CITY OF PETALUMA

2005 URBAN WATER MANAGEMENT PLAN

MAY 2007

DODSON PSOMAS

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SECTION 1

INTRODUCTION

This Urban Water Management Plan (Plan) addresses the City of Petaluma (City) water system and includes a description of the water supply sources, magnitudes of historical and projected water use, and a comparison of water supply to water demands during normal, single-dry, and multiple-dry years. The City receives its potable water from Sonoma County Water Agency (Agency). The Agency provides water principally from the Russian River to the majority of the retail water providers in Sonoma County, and to a lesser degree in Marin County. In addition to the Agency, the only potable water source currently available to the City is City-owned groundwater wells. Though the Agency's water is the City's primary source of water supply, the City has used groundwater wells to supplement the Agency's supply. The City also provides disinfected secondary treated recycled water from its wastewater treatment plant to two golf courses and agricultural and vineyard customers. Tertiary recycled water meeting the water recycling criteria in the California Code of Regulations, Title 22 will be available in Year 2009 upon completion of the City's new Ellis Creek Water Recycling Facility.

This section provides background information on the Plan, an overview of coordination with other agencies, a description of public participation and Plan adoption, and organization of the Plan.

1.1 Urban Water Management Planning Act

The City's Plan has been prepared in accordance with the Urban Water Management Planning Act (Act). The Act is defined by the California Water Code, Division 6, Part 2.6, and Sections 10610 through 10657. The Act became part of the California Water Code with the passage of Assembly Bill 797 during the 1983-1984 regular session of the California legislature. The Act requires every urban water supplier that provides water for municipal purposes to more than 3,000 connections, or supplying more than 3,000 acre-feet (ac-ft) of water annually, to adopt and submit a plan every five years to the California Department of Water Resources (DWR). Subsequent assembly bills have amended the Act. This plan serves as a long-range planning document for water supply.

1.2 Resource Maximization and Import Minimization

Water management tools have been used by the City to maximize water resources. The City has been committed to integrating water conservation into future supply and demand solutions for both the water system and the wastewater treatment/reuse system. A signatory of the California Urban Water Conservation Council's Memorandum of Understanding for Urban Water Conservation since January 1, 2002, Petaluma has implemented all of the Urban Best Management Practices for water retailers, yielding a total potable water savings of 396 million gallons (1,216 acre-feet) from 1999 through 2005. By further reducing the demand of current water customers and assuring that all new system uses are efficient, the amount of water the City will need through buildout of the current General Plan 2025 will be reduced by 5 percent through water conservation. A full discussion of the City's demand reduction efforts by water conservation is included in Section 6 of this report. In addition, the City will expand their recycled water efforts to save approximately 9 percent of the total estimated water demand at buildout. More information on the City's recycled water efforts is found in Section 5.

1.3 Agency Coordination

The Act requires the City to coordinate the preparation of its Plan with other appropriate agencies and all departments within the City, including other water suppliers that share a common source, water management agencies, and relevant public agencies. The City coordinated the preparation of its Plan with the Agency, two of its eight neighboring water providers that also utilize Agency water, and the following departments of the City of Petaluma: the Department of Water Resources and Conservation, the Community Development Department, and the Department of General Plan Administration. In addition, the City coordinated the preparation of the water demand projections in this Plan with the Petaluma General Plan land use and confirmed projections with the Association of Bay Area Government's (ABAG) demographic projections. Table 1-1 provides a summary of the City's coordination with the appropriate agencies and City departments.

TABLE 1-1. (DWR TABLE 1) COORDINATION WITH APPROPRIATE AGENCIES

Coordination Elements	County Agency	City of Petaluma				Neighboring Water Agencies	
	Sonoma County Water Agency	Dept. of Water Resources and Conservation	Dept. of General Plan Administration	Community Development Dept.	Ellis Creek Water Reclamation Facility	City of Santa Rosa	North Marin Water District
Participated in Developing the Plan		X	X		X		
Commented on the Draft		X	X		X		
Attended Public Meetings		X					
Contacted for Assistance	X	X	X	X	X	X	X
Received Copy of the Draft Plan	X	X		X			
Received Notice of intention to Adopt	X						

1.4 Public Participation and Plan Adoption

The City encouraged community and public interest involvement in the Plan update through public hearings and inspection of the draft document. Specifically, the City encouraged involvement of neighborhood associations, service groups, business leaders, local environmental groups, landscape professionals and associated groups, and agricultural growers associations. Public hearing notifications were published in the *Petaluma Argus Courier*. A copy of the published Notice of Public Hearing is included in Appendix A. The hearing provided an opportunity for all City water users to become familiar with the Plan and ask questions about water supply in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply. Copies of the draft Plan were made available for public inspection at the Petaluma Library, Petaluma Community Center, the Department of Water Resources and Conservation, and the City's website.

This Plan was adopted by the City Council on May 7, 2007. A copy of the adopted resolution is provided in Appendix A.

1.5 Plan Organization

The following is a list of the rest of the sections in this Plan:

- Section 2 provides a description of the service area, climate, water supply facilities, and distribution system.
- Section 3 presents historical and projected water use.
- Section 4 describes surface and groundwater supplies and a reliability comparison of projected supplies during dry years.
- Section 5 describes historical and projected recycled water supply.
- Section 6 addresses water conservation.
- Section 7 provides a comparison of future water supply to demand.
- Appendices A through D provide relevant supporting documents. Water shortage contingency planning is summarized in Appendix C.

SECTION 2

DESCRIPTION OF EXISTING WATER SYSTEM

This section describes the City of Petaluma's water system, including a description of the service area and its climate, and the water system facilities, including surface water supply facilities, ground water supply facilities, and the distribution system.

2.1 Description of Service Area

The City of Petaluma's potable water service area includes customers within the City Limits as well as a number of customers outside the City Limits and Urban Growth Boundary. The City of Petaluma's 2005 population is approximately 57,700 people. The City is situated in southern Sonoma County, approximately 40 miles north of San Francisco, with the Petaluma River and Highway 101 bisecting the City. Settled in the 1850's, Petaluma has grown steadily since its incorporation in 1858. Figure 2-1 illustrates the location of the City's service area and the Agency's transmission system.

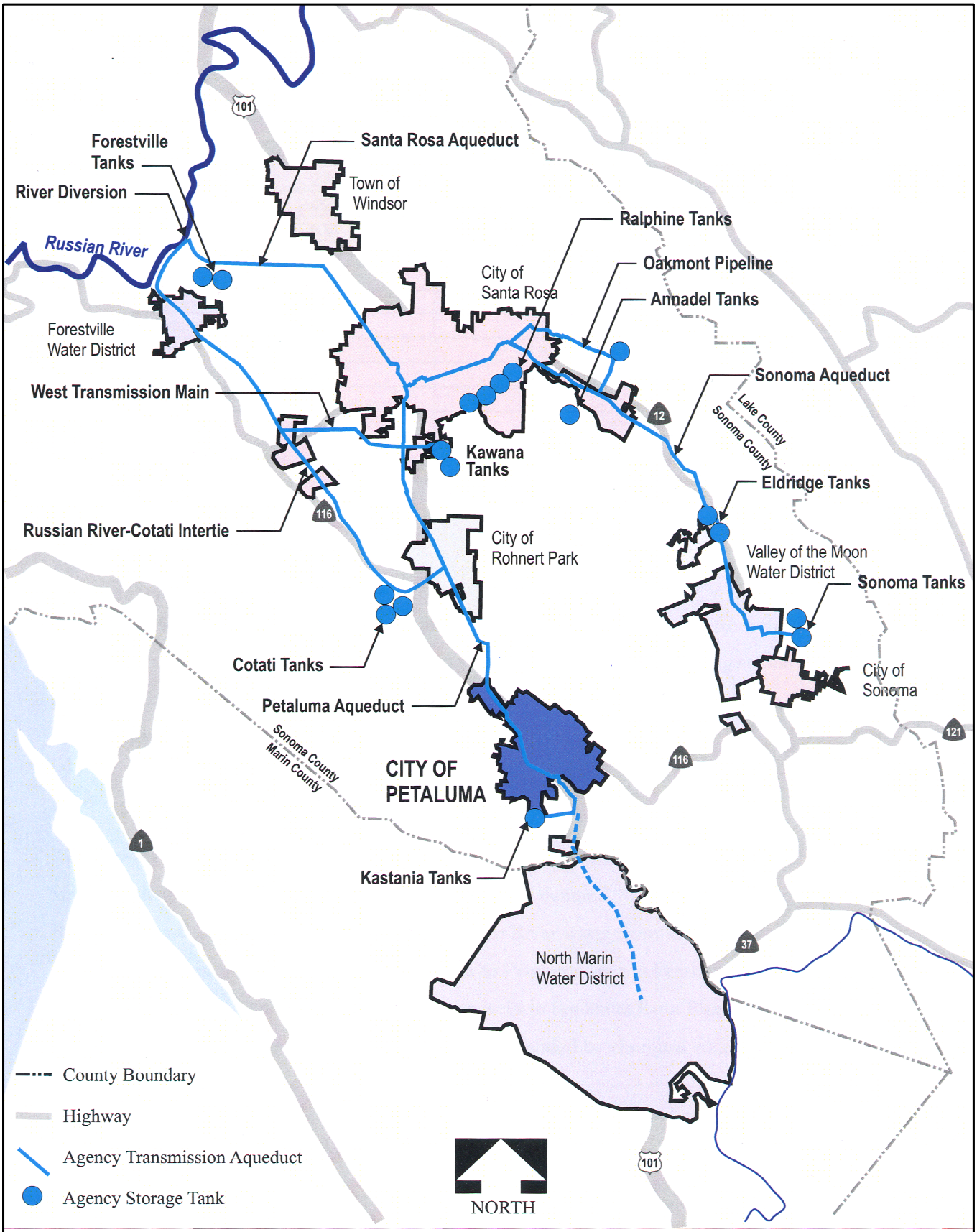
2.2 Climate

The City of Petaluma's climate is tempered by the Pacific Ocean, and the annual climate is divided into wet and dry seasons. Approximately 98 percent of the annual precipitation normally falls during the wet season between October and May, with a large percentage of the rainfall typically occurring during three or four major winter storms. Winters are cool, and below-freezing temperatures occasionally occur. Summers are warm, and the frost-free season is long. Due to its location near the ocean, the City is subject to marine influence and fog intrusion. Average annual precipitation in the area is approximately 25 inches. Prevailing winds are from the west and southwest. Table 2-1 summarizes monthly average evapotranspiration rates (ET^o), rainfall amounts, and temperatures.

TABLE 2-1. (DWR TABLE 3) CLIMATE

	Standard Average ETo [a] (in)	Average Rainfall [b] (in)	Average Temperature [a] (^oF)
January	1.15	5.48	43.98
February	1.61	4.52	47.45
March	3.18	3.35	50.07
April	4.26	1.55	51.85
May	4.87	0.56	56.16
June	6.27	0.18	60.29
July	6.43	0.03	60.93
August	5.55	0.08	59.83
September	4.59	0.24	60.59
October	3.20	1.34	56.40
November	1.56	3.33	49.18
December	1.10	4.72	46.07
Annual	**43.76**	**25.38**	**53.57**

Notes:
[a] Data recorded from Petaluma East Station 144 from CIMIS database (September 1999 – August 2006). ET^o, or evapotranspiration, is the loss of water from evaporation and transpiration from plants.
[b] 1948-2006 data recorded at Petaluma Fire Station 3 from NOAA website www.wrcc.dri.edu
in = inches



DODSON PSOMAS

5321F2-1
JVB 12/22/06

City of Petaluma

2005 URBAN WATER MANAGEMENT PLAN

AGENCY TRANSMISSION SYSTEM

FIGURE NO. 2-1

JOB NO. 5321

2.3 Water System Facilities Source Waters

The City currently receives its potable water supply from the Agency while integrating offset sources such as recycled water and water conservation. Groundwater supplies had been used in the past years to supplement the Agency's supply during peak summer periods. Well capacity is reserved for emergency backup supply. The City maintains its own retail distribution system, including distribution pipelines, storage tanks, and pumping stations. Figure 2-2 illustrates the locations of the City's water system facilities relative to the Agency facilities. Additional details regarding water supply sources are included in Section 4.

2.3.1 Surface Water System Facilities

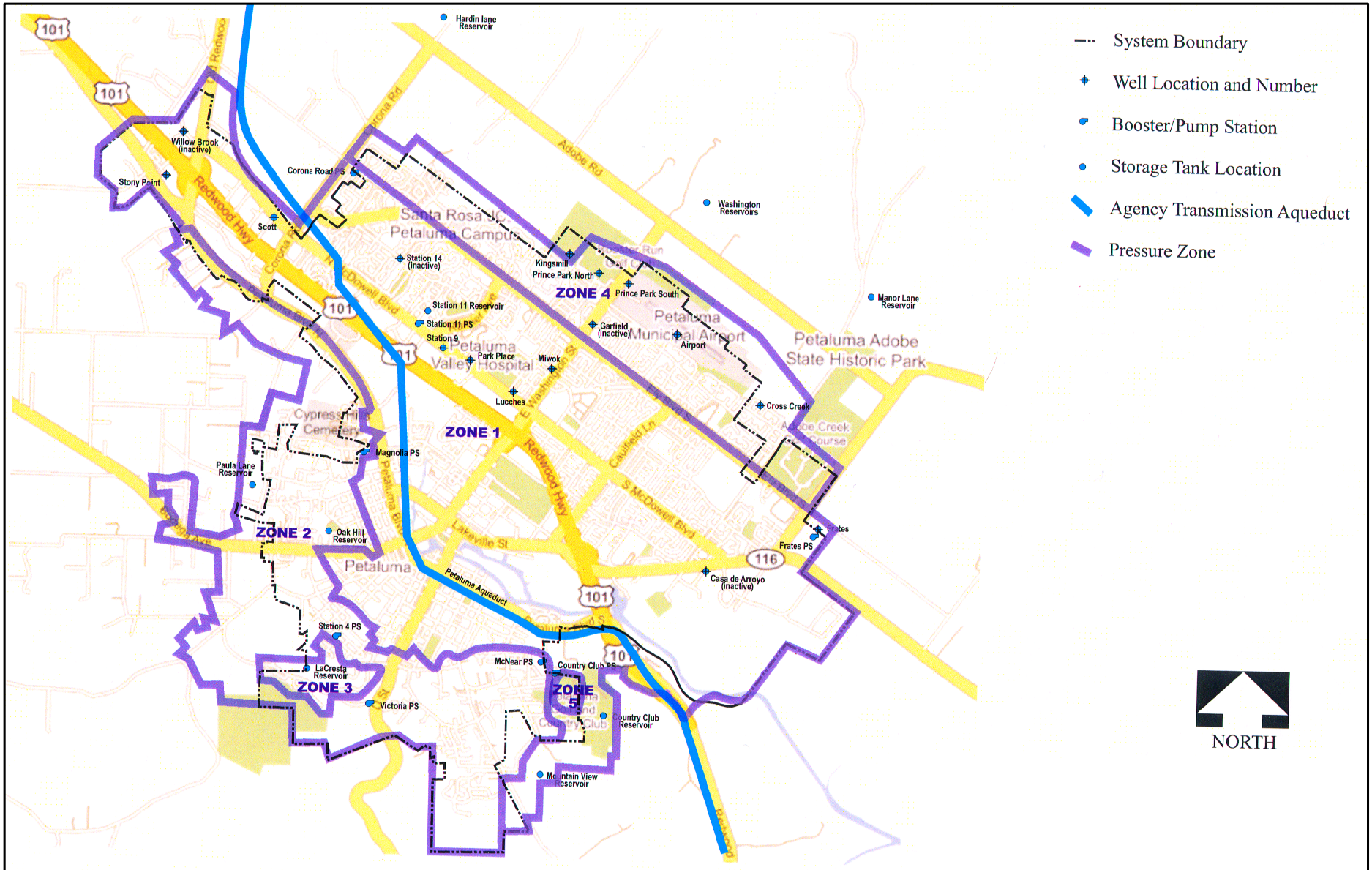
The City's water supply from the Agency is predominantly surface water from the Russian River supplied through six active (and one standby) aqueduct turnouts from the Agency's Petaluma Aqueduct. In addition, the Agency operates three groundwater wells in the Santa Rosa Plain that supplement the water supply from the Russian River. Treatment is provided by chemical addition for disinfection and corrosion control. The 33-inch Petaluma Aqueduct's initial capacity was 18-20 million gallons per day (mgd) and was increased to 33 mgd after the construction of the Ely Booster Station. The Agency is currently starting design of a second 48-inch aqueduct that will pass through Petaluma to increase transmission capacity and increase reliability through redundancy. The Agency system has four steel storage reservoirs providing gravity pressure to the City's active turnouts. Three of the four reservoirs, Cotati #1, Cotati #2, and Cotati #3, are located seven miles northwest of the City's Corona turnout, with capacities of 6 million gallons (MG), 12 MG, and 18 MG, respectively. There is a southern Agency reservoir, Kastania Tank, with a volume of 12 MG, located southeast of Petaluma.

The City's facilities include ten treated water reservoirs and eight booster pump stations to deliver potable water to its five pressure zones. A description of the supply quantity and quality are included in Section 4. A map of the City's existing water system that depicts the locations of pressure zones, storage tanks, wells, and pumping stations is presented on Figure 2-2. A schematic of the overall system is shown in Figure 2-3.

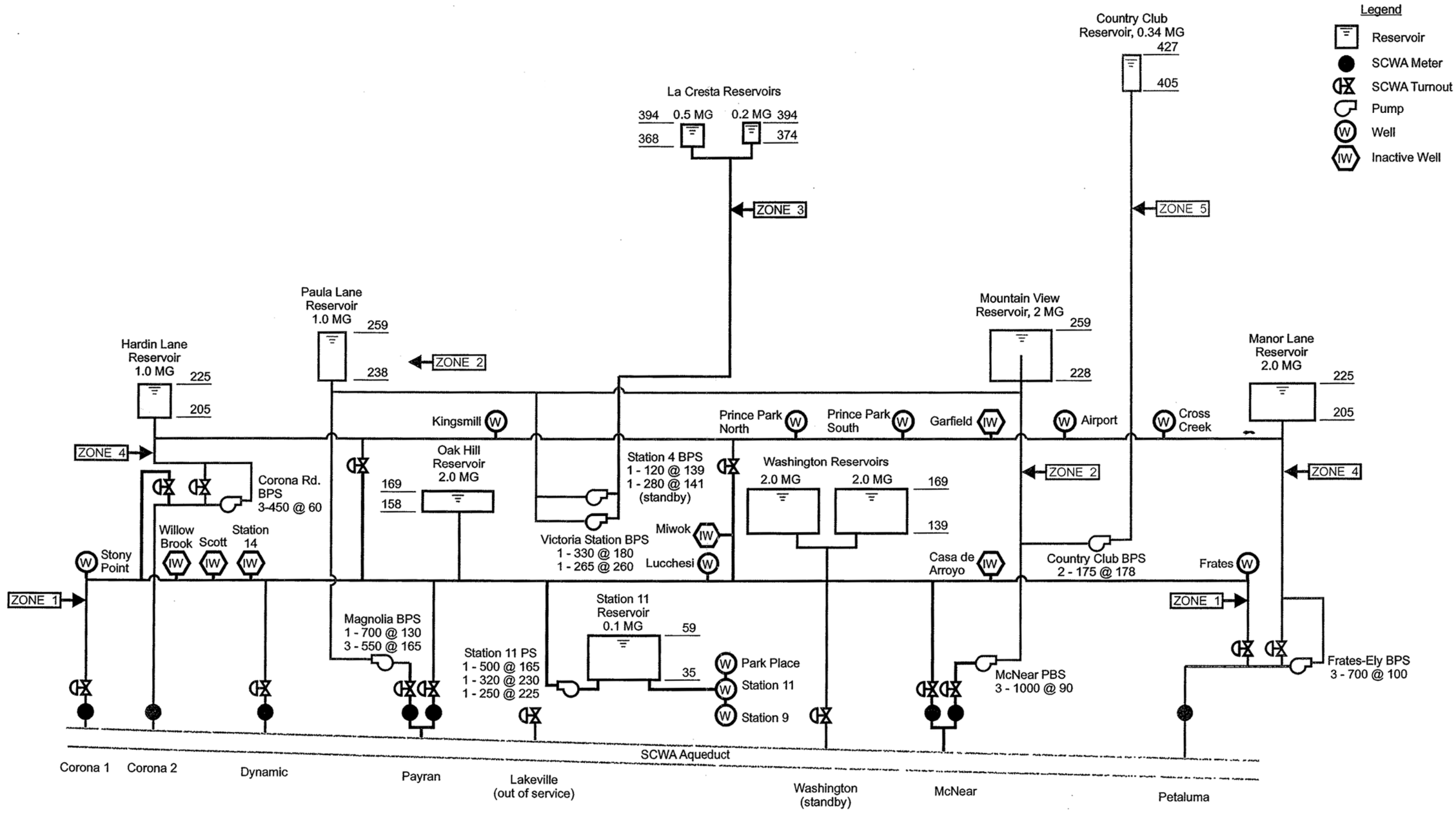
2.3.2 Groundwater Facilities

The only potable water source besides Agency water currently available is City-owned groundwater wells. The City currently has seventeen (17) completed groundwater wells and four (4) newly constructed wells that have not been completed. The wells are predominately on the east side of the City because the City has experienced better water quality in these areas. Well depths range from 229 to 680 feet, with most wells being around 500 feet deep.

