Table 9-1 in the *General Plan Background Report*.

According to the referenced information, there are approximately 5,019 acres of Prime Farmland within

the Planning Area. These soils are depicted on Figure 3-4.

GOAL NR15
PROMOTE THE ECONOMIC VIABILITY OF
AGRICULTURE IN AREAS SUITED FOR
AGRICULTURAL USE.

Policies to achieve this goal are to:

- NR15A. Protect existing prime agricultural soils outside the primary and secondary growth areas and freeway interchange areas with lot sizes (five acres and larger) capable of supporting agricultural operations.
- NR15B. Discourage the cancellation of Williamson Act contracts until it is demonstrated that the lands with such contracts will be needed for urban development in the immediate future.
- NR15C. Establish performance criteria to minimize impacts of urban development near existing income-producing agricultural lands on agricultural practices and reduce conflicts between urban and agricultural uses.

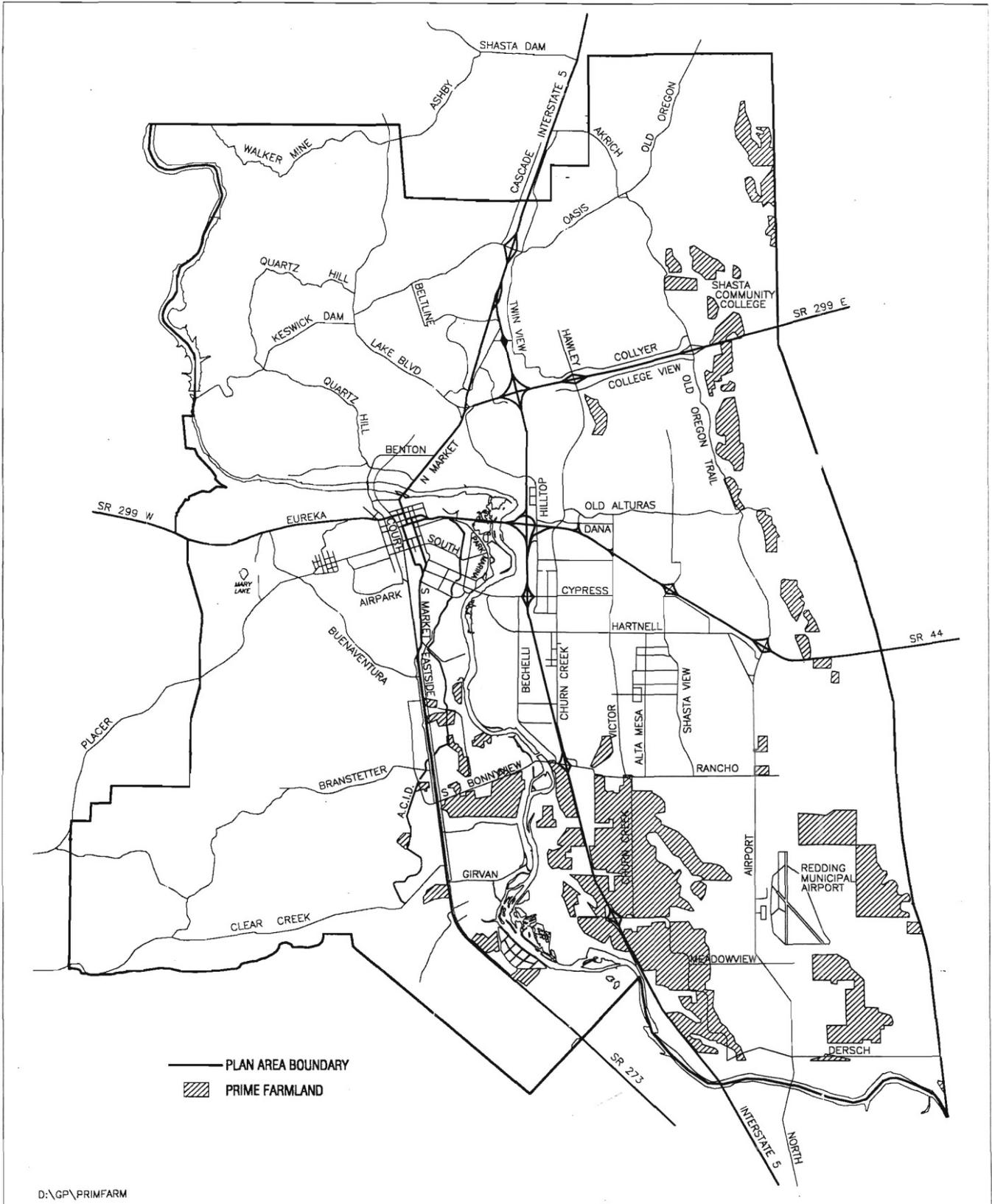


Figure 3-4 Prime Farmland



Natural Resource Element

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

ATTACHMENT M

**City of Redding 2000-2020 General Plan
Recreation Element**

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Recreation Element

INTRODUCTION

PURPOSE AND CONTENT

The purpose of the Recreation Element is to identify and document present park facilities; compare such facilities with current and long-term needs; establish attainable goals and objectives to meet the community's needs; and develop and adopt programs and plans which will accomplish the community's recreation goals.

Background data and information for this element are contained within Chapter 8 of the City of Redding *General Plan Background Report*.

Specific topics addressed within this element include:

- ▶ Natural and Scenic Open Areas.
- ▶ Regional River Parkway.
- ▶ Archaeological and Historic Resources (as they relate to park and recreation sites).
- ▶ Park Planning and Development.
- ▶ Compatibility with Adjacent Land Uses.
- ▶ Facility Funding and Management.

- ▶ Recreation Programs.
- ▶ Citywide Trail System.
- ▶ Vandalism and User Safety.

The Recreation Element is intended to be used as a coordinating document by all levels of government involved in planning and community development and the management and development of park, recreation, and open-space resources within the Redding Planning Area.

The Recreation Element should also be consulted by property owners, developers, and public officials before preparing land-use applications for consideration by the City. Whenever community issues affecting park, recreation, or open space are being discussed, it is appropriate to refer to the text and map exhibits of this element.

AUTHORITY

Government Code Section 65560(b)(3) specifies that open space for outdoor recreation be addressed in a community's General Plan. Although many jurisdictions choose to discuss this topic within their Open Space Element, Government Code Section 65303 states that the General Plan may include other elements, such as a Recreation Element, as long as they relate to the physical development of the City. Because of the importance of recreation to the Redding community, the City has adopted a separate "Recreation Element" since 1985.

GOALS AND POLICIES

To meet the needs of a growing and diverse population, recreational programs and park facilities play a critical role in community safety and in determining our quality of life. They can provide resources to combat juvenile delinquency, gangs, and antisocial behavior. They help develop values, life skills, and experiences of people, particularly our youth, that lead to healthy, socially responsible and productive lives. They can promote opportunities for citizens to be volunteers and advocates, enhancing communication and creating a sense of ownership in our community.

Background information for this element identifies several deficiencies in meeting Redding's park and recreation needs, particularly Neighborhood and Community Parks. The challenge to recreation and park providers is to balance the community's desire for a full spectrum of park facilities and recreation programs with the reality of limited resources.

It is recognized that new development can be beneficial to a city. However, it must be balanced with the realization that growth without "quality of life" as a critical component is not beneficial and ultimately counterproductive. This is a concern held by many Redding residents and community groups. In fact, this concern has resulted in several unique private/public partnerships to enhance park and recreation facilities such as the Sacramento River Trail, Turtle Bay Museum, Redding Arboretum, and Kids Kingdom—a portion of Enterprise Community Park.

To meet the community's desire for not only large public parks, but also smaller neighborhood-oriented facilities and improved open space, expansion of the private/public partnership concept and existing public partnerships is proposed within this element. The private/public partnership approach places more responsibility on the private sector for providing small neighborhood-oriented amenities to serve individual subdivisions and allows the City to direct a larger portion of its resources toward the community's broader park and recreation needs. Expansion of existing public partnerships emphasizes the collocation of parks with schools and utilization of joint use and

maintenance agreements to maximize efficiencies. Implementation of both approaches is considered necessary in order to provide and maintain the full range of park and facility types that is desired.

As population and the density of development within the Planning Area continue to increase, park, recreation, and open-space areas will become even more important to the community. At the same time, the availability of suitable parklands will decrease as potential sites are developed. Therefore, it is essential that suitable sites for public parks, trails, and other recreational features be identified and acquired well in advance of their actual need and, at times, before funding sources for facility development have been established to ensure that adequate lands will be available to meet long-term needs.

This section includes goals and policies designed to address the primary recreation and park development issues. The goals, policies, and exhibits contained in this element will serve as the framework for meeting the City's ongoing park and recreation needs.

NATURAL AND SCENIC OPEN AREAS

The City of Redding is fortunate to have a variety of natural, scenic, and open-space features throughout the community. The most important of these is the Sacramento River, which essentially bisects the City. The river is viewed as a focal point of the community. Development of a Regional River Parkway has long been envisioned as a multijurisdictional project that would maximize and enhance the recreational potential of the river. Therefore, efforts to plan and design the City's recreational system should focus on maximizing and protecting this resource.

G O A L

RECOGNIZE THE SACRAMENTO RIVER AS THE BACKBONE OF THE CITY'S PARK SYSTEM.

R1

Policies to achieve this goal are to:

- R1A. Prepare a Regional River Parkway Plan for areas along the Sacramento River between Shasta Dam and the City of Anderson to address:

- ▶ Resource protection.
- ▶ Recreational opportunities.
- ▶ Location of existing and proposed facilities.
- ▶ Recommendations for speed limits and use restrictions on the River, where warranted.
- ▶ Acquisition of lands.
- ▶ Management and operations.
- ▶ Financing.

R1B. Preserve native trees and riparian and other natural vegetation along the Sacramento River by incorporating these features into park designs, where feasible.

R1C. Plan and implement a public trail along the Sacramento River that also provides connections, where feasible, to school facilities and other destination points.

R1D. Protect and enhance public, fire, and rescue access along the entire riverfront, while minimizing/ mitigating impacts to the fullest extent possible.

R1E. Educate the public on responsible use of the river and on the economic benefits, such as increased tourism, that can result from protecting and enhancing the Sacramento River corridor.

GOAL

R2

PRESERVE AND ENCOURAGE THE JUDICIOUS DEVELOPMENT OF THOSE NATURAL RESOURCE AREAS WHICH HAVE A UNIQUE RECREATION POTENTIAL.

Policies to achieve this goal are to:

R2A. Establish park sites and public open-space areas along the river and tributary creeks through public and private land purchases, land dedications, easements, and similar mechanisms.

R2B. Promote the use of native plants, particularly valley oaks, where appropriate in park and natural open-space areas.

ARCHAEOLOGICAL AND HISTORIC RESOURCES

Redding is rich in both archaeological and historic resources. Because park and recreational facilities are often located adjacent to waterways or woodland areas, there is a high probability that archaeological, historic, or cultural resources will be encountered within sites proposed for park and recreation use. Depending on the type of resource involved, these features can often be incorporated into facility designs.

GOAL

R3

PRESERVE AND ENHANCE REDDING'S HISTORIC AND CULTURAL HERITAGE IN THE PROCESS OF PARK DEVELOPMENT.

Policies to achieve this goal are to:

R3A. Protect and enhance historically-significant structures and resources located in park and open-space lands.

R3B. Ensure that park-development and parkland-acquisition proposals consider potential impacts to historical or archaeological resources and minimize or eliminate those impacts to the fullest extent possible.

R3C. Integrate historic resources into park developments, where possible.

PARK PLANNING AND DEVELOPMENT

The City utilizes the following specific descriptions for various types of recreational lands. These descriptions include:

- ▶ Open Space.
- ▶ Neighborhood Parks.
- ▶ Large Community Parks.
- ▶ Special Purpose Facilities.
- ▶ Trails.

- ▶ Private Neighborhood Parks and Improved Open Space.
- ▶ Joint School/Park Facilities.

Open-Space Areas are usually maintained in a relatively natural condition and provide for extremely low-impact, passive recreation uses. These areas often contain steep slopes, floodplains, scenic viewsheds, or sensitive habitats. Given the natural condition of these areas, open space is not considered as "developed parkland" under Goal R4.

Neighborhood Parks are fully developed parks which typically contain a variety of active recreational facilities such as playgrounds, picnic areas, basketball or tennis courts, and open play areas. These facilities are intended primarily for unorganized recreational activities and divided into two categories:

- ▶ **Small Neighborhood Parks** (generally 5 acres or less in size).
- ▶ **Large Neighborhood Parks** (typically 5 to 10 acres or more).

Large Community Parks are also fully developed parks, generally 40 or more acres in size, which contain a variety of active recreational facilities such as sports fields, picnic areas, basketball or tennis courts, and playgrounds. Unlike both categories of Neighborhood Parks, these facilities are often utilized for organized recreational programs.

Special Purpose Facilities are developed for a focused or highly specialized purpose. Examples include boat ramps, campgrounds, sports field complexes, public pools, public golf courses, skateboard parks, indoor or outdoor archery facilities, etc.

Trails are linear facilities that can be single- or multipurpose in nature. Surfacing materials, widths, and designs vary depending on the intended function and/or anticipated user group.

Private Neighborhood Parks and Improved Open-Space Areas are developed, owned, and maintained by the private sector. These facilities may include tot lots, playgrounds, picnic facilities, open play areas, and/or streets and other landscaped areas designed for more passive recreational uses or visual enhancement. These facilities are typically constructed as an integral

part of and simultaneously with residential development projects. Active park facilities and/or passive landscaped areas are encouraged. Additional amenities, such as pools, tennis courts, and basketball courts, may also be provided. The size of these parks varies; however, they are typically smaller than public neighborhood parks.