The City's policy has been to design wells with a short-term (fourteen day) maximum capacity independent of drawdown to enable their use for standby, emergency, peak hour, or maximum use day. Water from the City's wells is typically hard and has a high total dissolved solids concentration. City wells have been used when required to meet peak summer demands in past years, but the preference is to reserve the City wells for emergency use only. Table 2-2 summarizes well data.



DODSON PSOMAS	5321f2-2 JVB 12-27-06	City of Petaluma	2005 URBAN WATER MANAGEMENT PLAN WATER SYSTEM FACILITIES	FIGURE NUMBER 2-2 JOB NO. 5321



DODSON PSOMAS	5321F2-3 MJF 1/24/07	City of Petaluma	2005 URBAN WATER MANAGEMENT PLAN WATER SYSTEM SCHEMATIC	FIGURE NO. 2-3 JOB NO. 5321

TABLE 2-2. GROUNDWATER WELL DETAILS- SHORT TERM YIELD

Name	Install Date	Well Depth (ft)	Pump Capacity (gpm)	Comments
Airport	1996	450	173	
Cross Creek	1998	480	90	Inactive
Frates	1995	500	173	
Kingsmill	1994	500	111	Inactive
Luchessi	1996	500	153	Inactive
Park Place	1984	314	188	
Prince Park North	1993	500	173	
Prince Park South	1993	500	166	
Station 9	1998	523	118	Inactive
Station 11	1998	520	76	Inactive
Stony Point	1977	597	600	
Casa de Arroyo	1977	229	N/A	Inactive, close to Beacon MTBE spill.
Garfield (Condiotti)	1977	360	150	Inactive
Miwok (Tahola)	1977	425	100	Inactive
Scott	1949	680	N/A	Inactive, no pump or motor, needs rehabilitation
Station 14	1957	560	130	Inactive
Willow Brook	1957	409	172	Inactive, no power, needs rehabilitation
Del Oro				New well, not completed
La Tercera				New well, not completed
McDowell				New well, not completed
St. Francis				New well, not completed
Permitted Active Wells			**1,473**	**2.121 mgd**
Inactive Wells			**1,100**	**1.584 mgd**

Notes:
gpm- gallons per minute
mgd- million gallons per day
MCL- Maximum Contaminant Level

2.3.3 Agency Groundwater Resources

The Agency supplements the Russian River water supply with three deep-water wells in the Santa Rosa Plain. A full discussion of the Agency's groundwater wells is provided in the Agency's Urban Water Management Plan.

2.4 Distribution System

The City's major water distribution facilities consist of ten treated water reservoirs and eight booster pump stations. These facilities and the distribution pipelines are described in this section.

2.4.1 Storage

The City has nine above-grade, welded steel reservoirs and one buried brick and gunite lined earthen reservoir. The City is currently designing a tenth above-grade welded steel reservoir. The City normally maintains the reservoirs at two-thirds capacity. The characteristics of the City's storage facilities are summarized in Table 2-3.

TABLE 2-3. CHARACTERISTICS OF EXISTING STORAGE FACILITIES

Name	Pressure Zone Served	Capacity (MG)	Type	Year Constructed
Washington (Old)	1	2.0	Above ground steel	1967
Washington (New)	1	2.0	Above ground steel	1971
Oak Hill	1	2.0	Gunite over brick	1881
Mountain View	2	2.0	Above ground steel	1971
Paula Lane	2	1.0	Above ground steel	1963
La Cresta (Old)	3	0.2	Above ground steel	1956
La Cresta (New)	3	0.5	Above ground steel	1968
Manor Lane	4	2.0	Above ground steel	1990
Hardin Lane	4	1.0	Above ground steel	1990
Country Club	5	0.34	Above ground steel	1989
Current Total		**13.0**		

Notes:
MG – million gallons

2.4.2 Pump Stations

The City operates eight booster pump stations, including both active and standby pump stations, to serve the five pressure zones. Seven of the pumps are active. Station 11 can be used to pump well water to Pressure Zone 1. At times, the aqueduct pressure is sufficient to fill Zone 4 reservoirs without operation of the Frates and Corona Pump Stations. The City's operational policy is to cycle the pumps to maintain nearly equal operating hours and to have a standby pump at each station.

The summary of the pump station characteristics is presented in Table 2-4. The actual pumping capacity of the pumps may not be the same as the rated design capacity due to the use of pressure reducing valves at the pump discharge lines.

TABLE 2-4. WATER SYSTEM PUMPING FACILITIES

Facility Name	Pressure Zone Served	Reservoir Served	Pump No.	Capacity (gpm)	Year Constructed
Station 11	1	Washington	1101 1102 1103	500 320 250	1996
Magnolia	2	Paula Lane	401 402 403 404	700 550 550 550	1971
McNear	2	Mountain View	301 302 303	1000 1000 1000	1995
Station 4 (Standby)	3	La Cresta	No. 1 No. 2	120 280	1940's
Victoria	3	La Cresta	501 502	265 330	1987
Corona Road	4	Hardin Lane	201 202 203	450 450 450	1990
Frates Road	4	Manor Lane	101 102 103	700 700 700	1990
Country Club	5	Country Club	601 602	175 175	1990

Notes:
gpm = gallons per minute

2.4.3 Distribution Pipelines

The City's existing water distribution system is divided into five pressure zones. Zones 1, 2, and 4 are supplied by turnouts from the Petaluma Aqueduct. Zones 3 and 5 are at higher elevations and require the use of booster stations. Transmission mains vary from 10 through 16 inches in diameter with distribution mains of 4 through 12 inches in diameter.

SECTION 3

HISTORICAL AND PROJECTED WATER USE

This section presents information regarding demographics, historical water use, and projections of future City water demands. A more detailed analysis of water use characteristics and projected water demands are presented in Appendix B.

3.1 Employment, Land Use, and Population

This section describes the City's employment, land use characteristics, and current and projected future population according to the General Plan 2025.

3.1.1 Employment Characteristics

Within the City's service area, employment is primarily in the public sector and in the service and manufacturing industries. Regionally, employment in the agricultural industry is related to vineyards, livestock, orchards, silage crops, and timber. Recreation and tourism are small but growing industries in the region. An increase in employment from 33,160 currently (Year 2005) to 49,710 at buildout is expected based on the City's General Plan.

3.1.2 Land Use Characteristics

Land use within the 9,911 acre Urban Growth Boundary is dominated by residential land uses. Commercial corridors, industrial uses, business parks, vacant land, and open space constitute the rest of the land uses. The goals of the General Plan are to infill existing vacant and underutilized sites with mixed uses. The General Plan allows for an increase in residential densities in some mixed-use areas and on some lands previously designated for commercial and/or industrial uses.

3.1.3 Population Projections

Table 3-1 provides the current and projected population for the City's service area through the year 2025. The population projections from 2005 and 2025 come from the City's General Plan.

TABLE 3-1. (DWR TABLE 2) POPULATION – CURRENT AND PROJECTED

Year	Population
2005	57,698
2010	62,400
2015	68,200
2020	72,100
2025	72,707

3.2 Historic and Future Water Use

This section outlines water use in the City by customer type, water sales to other agencies, additional water use, and past and projected water use. The analysis presented here was performed by the City's General Plan Department and Dodson Engineers and presented in the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006. The demand projections reflect average weather conditions based on water use in Year 2002.

3.2.1. Water Use by Customer Type

Potable water customers within and outside the City Limits and Urban Growth Boundary include single-family, multi-family, commercial/ industrial/office, institution (church, schools, institutions), and large turf irrigators (parks, open space, golf course, and other irrigated lands). The historical and projected number of connections and deliveries to the City's customers by sector are presented in Table 3-2. The projected deliveries do not include the effect of the plumbing code. The projected deliveries do not include water savings from future water conservation implementation or conversion of potable water sites to recycled water, but such offsets will be estimated in Section 5: Recycled Water and Section 6: Water Conservation.

TABLE 3-2. (DWR TABLE 12) PAST, CURRENT, AND PROJECTED WATER DELIVERIES

			Water Use Sectors					
			Single-Family	Multi-family [1]	Commercial/ Industrial/ Office	Institution	Turf	Total
2002	metered	# of accounts	16,962	299	1,471	595	372	19,699
		Deliveries ac-ft/yr	6,030	884	1,881	554	925	10,274
2005	metered	# of accounts	17,561	336	1,492	612	422	20,423
		Deliveries ac-ft/yr	6,311	992	1,920	576	981	10,778
2010	metered	# of accounts	18,641	437	1,569	598	439	21,684
		Deliveries ac-ft/yr	6,816	1,288	2,264	667	1,059	12,093
2015	metered	# of accounts	19,561	547	1,712	584	460	22,864
		Deliveries ac-ft/yr	7,247	1,615	2,638	636	1,103	13,239
2020	metered	# of accounts	19,831	589	1,852	584	469	23,325
		Deliveries ac-ft/yr	7,373	1,737	2,846	636	1,117	13,709
2025	metered	# of accounts	20,118	620	2,106	584	469	23,428
		Deliveries ac-ft/yr	7,508	1,831	3,049	636	1,117	14,141

Note:
[1] Multi-family accounts based on 13.7 dwelling units per account.
ac-ft/yr = acre-feet per year

The City has no unmetered accounts.

3.2.2. Water Sales to Other Agencies

The City does not currently sell water to other agencies.

3.2.3. Lost Water, Additional Water Use, and Plumbing Code Adjustments

Lost water includes accounted-for and unaccounted-for water. Lost water includes water used for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, as well as that used by unauthorized connections. Lost water use can also result from meter inaccuracies. Table 3-3 provides the estimated quantity of lost water. The City has estimated that lost

water is 8% of the total water demand based on 30-year historical data. Lost water for Year 2002 is actual.

Table 3-3 also includes additional water uses and losses. At this time, the City does not use water for groundwater recharge, to prevent salt-water intrusion (saline barriers), or for other conjunctive uses. The City supplies water for customers outside the City Limits, the largest being the Coast Guard facility. The Ellis Creek Water Recycling Facility planned to be operational in 2008, will require potable water for treatment processes. The City has also estimated serving approximately 300 additional acres outside the City's Urban Growth Boundary, which has been indicated as a potential demand between 2018 and 2025 for the next General Plan Update. Table 3-3 includes the effects of the Plumbing Code for overall demand reduction.

TABLE 3-3. (DWR TABLE 14) ADDITIONAL WATER USES AND LOSSES, AC-FT/YR

Water Use	2002	2005	2010	2015	2020	2025
Saline barriers	0	0	0	0	0	0
Groundwater recharge	0	0	0	0	0	0
Conjunctive use	0	0	0	0	0	0
Raw water	0	0	0	0	0	0
Recycled water [1]	0	0	0	0	0	0
Other (Coast Guard, Water Recycling Facility, and water use outside of the UGB)	141	141	403	403	546	899
Plumbing Code Adjustment	0	-11	-123	-258	-381	-493
Lost water	686	875	1,001	1,093	1,142	1,205
Total	**827**	**1,005**	**1,281**	**1,238**	**1,307**	**1,611**

[1] Recycled water use is covered in Chapter 5

3.2.4. Total Water Use

Past, present, and future water use for the system, which is the sum of the totals from Tables 3-2 and 3-3, is provided in Table 3-4. Water conservation will offset demand projections as discussed in Section 6. Recycled water will offset demand projections as discussed in Section 5.

TABLE 3-4. (DWR TABLE 15) TOTAL WATER USE (UNDER AVERAGE WEATHER CONDITIONS), AC-FT/YR

Water Use	2005	2010	2015	2020	2025
Total water use	11,783	13,374	14,477	15,017	15,753

3.3 Demand on Wholesale Supply

The Agency currently provides 100 percent of the City's potable water supply. Table 3-5 provides the projected amount of water that the City expects to purchase from the Agency to meet water demands in the future.

TABLE 3-5. (DWR TABLE 19) CITY DEMAND PROJECTIONS TO WHOLESALE SUPPLIERS, AC-FT/YR

Wholesaler	2010	2015	2020	2025
Sonoma County Water Agency	13,400	13,400	13,400	13,400

SECTION 4

WATER SUPPLY

The City currently uses Agency water and recycled water for irrigation as its supply sources. Groundwater from City-owned wells has been used on occasion to supplement this supply. The Russian River water supplied by the Agency is supplemented by three Agency-owned ground water wells. This section describes the surface water sources, future water sources, quantities, supply constraints, and the reliability and water quality of the water supply source. The City's use of recycled water is described in Section 5.

4.1 Agency Surface Water

This section describes the City's surface water supply, which is purchased from the Agency, as well as the physical and legal constraints to this supply. The surface water supply facilities are described in Section 2.

4.1.1 Description

The City receives its potable water supply from the Agency's transmission system. The Agency is supplied by the federal Russian River Project, which it operates along with the Agency's appurtenant water transmission system. The Coyote Valley Dam, which creates Lake Mendocino on the East Fork Russian River, and Warm Springs Dam, which creates Lake Sonoma on Dry Creek (a tributary to the Russian River), are the key elements of the Russian River Project. The Agency manages releases at both reservoirs for water supply and to maintain required minimum flows in the Russian River and Dry Creek. Flood control releases from each of the reservoirs are controlled by the United States Army Corps of Engineers (USACE). Flows in the Russian River are augmented by Pacific Gas & Electric Company's (PG&E) Potter Valley Project, which diverts a portion of the Eel River flows to the East Fork of the Russian River. Water from the Russian River is diverted by the Agency near Forestville and conveyed via its transmission system (including diversion facilities, treatment facilities, pipelines, water storage tanks, booster pump stations, and groundwater wells) to its wholesale customers, including the City. Further detail on the City's water supply facilities and distribution system is included in Section 2.

4.1.2 Physical Constraints

The Agency's Petaluma Aqueduct has a diameter of 33 inches and its capacity limits the City's water supply from the Agency, particularly average day maximum month flow.

4.1.3 Legal Constraints

This section of the plan describes the water rights held by the Agency and the various conditions that may influence the water supply availability. The City's entitlement to the Agency's water supply is also described.

Water Rights

Four State Water Resources Control Board (SWRCB) permits[1] currently authorize the Agency to store water in Lake Mendocino (122,500 ac-ft) and Lake Sonoma (245,000 ac-ft) and to divert and redivert 180 cubic feet per second (cfs) of water from the Russian River, up to 75,000 ac-ft/yr. The permits also establish minimum instream flow requirements for fish and wildlife protection and Russian

[1] SWRCB Permits Numbers 12947A, 12949, 12950, and 16596

River recreational considerations. These minimum instream flow requirements vary according to the hydrologic cycle (i.e., dry water years versus normal water years) defined by the SWRCB's Decision 1610. The Agency meets the various instream flow requirements set by Decision 1610 by making releases from Coyote Valley Dam and Warm Springs Dam. The Agency has applied to the SWRCB to increase the Agency's Russian River rediversion right from 75,000 to 101,000 ac-ft/yr.

In the early 1990s, the Agency initiated a water project to increase the amount of water released from Lake Sonoma and diverted from the Russian River and to expand the transmission system. The Environmental Impact Report (EIR) for the water project was successfully challenged, and the Agency is in the process of preparing an EIR for a new water project. The new water project, the Water Supply, Transmission, and Reliability Project, must undergo environmental review in accordance with the California Environmental Quality Act (CEQA) and obtain project approval before it can proceed. The Draft EIR is anticipated to be released for public review in 2007. Final EIR certification and project approval is expected to be considered by the Agency Board of Directors by the end of 2007.

Restructured Agreement for Water Supply

The Restructured Agreement for Water Supply (Restructured Agreement), which was executed in 2006, generally provides for the finance, construction, and operation of new diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. The Restructured Agreement provides the contractual relationship between the Agency and the City and includes specific rate of delivery and maximum amounts of water that the Agency will seek to supply to the City.

The Restructured Agreement defines the City's allocations as 13,400 ac-ft/yr and an average of 21.8 million gallons per day (mgd) during a one-month period.

Though the City's existing supply from the Agency is relatively reliable, the following conditions, discussed in more detail below, could affect the City's long term sustainable water supply available from the Agency: completion of the Agency's Water Project EIR and success of the related petition to increase Russian River diversions; results of a Section 7 consultation being undertaken on the Russian River; seasonal hydrologic constraints on the Russian River diversion facilities; and future operation of the Potter Valley Project.

Water Project EIR

In 1998, the Agency's Board of Directors certified an environmental impact report (EIR) for the Agency's Water Supply and Transmission System Project (WSTSP) and approved the project. The objective of the WSTSP was to provide a safe, economical and reliable water supply to meet the defined future needs of the Agency's service area, which includes providing for the future water supply needs of the City. The WSTSP was expected to increase the amount of water SCWA diverts from the Russian River to 101,000 ac-ft/yr and increase the Agency's water transmission system average-day peak month delivery capacity from 92 to 149 mgd.

In 1999, a lawsuit was filed challenging the WSTSP EIR. In 2000, the trial court found the EIR to be adequate. On May 16, 2003, however, the Court of Appeals reversed the trial court's decision, concluding that the EIR was inadequate because it did not contain adequate cumulative impacts and alternatives analyses and its description of the project's environmental setting was deficient. On November 9, 2004, the Agency adopted a resolution directing the preparation of a new EIR, the Water Supply, Transmission, and Reliability Project EIR (Water Project EIR) to address the

inadequacies of the WSTSP and to more closely reflect current water supply circumstances. The draft Water Project EIR is expected to be released for public review in 2008.