Joint School/Park Facilities include all public park areas that are located adjacent to or collocated with schools. In some instances, the City may not own any of the facilities, but operates programs from school-owned buildings and property. Joint-use agreements are typically utilized to address public use of school facilities and maintenance.

Park and recreation areas have historically been public facilities. However, in the face of dwindling resources, new approaches to providing park and recreational amenities are needed. The development and maintenance of small parks or improved open-space areas designed to serve an individual subdivision or group of small subdivisions are encouraged to become a private-sector responsibility. In turn, the City will direct a larger portion of its resources toward addressing broader community needs through the development of Small Neighborhood, Large Neighborhood, and Community Parks. The City will also attempt to maximize facility development and utilization by collocating parks with schools whenever practical. In order to ensure that the needs of all segments of the population are considered, opportunities for public input and participation should be provided during all aspects of park and recreation planning.

Beyond acquisition of adequate parkland, another important issue to the community is the need for full development of the land that is acquired. Therefore, policies have been incorporated supporting construction of new or undeveloped park sites. In order to ensure that an adequate amount of improved parkland is provided as growth and development occurs, many jurisdictions adopt specific standards which identify the community's desired level of improved parkland acreage per 1,000 population. Within the City of Redding, the desired standard is ten acres per 1,000. This figure includes: developed and undeveloped parks that are owned and maintained by the City, such as Small and Large Neighborhood Parks; Community Parks; Special Purpose Facilities; parkland adjacent to schools in instances where the

land is publicly owned; and parkland and play areas associated with school-owned recreational facilities, where long-term, joint-use agreements have been established. Not included are school facilities where no long-term, joint-use agreements are in effect; publicly owned open-space areas; trails; private, improved open-space areas within residential developments; and private neighborhood parks where public access is restricted.

The locations of existing public park facilities and/or private facilities accessible to the general public are shown on Appendix "A." Figure 7-1 identifies general locations where future parks will be needed based on proposed development densities depicted on the General Plan Diagram. The locations illustrated on Figure 7-1 should not be considered site-specific. The purpose of the figure is to identify the types of public park facilities that will be needed based on buildout of the General Plan and their approximate distribution.

GOAL

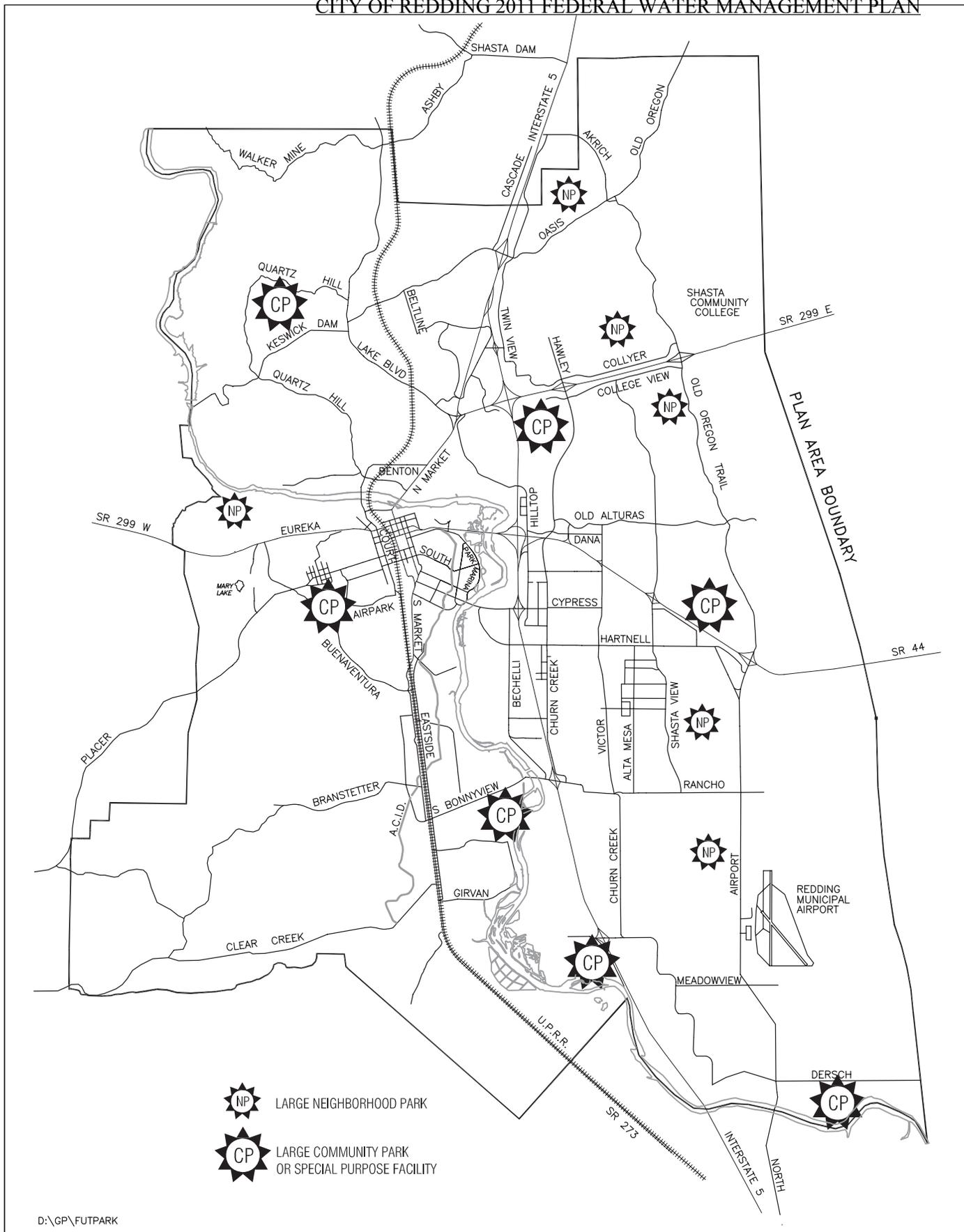
R4

PROVIDE A MINIMUM OF TEN ACRES OF DEVELOPED PARKLAND PER 1,000 POPULATION AND A BROAD RANGE OF FACILITY TYPES.

Policies to achieve this goal are to:

- R4A. Develop and implement a Citywide Parks and Recreation Master Plan.
- R4B. Construct a regional sports complex in the vicinity of Old Oregon Trail and Viking Way to meet existing and future needs for softball, baseball, soccer, equestrian, and similar facilities.
- R4C. Locate at least one Large Community Park in each quadrant of the City (refer to Figure 7-1) as indicated generally on the General Plan Diagram.
- R4D. Accept only parkland that is consistent with the City's site, locational, and development requirements.
- R4E. Acquire Large Neighborhood and Community Park sites well in advance of their actual need.
- R4F. Explore nontraditional methods for acquiring park and recreation land.