Section 7 Consultation

An uncertainty facing the Agency's water supply is related to the recent listings of Coho salmon, Chinook salmon, and steelhead as threatened under the federal Endangered Species Act (ESA). The Agency's water supply operations and maintenance activities are undergoing review by the National Oceanic and Atmospheric Administration –National Marine Fisheries Service (NOAA-NMFS). This review is being conducted as part of an ongoing Section 7 consultation process under the federal Endangered Species Act. Changes to the Agency's water supply operations and maintenance activities or to required minimum streamflows resulting from the consultation process might affect the ability of the Agency to use or deliver its water supply.

In accordance with Section 7(a) (2) of the ESA, federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) and/or NOAA Fisheries (depending on the species) to "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat…." (50 CFR §402). The operation of Warm Springs and Coyote Valley dams and the Agency's rubber dam and fish screens all fall within the provisions of Section 7.

As part of the Section 7 consultation, a Biological Assessment was prepared to study the impact of current and potential future operations of facilities on the listed species in the Russian River. The final Biological Assessment was completed in September 2004. A Biological Opinion that covers current operations is expected in early 2007. Further environmental studies will be needed prior to the issuance of a Biological Opinion for future operations or facilities.

Seasonal Constraint

The ability of the Russian River to produce water is generally limited by the rate of recharge to the aquifer through the streambed. To augment this recharge capacity, the Agency has constructed several infiltration ponds that surround the Agency collector wells. The Agency's water production capacity is complex and will vary from year to year based on a number of factors. In any given year, Agency production needs depend on demands, which are a function of temperature, precipitation and growth, and hydrologic conditions, which are a function of groundwater levels and the permeability of the river bed, that vary based on the number and duration of storm events. An Agency analysis of water trends from 1997 to 1999 concluded that stressed hydrologic conditions occurred in the fall/early winter, followed by nonstressed conditions in the winter, and stressed conditions again in the spring, prior to the rubber dam being raised. Stressed hydrologic conditions are determined by monitoring groundwater levels and noting the decline in water levels as the Agency pumps water to meet demands.

Agency staff is continuing to analyze the seasonal constraint and its potential impact on the ability to provide water to its customers. As non-peak demands continue to rise, the Agency will increasingly rely on using the inflatable dam more continuously throughout the year. Should the Agency be precluded from using the dam due to mechanical or environmental constraints, the production capacity of the Agency transmission system could be temporarily impaired.

Future Operation of the Potter Valley Project

Diversions from the Eel River in to the Russian River via Pacific Gas & Electric's Potter Valley Project are regulated by a number of agencies including the Federal Energy Regulatory Commission (FERC),

and NOAA-NMFS. In 2004, FERC issued a final decision that reduced the amount of diversion from the Eel River into the Russian River by approximately 15 percent to protect Eel River fisheries. This decision formalized an interim decision that was made and implemented in 1999. Since the flow reductions were implemented in 1999, the Agency has not experienced any difficulties in operating the Russian River Project for water supply purposes or in meeting minimum streamflow requirements. Although there is some uncertainty surrounding this issue because the FERC decision is being appealed, there are no additional proposed reductions pending before FERC.

Temporary Impairment Memorandum of Understanding (MOU)

On December 7, 1999, the Agency Board declared that the reliable summertime water production capacity of the SCWA transmission system was impaired because only 84 mgd average could be produced. From June 2000 to September 2005, a *Memorandum of Understanding Regarding Water Transmission System Capacity Allocation During Temporary Impairment (*Temporary Impairment MOU) was in effect between the Agency and its contractors. The MOU defined the water contractors' transmission system capacity during the Temporary Impairment. Under the Temporary Impairment MOU, the City's peak month allocation (during the "summer months" of June through September) was 16.0 mgd (Sonoma County Water Agency, 2000b).

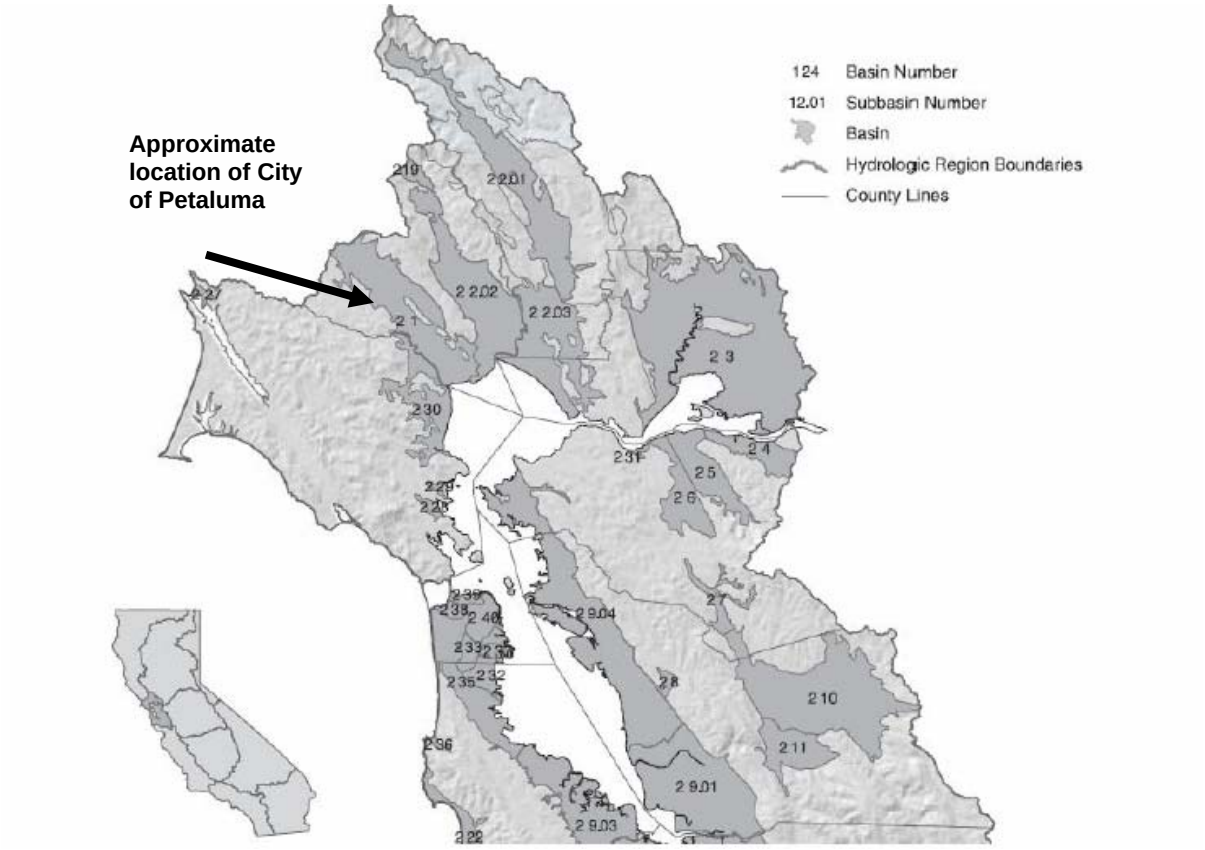
The Temporary Impairment MOU contained several additional components of significance including: (1) an agreement that water conservation funds may be used for water conservation measures, recycled water projects, and standby local peak month production capacity projects that reduce peak demand on the system, as well as a funding commitment from the Agency; (2) a requirement that contractors use best efforts to achieve standby local capacity equal to 40 percent of peak month demand, if possible; (3) the accelerated implementation of specific conservation measures to alleviate peak summer demands; and (4) an agreement to coordinate with agencies with planning and zoning powers as well as building regulatory powers for water supply planning purposes and promotion of water efficiency tools (Sonoma County Water Agency, 2004).

In January 2005, the Agency Board again declared a temporary impairment because the transmission and production capacity were limited to 92 mgd. The Temporary Impairment MOU expired on September 30, 2005. In 2006, the Agency and its water contractors executed an amended Temporary Impairment MOU. The amended Temporary Impairment MOU includes a peak demand allotment of 17.1 mgd for the City during the summer months of 2006 through 2008.

4.2 Existing and Planned Groundwater Supply

The City is located in the Petaluma Valley groundwater basin, number 2.1 in Figure 4-1 below. The Petaluma Valley basin is 46,000 acres. Groundwater budget is defined as numerical accounting of the recharge, discharge, and changes in storage of an aquifer, part of an aquifer, or a system of aquifers. According to Bulletin 118, there is not adequate information to evaluate the groundwater budget in the Petaluma Valley groundwater basin. The City's utilization of the Agency's surface water deliveries in combination with its local groundwater supply has varied; in recent years, however, the City has used the Agency's water as its primary source of water supply and used its local groundwater to supplement this supply during peak demand periods.

FIGURE 4-1 GEOLOGIC BASINS BASED ON BULLETIN 118 GROUNDWATER BASIN MAP (SAN FRANCISCO BAY HYDROLOGIC REGION)



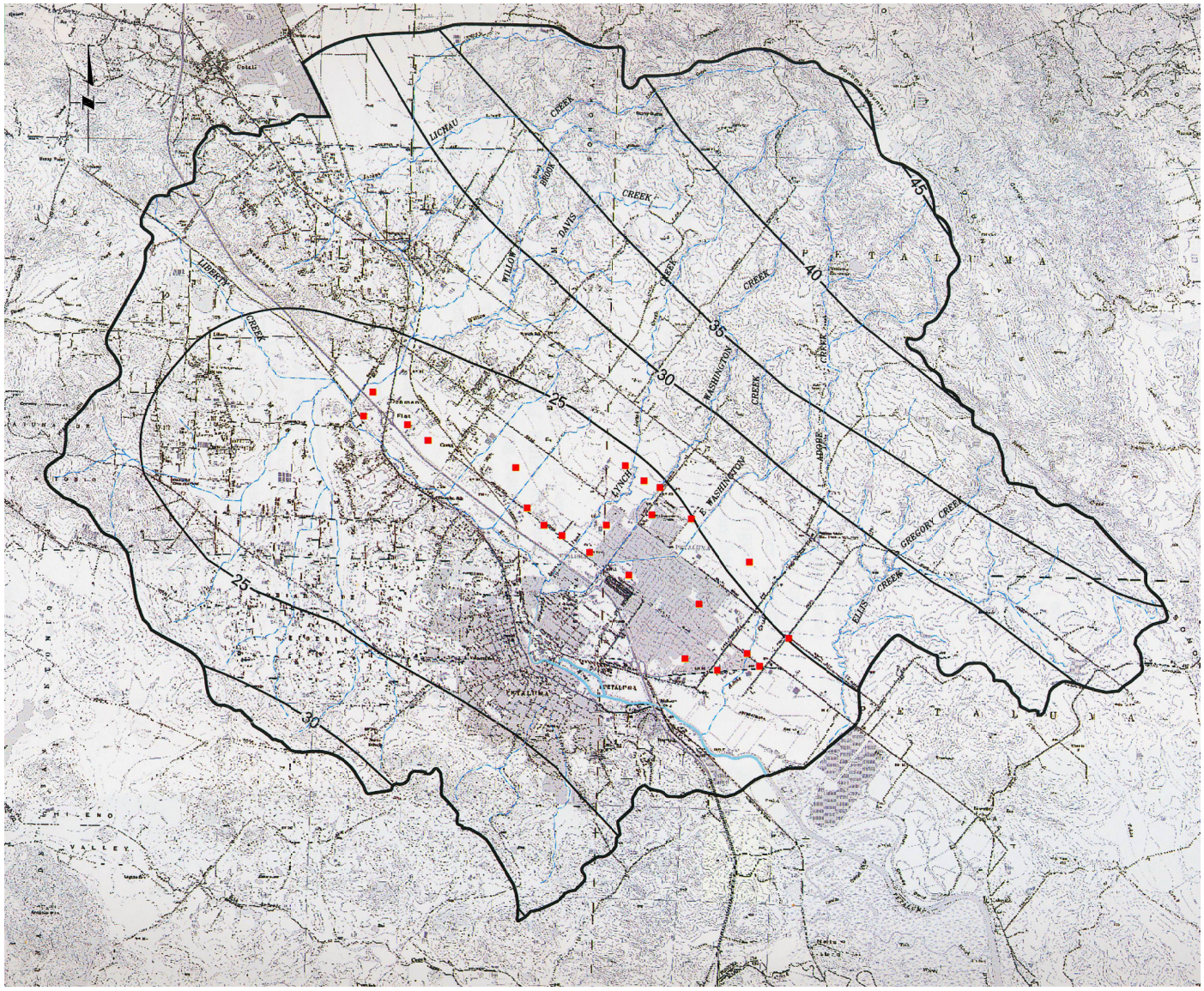
4.2.1 Physical Constraints

In the period between 2000 and 2005, the City obtained less than ten percent of its water from wells in the Petaluma Valley Basin (Table 4-1), relying primarily on surface water supplies. The groundwater use gradually decreased in this period, and in 2005, the City did not pump any groundwater to meet City water demands. Groundwater was used only when surface water from the SCWA aqueduct was not available during peak hour or maximum day conditions.

TABLE 4-1. (DWR TABLE 6) AMOUNT OF GROUNDWATER PUMPED BY THE CITY, AC-FT/YR

Basin Name	2000	2001	2002	2003	2004
Petaluma Valley	888	984	407	52	0
Percent of total water supply	8	9	4	0.5	0

The groundwater supply system is currently limited because the aquifer is faulted and discontinuous, well capacities are relatively low, and water quality is inadequate in some wells. The City of Petaluma currently has twenty one (21) groundwater wells. The status of each well is shown in Table 4-2. The wells are predominately on the east side of the City because the City has experienced better water quality in these areas. Well depths range from 229 to 680 feet, with most wells around 500 feet deep. The location of the existing wells and the boundary of the Petaluma Valley Sub-basin are shown in Figure 4-2: Location of the Petaluma Sub-basin and City Wells.



LEGEND

GROUNDWATER SUB-BASIN BOUNDARY

30 LINE OF EQUAL MEAN SEASONAL PRECIPITATION IN INCHES

CITY OF PETALUMA WELL

REFERENCE:
SONOMA COUNTY MEAN SEASONAL PRECIPITATION, SONOMA COUNTY WATER AGENCY, REVISED JUNE 1983. FROM: CITY OF PETALUMA GENERAL PLAN 2025, WEST YOST, SEPTEMBER 2006.

DODSON PSOMAS

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City of Petaluma

2005 URBAN WATER MANAGEMENT PLAN

LOCATION OF THE PETALUMA VALLEY SUB-BASIN AND CITY WELLS

FIGURE NUMBER
4-2

JOB NO.
5321

TABLE 4-2. EXISTING GROUNDWATER WELL CONDITIONS SUMMARY

Well	Comments	Well Status		
		Active	Standby	Inactive
Airport		X		
Cross Creek			X	
Frates		X		
Kingsmill	Low yield		X	
Luchessi	Taste and odor concerns		X	
Park Place		X		
Prince Park North		X		
Prince Park South		X		
Scott	No pump or motor; needs rehabilitation			X
Station 9	Has exceeded secondary MCL for Manganese		X	
Station 11	Has exceeded secondary MCL for Manganese		X	
Stony Point		X		
Casa de Arroyo	Out of service site is close to Beacon MTBE Spill.		X	X
Garfield (Condiotti)	Exceeds secondary MCL for Iron		X	X
Miwok (Tahola)	Water quality concerns, low yield		X	X
Station 14			X	X
Willow Brook	No power, needs rehabilitation		X	X
Del Oro	New well, not completed		X	X
La Tercera	New well, not completed		X	X
McDowell	New well, not completed		X	X
St. Francis	New well, not completed, low yield		X	X

The City's policy has been to design wells with a short-term maximum capacity independent of drawdown to enable their use for standby, emergency, peak hour or maximum use day. City wells have been used when required to meet peak summer demands in past years, but prefers to reserve the City wells for emergency use only. The City will utilize both water conservation and recycled water in future years to meet ADMM demands in excess of the 17.0 mgd allotted by the Agency.

Based on findings by West Yost & Associates the annual groundwater limit for the City of Petaluma is estimated between 2,000 to 3,000 acre-ft/year (652 to 973.2 MG/Year). This is the maximum developable groundwater production rate given known potential risks associated with excessive drawdown. This figure is hard to determine due to limitations of data and lack of criteria for assessing the potential impacts of groundwater production. In the past, production has ranged from 400 to 1,400 acre-ft/year.

4.2.2 Planned Groundwater Resources

The recommended supply/offset program to meet water demands includes groundwater supply via City-owned wells as a minor program component. Although the City has utilized groundwater in the past to meet peak summer demands, the City prefers to reserve City well capacity for emergency use only. For this reason, future water demands would be met utilizing the City's groundwater wells as the last element to be implemented in the program. The recommended program in its current state requires the use of 25 percent of the City's existing well capacity during the four summer months starting in Year 2024 to meet the City's potable water demands. The annual amount of potable water

produced by the wells will be 186 acre-ft/year (60.75 MG/Year). In addition, the wells will also satisfy 0.5 mgd of the ADMM demand (Table 4-3). This plan does not require an increase in the number of groundwater wells.

TABLE 4-3 (DWR TABLE 7) AMOUNT OF GROUNDWATER PROJECTED TO BE PUMPED BY THE CITY, AC-FT/YR

Basin Name	2005	2010	2015	2020	2025
Petaluma Valley	0	0	0	0	186
Percent of total water supply	0	0	0	0	1

4.2.3 Legal Constraints

There are no legal constraints on the City's use of its groundwater supply (Table 4-4).

TABLE 4-4. CITY'S GROUNDWATER PUMPING RIGHTS, AC-FT/YR

Basin Name	Pumping Right (AC-FT/YR)
Petaluma Valley Basin	Not limited
Total	Not limited

4.3 Desalination

There are currently no plans to develop desalinated water supplies, and no desalination for future water supply is anticipated.

4.4 Historical Water Supply Sources

Historical water supply sources include groundwater, surface water from the Agency, and local production. The City stopped local production in 1993. A history of the City's water supply sources from 1970 is shown in Table 4-5.

TABLE 4-5. CITY'S HISTORICAL WATER SUPPLY AMOUNTS, ACRE-FEET

Year	Groundwater (AF)	Local Supply (AF)	SCWA (AF)	Total (AF)
1970	832.12	642.31	2,784.28	4,259
1971	871.18	695.53	3,118.36	4,685
1972	857.34	535.57	3,689.61	5,083
1973	767.82	632.16	4,005.23	5,405
1974	742.60	735.83	3,874.19	5,353
1975	661.39	619.86	4,057.84	5,339
1976	749.98	312.54	4,593.71	5,656
1977	24.92	154.43	3,827.12	4,006
1978	817.04	299.93	3,991.39	5,108
1979	446.36	303.31	4,843.81	5,593
1980	897.95	514.65	4,610.94	6,024
1981	920.10	375.61	5,051.15	6,347
1982	355.61	644.78	5,105.90	6,106
1983	382.37	619.86	5,180.96	6,183
1984	1,128.97	500.50	5,346.16	6,976
1985	1,237.56	375.61	5,562.11	7,175
1986	1,433.52	405.45	5,615.94	7,455
1987	1,160.96	297.78	6,496.66	7,955
1988	1,117.90	284.86	6,640.63	8,043
1989	458.66	374.68	7,123.29	7,957
1990	298.70	224.87	8,067.07	8,591
1991	0.00	243.02	7,800.98	8,044
1992	0.00	135.23	8,178.71	8,314
1993	0.00	0.00	8,576.74	8,577
1994	0.00	0.00	9,357.58	9,358
1995	1.96	0.00	9,536.85	9,539
1996	0.00	0.00	9,859.83	9,860
1997	13.90	0.00	10,604.83	10,619
1998	926.33	0.00	8,958.24	9,885
1999	1,054.97	0.00	10,023.91	11,079
2000	887.50	0.00	10,254.40	11,142
2001	983.67	0.00	10,372.61	11,356
2002	406.98	0.00	10,738.72	11,146
2003	52.00	0.00	10,744.57	10,797
2004	0.00	0.00	11,048.02	11,048

Based on the City of Petaluma Water Production and Sales Report, 2004

4.5 Transfer and Exchange Opportunities

Currently, the City does not transfer and/or exchange water with other entities. It is not anticipated that transfers or exchanges would occur in the future. However, water transfers between the

Agency's water contractors are authorized under the 11th Amended and Restructured Agreements. Such transfers and exchanges between Agency water contractors have been necessary in the past and may be necessary in the future to improve water reliability (Sonoma County Water Agency, 2000a).