- R4G. Disperse park facilities and equipment throughout the community to prevent an undue concentration in any one area.
- R4H. Locate parks adjacent to school facilities, whenever possible, to maximize recreational opportunities and joint use of facilities.
- R4I. Establish agreements with local schools which will allow other agencies, groups, or members of the public to use special facilities and grounds (such as multipurpose rooms, gymnasiums, sports fields, basketball courts, etc.) during times when school is not in session to accommodate additional community and recreational activities. Where such agreements are in effect, the facilities may be included in the City's parkland inventory.
- R4J. Increase the acreage and quality of developed park facilities by placing a priority on:
 - ▶ Building out existing Large Neighborhood and/or Community parks that are underdeveloped.
 - ▶ Encouraging developers of large residential projects to dedicate land and build out park sites.
 - ▶ Encouraging community-based park improvements such as gifts or community-improvement projects.
 - ▶ Coordinating improvements and programs with nonprofit organizations, schools, other agencies, and private-sector providers to avoid duplication of facilities and programs.
- R4K. Encourage collocation of public and private parks with flood-control facilities, such as storm-water detention basins, where appropriate, to maximize the efficient use of land.
- R4L. Pursue the acquisition of surplus Federal, State, and local lands, where appropriate, to meet present and future park and recreation needs.
- R4M. Work with citizens groups and other agencies



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Figure 7-1 Future Parks (Conceptual Locations)



to prioritize development of and identify appropriate locations for Special Purpose Facilities. Facilities to be considered may include a public golf course, sports field complexes, indoor or outdoor archery facilities, an indoor or outdoor pool complex.

GOAL

R5

ENSURE THAT NEW DEVELOPMENT CONTRIBUTES TO THE PARK, RECREATION, AND IMPROVED OPEN-SPACE NEEDS OF THE CITY.

Policies to achieve this goal are to:

- R5A. Develop standards that will result in new residential projects providing appropriate levels of improved open-space and/or recreational amenities.
- R5B. Continue to require developers of residential property to contribute park sites or pay in-lieu fees at the maximum rate allowed by State law.
- R5C. Provide a partial credit toward in-lieu fees, parkland dedication requirements, and/or park development fees for:
 - ▶ Construction of private recreation facilities, improved open-space areas, and parks.
 - ▶ Recreational amenities constructed within existing public park facilities or schools where a long-term, joint-use agreement is in effect.
 - ▶ Private development of new public parks.
- R5D. Adjust parkland in-lieu fees regularly to reflect current land values.

GOAL

R6

CREATE AN AWARENESS THAT RECREATIONAL PROGRAMS AND PARK FACILITIES SERVE A COMMUNITY- SAFETY NEED. PROVIDE A MIX OF RECREATION PROGRAMS AND PARK FACILITIES THAT APPEALS TO ALL AGE, ECONOMIC, SOCIAL, AND ETHNIC

GROUPS IN THE COMMUNITY.

Policies to achieve this goal are to:

- R6A. Monitor population, age, economic, and ethnic ratios to ensure that recreation programs and park facilities meet the most pressing needs.
- R6B. Explore the creation of recreation-based programs and park facilities in conjunction with law enforcement, schools, local colleges, and community groups that address current social concerns for youth violence, crime, and drug problems.
- R6C. Program recreation activities jointly with schools and local colleges, where possible.

GOAL

R7

ENCOURAGE SHASTA COUNTY TO PROVIDE PARKLAND AND RECREATION PROGRAMS IN THOSE UNINCORPORATED SECTORS OF THE REDDING PLANNING AREA IN WHICH URBANIZATION IS PERMITTED BY THE COUNTY.

Policy to achieve this goal is to:

- R7A. Encourage the County to acquire and improve Neighborhood Parks as a part of the subdivision development process.

GOAL

R8

PROMOTE A REGIONAL APPROACH TO RECREATION FACILITY AND PROGRAM PLANNING/DEVELOPMENT.

Policy to achieve this goal is to:

- R8A. Encourage a regional approach to the provision, planning, and development of recreation facilities and programs by promoting cooperation with school districts, special service districts, neighboring communities, Shasta County, and the Federal government. Recognize that policies and programs restricted to jurisdictional boundaries can impede the provision of high-quality facilities and programs that benefit the citizens of Redding.

COMPATIBILITY WITH ADJACENT LAND USES

Although park facilities are typically viewed as an asset to the community and its residents, there are some impacts associated with certain types of park activities and features that may be incompatible with surrounding residential development. The introduction of night lighting for organized sporting events such as softball, football, and soccer; noise generated by organized sport activities that attract large numbers of users or spectators; and increased traffic and parking demands all have the potential to adversely impact surrounding residential neighborhoods.

GOAL **MINIMIZE THE IMPACTS OF RECREATIONAL FACILITIES ON ADJACENT RESIDENTIAL DEVELOPMENT.**

R9

Policies to achieve this goal are to:

- R9A. Avoid the installation of sports-related lighting in Neighborhood Parks and elementary schools where it will impact residences of the neighborhood; appropriate mitigation features shall be incorporated where such lighting is allowed.
- R9B. Minimize to the fullest extent the impacts of sports field lighting at Large Community Parks, junior high schools, and high schools on adjacent residential uses. Mitigation may include:
 - ▶ Restrictions on the height, wattage, or orientation of lighting equipment.
 - ▶ Shielding requirements for light fixtures.
 - ▶ Limitations on the times the lights may be utilized.
 - ▶ Installation of vegetative screens where playing fields abut adjacent residential uses.
- R9C. Locate Large Neighborhood and Community Parks on collector or arterial streets to ensure

that adequate access and road capacity are available to serve the facilities.

- R9D. Install signage, traffic-safety features, and traffic-calming devices as necessary to reduce traffic speeds in residential areas surrounding parks and provide for the safety of pedestrians and bicyclists.
- R9E. Provide sufficient off-street parking to accommodate anticipated parking demands generated by park and recreation facilities.
- R9F. Locate parking areas for park and recreation uses away from abutting residential uses, where possible. Where no other reasonable location for off-street parking areas exists, screening shall be provided along adjacent residential properties. Screening may include solid fencing and/or vegetative buffers.
- R9G. Locate active recreation features and amenities, such as sports fields, bleachers, playgrounds, and pools, away from adjacent residential uses whenever possible.

FACILITY FUNDING AND MANAGEMENT

Acquiring adequate funding for park development and ongoing maintenance is a challenge. Since the level of funding ultimately determines the level and quality of recreational opportunities that are provided, the City will need to consider and implement a variety of funding and management strategies for its park and recreation facilities.

GOAL **ESTABLISH ADEQUATE FUNDING MECHANISMS TO IMPLEMENT THE FACILITY AND PROGRAM NEEDS IDENTIFIED IN THIS ELEMENT.**

R10

Policies to achieve this goal are to:

- R10A. Adjust park-development fees regularly to reflect current park-development costs.
- R10B. Explore innovative means of financing new facilities and maintaining existing and future

parks such as the creation of a park and recreation district or similar measure.

R10C. Establish an "Adopt a Park" program to encourage volunteer groups, service clubs, and other members of the private sector to assist with the development and maintenance of park and recreation facilities. If ongoing maintenance is an issue, innovative ways of providing this service need exploration and should not prohibit development of these park and recreation facilities.

R10D. Pursue joint development and service agreements with elementary and high school districts.

CITYWIDE TRAIL SYSTEM

The topography and natural setting of Redding, including the Sacramento River and its numerous tributary creeks, provide outstanding opportunities for bicycle and pedestrian travel. As discussed earlier in this element, development of a Regional River Parkway along the Sacramento River between Shasta Dam and Anderson, has long been envisioned as a multijurisdictional project that would maximize and enhance the recreational potential of the river. Development of a citywide recreational trail system, which links residential uses to commercial, industrial, recreation, and other public uses, is also considered a priority. Additional goals and policies regarding commuter bicycle and pedestrian facilities are contained the Circulation Element.

A conceptual plan for trails is depicted on Figure 7-2. However, a detailed Citywide Trails Master Plan is needed to more specifically locate, prioritize, and identify funding sources for public recreational trail development. It is also important that the plan address interfaces between public trails and private property to protect the security and privacy of adjacent residents.

Similar to the need to acquire suitable lands for public parks at the earliest opportunity, it is also essential that the City continually work to acquire necessary land dedications and easements for public trails through a combination of direct purchases and the discretionary approval process for new development and redevelopment projects. In many areas along the

Sacramento River and creek corridors, development has already occurred before dedications and easements for public trail purposes were required. Acquisition in these areas will be more challenging and need to occur on a gradual basis as opportunities arise. It is possible that formal trail improvements will not be completed at some locations within the projected 20-year life of this General Plan. However, the acquisition, land dedications, and easements should still be pursued so that public access opportunities and future options for additional trail development are protected. Where continuous trails cannot be provided or are not feasible, connections to the City street system can serve to link trail sections.

G O A L

PROMOTE AND FACILITATE DEVELOPMENT OF A CITYWIDE RECREATIONAL TRAIL SYSTEM.

R11

Policies to achieve this goal are to:

R11A. Develop a Citywide Trails Master Plan to specifically locate future trails. In general, the trail system should:

- ▶ Focus on linking neighborhoods to other land uses and significant destination points within the community.
- ▶ Separate bicyclists and pedestrians from vehicular traffic and pedestrian facilities from bicycle facilities, whenever feasible.
- ▶ Provide continuous trail connections, including a looped system around the City.

R11B. Continue development of the Sacramento River Trail to establish a common and continuous thread along the river corridor, connecting recreational, educational, cultural, commercial, and residential areas/uses.

R11C. Until such time as the Citywide Trails Master Plan is adopted, utilize Figure 7-2 as a guide to establish trails that provide links to schools as well as trails and trail connections along open-space corridors.

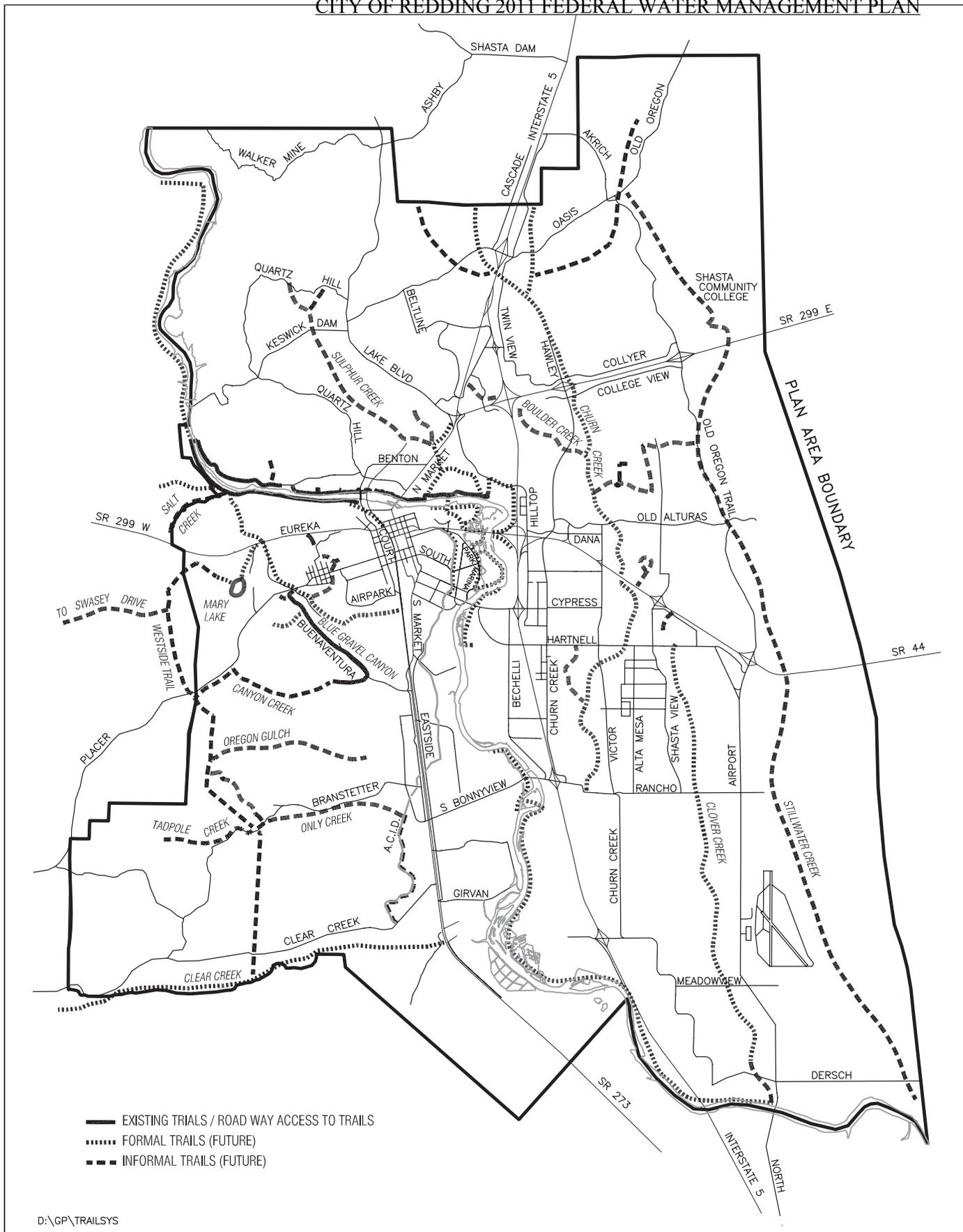


Figure 7-2 Trail System



- R11D. Continue to obtain land dedications and/or easements for the development of public trails and the Regional River Parkway through direct purchases and the discretionary approval process for new development. Until such time as a Citywide Trails Master Plan is developed, utilize Figure 7-2 to determine appropriate trail corridors.
- R11E. Pursue funding which can be used for parkway and trail-system planning, land acquisitions, construction, and maintenance.
- R11F. Design bicycle and trail systems in a manner that protects the privacy of adjacent land uses, allows for easy maneuvering, and promotes user safety.
- R11G. Encourage the establishment of volunteer bicycle-path/recreation-trail patrols to improve the real and perceived level of safety for users of those facilities.