4.6 Current and Projected Water Supplies

This section provides current water supply quantities and projections of the City's future water supply quantities by source. Future water supplies from the Agency are dependent upon planned infrastructure improvements being approved and constructed. No increases in current annual and ADMM supply from the Agency over current entitlements through 2025 have been assumed. Future water supply information is based on the City of Petaluma's Water Demand and Supply Analysis Report (May 2006).

The City currently holds entitlement to 13,400 ac-ft/yr from the Agency and can utilize approximately 1,428 ac-ft/yr from recycled water. Water conservation can also offset 781 ac-ft/year of annual demand through 2025. Beginning in about 2024, additional supply will be needed to meet the 2030 demand projections of this Plan. This additional supply will be provided by any combination of the following sources: possible utilization of the City's own groundwater resources or additional entitlement from the Agency. Table 4-6 summarizes the current and projected water supplies available to the City. Future projects that will contribute to the City's water supply are summarized in Table 4-7.

TABLE 4-6. (DWR TABLE 4) CURRENT AND PLANNED WATER SUPPLIES, AC-FT/YR

Water Supply Sources	2005	2010	2015	2020	2025
Agency (SCWA)	13,400	13,400	13,400	13,400	13,400
Recycled water	0	669	1,020	1,326	1,428
Water conservation offset	0	337	601	715	781
Groundwater	0	0	0	0	187
Total	13,400	14,410	15,021	15,441	15,795

TABLE 4-7. (DWR TABLE 17) FUTURE WATER SUPPLY PROJECTS

Project Name	Projected Start Date	Projected Completion Date	Normal year ac-ft to City	Single-dry year yield ac-ft	Multiple-Dry Year		
					Year 1 ac-ft	Year 2 ac-ft	Year 3 ac-ft
Tertiary Water Recycling Facility [1]	2006	2009	1,428	1,428	1,428	1,428	1,428

[1] Data shown is for Year 2025. See Table 4-6 for tertiary recycled water amounts in prior years. In addition, the Agency is working on the Agency's Water Supply, Transmission, and Reliability projects. No data is available.

4.7 Water Supply Reliability

This section presents the projected supplies available during single-and multiple-dry water years. Actions that would be undertaken during a short-term water supply curtailment are addressed in the Water Shortage Contingency Plan, which is presented in Appendix C.

4.7.1 Reliability Comparison

The reliability of the City's water sources is summarized in Table 4-8. The City's surface water supply from the Agency is subject to reductions during dry years (seasonal and climatic shortages) pursuant to SWRCB water rights Decision 1610. When the Lake Sonoma (total volume 381,000 ac-ft;

water supply pool 212,000 ac-ft) water volume is less than 100,000 ac-ft, a 30 percent reduction in diversions is required. This condition has not been experienced on the Russian River system, even during the multiple dry year conditions of 1990 – 1992. It is not likely that a drought would reduce the volume of surface water available to the Agency, for reasons set forth in Table 5-2 and 5-3 of the Agency's UWMP 2000. There is significant water in storage upon which the Agency is entitled to withdraw. The reliability of recycled water is not anticipated to be affected by single- or multiple-dry years. Recycled water, groundwater supply, and water conservation offset is also anticipated to not be impacted by drought conditions. Groundwater sources can be impacted by drought conditions, but the minimal groundwater supply outlined in Table 4-6 is not expected to decrease since this amount represents only 25% of the City's current total sustainable groundwater supply. For recycled water, wastewater generation is not impacted by drought. Water conservation is expected to increase with increasing drought conditions as outlined in Appendix C, but for this analysis, it is assumed to be constant.

TABLE 4-8. (DWR TABLE 8) YEAR 2025 SUPPLY RELIABILITY - PERCENT OF NORMAL, AC-FT/YR

			Multiple-Dry Water Years			
Sources	Normal Water Year	Single-Dry Water Year	Year 1	Year 2	Year 3	Year 4
Agency (SCWA) [a]	13,400	13,400	13,400	13,400	13,400	N/A [b]
Recycled water	1,428	1,428	1,428	1,428	1,428	1,428
Groundwater wells	187	187	187	187	187	187
Water conservation offset	781	781	781	781	781	781
Percent normal	100	100	100	100	100	N/A [b]

[a] Source: Agency's 2000 Urban Water Management Plan. No reductions during single or multiple-dry years.
[b] Not available based on the Agency's 2000 Urban Water Management Plan.

Table 4-9 lists the years upon which the data in Table 4-8 are based.

TABLE 4-9. (DWR TABLE 9) BASIS OF WATER YEAR DATA

Water Year Type	Base Year(s)
Normal water year	1962
Single-dry water year	1977
Multiple-dry water years	1990-1992

Factors resulting in inconsistency of supply are summarized in Table 4-10. Alternatives to replace inconsistent sources may potentially include the development of groundwater wells, use of recycled water, and increased conservation. Water quality issues are not anticipated to have a significant impact on water supply reliability except for groundwater. If applicable in the future, chemical contamination and the lowering of maximum contaminant levels (MCLs) for naturally occurring constituents can be mitigated by constructing new treatment facilities. These treatment facilities would have a significant cost.

TABLE 4-10. (DWR TABLE 10) DESCRIPTION OF THE FACTORS RESULTING IN INCONSISTENCY OF SUPPLY

Name of Supply	Legal	Environmental	Water Quality	Climatic
Agency (SCWA)	Current supply is stable with regard to these factors; future supply increases may not be stable due to delays in construction, approval of water rights application, or in environmental documentation.		None	Drought could result in a curtailment of 30 percent or higher
Recycled water	None	None	None	None
Groundwater wells	None	None	None	Drought could result in reduction in yield. However, only 25% of the City's current total sustainable groundwater supply will be used. The supply is not expected to decrease.

4.7.2 Wholesaler (Agency) Water Supply Projections

Agency projections that quantify water availability to the City through 2030 are presented in Table 4-11.

TABLE 4-11. (DWR TABLE 20) WHOLESALER IDENTIFIED AND QUANTIFIED EXISTING AND PLANNED SOURCES OF WATER, AC-FT/YR

Wholesaler sources	2010	2015	2020	2025	2030
Agency (SCWA)	13,400	13,400	13,400	13,400	13,400

A water supply reliability comparison for the Agency supply is made in Table 4-12, considering three water supply scenarios: average/normal water year, single-dry water year, and multiple dry water years.

TABLE 4-12. (DWR TABLE 21) WHOLESALER SUPPLY RELIABILITY, AC-FT/YR

			Multiple-Dry Water Years			
Wholesaler	Normal Water Year	Single-Dry Water Year	Year 1	Year 2	Year 3	Year 4
Agency (SCWA)	13,400	13,400	13,400	13,400	13,400	N/A [a]
Percent normal	100	100	100	100	100	N/A [a]

Source: Agency's 2000 UWMP

[a] N/A- not available. The Agency's 2000 UWMP only modeled a 3-year multiple dry water year period. Data is not available for a four-year multiple dry water year period.

Table 4-13 lists the years upon which the data in Table 4-11 are based.

TABLE 4-13. (DWR TABLE 9) BASIS OF WATER YEAR DATA

Water Year Type	Base Year(s)
Normal water year	1962
Single-dry water year	1977
Multiple-dry water years	1990 – 1992

Factors resulting in inconsistency of the Agency's supply are included in Table 4-14.

TABLE 4-14. (DWR TABLE 22) FACTORS RESULTING IN INCONSISTENCY OF WHOLESALER'S SUPPLY

Name of supply	Legal	Environmental	Water Quality	Climatic
Agency (SCWA)	Current supply is stable with regard to these factors; future supply increases may not be stable due to delays in construction, approval of water rights application, or in environmental documentation. The City of Petaluma is not relying upon future supply increases from the Agency.		None	Drought could result in a curtailment of 30 percent or higher

The 30% curtailment is based on diversions of 101,000 ac-ft/yr and does not affect the 75,000 ac-ft/yr diversion that the Agency is currently entitled. Therefore, the City supply, which is based on the 75,000 ac-ft /yr diversion, is not affected.

4.8 Water Quality Impacts on Future Water Supply

The quality of the City's water deliveries is regulated by DHS, which requires regular collection and testing of water samples to ensure that the quality meets regulatory standards and does not exceed MCLs. Both the City and the Agency perform water quality testing, which has consistently yielded results within the acceptable regulatory limits.

Water quality has not limited Petaluma's supply, and this trend is expected to continue. Concentrations of manganese and iron in some of Petaluma's groundwater wells can create taste concerns. This is an aesthetic problem. These naturally occurring constituents are not considered a health concern. The City manages the presence of iron and manganese by limiting the use of groundwater wells that contain elevated concentrations of these constituents.

Construction of the City of Petaluma's Ellis Creek Water Recycling Facility (WRF) provides disinfected tertiary treated recycled water as a water offset source for the future. In 2005, no recycled water was utilized by the City to offset potable water supply other than secondary recycled water provided for irrigation of a golf course. In 2009, the WRF will go on-line to produce recycled water meeting the requirements of Title 22 for unrestricted use. All recycled water shown to be used within the City of Petaluma for potable offset/supply in Years 2010, 2015, 2020, and 2025 will meet Title 22 requirements for unrestricted use. Recycled water quality will remain unchanged, as the plant will be equipped with redundant equipment and alarms to provide reliability. Table 4-15 summarizes the current and projected water supply changes due to water quality.

TABLE 4-15. (DWR TABLE 39) CURRENT AND PROJECTED WATER SUPPLY CHANGES DUE TO WATER QUALITY – PERCENTAGE

Water Source	2005	2010	2015	2020	2025
Agency (SCWA)	0	0	0	0	0
Groundwater	0	0	0	0	0
Recycled water	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**

SECTION 5

RECYCLED WATER

The use of Title 22 unrestricted use tertiary recycled water for potable offset as outlined within this Urban Water Management Plan is based on the City of Petaluma's Water Demand and Supply Analysis Report dated 2006. The Water Demand and Supply Report updates the City's Recycled Water Master Plan prepared in 2004. Under the Water Demand and Supply Analysis project, the focus of recycled water use was redefined from identification of the least cost project to dispose of wastewater effluent during the period of restricted release into the Petaluma River to a concentrated effort to maximize potable offset through the use of recycled water. The same methodology used in the Recycled Water Master Plan was applied, but only existing recycled water customers and current or future potable water customers were included in the analysis. The analysis was only applied to the tertiary recycled water system, since none of the existing secondary recycled water system customers would utilize potable water in lieu of recycled water. The facilities and anticipated users of tertiary recycled water are shown in Figure 5-1 and listed in Table 5-1. The anticipated phasing of potential potable offset recycled water customers is shown in Figure 5-2.

The City of Petaluma owns the potable water distribution system and wastewater collection and treatment facilities that serve the residents of Petaluma and customers within the sphere of influence. The City contracts with Veolia Water North America to operate and maintain the wastewater system. The City of Petaluma's departments of planning, water and wastewater, as well as Veolia Water North America were involved in the development of the City's Recycled Water Program.

TABLE 5-2. (DWR TABLE 32) PARTICIPATING AGENCIES FOR THE CITY'S RECYCLED WATER PROGRAM

Agency Type	Participated
Water Agencies: City of Petaluma and SCWA	X
Wastewater Agencies: City of Petaluma and Veolia North America	X
Groundwater Agencies: None	
Planning Agencies: City of Petaluma	X

5.1 Wastewater System Description

The City of Petaluma owns the wastewater collection system, the wastewater treatment plant (WWTP) located at 950 Hopper Street in Petaluma, the effluent collection ponds, and the recycled water distribution system within the City of Petaluma and portions of unincorporated southern Sonoma County. The City of Petaluma is located within the jurisdiction of the San Francisco Bay Region of the California Regional Water Quality Control Board (RWQCB) and the Sonoma District of the North Coast Section of the California Department of Health Services Drinking Water Branch (DHS).

The City of Petaluma currently operates the WWTP within the Petaluma city limits. Treated wastewater from the wastewater facility is then pumped through a 36-inch forcemain from the treatment plant's pond influent pump station to the City's oxidation ponds, located adjacent to Lakeville Highway. Disinfected secondary effluent from the oxidation ponds is currently discharged into the Petaluma River or distributed to recycled water irrigation customers. The City currently operates an extensive water-recycling program that recycles all of the wastewater treatment plant's disinfected secondary-23 effluent during the irrigation season.

TERTIARY RESERVOIRS (TWO 1.1 MG RESERVOIRS @ ELEV 280)

MAIN TERTIARY PS AT ELLIS CREEK WRF 7.8 MGD @ 350' TDH

PETALUMA COUNTRY CLUB PUMP STATION 0.23 MGD @ 190' TDH

ADOBE RD
RIESLING RD
CORONA RD
OLD REDWOOD HWY
HIGHWAY 101
NORTH MCDOWELL BLVD
RAILROAD RIGHT-OF-WAY
STONY POINT RD
MARIA DRIVE
SONOMA MOUNTAIN PKWY
DONBRIDGE
TURTLE CREEK LN
EAST WASHINGTON ST
MONROE ST
ELY BLVD SOUTH
CASA GRANDE RD
FRATES RD
ELY RD
BROWNS LANE
LAKEVILLE HWY
CRINELLA DR
CAULFIELD LN
SOUTH MCDOWELL BLVD
SARTORI DR
ST FRANCIS DR
PETALUMA BLVD NORTH
PETALUMA BLVD SOUTH
PAYRAN ST
HOPPER ST
HOWARD ST
WEBSTER ST
BODEGA AVE
WESTERN AVE
ENGLISH ST
'B' STREET
'D' STREET
'G' STREET
'I' STREET
MCNEAR AVE
COUNTRY CLUB DR
PETALUMA RIVER

LEGEND

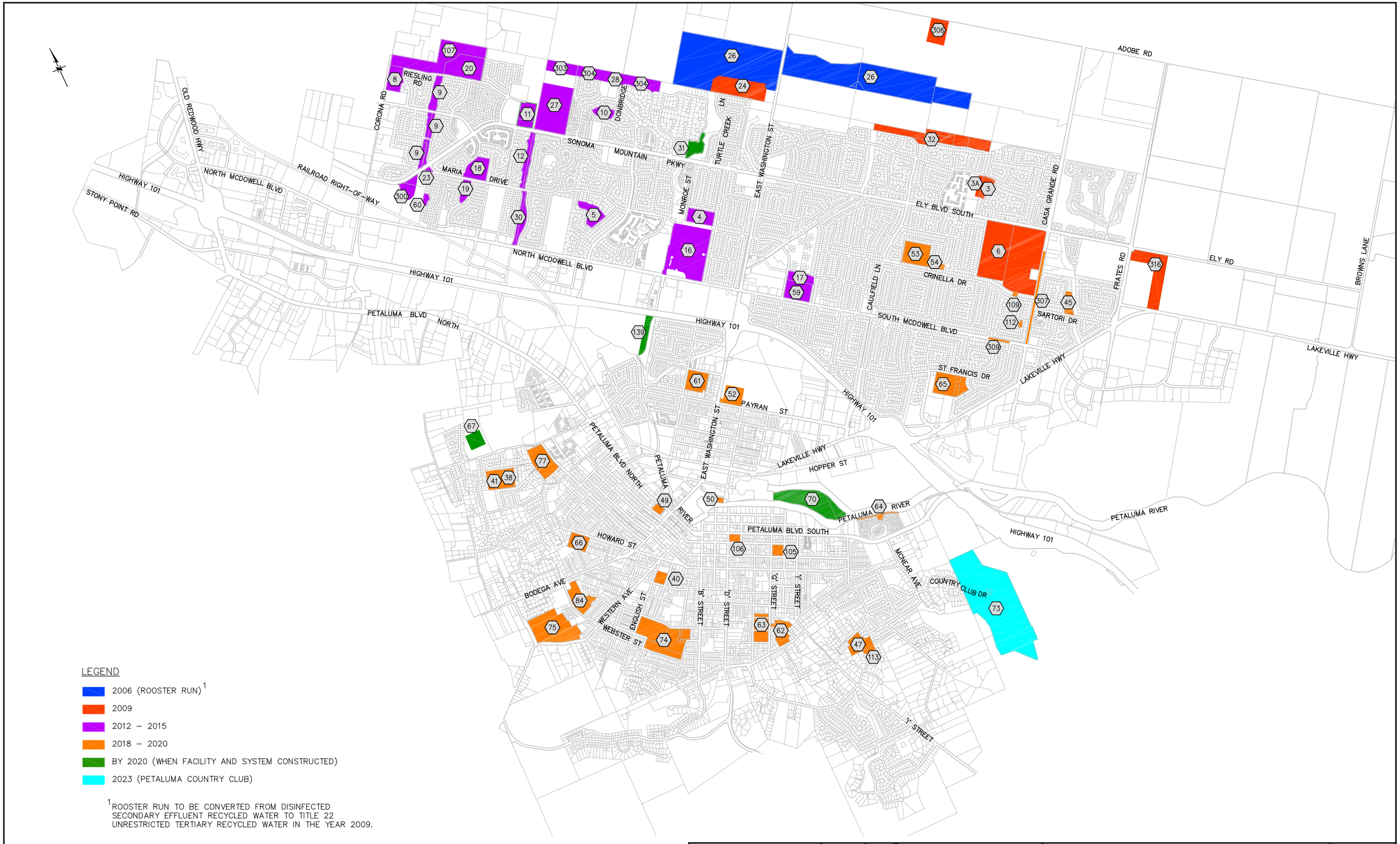
- EXISTING POTABLE WATER USERS
- FUTURE POTABLE WATER USERS
- NON-POTABLE RW USERS AND ELLIS CREEK WRF
- EXISTING PIPELINE
- NEW PIPELINE

DODSON PSOMAS	5321F5-1 JVB 1/22/07	City of Petaluma	2005 URBAN WATER MANAGEMENT PLAN RECOMMENDED TERTIARY RECYCLED WATER CUSTOMERS AND FACILITIES

FIGURE NO. 5-1
JOB NO. 5321

TABLE 5-1. RECOMMENDED TERTIARY RECYCLED WATER SYSTEM USERS

Customer Name	Map Location #	Description	Total Irrigated Acres	Existing Potable User (2002)	Future Potable Water User	Total Annual Demand (Irrigation Season Use) (Ac-Ft/Yr)	Total Annual Demand (Irrigation Season Use) (MG/year)	Average Day Demand (mgd)	Max. Month Demand (MG/month)	Max. Day Demand (mgd)	Max. Hour Demand (gpm)	Factor (MG/acre)	ADMM (mgd)
Arroyo Park	3	Park	3	X		**9.21**	3.00	0.01	0.81	0.03	58	1.000	0.026
Arroyo Park (Extended)	3A	Park	1.3		X	**3.99**	1.30	0.01	0.35	0.01	25	1.000	0.011
Casa Grande High School	6	School	23.5	X		**72.12**	23.50	0.11	6.38	0.24	453	1.000	0.206
Greenway (Future)	316	Turf	15.5	X		**47.57**	15.50	0.07	4.21	0.16	299	1.000	0.136
Old Adobe School	306	School	6.6	X		**20.25**	6.60	0.03	1.79	0.07	127	1.000	0.058
Prince Park	24	Park	11.1	X		**34.06**	11.10	0.05	3.01	0.12	214	1.000	0.097
Rooster Run	26	Golf Course	126.4	X		**424.55**	138.34	0.65	25.20	0.97	671	1.094	0.813
Wiseman Park (Extended)	32	Park	19.4	X		**59.54**	19.40	0.09	5.27	0.20	374	1.000	0.170
Bernard Eldridge School	4	School	2	X		**6.14**	2.00	0.01	0.54	0.02	39	1.000	0.018
Bond Park	5	Park	6	X		**18.41**	6.00	0.03	1.63	0.06	116	1.000	0.053
City Right-Of-Way (Maria & Sonoma Mtn)	23	Park	3	X		**9.21**	3.00	0.01	0.81	0.03	58	1.000	0.026
Corona Creek Elementary	8	School	3	X		**9.21**	3.00	0.01	0.81	0.03	58	1.000	0.026
Corona Creek LAD	9	Park	2.5	X		**7.67**	2.50	0.01	0.68	0.03	48	1.000	0.022
Eagle Park	10	Park	2.9	X		**8.90**	2.90	0.01	0.79	0.03	56	1.000	0.025
Gatti Park	11	Park	7.3	X		**22.40**	7.30	0.03	1.98	0.08	141	1.000	0.064
Glenbrook Park	12	Park	2.6	X		**7.98**	2.60	0.01	0.71	0.03	50	1.000	0.023
Kenilworth Jr. High (Relocated)	20	School	20	X		**61.38**	20.00	0.09	5.43	0.21	386	1.000	0.175
Lucchesi Park	16	Park	13.1	X		**40.20**	13.10	0.06	3.56	0.14	253	1.000	0.115
Lynch Creek Park (Future)	139	Park	7		X	**21.48**	7.00	0.03	1.90	0.07	135	1.000	0.061
McDowell Elementary	59	School	3.7	X		**11.35**	3.70	0.02	1.00	0.04	71	1.000	0.032
McDowell Meadow Park	60	Park	0.8	X		**2.46**	0.80	0.00	0.22	0.01	15	1.000	0.007
McDowell Park	17	Park	5.3	X		**16.27**	5.30	0.02	1.44	0.06	102	1.000	0.046
Meadow Elementary	18	School	2.2	X		**6.75**	2.20	0.01	0.60	0.02	42	1.000	0.019
Meadow Park	19	Park	2.7	X		**8.29**	2.70	0.01	0.73	0.03	52	1.000	0.024
Open Space (by new Jr. High)	107	Open Space	3	X		**9.21**	3.00	0.01	0.81	0.03	58	1.000	0.026
Santa Rosa J.C. Phase 2	303	Open Space	5.4	X		**16.57**	5.40	0.03	1.47	0.06	104	1.000	0.047
Santa Rosa Junior College	27	School	5	X		**15.34**	5.00	0.02	1.36	0.05	96	1.000	0.044
Sonoma Mountain Elementary Turf	28	School	2.7	X		**8.29**	2.70	0.01	0.73	0.03	52	1.000	0.024
Sunrise Park	30	Park	2.1	X		**6.44**	2.10	0.01	0.57	0.02	40	1.000	0.018
Turn Bridge Park	300	Park	2.3	X		**7.06**	2.30	0.01	0.62	0.02	44	1.000	0.020
Turtle Creek Park	31	Park	5	X		**15.34**	5.00	0.02	1.36	0.05	96	1.000	0.044
Urban Separator S	304	Open Space	11.4	X		**34.99**	11.40	0.05	3.10	0.12	220	1.000	0.100
Anna Meadows Park	112	Park	0.37	X		**1.14**	0.37	0.00	0.10	0.00	7	1.000	0.003
Casa Grande Streetscape	307	Park	0.5	X		**1.53**	0.50	0.00	0.14	0.01	10	1.000	0.004
Crinella Mini Park	109	Park	0.4	X		**1.23**	0.40	0.00	0.11	0.00	8	1.000	0.004
Del Oro Park	45	Park	3.5	X		**10.74**	3.50	0.02	0.95	0.04	67	1.000	0.031
La Tercera Elementary	53	School	5	X		**15.34**	5.00	0.02	1.36	0.05	96	1.000	0.044
La Tercera Park	54	Park	2.8	X		**8.59**	2.80	0.01	0.76	0.03	54	1.000	0.025
Miwok Valley Elementary and Park	65	School	6.9	X		**21.18**	6.90	0.03	1.87	0.07	133	1.000	0.060
S. McDowell Streetscape	309	Park	0.08	X		**0.25**	0.08	0.00	0.02	0.00	2	1.000	0.001
Cherry Valley Park	38	Park	0.75	X		**2.30**	0.75	0.00	0.20	0.01	14	1.000	0.007
City Hall	40	Park	0.7	X		**2.15**	0.70	0.00	0.19	0.01	13	1.000	0.006
Collins, Mary Elementary	41	School	1.4	X		**4.30**	1.40	0.01	0.38	0.01	27	1.000	0.012
Library	52	Park	2	X	X	**6.14**	2.00	0.01	0.54	0.02	39	1.000	0.018
Grant Elementary	47	School	3.4	X		**10.43**	3.40	0.02	0.92	0.04	66	1.000	0.030
Grant Park	113	Park	0.98	X		**3.01**	0.98	0.00	0.27	0.01	19	1.000	0.009
Jack Cavanaugh Park	50	Park	0.04	X		**0.12**	0.04	0.00	0.01	0.00	1	1.000	0.000
Magnolia Park (Future)	67	Park	4	X		**12.28**	4.00	0.02	1.09	0.04	77	1.000	0.035
McKinley Elementary	61	School	2.7	X		**8.29**	2.70	0.01	0.73	0.03	52	1.000	0.024
McNear Elementary	62	School	1.7	X		**5.22**	1.70	0.01	0.46	0.02	33	1.000	0.015
McNear Landing	64	Park	0.15	X		**0.46**	0.15	0.00	0.04	0.00	3	1.000	0.001
McNear Park	63	Park	4.8	X		**14.73**	4.80	0.02	1.30	0.05	93	1.000	0.042
McNear Peninsula Park (Future)	70	Park	17.5		X	**53.71**	17.50	0.08	4.75	0.18	337	1.000	0.153
Oak Hill Park	66	Park	2.7	X		**8.29**	2.70	0.01	0.73	0.03	52	1.000	0.024
Penry Park	49	Park	1.8	X		**5.52**	1.80	0.01	0.49	0.02	35	1.000	0.016
Petaluma High	74	School	10.6	X		**32.53**	10.60	0.05	2.88	0.11	204	1.000	0.093
Petaluma Junior High	75	School	6.6	X		**20.25**	6.60	0.03	1.79	0.07	127	1.000	0.058
Saint Vincent's High School	77	School	2.8	X		**8.59**	2.80	0.01	0.76	0.03	54	1.000	0.025
Valley Vista Elementary	84	School	3.5	X		**10.74**	3.50	0.02	0.95	0.04	67	1.000	0.031
Walnut Park	106	Park	1.4	X		**4.30**	1.40	0.01	0.38	0.01	27	1.000	0.012
Wickersham Park	105	Park	2	X		**6.14**	2.00	0.01	0.54	0.02	39	1.000	0.018
Petaluma Golf Course (9 hole)	73	Golf Course	43.1	X		**102.59**	33.43	0.16	6.00	0.23	160	0.776	0.194
Total-Potable Offset Only			**461.97**			**1,424.69**	**464**	**2.17**	**111**	**4.24**			**3.568**
Non-Potable Offset Users													
RESA (Redwood Estate Sports Plex)	25	Park	18	**no**	**no**	**55.24**	18.00	0.08	4.89	0.19	347	1.000	0
Matteri	100	Ag User	37	**no**	**no**	**106.43**	34.68	0.16	8.57	0.33	228	0.937	0
Adobe Creek (NE)	101	Golf Course	96.9	**no**	**no**	**274.33**	89.39	0.42	17.49	0.67	466	0.922	0
Karren Vineyard	103	Vineyard	30	**no**	**no**	**12.15**	3.96	0.03	0.99	0.04	70	0.132	0
WRF (returning)	137A	WRF	0	**no**	**no**	**n/a**	n/a	0.50	n/a	0.84	583	n/a	0
WRF (Irrigation)	137B	WRF	40	**no**	**no**	**122.75**	40.00	0.19	10.86	0.42	771	1.000	0
Total (Tertiary Recycled Water Use)			**683.87**			**570.90**	**650**	**3.55**	**153**	**6.72**			**3.568**



LEGEND

- 2006 (ROOSTER RUN)[1]
- 2009
- 2012 – 2015
- 2018 – 2020
- BY 2020 (WHEN FACILITY AND SYSTEM CONSTRUCTED)
- 2023 (PETALUMA COUNTRY CLUB)

[1] ROOSTER RUN TO BE CONVERTED FROM DISINFECTED SECONDARY EFFLUENT RECYCLED WATER TO TITLE 22 UNRESTRICTED TERTIARY RECYCLED WATER IN THE YEAR 2009.

DODSON PSOMAS | 5321F5-2 JVB 1/23/07 | City of Petaluma

2005 URBAN WATER MANAGEMENT PLAN

RECOMMENDED POTABLE OFFSET RECYCLED WATER CUSTOMERS

FIGURE NO. 5-2

JOB NO. 5321

The City of Petaluma's wastewater collection system consists of 200 miles of pipelines and nine pumping stations. Currently, all of the City's wastewater is conveyed to the WWTP, which can treat 5.2 mgd of ADWF. All influent flow exceeding 6 mgd is routed to the Pond Influent Pump Station (PIPS) and sent directly to the oxidation ponds. The Hopper Street WWTP produces approximately 2 mgd primary effluent, 2 mgd trickling filter effluent, and 2 mgd activated sludge effluent, for a total of 6 mgd. Effluent from the WWTP is routed to the PIPS and sent to the oxidation ponds. The oxidation ponds provide additional treatment before the effluent is disinfected and either discharged to the Petaluma River in the winter or reused for irrigation in the summer. The existing facilities at Lakeville Highway consist of an aerated lagoon, oxidation ponds, and disinfection facilities, all built in 1972.

In 2009, the City of Petaluma will decommission the existing WWTP located at 950 Hopper Street and start up operation of the new Ellis Creek Water Recycling Facility (WRF) located on Lakeville Highway. The new plant will produce both secondary and tertiary effluent to meet the Water Recycling Criteria contained in the California Code of Regulation, Title 22. At that time, the City will operate two independent recycled water distribution systems. The City will distribute secondary effluent to various users for irrigation of agricultural lands. The City will distribute tertiary effluent to various users for irrigation of areas acceptable to receive Title 22 unrestricted use recycled water such as parks, golf courses, schools, and business parks, as well as industrial sites.

The new 6.7 mgd ADWF WRF will produce recycled water of two distinct qualities: Title 22 disinfected secondary-23 effluent for restricted reuse and Title 22 disinfected tertiary effluent for unrestricted reuse. The two recycled water systems will share preliminary and secondary treatment trains. Preliminary treatment will consist of screening and grit removal. Secondary treatment will include oxidation ditches, secondary clarification, and a secondary sludge pump station. After the secondary clarifiers, the flow will split between the restricted and unrestricted reuse facilities.

Disinfected secondary-23 facilities will consist of the existing oxidation ponds, treatment and polishing wetland cells, sodium hypochlorite disinfection, and recycled water pumping. During the reuse season (May 1st to October 20th), a combination of secondary effluent and pond effluent will be disinfected to Title 22 disinfected secondary-23 standards using the existing disinfection facilities.

Tertiary treatment facilities will consist of influent pumping, chemical addition and flocculation, filtration, and UV disinfection. Up to 5.2 mgd of secondary effluent will initially be conveyed to the tertiary facilities for treatment to Title 22 disinfected tertiary standards. Provisions for expansion up to 10.4 mgd are included, as required in the future for tertiary production. Tertiary water will be stored on-site in a recycled water basin, used on-site for irrigation, utility water, dual plumbing of the Operations Building and fire suppression, and distributed to users for reuse.

Recycled water storage and pumping facility will consist of a new on-site storage reservoir and pumping system to deliver disinfected tertiary water into the distribution system. An open one (1) million gallon recycled water storage reservoir will be located at the WRF and will provide diurnal flow storage for filtered disinfected recycled water. A recycled water pump station, located adjacent to the reservoir, will deliver flows into the distribution system. A portion of the water (approximately 400,000 gallons) in this reservoir will be maintained at all times for WRF fire suppression. In addition to off-site uses, the disinfected tertiary water will be used on-site for irrigation and plant uses such as washdown water.

Typically, the recycled water pumps will supply water into the disinfected tertiary distribution system and all recycled water used on-site will be delivered from the distribution system. The distribution system will contain off-site storage reservoirs, which will supply diurnal peaking flows for all users.

The location of the existing and future wastewater facilities are shown in Figure 5-3. Table 5-3 outlines wastewater collection and treatment of quantities.

TABLE 5-3. (DWR TABLE 33) WASTEWATER TREATMENT AND COLLECTION, AC-FT/YR

Type of Wastewater	2000	2005	2010	2015	2020	2025
Wastewater collected and treated in service area	6,158	7,361	7,919	8,382	8,547	8,720
Tertiary quality recycled water for Title 22 unrestricted use	0	0	1,183	1,518	1,838	1,941
Secondary-23 quality recycled water	2,374	1,825	1,386	1,159	1,044	1,071

Information for 2000 and 2005 based on City records. Year 2025 represents buildout.

5.2 Wastewater Disposal and Recycled Water Uses

The average dry weather flow design capacity of the existing Hopper Street WWTF is 5.2 mgd. The new WRF is designed for an ADWF of 6.7 mgd. In addition to treating wastewater collected from the City of Petaluma, the WWTP also treats wastewater collected by the Penngrove Sanitation Zone, whose collection system and lift station is owned and operated by the Agency. The new wastewater recycling facility (WRF) is anticipated to be operational in 2009. It will be located east of the Oakmead/ Northbay business park and adjacent to Lakesville Highway near the existing oxidation pond site.

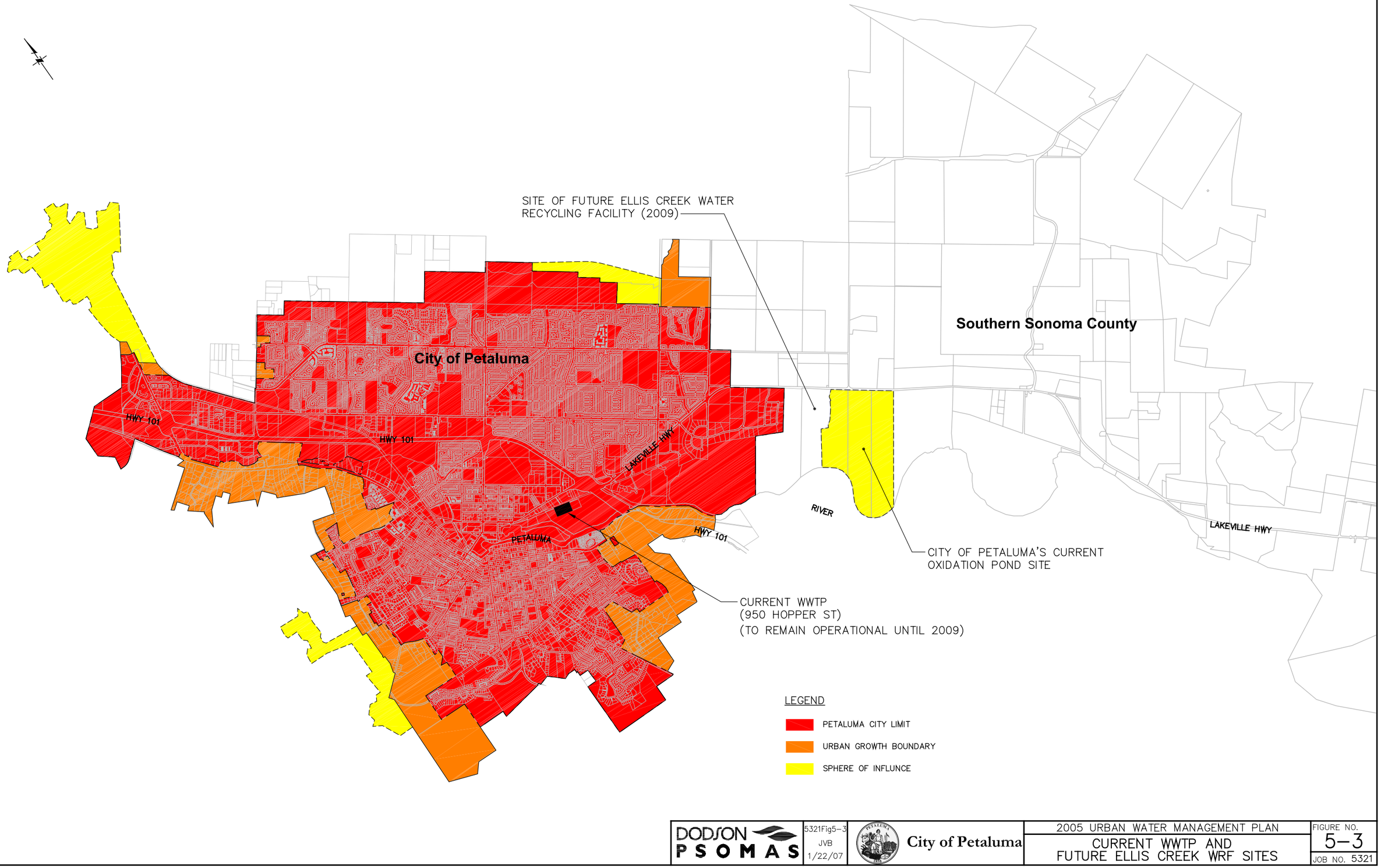
The City of Petaluma is restricted from discharging wastewater effluent into the Petaluma River between May 1st and October 20th based on their NPDES permit with the San Francisco RWQCB. The current and projected annual volume of wastewater effluent that is discharged into the Petaluma River is shown in Table 5-4.

TABLE 5-4. (DWR TABLE 34) DISCHARGE OF WASTEWATER (NON-RECYCLED), AC-FT/YR

Method of Disposal	2000	2005	2010	2015	2020	2025
Petaluma River Discharge	3,784	5,536	5,350	5,705	5,665	5,708

Information for 2000 and 2005 based on City records.

Secondary-23 quality recycled water is currently produced and used for irrigation of agricultural land, vineyard land, and golf courses. Once the City's new Ellis Creek WRF goes on line in Year 2009, both secondary-23 quality recycled water and tertiary quality recycled water meeting Title 22 unrestricted use requirements will be available. The potential uses for recycled water meeting these treatment levels will be in conformance with the latest version of Title 22: California Water Recycling Criteria.



DODSON PSOMAS	5321Fig5-3 JVB 1/22/07	City of Petaluma	2005 URBAN WATER MANAGEMENT PLAN CURRENT WWTP AND FUTURE ELLIS CREEK WRF SITES	FIGURE NO. 5-3 JOB NO. 5321	

5.3 Projected Uses of Recycled Water

5.3.1 Existing Recycled Water Use

As of 2005, the City of Petaluma delivered disinfected secondary -23 effluent through eighteen (18) hydrants to ten (10) recycled water customers in southern Sonoma County. The majority of recycled water is used for irrigation of local agricultural and vineyard lands, and the remainder is used to irrigate a portion of Adobe Creek Golf Course. These customers do not require tertiary effluent for their irrigation needs.