REGIONAL RECREATIONAL OPPORTUNITIES

This plan envisions that the citywide trail system will complement and become an integral component of a regional trail and recreation system. Much work has been accomplished to date by various agencies and organizations to lay the foundation for a number of recreation/natural areas and regional trails. This includes establishment of right-of-way and construction of a portion of the "Westside Trail," organizing efforts to extend the Sacramento River Trail from Redding to the Interlakes Recreation Area and planning for a trail connection between the Sacramento River and the Whiskeytown National Recreation Area along Clear Creek. Completion of these trails, together with the City's trail system, will provide invaluable recreational opportunities. Further, with the establishment of the Horsetown-Clear Creek Preserve, additional public lands are available for passive recreational pursuits. As Redding's population continues to grow in the coming decades, the opportunity these areas will offer will become even more appreciated by citizens of Redding.

G O A L

R12

PROMOTE AND FACILITATE THE DEVELOPMENT OF A REGIONAL RECREATION AND TRAIL SYSTEM THAT WILL COMPLEMENT THE CITY'S TRAIL SYSTEM.

Policy to achieve this goal is to:

- R12A. Encourage efforts to develop recreational opportunities in those natural areas neighboring the City, including the Horsetown-Clear Creek Preserve, the Westside Trail, the Clear Creek Trail, and extension of the Sacramento River Trail from Redding to the Interlakes Recreation Area at Shasta Dam.

VANDALISM AND USER SAFETY

Studies of public attitudes have found that the level of use and enjoyment of recreational facilities are directly related to an individual's perceptions regarding personal safety. Since the City has invested and will continue to invest significantly in the development of park and recreational facilities, it is essential that the topics of vandalism and improved park safety be addressed.

G O A L

R13

REDUCE THE PREVALENCE OF VANDALISM AND INCREASE THE LEVEL OF SAFETY IN PARK FACILITIES AND OPEN-SPACE LANDS.

Policies to achieve this goal are to:

- R13A. Plan for safe and secure park and recreation areas.
- R13B. Incorporate security lighting and other design features within park and recreation facilities to reduce vandalism and improve user safety, while protecting surrounding residential uses from excessive light and glare.
- R13C. Consider providing park hosts for all larger parks.
- R13D. Establish a policy of zero tolerance for vandalism.

APPENDIX "A"
RECREATION ELEMENT

PARK AND RECREATION FACILITIES BY TYPE				
DEVELOPED AND UNDEVELOPED PARK SITES				
Map No.	Park	Acres	Developed Acres¹	Description of Facilities
Small Neighborhood Parks				
1	Amethyst Park	.61		Picnic area, playground area, turf grass, handicapped access
2	Bedrock Park **	.50		Undeveloped
3	Benton Airpark *	2.30		Parking lot, picnic area, turf grass
4	Bobwhite Park	.43		Playground area, turf grass
5	Carnelian Park	.50		Basketball court, picnic area, turf grass
6	Churn Creek Heights **	1.00		Undeveloped
7	Clover Creek Park *	2.75	1.00	Basketball court, picnic area, playground area, turf grass
8	Country Heights Park	3.59	1.50	Basketball court, picnic area, playground area, turf grass
9	Creekside Park	.87		Basketball court, picnic area, playground area, turf grass, handicapped access
10	Foothill Park	3.25		Turf grass
11	Foxtail Park	1.00		Basketball court, picnic area, playground area, turf grass
12	Graham Park	.40		Parking lot, picnic area, turf grass
13	Hacienda Heights, Unit 5 **	1.23		Undeveloped
14	Hawn Avenue Park	.31		Picnic area, playground area
15	Indian Hills Park	1.40	.75	Basketball court, picnic area, playground area, turf grass, handicapped access
16	Library Park	.30		Historical, parking lot, picnic area, turf grass
17	Martin Luther King Jr. Park	3.30		Baseball field, basketball court, horseshoe court, parking lot, picnic area, playground area, restrooms, turf grass, handicapped access, multipurpose building, shade structure
18	Meadow Creek Park *	2.00		Turf grass
19	Minder Park	1.00		Basketball court, picnic area, playground area, turf grass, handicapped access
20	Northridge Gardens Park	.75		Picnic area, turf grass, handicapped access, shade structure
21	Old City Hall Park	.10		Historical, arboretum/museum
22	Peppertree Park	2.00		Basketball court, picnic area, playground area, trail, turf grass
23	Rancho Estates Park **	3.27		Undeveloped
24	Ravenwood Park	.76		Picnic area, playground area, turf grass, handicapped access
25	River Park Highlands **	1.92		Undeveloped
26	River Park Highlands, Unit 2 **	1.21		Undeveloped
27	River Ridge Park I **	1.90		Undeveloped
28	River Ridge Park II **	2.00		Undeveloped
29	Rolling Hills Park	1.28		Basketball court, turf grass
30	Rosetree Park **	2.00		Undeveloped
31	Stillwater Heights Park	1.85	1.00	Basketball court, picnic area, playground area, turf grass, handicapped access
32	Summerfield Meadows **	2.26		Undeveloped
33	Tourmaline Park **	.50		Undeveloped
34	T.R. Woods Memorial Park	3.00		Basketball court, parking lot, playground area, turf grass, shade structure
35	Valley Ridge Park	1.47	1.00	Basketball court, picnic area, turf grass
36	Vista Ridge **	.92		Undeveloped
37	Waverly Park **	.60		Undeveloped
38	Western Oaks Park	2.10		Basketball court, picnic area, playground, turf grass, handicapped access