5.3.2 Future Recycled Water Use

Upon startup of the new Ellis Creek WRF in Year 2009, disinfected tertiary recycled water meeting the requirements of Title 22 unrestricted use will be available to customers and used to offset current and future potable water demands to meet the City's potable water needs. Recommended tertiary recycled water customers and facilities are shown in Figure 5-1. Table 5-1 outlines each potential tertiary recycled water users' demands and use. Figure 5-2 illustrates the estimated phasing of the availability to receive tertiary recycled water to potable offset customers.

Recycled water customers were classified into six different user type classifications within the recycled water master plan. Demands for each customer were developed based on their classification, since different types of users use different amounts of water, have varying irrigation season lengths, and use water at different times throughout the day. The six user type classifications included turf, golf course, industrial, vineyard, agricultural, and WRF No. 3 water. No. 3 water is tertiary recycled water that will be used within the new WRF for process water in lieu of potable water. Information about existing and potential recycled water use and type of use is described in Tables 5-5 and 5-6 below.

TABLE 5-5. (DWR TABLE 35) RECYCLED WATER USES – ACTUAL AND POTENTIAL, AC-FT/YR

Type of Use	Treatment Level	2005	2010	2015	2020	2025	2030
Agriculture	Secondary	1,624	1,386	1,159	1,044	1,071	1,071
Agriculture	Tertiary	0	119	119	119	119	119
Landscape (golf courses only)	Secondary	201	0	0	0	0	0
Landscape	Tertiary	0	941	1,276	1,596	1,699	1,699
Wildlife habitat	Tertiary	0	0	0	0	0	0
Created wetlands	Tertiary	0	0	0	0	0	0
Industrial	Tertiary	0	0	0	0	0	0
Other (Water Reclamation Facility landscape)	Tertiary	0	123	123	123	123	123
Total		**1,825**	**2,569**	**2,677**	**2,882**	**3,012**	**3,012**

Source: Water Demand and Analysis Report: Phasing information including secondary and tertiary users can be found in Appendix V.

TABLE 5-6. (DWR TABLE 36) PROJECTED FUTURE USE OF RECYCLED WATER IN SERVICE AREA, AC-FT/YR

Type of Use	2010	2015	2020	2025	2030
Agriculture	1,505	1,278	1,163	1,190	1,190
Landscape	941	1,276	1,596	1,699	1,699
Wildlife habitat	0	0	0	0	0
Created wetlands	0	0	0	0	0
Industrial	0	0	0	0	0
Other (Water Reclamation Facility landscape)	123	123	123	123	123
Total	**2,569**	**2,677**	**2,882**	**3,012**	**3,012**

Future recycled water users will be phased based on location and anticipated recycled water needs (Figure 5-2).

5.4 Promotion of Recycled Water

As the City embarks on startup of their tertiary recycled water system in Year 2009, the promotion of recycled water for offsetting current and future potable water demands will become critical. Under the City's Water Demand and Supply Analysis project and within the City's General Plan 2025, the use of recycled water may include, but will not be limited to the following elements: education, recycled water rate incentives compared to potable water rates, financial incentives, and ordinances. Table 5-7 outlines anticipated methods to encourage tertiary recycled water use for potable offset.

TABLE 5-7. (DWR TABLE 38) METHODS TO ENCOURAGE TERTIARY RECYCLED WATER USE FOR POTABLE OFFSET AND PROJECTED RESULTS, AC-FT/YR

Actions	Acre-feet of Use Projected to Result from this Action				
	2010	2015	2020	2025	2030
Financial incentives, education, and ordinances	669	1,020	1,326	1,428	1,428
Total	**669**	**1,020**	**1,326**	**1,428**	**1,428**

SECTION 6

WATER CONSERVATION

6.1 Introduction

Demand management is an integral part of the City of Petaluma's (City) long-term water management strategy. The City is committed to integrating water conservation into future supply and demand solutions for both the water system and the wastewater treatment/reuse system. The City currently reduces water demands by implementing water conservation BMPs as a method of reducing water demands.

The City is a member of the California Urban Water Conservation Council's (CUWCC). In 2002, the City became a signatory to the Memorandum of Understanding (MOU) regarding Urban Water Conservation. As a signatory, the City is committed to implementing the urban water conservation Best Management Practices (BMPs) as outlined by the MOU. The MOU seeks to expedite implementation of reasonable water conservation measures in urban areas and to establish assumptions for use in calculating estimates of reliable water savings resulting from proven and reasonable conservation measures. The Agency is the only wholesale water agency in the state to have all of its water contractors as signatories to the CUWCC MOU.

Fourteen BMPs were identified. If a BMP is not economically feasible or effective, the City can request an exemption for that BMP or replace it with any measure that is just as effective. Table 6-1 outlines coordination for CUWCC BMP implementation between the City of Petaluma and the Agency. Table 6-2 summarizes the City's implementation of the CUWCC BMPs for the 2005 – 2006 Reporting Period.

TABLE 6-1. COORDINATION SUMMARY FOR THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL BEST MANAGEMENT PRACTICES

CUWCC Best Management Practices	City of Petaluma	Sonoma County Water Agency [a]
BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers	X	
BMP 02: Residential Plumbing Retrofit	X	
BMP 03: System Water Audits, Leak Detection and Repair	X	
BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing	X	
BMP 05: Large Landscape Conservation Programs and Incentives	X	
BMP 06: High-Efficiency Washing Machine Rebate Programs	X	X
BMP 07: Public Information Programs	X	X
BMP 08: School Education Programs	X	X
BMP 09: Conservation Programs for CII Accounts	X	X
BMP 10: Wholesale Agency Assistance Programs	N/A	X
BMP 11: Conservation Pricing	X	
BMP 12: Conservation Coordinator	X	
BMP 13: Water Waste Prohibition	X	
BMP 14: Residential Ultra-low Flow Toilet (ULFT) Replacement Programs	X	

[a] These programs are being run in part by the Agency

TABLE 6-2. CALIFORNIA URBAN WATER CONSERVATION COUNCIL BEST MANAGEMENT PRACTICES AND CURRENT COMPLIANCE BY THE CITY OF PETALUMA FOR THE 2005 – 2006 REPORTING PERIOD

CUWCC Best Management Practices	Meeting CUWCC Coverage Requirements (Compliance)	BMP Status
BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers	NO	Began program in 2005, not on track with RSF homes.
BMP 02: Residential Plumbing Retrofit	YES	Have reached 75% saturation for RSF and RMF homes.
BMP 03: System Water Audits, Leak Detection and Repair	YES	UFW lower than 10%, prescreen audit completed.
BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing	YES	No unmetered accounts.
BMP 05: Large Landscape Conservation Programs and Incentives	NO	Water budgets and audits underway, but not on track.
BMP 06: High-Efficiency Washing Machine Rebate Programs	COMPLETED	Have reached coverage requirement.
BMP 07: Public Information Programs	YES	Have public information program.
BMP 08: School Education Programs	YES	Have school education program.
BMP 09: Conservation Programs for CII Accounts	YES	Audit program continuing and on track.
BMP 10: Wholesale Agency Assistance Programs	N/A	Not wholesaler.
BMP 11: Conservation Pricing	YES	Have tiered rate structure.
BMP 12: Conservation Coordinator	YES	Complies with this BMP.
BMP 13: Water Waste Prohibition	YES	Water Conservation Ordinance complies with this BMP.
BMP 14: Residential ULFT Replacement Programs	YES	Rebate program continuing and on track.

Notes: RSF = Residential Single-Family RMF = Residential Multi-Family

The City submits annual BMP activity reports to the CUWCC. In Appendix D, there are copies of the City's most recent BMP activity reports (for fiscal year 2003/2004) as well as the most recent Coverage Reports for BMP implementation and water savings (for fiscal years 2005/2006). The City is implementing all applicable BMPs. Activity reports to fiscal year 2003/2004 can be found at the CUWCC website and have been deemed complete per the CUWCC.

The City also plans to implement an additional seven measures starting in 2008 for increased water savings as well as continue implementation of some of current CUWCC BMPs beyond that of the existing BMP life requirements. It is projected that the total long term (beyond 2025) sustainable water savings from continued implementation of CUWCC BMPs 1, 2, 5, 6, 7, 9, and 14 and future measures shown in Table 6-3 are 816 ac-ft/yr (266 MG/Y). The annual savings will increase from 222.5 ac-ft/yr (72.5 MG/Y) in 2008 to 781 ac-ft/yr (254.5 MG/Y) in 2025 (Buildout). Recycled water areas were also designated and not counted as receiving potable water savings due to water conservation since they would not be supplied with potable water.

TABLE 6-3. FUTURE WATER CONSERVATION MEASURES PLANNED FOR IMPLEMENTATION IN 2008

Measure	Targeted Customer	Description
Hot Water System Development	RSF, RMF	All new single family and multi family housing units have a hot water on demand systems installed. This includes a recirculation pump and insulated hot water pipes.
Direct Installation of HETs	RSF, RMF, BUS	High efficiency toilets are either dual-flush (6/3 liter) or 4-liters-per-flush toilets. A contractor would offer free installation. Assume non-residential program would lag 3 years behind residential program so that customers could become more familiar with HETs in their homes first.
Rain Sensor Giveaways	RSF, RMF, BUS PUB	Give away rain sensors to customers for their automatic irrigation system (controller). Users install sensors themselves.
Landscape Education Training	RSF	Combination of three types of training classes: (1) Water Efficient Principals, (2) Homeowner Irrigation, and (3) Promotion of Water Efficient Plants.
ET Controller Rebates	RSF, RMF, BUS PUB	Give rebates for purchase of weather adjusting (ET) irrigation controllers to customers. Users install controllers themselves.
Increase Enforcement of Landscape Requirements	RMF, BUS	Enforce landscape requirements on new non-single family landscaping; this could require 100% water efficient plantings and efficient irrigation.
Commercial Urinal Rebates	BUS	Selectively provide rebates to businesses to convert to efficient (0.5 gallons/flush) urinals subject to high use, such as restaurants, theaters, stadiums, etc.

Notes: RSF = Residential Single-Family
RMF = Residential Multi-Family
BUS = Business
IRR = Dedicated irrigation meters
PUB = Public, buildings/grounds owned by the Water Utility or City

6.2 Demand Management Measures Implementation

The section outlines the City of Petaluma's water conservation efforts to date through calendar Year 2005. The City of Petaluma is signatory to the California Urban Water Conservation Council's Best Management Practices (BMPs) and is actively implementing each relevant BMP.

BMP status through December 31st 2005 is as follows:

BMP 01 – Water Survey Programs for Single-Family and Multi-Family Residential Customers

The City has developed and is implementing a survey program for single-family and multi-family residential accounts. The program is called the *Water-Wise House Calls* program and is a free service offered to City water and sewer customers. The program utilizes a subcontractor, *Conservision*, to perform the surveys. All indoor and outdoor water using fixtures are analyzed for water use efficiency. Surveys include:

- Check for water leaks in toilets, showers, and faucets.
- Instruct customers how to read the water meter and use it to check for leaks.
- Measure showerhead and faucet flow rates and offer to replace or recommend replacement of high-flow fixtures with new water-conserving fixtures.
- Check irrigation system and timers.
- Review or develop customer irrigation schedules.

A detailed report is given to each customer after each survey is completed and is submitted to City staff for record.

Implementation Schedule: The City continues to target and market residential customers and will continue to offer surveys to residents.

Program Effectiveness Evaluation: The *Water-Wise House Calls* program was very effective for single-family and multi-family residential customers and resulted in significant sustainable savings.

Water Savings: To date 347 single family surveys have been completed with an estimated total of 10.11 acre feet per year (AFY) savings. A total of 88 multi-family accounts have been surveyed with an estimated 2.56 AFY savings.

BMP 02 – Residential Plumbing Retrofit

The City distributes low-flow showerheads, faucet aerators, and hose-end nozzles at no charge to residents at various events and venues, including City Hall, the Petaluma Fair, and during a *Water–Wise House Calls* survey.

Implementation Schedule: The City will continue to offer these devises to all City customers.

Program Effectiveness Evaluation: The City is just below the targeted number of homes to achieve the required saturation percentage of 75% of units built prior to 1992. The City is at 74% saturation and estimates full compliance by 2006.

Water Savings: The City has achieved 156 AF in water savings from implementation of this BMP since 1999.

BMP 03 – System Water Audits, Leak Detection, and Repair

The City has been running less than 10% lost water since 1980 and less than 8% lost water since 1990. The City is currently running below 6% lost water and thus will not be conducting water surveys. The last survey conducted by the City was in 1996. The City's aggressive leak repair and meter calibration program has minimized the amount of lost water.

Implementation Schedule: The City is compliant with the BMP.

BMP 04 – Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections

The City has completed this BMP. All accounts are metered. In addition, the City requires all new multi-family residential and commercial/industrial/institutional customers to install separate meters for irrigation.

Implementation Schedule: The City will continue to meter all services.

Program Effectiveness Evaluation: It is estimated that metered accounts use 15 percent less water than unmetered accounts.

Water Savings: The City has continually metered all accounts and therefore the City's CUWCC Water Savings report does not calculate any water savings for this measure.

BMP 05 – Large Landscape Conservation Programs and Incentives

The City has assigned water budgets to 320 dedicated irrigation accounts and sent out annual reports that compare actual water use to the site's water budget. Water budgets are being assigned to additional accounts with dedicated irrigation meters.

The City also publishes information on incentive programs on its website and in brochures and letters marketing our survey programs. The City offers surveys to large landscape accounts through the Sonoma County Water Agency's survey program.

Surveys include measuring landscape areas by plant type, checking irrigation systems for leaks, testing irrigation systems for efficiency, performing catch can tests on turf sprinkler systems, and providing recommendations.

Implementation Schedule: The City will continue to implement the requirements of this BMP. The City will continue to determine water budgets until 100% of our dedicated irrigation accounts have water budgets. In addition, the City will continue to offer large landscape surveys and site-specific irrigation incentives.

Program Effectiveness Evaluation: Fifty-eight percent of the City's dedication irrigation accounts have been measured and are receiving water budgets.

Water Savings: The City has achieved 320 AF in water savings from implementation of this BMP.

BMP 06 – High-Efficiency Washing Machine Rebate Programs

The City has completed this BMP by participating in a regional washing machine rebate program for single-family residential customers that is administered by our water wholesaler, the Sonoma County Water Agency (Agency). The rebate program provides $100 – 150, depending on the efficiency of the washing machine, to residential customers who buy high-efficiency clothes washers.

Implementation Schedule: The City is compliant with the BMP and will continue to implement it through the Agency's regional program.

Program Effectiveness Evaluation: The City has rebated 1,853 residential high-efficiency clothes washing machines.

Water Savings: The City has achieved 99 AF in water savings from implementation of this BMP.

BMP 07 – Public Information Programs

City staff provides public outreach for it's water conservation programs through bus advertising, via the City web site, with bill stuffers, at public venues (such as community group meetings, fairs, and public meetings), at City Hall, on City vehicles, at the City's demonstration garden, and through local media.

Implementation Schedule: The City will continue to provide public outreach to promote water conservation on several fronts.

Program Effectiveness Evaluation: The City receives feedback from customers, receives requests for presentations, and requests to present information at select.

Water Savings: Water savings have not been estimated for this measure.

BMP 08 – School Education Programs

The City's water wholesaler, the Sonoma County Water Agency (Agency), implements a regional water education program on behalf of all of its retail water agencies. The Agency's Water Education Program is designed to help educators teach students the value of water as an important natural resource and to promote water conservation and watershed stewardship. The program includes classroom instructional presentations; field study opportunities; teacher trainings and workshops; free curriculum materials aligned with the California State Frameworks; a lending library of videos, interactive models, and printed materials; production of a newsletter for teachers; and endorsement, participation, and financial sponsorship of events, assemblies, and workshops.

Implementation Schedule: The Agency will continue to implement this BMP on behalf of the City.

Program Effectiveness Evaluation: Through implementation of the Agencies School Education Program, over 5000 students in grade school and high school have been reached.

Water Savings: Water savings have not been estimated for this measure.

BMP 09 – Conservation Programs for Commercial, Industrial, and Institutional Accounts

The City offers a $260.00 rebate to CII customers for low-flow toilets and waterless urinals and up to $500 for high efficient washing machines. The City offers site surveys for CII customers. Surveys include a review of all water using fixtures/devices, including plumbing, process and cooling water, and irrigation systems, and makes recommendations for efficiency improvements.

Implementation Schedule: The City will continue to implement both tracks of this BMP.

Program Effectiveness Evaluation: The City has replaced 1208 high-flow toilets with Ultra Low Flush Toilet (ULFT) at various Commercial, Industrial and Institutional (CII) customer sites, installed 107 waterless urinals at City schools and public locations, and has reached its goal of installing 105 pre-rinse spray nozzles at local restaurants. The City participates in a regional CII washing machine rebate program and has rebated 99 CII washing machines.

Water Savings: The City has achieved 431 AF of water savings from the implementation of this BMP.

BMP 10 – Wholesale Agency Programs

The City is not a wholesale potable water provider and does not plan to be a potable water wholesaler in the future.

BMP 11 – Conservation Pricing

The City's rate structure has several effective conservation components: increasing block tiered water rates for residential customers that reward efficient water use; residential wastewater rates based on average winter time water use; and commercial/business wastewater rates based on water use. Also approximately 85% of the total water and sewer revenue is generated by commodity charges, while approximately 15% of the total revenue is generated by fixed changes.

Implementation Schedule: The City is in compliance with this BMP and will continue to implement this BMP.

Program Effectiveness Evaluation: The implementation of a tiered rate structure, in conjunction with other water conservation efforts, has resulted in sustained water savings.

Water Savings: Water savings have not been estimated for this measure.

BMP 12 – Water Conservation Coordinator

The City currently utilizes the assistance of Sonoma County Water Agency personnel through BMP 10 funding. The City supports this BMP through our Department Director (5%), Engineering Manager (10%), Associate Engineer (10%), Utility Manager (10%), Water Utility Technician (5%), Administrative Professional (5%), and IT support as needed, and a full time Water Conservation Coordinator.

Implementation Schedule: The City will continue to implement this BMP.

Program Effectiveness Evaluation: The City has not formally evaluated the effectiveness of this BMP. Naturally, the success of our water conservation efforts is directly dependant on staffing levels.

Water Savings: Water savings have not been estimated for this measure.

BMP 13 – Water Waste Prohibition

In June 2001, the City adopted Water Waste Ordinance No. 2114 which allows the City to enforce the intentional or unintentional waste of water. The ordinance prohibits such practices as non-recirculating fountains, deliberate waste of water, single-pass evaporative cooling towers, or other non-essential uses of water. The ordinance gives the City the authority to disconnect service if water waste is not corrected. Any reported water waste incident receives immediate response from field staff. If water waste is identified, the customer is notified (or a door tag is left at the property) of the violation and follow-up technical assistance is provided.

Implementation Schedule: The City is in compliance with the BMP and will continue to implement this BMP.

Program Effectiveness Evaluation: All water waste complaints are tracked in the City's database.

Water Savings: Water savings have not been estimated for this measure.

BMP 14 – Residential Ultra-Low Flush Toilet Replacement Programs

The City has retrofitted 4,013 toilets using 3.5 to 7 gallon per flush (gpf) with 1.6 gpf ultra low flow toilets. The majority of these fixtures have been replaced through the City's ULFT rebate program, which offers customers a $75 rebate per fixture. The City also implemented a direct installation program where over one thousand ULFTs were installed to replace high flow toilets at no charge to the customer.

Implementation Schedule: The City will continue to implement the requirements of this BMP. The City may develop an incentive program for replacement of high flow toilets with high efficiency toilets if cost effective.

Program Effectiveness Evaluation: This program continues to be an effective method for sustained water savings. Participation levels amongst single-family and multi-family customers have been favorable.

Water Savings: The City has achieved 197 AF in water savings from implementation of this BMP.

Table 6-4: CUWCC Water Savings Report below provides a summary of the gross water savings from Petaluma's BMP implementation as calculated by the CUWCC Water Savings Reports.

TABLE 6-4. CUWCC WATER SAVINGS REPORT GROSS WATER SAVINGS FROM 1999-2005, ACRE-FEET

	BMP 1	BMP 2	BMP 3	BMP 5	BMP 6	BMP 9	BMP 14	Total
1999		8			5	25		38
2000		15			6	31	20	72
2001		19			10	39	25	93
2002		24			10	41	31	106
2003		28		9	17	60	36	150
2004		30		9	22	114	40	215
2005	13	32		302	29	121	45	542
Total	**13**	**156**	**0**	**320**	**99**	**431**	**197**	**1,216**

6.3 Demand Management Measures Not Implemented

The City is implementing all applicable Best Management Practices (BMPs) of the California Urban Water Conservation Council's Memorandum of Understanding regarding Urban Water Conservation, as well as planning for implementation of future BMPs described in Table 6-3 starting in 2008.

SECTION 7

WATER SUPPLY VERSUS DEMAND COMPARISON

This section provides a comparison of the projected water supply and demand for the City from 2005 through 2025. Buildout of the City of Petaluma's General Plan is expected to occur in 2025. Water demands and supplies are expected to remain constant after 2025. Supply and demand estimates are expected to match 2025 projections. Water supply to demand comparisons are also provided for single-dry year and multiple-dry year scenarios. The water demands are developed in Section 3, water supplies are defined in Section 4, and recycled water supplies are presented in Section 5 of this report. Decreased water use resulting from water conservation is shown in Section 3 of this report.

7.1 Normal Water Supply vs. Demand Comparison

The analysis compares the projected normal water supply available to the City and required customer demands from 2010 to 2030, in five-year increments. The projected available normal climate year water supply and demands are presented in Tables 7-1 and 7-2, respectively.

TABLE 7-1. (DWR TABLE 40) PROJECTED NORMAL WATER SUPPLY, AC-FT/YR

(From Table 4-6, DWR Table 4)	2010	2015	2020	2025
Supply	14,410	15,021	15,441	15,795
Percent of 2005	107%	112%	115%	118%

TABLE 7-2. (DWR TABLE 41) PROJECTED NORMAL WATER DEMAND, AC-FT/YR

(From Table 3-4, DWR Table 15)	2010	2015	2020	2025
Demand	13,374	14,477	15,017	15,753
Percent of 2005	113%	123%	127%	134%

The comparison of projected water supply and demand is presented in Table 7-3.

TABLE 7-3 (DWR TABLE 42) PROJECTED SUPPLY AND DEMAND COMPARISON, AC-FT/YR

	2010	2015	2020	2025
Supply totals	14,410	15,021	15,441	15,795
Demand totals	13,374	14,477	15,017	15,753
Difference	1,036	544	424	42
Difference as percent of supply	7%	4%	3%	0.3%
Difference as percent of demand	8%	4%	3%	0.3%

7.2 Dry Year Water Supply vs. Demand Comparison

It is not likely that a drought would reduce the volume of surface water available to the Agency, for reasons set forth in Table 5-2 and 5-3 of the Agency's Urban Water Management Plan 2000. There is a significant amount of water in storage upon which the Agency is entitled to withdraw. Tables 7-4 through 7-6 provide a comparison of a single dry year water supply with projected total water use over the next 25 years, in five-year increments. Dry year water supply is based on Agency modeling from the Agency's 2000 Urban Water Management Plan because the 2005 Agency Urban Water Management Plan is not yet finalized.

TABLE 7-4. (DWR TABLE 43) PROJECTED SINGLE-DRY YEAR WATER SUPPLY, AC-FT/YR

	2010	2015	2020	2025
Supply	14,410	15,021	15,441	N/A [a]
Percent of projected normal	100%	100%	100%	N/A [a]

[a] N/A – Not available. The Agency's 2000 UWMP only provides projections through 2020.

TABLE 7-5. (DWR TABLE 44) PROJECTED SINGLE-DRY YEAR WATER DEMAND, AC-FT/YR

	2010	2015	2020	2025
Demand	13,374	14,477	15,017	15,753
Percent of projected normal	100%	100%	100%	100%

TABLE 7-6. (DWR TABLE 45) PROJECTED SINGLE-DRY YEAR SUPPLY AND DEMAND COMPARISON, AC-FT/YR

	2010	2015	2020	2025
Supply totals	14,410	15,021	15,441	N/A [a]
Demand totals	13,374	14,477	15,017	15,753
Difference	1,036	544	424	N/A [a]
Difference as percent of supply	7%	4%	3%	N/A [a]
Difference as percent of demand	8%	4%	3%	N/A [a]

[a] N/A – Not available. The Agency's 2000 UWMP only provides projections through 2020.

Tables 7-7 through 7-18 compare the total water supply available in multiple dry water years with projected total water use over the next 20 years, in one-year increments. The Agency supply data is based on the Agency's 2000 Urban Water Management Plan because the Agency's 2005 Urban Water Management Plan was not finalized at the time when preparation of this report began. Groundwater supply reliability is based on discussion in Section 4.6.1 of this report. Recycled water is assumed to be available even during multiple dry years. Individual year data is developed under the City's Water Demand and Supply Analysis work.

TABLE 7-7. (DWR TABLE 46) PROJECTED SUPPLY DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2010, AC-FT/YR

	2006	2007	2008	2009	2010
Supply	13,824	13,824	14,047	14,347	14,410
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-8. (DWR TABLE 47) PROJECTED DEMAND MULTIPLE-DRY YEAR PERIOD ENDING IN 2010, AC-FT/YR

	2006	2007	2008	2009	2010
Demand	12,080	12,359	12,834	13,113	13,374
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-9. (DWR TABLE 48) PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2010, AC-FT/YR

	2006	2007	2008	2009	2010
Supply totals	13,824	13,824	14,047	14,347	14,410
Demand totals	12,080	12,359	12,834	13,113	13,374
Difference	1,744	1,465	1,213	1,234	1,036
Difference as percent of supply	13%	11%	9%	9%	7%
Difference as percent of demand	14%	12%	9%	9%	8%

TABLE 7-10. (DWR TABLE 49) PROJECTED SUPPLY DURING MULTIPLE-DRY YEAR ENDING IN 2015, AC-FT/YR

	2011	2012	2013	2014	2015
Supply	14,462	14,870	14,925	14,970	15,021
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-11. (DWR TABLE 50) PROJECTED DEMAND MULTIPLE-DRY YEAR PERIOD ENDING IN 2015, AC-FT/YR

	2011	2012	2013	2014	2015
Demand	13,613	13,833	14,054	14,275	14,477
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-12. (DWR TABLE 51) PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2015, AC-FT/YR

	2011	2012	2013	2014	2015
Supply totals	14,462	14,870	14,925	14,970	15,021
Demand totals	13,613	13,833	14,054	14,275	14,477
Difference	849	1,037	871	695	544
Difference as percent of supply	6%	7%	6%	5%	4%
Difference as percent of demand	6%	7%	6%	5%	4%

TABLE 7-13. (DWR TABLE 52) PROJECTED SUPPLY DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2020, AC-FT/YR

	2016	2017	2018	2019	2020
Supply	15,055	15,090	15,329	15,343	15,441
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-14. (DWR TABLE 53) PROJECTED DEMAND MULTIPLE-DRY YEAR PERIOD ENDINGIN 2020, AC-FT/YR

	2016	2017	2018	2019	2020
Demand	14,603	14,710	14,818	14,925	15,017
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-15. (DWR TABLE 54) PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2020, AC-FT/YR

	2016	2017	2018	2019	2020
Supply totals	15,055	15,090	15,329	15,343	15,441
Demand totals	14,603	14,710	14,818	14,925	15,017
Difference	452	380	511	418	424
Difference as percent of supply	3%	3%	3%	3%	3%
Difference as percent of demand	3%	3%	3%	3%	3%

TABLE 7-16. (DWR TABLE 55) PROJECTED SUPPLY DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2025, AC-FT/YR

	2021	2022	2023	2024	2025
Supply	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]
Percent of projected normal	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]

[a] N/A – Not available. The Agency's 2000 UWMP only provides projections through 2020.

TABLE 7-17. (DWR TABLE 56) PROJECTED MULTIPLE-DRY YEAR PERIOD ENDING IN 2025, AC-FT/YR

	2021	2022	2023	2024	2025
Demand	15,180	15,328	15,475	15,622	15,753
Percent of projected normal	100%	100%	100%	100%	100%

TABLE 7-18. (DWR TABLE 57) PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE-DRY YEAR PERIOD ENDING IN 2025, AC-FT/YR

	2021	2022	2023	2024	2025
Supply totals	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]
Demand totals	15,180	15,328	15,475	15,622	15,753
Difference	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]
Difference as percent of supply	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]
Difference as percent of demand	N/A [a]	N/A [a]	N/A [a]	N/A [a]	N/A [a]

[a] N/A – Not available. The Agency's 2000 UWMP only provides projections through 2020.

SECTION 8

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APPENDIX A

CITY OF PETALUMA
URBAN WATER MANAGEMENT PLAN

URBAN WATER MANAGEMENT PLAN PUBLIC HEARING AND RESOLUTION

CERTIFICATION OF PUBLICATION IN
Petaluma Argus-Courier
(Published Wednesdays)
IN THE
SUPERIOR COURT
OF THE
STATE OF CALIFORNIA
In and for the County of Sonoma

DECLARATION

I am a citizen of the United States, over the age of eighteen years and a resident of said county and was at all said times the principal clerk of the printer and publisher of The Petaluma Argus-Courier, a newspaper of general circulation, published weekly in the City of Petaluma, in said County of Sonoma, State of California; that The Petaluma Argus-Courier is and was at all times herein mentioned, a newspaper of general circulation as that term is defined by Section 6000 of the Government Code; its status as such newspaper of general circulation having been established by Court Decree No. 35518 of the Superior Court of the State of California, in and for the County of Sonoma, Department No. I thereof; and as provided by said Section 6000, is published for the dissemination of local and telegraphic news and intelligence of a general character, having a bona fide subscription list of paying subscribers, and is not devoted to the interests, or published for the entertainment or instruction of a particular class, profession, trade, calling, race or denomination, or for the entertainment and instruction of such classes, professions, trades, callings, races or denominations, that at all said times said newspaper has been established, published in the said City of Petaluma, in said County and State at regular intervals for more than one year preceding the first publication of this notice herein mentioned; that said notice was set in type not smaller than nonpareil and was preceded with words printed in black face type not smaller than nonpareil, describing and expressing in general terms, the purport and character of the notice intended to be given; that the Notice of Public Hearing: Petaluma 2005 Urban Water of which the annexed is printed copy, was published and printed in said newspaper at least one consecutive time commencing on the 18th day of April and ending on the 18th day of April, 2007, to-wit April 18, 2007.

I DECLARE UNDER PENALTY OF PERJURY that the foregoing is true and correct.

DATED this 18th day of April, 2007, at Petaluma, California.

Signed Barbara Reichardt
Barbara Reichardt, Chief Clerk

#PD01883070

CITY OF PETALUMA
NOTICE OF PUBLIC HEARING

ADOPTION OF THE CITY OF PETALUMA'S 2005 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that a public hearing will be conducted by the City Council on Monday, May 7, 2007, at or after 3:00 p.m., in the City Council Chambers, City Hall, 11 English Street, Petaluma, CA. The purpose of the public hearing will be to receive public comment prior to formal adoption of the City of Petaluma's "2005 Urban Water Management Plan."

Copies of the "2005 Urban Water Management Plan" are available for public review at:

Department of Water Resources & Conservation, City of Petaluma, 202 N. McDowell Blvd.; Petaluma Library, 100 Fairgrounds Drive; and the Petaluma Community Center, 320 N. McDowell Blvd.; during normal business hours. The document is also available for review at the City of Petaluma's website. Copies are available for purchase at the Department of Water Resources & Conservation for $50.

If you cannot attend, you are encouraged to submit written comments and recommendations prior to the public hearing. Written comments may be mailed to: City Clerk, City of Petaluma, 11 English Street, Petaluma, CA 94952, or emailed to: cityclerk@ci.petaluma.ca.us, or delivered to the City Clerk, City Hall, 11 English Street, Petaluma.

For accessible meeting information, please call (707)778-4360 (voice) or (707)778-4480 (TDD).

PD01883070 - Pub. Apr. 18, 2007 1tl

Resolution No. 2007-081 N.C.S.
of the City of Petaluma, California

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PETALUMA ADOPTING THE CITY OF PETALUMA 2005 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act, which is codified at California Water Code Section 10610 et seq., requires that every urban water supplier which provides 3,000 acre feet or more of water annually, or which directly or indirectly supplies water for municipal purposes to more than 3,000 customers, shall prepare an Urban Water Management Plan (UWMP), the primary objective of which is to plan for the conservation and efficient use of water; and,

WHEREAS, the Urban Water Management Planning Act also requires all urban water purveyors serving over 3,000 customers or over 3,000 acre-feet of water annually to develop an Urban Water Shortage Contingency Plan; and,

WHEREAS, the Urban Water Management Plan must be adopted after public review and a public hearing by the City, and after adoption by the City Council must be filed with the California Department of Water Resources; and,

WHEREAS, the City of Petaluma has prepared the City of Petaluma 2005 Urban Water Management Plan and the City of Petaluma Urban Water Shortage Contingency Plan 2006 per the requirements of the Urban Water Management Planning Act; and,

WHEREAS, the Petaluma City Council conducted a public hearing on the City of Petaluma 2005 Urban Water Management Plan and the City of Petaluma Urban Water Shortage Contingency Plan 2006 on May 7, 2007; and,

WHEREAS, the City of Petaluma published a notice on the public hearing on April 18, 2007 in the Petaluma Argus Courier.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF PETALUMA AS FOLLOWS:

1. The above recitals are true and correct and hereby declared to be findings of the City Council of the City of Petaluma.

2. The City of Petaluma 2005 Urban Water Management Plan and the City of Petaluma Urban Water Shortage Contingency Plan 2006 are hereby adopted.

3. The Director of Water Resources and Conservation is hereby directed to submit the City of Petaluma 2005 Urban Water Management Plan to the California Department of Water Resources, Office of Water Use Efficiency, Post Office Box 942836, Sacramento, CA 94236-0001, within 30 days of adoption of the Plan.

4. This Resolution shall become effective immediately. All portions of this Resolution are severable. Should any individual component of this Resolution be adjudged to be invalid and unenforceable by a body of competent jurisdiction, then the remaining Resolution portions shall be and continue in full force and effect, except as to those Resolution portions that have been adjudged invalid. The City Council of the City of Petaluma hereby declares that it would have adopted this Resolution and each section, subsection, clause, sentence, phrase and other portion hereof, irrespective of the fact that one or more section subsection, clause sentence, phrase or other portion may be held invalid or unconstitutional.

Under the power and authority conferred upon this Council by the Charter of said City.

REFERENCE: I hereby certify the foregoing Resolution was introduced and adopted by the Council of the City of Petaluma at a Regular meeting on the 7th day of May, 2007, by the following vote:

Approved as to form:

City Attorney

AYES: Barrett, Vice Mayor Nau, Rabbitt, Mayor Torliatt

NOES: None

ABSENT: Freitas, Harris, O'Brien

ABSTAIN: None

ATTEST: Claire Cooper

City Clerk

Pamela Torliatt

Mayor

APPENDIX B

CITY OF PETALUMA
URBAN WATER MANAGEMENT PLAN

POTABLE WATER DEMAND PROJECTIONS

APPENDIX B

POTABLE WATER DEMAND PROJECTIONS

The City of Petaluma's potable water demand projections were developed based on buildout of land uses developed for the General Plan update in conjunction with historic potable water use within the City.

Existing Land Use

Since buildout potable water demand for the City of Petaluma was to be based on buildout of land uses within the City, it was essential to determine how potable water is currently used within the City of Petaluma in relation to land use. A Base Year of 2002 was used for the analysis since both existing land uses within the City and potable water billing data by customer sector were available for that year. Since the City of Petaluma's potable water system serves a number of customers outside the City Limits and the Urban Growth Boundary, and a number of parcels within the City Limits and Urban Growth Boundary do not receive potable water from the City's potable system, the 2002 land use map was converted to a 2002 potable water use map. The conversion included adding parcels outside the City Limits and Urban Growth Boundary that received potable water in 2002 and removing parcels within the City Limits and Urban Growth Boundary that did not receive potable water. The 2002 potable water use map is shown in Figure B-1.

The land uses in Figure B-1 are divided into the following categories to correspond with the General Plan land use designations.

- Single-Family
- Multi-Family
- Commercial/Industrial/Office
- Institution
- Parks/Open Space/Other Irrigated Land
- No Potable Water Service

Corresponding data for each parcel of land identified on Figure B-1 is included in Appendix A - Year 2002 Potable Water User Land Use Data of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006. A summary of the data is included in the tables below. Figure B-1 and all data included in Appendix A of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006, were provided by the City of Petaluma's Department of General Plan Administration. The total number of single-family residences which received potable water in 2002 is shown in Table B-1.

TABLE B-1

YEAR 2002 – SINGLE-FAMILY – POTABLE WATER LAND USE

Land Use Classification	# Dwelling Units
Single-Family	16,962

The total number of multi-family residences which received potable water in 2002 is shown in Table B-2.

TABLE B-2

YEAR 2002 – MULTI-FAMILY – POTABLE WATER LAND USE

Land Use Classification	# Dwelling Units
Multi-Family	4,101

Year 2002 land use data for the potable water customers in the Commercial/Industrial/Office category was provided in nine separate classifications as shown in Table B-3. Table B-3 includes building square footage and total acreage for each classification with the exception of the hotel/motel classification. The hotel/motel data includes the number of rooms and total acreage.

TABLE B-3

YEAR 2002 – COMMERCIAL/INDUSTRIAL/OFFICE – POTABLE WATER LAND USE

	Building Square Footage				
Land Use Classification	Commercial (SF)	Industrial (SF)	Office (SF)	# Rooms	# Acres
Heavy Commercial	128,956				22.01
Heavy Industrial		800,305			140.16
Hotel/Motel				475	10.93
Light Industrial		2,688,079	25,000		223.46
Mixed Use	87,493		113,947		2.25
Office			5,128,840		297.14
Shopping Center	1,084,704				132.80
Strip Commercial	1,922,269				174.78
Warehouse		675,584			49.34
TOTAL	**3,223,422**	**4,163,968**	**5,267,787**	**475**	**1052.87**

sf = square feet

The land use data for the institution category in Year 2002 is show in Table B-4. The category is separated into churches, schools, and other institutions. The land use data for churches and other institutions includes both building square footage and total acreage whereas the school classification includes number of students and total acreage. School parcels which include ball fields and turf areas without building structures are included in Table B-5, under the parks, open space, and other irrigated land category.