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN

DEVELOPED AND UNDEVELOPED PARK SITES				
Map No.	Park	Acres	Developed Acres ¹	Description of Facilities
39	Whistling Park **	2.00		Undeveloped
40	Wilson Street Park **	3.00		Undeveloped
41	Victoria Knolls **	5.00		Undeveloped
	TOTAL	66.63		
Large Neighborhood Parks				
42	Alta Mesa Park	6.76		Baseball field, parking lot, picnic area, playground area, restroom, tennis court, turf grass
43	Blossom Park **	5.90		Undeveloped
44	Hacienda Heights **	6.60		Undeveloped
45	Lake Redding Park	10.00		Historical, horseshoe court, parking lot, picnic area, playground area, restrooms, trail, turf grass, fishing access, shade structure
46	Mary Lake Park *	30.00	25.00	Picnic area, trail, fishing access
47	Ridgeview Park* 2150 Cumberland Drive	6.06	1.90	Basketball court, picnic area, playground area, turf grass, handicapped access
	TOTAL	65.32		
Community Parks				
48	Buckeye Park*	30.00	9.40	Baseball field, parking lot, picnic area, restrooms, tennis court, trail, turf grass
49	Caldwell Park	70.00		Baseball field, basketball court, boat ramp, historical, arboretum/museum, parking lot, picnic area, playground area, restrooms, soccer field, swimming, trail, turf grass, handicap parking, fishing access, multipurpose building
50	Cascade Park*	27.64	4.00	Basketball court, parking lot, picnic area, playground area, trail, turf grass, fishing access
51	Enterprise Park *	94.60	30.00	Basketball court, parking lot, picnic area, playground, restrooms, soccer field, roller hockey, tennis court, turf grass, handicapped parking, shade structure
52	South City Park	20.00		Baseball field, parking lot, picnic area, playground area, restrooms, tennis court, turf grass, multipurpose building
53	Twin View Park **	41.20		Undeveloped
	TOTAL	283.44		
Joint School/Park Facilities				
54	Enterprise High School	4.00		Parking lot, soccer field, swimming
55	Parsons Jr. High School	4.00		Baseball field, parking lot, restrooms, soccer field
56	Sequoia Middle School	4.00		Parking lot, soccer field, tennis court
	TOTAL	12.00		
Special Purpose Facilities				
57	Community Garden Center*	18.00	10.00	Parking lot, restrooms
58	Riverfront Park*	17.00		Boat ramp, parking lot, picnic area, restrooms, turf grass, fishing access
59	Riverland Drive **	54.00		Undeveloped
60	Rodeo Grounds	12.00		Rodeo arena, bleachers, restrooms, parking lot
61	Senior Citizen Hall	1.95		Parking lot, restrooms, handicapped access, multipurpose building
62	Softball Park	4.40		Baseball field, parking lot, restrooms
63	South Bonnyview Boat Launch	6.10	5.00	Boat ramp, parking lot, restrooms, handicapped access, fishing access
64	Sulphur Creek Park **	10.00		Undeveloped
65	Treatment Plant **	272.00	.50	Undeveloped
66	Turtle Bay East*	85.00		Parking lot, fishing access
	TOTAL	480.45		
	TOTAL ALL FACILITIES	907.84		

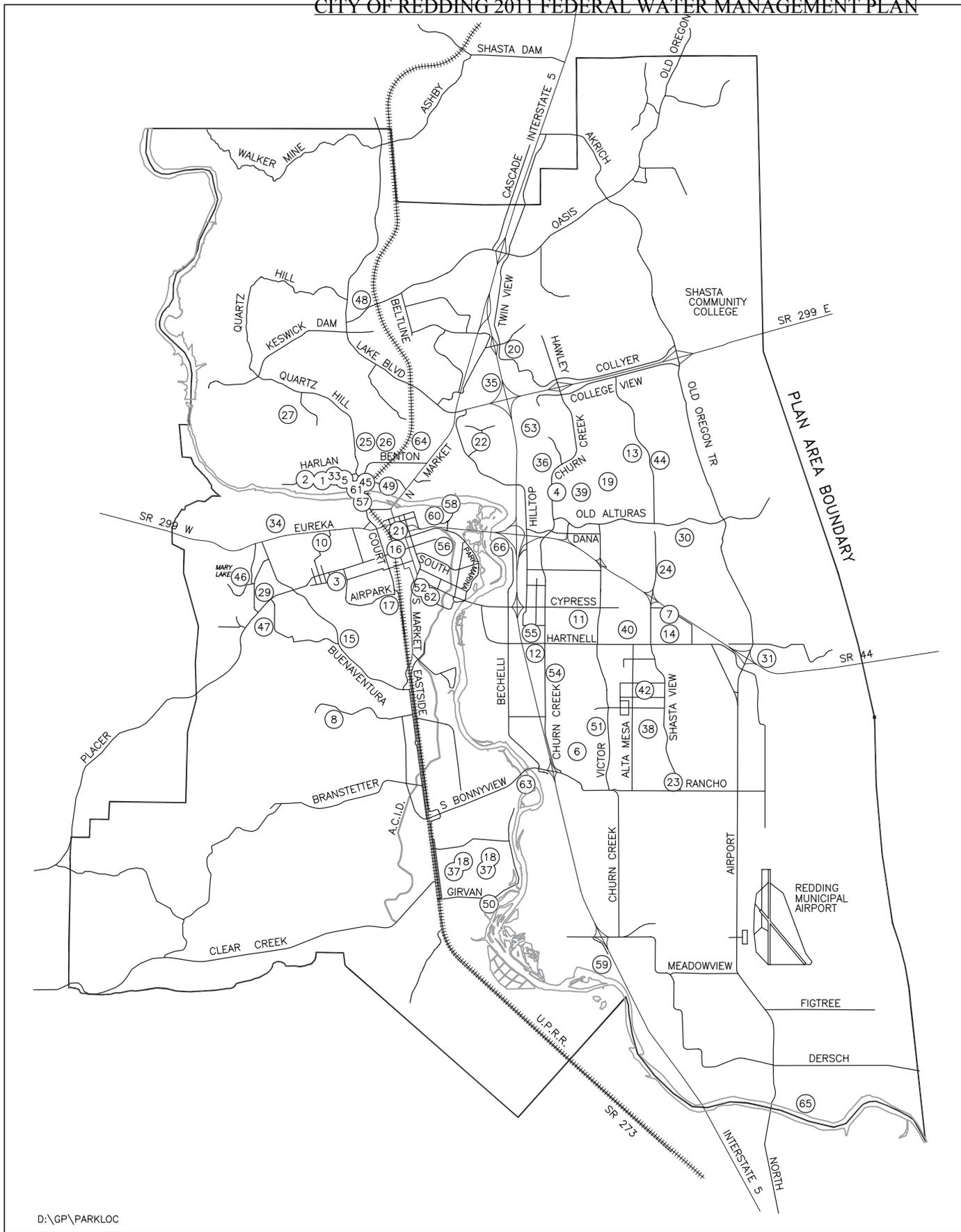
* Partially Developed

** Undeveloped

¹ If different than total acreage

Source: City of Redding Development Services Department, January 1996.

CITY OF REDDING 2011 FEDERAL WATER MANAGEMENT PLAN



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Appendix A Park Locations



ATTACHMENT N

**California Urban Water Conservation Council
GPCD Worksheets**

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Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL GPCD
2010	117.4	105.6	130.1	131.6	217.8	362.7	447.4	445.9	350.1	260.1	129.7	116.5	234.6
2009	153.0	130.2	153.7	242.7	319.0	352.0	491.5	477.6	411.4	249.1	163.5	140.8	273.7
2008	138.0	129.6	215.7	300.1	386.3	441.1	475.2	478.0	412.5	283.8	159.1	147.9	297.3
2007	153.6	132.6	197.1	233.0	342.1	450.8	499.4	479.7	387.6	216.9	178.0	144.4	284.6
2006	128.1	128.4	128.8	152.8	353.7	424.6	534.3	445.4	413.9	282.8	158.5	153.8	275.4
2005	132.4	131.6	167.3	178.7	237.9	358.4	516.5	517.6	392.1	305.6	172.5	145.0	271.3
2004	146.4	134.5	202.4	256.8	345.4	444.4	518.4	491.8	413.8	271.6	160.0	150.1	294.6
2003	128.3	124.1	146.8	155.9	258.7	451.9	504.1	435.5	407.3	351.2	177.2	140.5	273.5
2002	118.3	122.1	155.3	227.7	248.0	430.7	507.5	476.5	406.8	330.3	175.6	142.3	278.4
2001	130.2	108.6	169.4	208.2	395.7	432.2	440.1	448.4	370.4	315.1	157.0	129.8	275.4
2000	143.2	121.4	165.4	249.7	308.8	431.1	481.6	489.9	314.0	247.9	163.5	157.9	272.9
1999	143.0	109.4	139.7	197.8	363.2	421.0	483.8	412.1	385.1	316.6	152.3	144.5	272.4
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1992													
1991													
1990													

Recycled water accounts for 0 % of 2008 deliveries, therefore select a 10 year baseline period using the selection buttons below

Baseline Ending In...	Baseline 10- years	N/A	N/A	N/A	N/A	N/A
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2010	<input type="radio"/> 275.9					
2009	<input type="radio"/> 279.7					
2008	<input checked="" type="radio"/> 279.6					
2007	<input type="radio"/> 277.6					
2006	<input type="radio"/> 276.7					
2005	<input type="radio"/> 276.9					

Ending in...	Baseline 5- years
<input type="radio"/> 2010	273.1
<input type="radio"/> 2009	280.5
<input checked="" type="radio"/> 2008	284.7
<input type="radio"/> 2007	279.9

Base daily per capita water use (10-15yr baseline) **279.6**

Base daily per capita water use (5yr baseline) **284.7**

User selection buttons:



California Urban Water Conservation Council

TARGETS / COMPLIANCE (CUWCC MOU)

Baseline / Initial GPCD
(Use option buttons to select)

GPCD in 2006 275.4
 Baseline GPCD (1997 to 2006) 276.7

GPCD in 2010 234.6
 GPCD Target for 2018 225.9

Potable Water GPCD for each Year in the
Baseline Period

Year	GPCD
2006	275.4
2005	271.3
2004	294.6
2003	273.5
2002	278.4
2001	275.4
2000	272.9
1999	272.4
1998	
1997	

Biennial GPCD Compliance Table

Year	Report	Target		Highest Acceptable Bound	
		% Base	GPCD	% Base	GPCD
2010	1	96.4%	265.5	100%	275.4
2012	2	92.8%	255.6	96.4%	265.5
2014	3	89.2%	245.7	92.8%	255.6
2016	4	85.6%	235.8	89.2%	245.7
2018	5	82.0%	225.9	82.0%	225.9

Monthly GPCD Data for Weather Normalization

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2010	117.4	105.6	130.1	131.6	217.8	362.7	447.4	445.9	350.1	260.1	129.7	116.5
Baseline avg*	133.8	122.5	159.4	203.4	313.9	424.3	498.3	464.7	387.9	302.7	164.6	145.5

* The average for each month is based on the baseline period 1997 to 2006



California Urban Water Conservation Council

TARGETS / COMPLIANCE (SBx7-7)

Input cells:
 Calculated cells:

Target Summary	2020	2015
Method 1	223.7	251.6
Method 2	N/A	N/A
Method 3	N/A	N/A
Method 4	0.0	0.0
	Min Value	Max Value

GPCD in 2010	234.6
Base daily per capita water use (10-15yr baseline)	279.6
Base daily per capita water use (5yr baseline)	284.7
Max. allowable GPCD target in 2020 (95% x 5yr baseline)	270.4

Method 1: Baseline per Capita Water Use

80% x Base daily per capita water use (10-15yr baseline):

2015 Target:
 2020 Target:

Method 2: Performance Standards

TM 2 Indoor Water Use allowance:
 TM 6 Landscaped Area Water Use:
 TM 7 Baseline CII Water Use:

2015 Target:
 2020 Target:

Method 3: Hydrologic Region Targets

Enter the percentage of your service area population in each hydrologic region

Region	Region Name	% Population	GPCD Target
1	North Coast		137
2	San Francisco Bay		131
3	Central Coast		123
4	South Coast		149
5	Sacramento River	0.0%	176
6	San Jacinto		174
7	Tulare lake		188
8	North Lahontan		173
9	South Lahontan		170
10	Colorado River		211

2015 Target:
 2020 Target:

Method 4:

To be Developed

ATTACHMENT O

City of Redding Council Resolution 2012-060:

**Adoption of
Federal Water Management Plan 2011 Update**

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RESOLUTION NO. 2012-060

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF REDDING TO AMEND THE FEDERAL WATER MANAGEMENT PLAN AS REQUIRED BY THE UNITED STATES BUREAU OF RECLAMATION AND PURSUANT TO SECTION 210 OF THE RECLAMATION REFORM ACT OF 1982

WHEREAS, the Department of the Interior, United States Bureau of Reclamation, requires that water purveyors, as a condition of long-term water-service contracts for Central Valley Project water prepare a Federal Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water, and;

WHEREAS, the City of Redding is a United States Bureau of Reclamation water contractor providing water to a population of approximately 90,000 people; and,

WHEREAS, the City of Redding has therefore prepared a Federal Water Management Plan which incorporates Best Management Practices and will submit its Plan to the United States Bureau of Reclamation; and,

WHEREAS, the City of Redding, in accordance with United States Bureau of Reclamation guidelines and current criteria, will re-evaluate and resubmit its plan at least once every five years or as conditions warrant;

NOW THEREFORE, BE IT RESOLVED, that the Federal Water Management Plan with current Best Management Practices Implementation Measures is adopted by the City of Redding.

I HEREBY CERTIFY that the foregoing resolution was introduced, read, and adopted at a regular meeting of the City Council on the 17th day of July, 2012, by the following vote:

AYES:	COUNCIL MEMBERS:	Bosetti, Jones, McArthur, Sullivan & Dickerson
NOES:	COUNCIL MEMBERS:	None
ABSENT:	COUNCIL MEMBERS:	None
ABSTAIN:	COUNCIL MEMBERS:	None

THIS INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE

JUL 24 2012

ATTEST: _____
 PAMELA MIZE
 CITY CLERK OF THE CITY COUNCIL
 OF THE CITY OF REDDING, COUNTY OF SHASTA,
 STATE OF CALIFORNIA

Pamela Mize
 PAMELA MIZE, City Clerk

Dick Dickerson

 DICK DICKERSON, Mayor

FORM APPROVED:

 RICHARD A. DUVERNAY, City Attorney

R-2012-060