TABLE B-4

YEAR 2002 – INSTITUTION – POTABLE WATER LAND USE

Land Use Classification	Building Square Footage (SF)	# Students	#Acres
Church	323,025	N/A	42.26
School	N/A	18,345	271.51
Institution	943,273	N/A	170.56
TOTAL	**1,266,297**	**18,345**	**484.33**

sf = square feet

All Year 2002 land uses which received potable water solely for turf irrigation have been included in the Parks/Open Space/Other Irrigated Land category. Table B-5 provides the total acreage for all

land uses in this category. The golf courses within Petaluma that received potable water in Year 2002 for irrigation are separated out from other turf areas in Table B-5.

TABLE B-5
YEAR 2002 – PARKS/OPEN SPACE/OTHER IRRIGATED LAND – POTABLE WATER LAND USE

Land Use Classification	# Acres
Rooster Run Golf Course	160.80
Petaluma Country Club	80.82
Other	230.93
TOTAL	**472.55**

Existing Water Use

Adjusted potable water use for Year 2002 for the City of Petaluma equated to 3,400 million gallons (MG). This information was obtained from City billing records. A summary of the actual potable water use in Year 2002 by land use category is shown in Table B-6. Since the City's billing categories do not perfectly align with the land use categories used in the General Plan, except for the single-family and multi-family categories the Commercial/Industrial/Office, Institution, and Parks/Open Space/Other Irrigated Land categories 2002 potable water demands were combined in Table B-6. An additional category was included in Table B-6 for the Coast Guard facility which is located well outside the City Limits and Urban Growth Boundary and was not included on Figure B-1 or in the land use data in Appendix A of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006. The Coast Guard facility used 46 MG of potable water in Year 2002.

TABLE B-6
YEAR 2002 – POTABLE WATER USE

Land Use Category	2002 Potable Water Demand (MG/Year)
Single-family	1,965
Multi-Family	288
Commercial/Industrial/Office	1,101
Institution	
Parks/Open Space/Other Irrigated Land	
Coast Guard	46
TOTAL	**3,400**

MG = Million Gallons

Water Use Factor Development

The Year 2002 land use data for potable water users was used in conjunction with the actual water demands from the Year 2002 billing data to develop water use factors for each land use category. These factors will then be applied to the changes in land uses which are expected to occur between Year 2002 and buildout per the General Plan 2025 to project the City of Petaluma's potable water demand through buildout. The methodology for developing water use factors for each land use category are outlined below.

Single-family Residences

The development of a water use factor for existing single-family residences was straight forward since the land use information for Year 2002 indicated that the total number of single-family residences which received potable water was 16,962 and the billing data indicated that these residences used a total of 1,965 MG of potable water in 2002. Therefore, an average potable water use of 317.4 gpd/unit was used in Year 2002 by each single-family residence.

TABLE B-7
EXISTING SINGLE-FAMILY WATER USE FACTOR

Land Use Category	Water Use Factor (gpd/unit)
Existing Single-Family	317.4

gpd = gallons per day

Although the water use factor for existing single-family residences in Year 2002 was calculated as 317.4 gpd/unit, it is anticipated that new single-family homes constructed after 2002 will utilize more potable water. This increase in use by new homes was realized during preparation of the 2005 Urban Water Management Plan by SCWA. The increase was noted in billing data records for new homes within Petaluma and all other surrounding communities served by SCWA. An average water use factor of 418 gpd/unit was calculated for new single-family homes within Petaluma constructed after 2002 through analysis of billing records. This factor will be applied to all new single-family homes to develop potable water demands for the City. Data is provided in Appendix B - Increased Water Demand for New Single-family Residences of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006.

TABLE B-8
NEW SINGLE-FAMILY WATER USE FACTOR

Land Use Category	Water Use Factor (gpd/unit)
New Single-family	418

gpd = gallons per day

Multi-Family Residences

The development of a water use factor for multi-family residences was also straight forward since multi-family residences were included as both a 2002 land use category and as a 2002 billing category. A total number of 4,101 multi-family dwelling units utilizing potable water existed in Year 2002 which used a total of 288 MG of potable water. The water use factor for multi-family residences was then determined to be 192.4 gpd/unit. Unlike new single-family residences, no increase in water use was noted for multi-family residences constructed after Year 2002.

TABLE B-9
MULTI-FAMILY WATER USE FACTOR

Land Use Category	Water Use Factor (gpd/unit)
Multi-Family	192.4

gpd = gallons per day

Commercial/Industrial/Office

The development of the water use factors for the Commercial/Industrial/Office category required coordination with water use factor development for the Institution and Parks/Open Space/Other

Irrigated land categories since only the total water demand for all three categories was known for Year 2002 (See Table B-6). Water use factors for each of the nine land use categories shown in Table B-3 were obtained through text book literature, actual literature from nearby agencies with similar economic and climate conditions, and actual measurements taken by the City of Petaluma's Department of Water Resources and Conservation. These factors are shown in Table B-10. A factor of 493.2 gpd/acre was applied to all acreage for outdoor irrigation use. This factor corresponds to spray irrigation of turf acreage of approximately 18 percent of the entire parcel.

TABLE B-10
YEAR 2002 – COMMERCIAL/INDUSTRIAL/OFFICE WATER USE FACTORS

Land Use Classification	Building Square Footage Factor			Room Factor	Acreage Factor
	Commercial	Industrial	Office		
Heavy Commercial	110 gpd/1000sf				493.2 gpd/acre
Heavy Industrial		110 gpd/1000sf			493.2 gpd/acre
Hotel/Motel				116 gpd/room	493.2 gpd/acre
Light Industrial		110 gpd/1000sf	110 gpd/1000sf		493.2 gpd/acre
Mixed Use	95 gpd/1000sf		76 gpd/1000sf		493.2 gpd/acre
Office			76 gpd/1000sf		493.2 gpd/acre
Shopping Center	95 gpd/1000sf				493.2 gpd/acre
Strip Commercial	95 gpd/1000sf				493.2 gpd/acre
Warehouse			18 gpd/1000sf		493.2 gpd/acre

gpd = gallons/day
sf = square feet
Acreage factor = 1 MG/Acre/Year is required for turf = Ave. 2,740 gpd/acre*18%=493.2 gpd/acre (Ave.)

The Year 2002 potable water demand for the Commercial/Industrial/Office category was developed using the factors outlined in Table B-10 and the land use information outlined in Table B-3. The Year 2002 potable water demand for the Commercial/Industrial/Office category is shown in Table B-11.

TABLE B-11
YEAR 2002 – COMMERCIAL/INDUSTRIAL/OFFICE POTABLE WATER DEMAND

Land Use Classification	Indoor Potable Water Use[1] (gpd)	Outdoor Potable Water Use[2] (gpd)	Total (gpd)
Heavy Commercial	14,185	10,855	25,040
Heavy Industrial	88,034	69,127	157,160
Hotel/Motel	55,100	5,391	60,491
Light Industrial	298,439	110,210	408,649
Mixed Use	16,972	1,110	18,082
Office	389,792	146,549	536,341
Shopping Center	103,047	65,497	168,544
Strip Commercial	182,616	86,201	268,817
Warehouse	12,161	24,334	36,495
TOTAL (gpd)	**1,160,344**	**519,275**	**1,679,619**
TOTAL (MG/Year)	**423.53**	**189.54**	**613.06**

gpd=gallons/day
MG=Million Gallons
[1] Developed from square foot factor
[2] Developed from acreage factor

Verification of the water use factors in Table B-10 is obtained by adding the total water demand calculated for the Commercial/Industrial/Office category shown in Table B-11 to that of the Institution (180.57 MG/Year, see Table B-14) and Parks/Open Space/Other Irrigated Land (301.45 MG/Year, see Table B-17) categories which equates to approximately 1,101 MG/Year as indicated in Table B-6 as obtained from Year 2002 billing data. The existing 2002 land use data, as shown in Table B-3, B-10, and B-11, was provided in nine land use classifications. The future land uses identified for the new general plan are classified into only three classifications, namely commercial, industrial, and office. Due to the less certain nature of future specific land uses, the water use factors presented in Table B-10 were consolidated into these three general categories based on the weighed proportion of the subcategories' square footage presented within the City's Year 2002 land use data. The factors for the Commercial/Industrial/Office category for use in calculating future potable water demands are provided in bold font in Table B-12.

TABLE B-12
COMMERCIAL/INDUSTRIAL/OFFICE WATER USE FACTORS

Commercial	**= 98.29 gpd/1000sf**	**+493.2 gpd/acre**
Heavy Commercial	= 110 gpd/1000sf	+493.2 gpd/acre
Mixed Use (Commercial)	= 95 gpd/1000sf	+493.2 gpd/acre
Shopping Center	= 95 gpd/1000sf	+493.2 gpd/acre
Strip Commercial	= 95 gpd/1000sf	+493.2 gpd/acre
Office	**= 77.74 gpd/1000sf**	**+493.2 gpd/acre**
Light Industrial	= 110 gpd/1000sf	+493.2 gpd/acre
Mixed Use (Office)	= 76 gpd/1000sf	+493.2 gpd/acre
Office	= 76 gpd/1000sf	+493.2 gpd/acre

Industrial	= 95.07 gpd/1000sf	+493.2 gpd/acre
Heavy Industrial	= 110 gpd/1000sf	+493.2 gpd/acre
Light Industrial	= 110 gpd/1000sf	+493.2 gpd/acre
Warehouse	= 18 gpd/1000sf	+493.2 gpd/acre
Hotel/Motel	= 116 gpd/room	+493.2 gpd/acre

gpd = gallons/day
sf = square feet

Institution

The development of the water use factors for the Institution category required coordination with water use factor development for the Commercial/Industrial/Office and Parks/Open Space/Other Irrigated Land categories since only the total water demand for all three of these categories could be obtained from Year 2002 billing data (See Table B-6).Water use factors for the three land use classifications shown in Table B-4 for the Industrial category were obtained through text book literature, actual literature from nearby agencies with similar economic and climate conditions, and actual measurements taken by the City of Petaluma's Department of Water Resources and Conservation. These factors are shown in Table B-13. A factor of 493.2 gpd/acre was applied to all acreage for outdoor irrigation use except for schools since the gallon per day per student factor includes all indoor and outdoor use at schools. 493.2 gpd/acre equates to irrigation of 18 percent of all acreage with spray irrigation.

TABLE B-13
YEAR 2002 – INSTITUTION WATER USE FACTORS

Land Use Classification	Building Square Footage Factor	Student Factor	Acreage Factor
Church	76 gpd/1000sf		493.2 gpd/acre
Schools		16 gpd/student	
Institution	76 gpd/1000sf		493.2 gpd/acre

gpd = gallons/day
sf = square feet
Acreage factor = 1 MG/Acre/Year is required for turf = Ave 2,740 gpd/acre*18%=493.2 gpd/acre (Ave)

The Year 2002 potable water demand for the Institution category was developed using the factors outlined in Table B-13 and the land use information outlined in Table B-4. The 2002 potable water demand for the Institutional category is shown in Table B-14.

TABLE B-14
YEAR 2002 – INSTITUTION POTABLE WATER DEMAND

Land Use Classification	Indoor Potable Water Use (per SF factor) (gpd)	Outdoor Potable Water Use (per Acreage factor) (gpd)	Total School Potable Water Use (per student factor) (gpd)	Total (gpd)
Church	24,550	20,843	N/A	45,393
Schools	N/A	N/A	293,520	298,520
Institution	71,689	84,120	N/A	155,809
TOTAL (gpd)	**96,239**	**104,963**	**293,520**	**494,721**
TOTAL (MG/Year)	**35.13**	**38.31**	**107.13**	**180.57**

gpd = gallons per day
MG = millions gallons

Verification of water use factors in Table B-13 is obtained by adding the total water demand calculated for the Institution category (180.57 MG/Year) to that of the Commercial/Industrial/Office (613.06 MG/Year, see Table B-11) and Parks/Open Space/Other Irrigated Land (301.45 MG/Year, see Table B-17) categories which equate approximately to the total of 1,101 MG/Year as indicated in Table B-6 as obtained from Year 2002 billing data. The land use factors identified in Table B-13 for the Institution category are consistent with the land use classification data available for the General Plan update land use (Year 2025). The factors for the Institution category for use in calculating future potable water demand are provided in Table B-15.

TABLE B-15
INSTITUTION WATER USE FACTORS

Church	= 76 gpd/1000sf	+ 493.2 gpd/acre
Schools	= 16 gpd/student	
Institution	= 76 gpd/1000sf	+ 493.2 gpd/acre

Parks/Open Space/Other Irrigated Land

The development of the water use factors for the Parks/Open Space/Other Irrigated Land category required coordination with water use factor development for Commercial/Industrial/Office and Institutional categories since only the total water demand for all three categories could be obtained from Year 2002 billing data (See Table B-6). Water use factors for the golf courses outlined in Table B-16 were obtained utilizing the known acreage of the golf courses as shown in Table B-5 and the actual potable water usage for the two golf courses from billing data. A water use factor of 1,507 gpd/acre for average water use over the entire year was used for the other turf areas. This value equates to irrigation of approximately 55 percent of the entire acreage with spray irrigation. The 55 percent value was obtained as the average area for the Park, Open Space, Other Irrigated Land areas in Petaluma and by using park data provided by the City and aerial photos to determine the percentage of the acreage that was irrigated in relation to the total acreage.

TABLE B-16
YEAR 2002 – PARKS/OPEN SPACE/OTHER IRRIGATED LAND WATER USE FACTORS

Land Use Classification	Acreage Factor[2]
Rooster Run Golf Course	2,402.37 gpd/acre [1]
Petaluma Country Club	1,133.25 gpd/acre [1]
Other	1,507 gpd/acre[2]

[1] Actual Values
[2] Acreage Factor = 1 MG/Acre/Year is required for turf = Ave 2740 gpd/Acre *55% = 1507 gpd/Acre
gpd = gallons per day

The Year 2002 potable water demand for the Parks/Open Space/Other Irrigated Land category was calculated using the factors outlined in Table B-16 and the land use information outlined in Table B-5. The 2002 potable water demand for the Parks/Open Space/Other Irrigated Land category is shown in Table B-17.

TABLE B-17

YEAR 2002 – PARKS/OPEN SPACE/OTHER IRRIGATED LAND POTABLE WATER DEMAND

Land Use Classification	Total (gpd)
Rooster Run Golf Course	386,301 [1]
Petaluma Country Club	91,589 [1]
Other	348,012
TOTAL (gpd)	**825,902**
TOTAL (MG/Year)	**301.45**

[1] Actual Values from billing records
gpd = gallons per day
MG = Million Gallons

Verification of water use factors for non-golf course areas in Table B-16 is obtained by adding the total water demand calculated for Parks/Open Space/Other Irrigated Land (301.45 MG/Year) to that of the Commercial Industrial/Office (613.06 MG/Year, see Table B-11) and Institutional (180.57 MG/Year, see Table B-14) categories which equates to approximately the total of 1,101 MG/Year as indicated in Table B-6 as obtained from Year 2002 billing data. The land use factor to be applied to all new land use within the Parks/Open Space/Other Irrigated Land categories is 1,507 gpd/acre. No new golf courses are included in the updated General Plan land use (Buildout Year 2025).

TABLE B-18

PARKS/OPEN SPACE/OTHER IRRIGATED LAND WATER USE FACTOR

Turf	= 1,507 gpd/acre

Mixed Use

An additional land use category was added to the land use presented in the General Plan update. Mixed use consists of multi-family dwelling units, commercial, industrial, and office. Fortunately, the land use data provided for the mixed use category included sub classifications for all of these components. Since water use factors were already developed for these components under prior land use categories, they will also be used for calculating future potable water demand for the mixed use category. The mixed use factors are shown in Table B-19.

TABLE B-19

MIXED USE – WATER USE FACTORS

Multi-Family	= 192.4 gpd/unit	
Commercial	= 98.29 gpd//1000 sf	+493.2 gpd/acre
Office	= 77.74 gpd//1000 sf	+493.2 gpd/acre
Industrial	= 95.07 gpd//1000 sf	+493.2 gpd/acre

Future Land Use

As part of the General Plan Update, a land use map for the City of Petaluma was developed to depict buildout land use in Year 2025. As with the land use map for Year 2002, this map was converted to a Year 2025 potable water use map indicating all potable water customers inside and outside the City Limits and Urban Growth boundary which will receive potable water. The Year 2025 (Buildout)

Potable Water Use Map is shown in Figure B-2. In addition to the buildout (Year 2025) potable water land use map, the City of Petaluma's Department of General Plan Administration, also developed maps that depict land use area changes in increments or tiers between the Base Year 2002 and Buildout (Year 2025) so water demands can be projected in five year time periods to reflect actual development rather than projecting linear water demand increases. Eight tier maps and their associated land use data were developed showing land use changes and new development in phases between Year 2002 and Buildout. These maps along with their associated land use data are included in Appendix C – Future Potable Water Use Maps and Data of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006. Each tier represents projects within different stages of development. The definition of each tier is listed below.

- Tier 1: Projects under construction or completed since Base Year (June 2002).
- Tier 2: Approved projects/subdivisions not yet under construction (as of June 2005).
- Tier 3: Projects currently in the formal review process (as of June 2005).
- Tier 4: Anticipated project, not active application (as of June 2005).
- Tier 5: Vacant lands, not including those contained in Tiers 1-4 above, potential based on 1987 General Plan.
- Tier 6: Underutilized land based on 1987 General Plan, additional potential based on Draft 2025 General Plan.
- Tier 7: Underutilized land based on Draft 2025 General Plan, additional potential based on Draft 2025 General Plan.
- Tier 8: Anticipated additional residential parcels mostly existing and in the County, expected to receive City water by 2025.

Development in each tier is expected to occur over a number of years. The City of Petaluma's Department of General Plan Administration evaluated each tier and provided the following formulas to determine within which time period the development is expected to occur so water demand projections could be determined for each five year period between the Base Year 2002 and buildout (Year 2025).

TABLE B-20
TIMELINE FOR TIER DEVELOPMENT

Time Period	Associated Tier Development
2002-2005	= Tier 1
2005-2010	= Tier 2+ 50% of Tier 3+ 50% of Tier 4+ 25% of Tier 5
2010-2015	= 50% of Tier 3+ 50% of Tier 4 + 50% of Tier 5 + 25% of Tier 6
2015-2020	= 25% of Tier 5 + 50% of Tier 6
2020-2025	= 25% of Tier 6 +Tier 7 + Tier 8

Water Demand Projections

Water demand projections for future potable water land uses were calculated for each tier utilizing the data for each tier provided in Appendix C – Future Potable Water Use Maps and Data of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006 and the water use factors developed for each land use category. Since water use factors were developed utilizing actual water use and land use information for Year 2002 (Base Year), the water use factors are representative of

how water was used within the City of Petaluma in Year 2002. Although Year 2002 is considered a normal year for climatic conditions, the City was experiencing high vacancy rates in the commercial, industrial, and office sectors. The high vacancy rates are assumed to have only impacted indoor potable water use at these facilities since although the buildings were vacant, the owners of the buildings did continue to maintain the landscaping at the facilities. Since the City of Petaluma must plan to meet the potable water demands for the City in times with historic low vacancy rates, the water use factors for indoor water use were adjusted to account for realistic vacancy within the commercial, industrial, and office sectors. Water use factors were adjusted to 2% vacancy rates for commercial properties and 5% vacancy rates for industrial and office properties to reflect historic vacancy rates for each sector which occurred in Year 2000. Appendix D – Vacancy Rate Adjustment of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006 outlines the methodology used to adjust the building square footage factors and includes vacancy rate data for Base Year 2002 as well as historic vacancy rate information. Table B-21 outlines the water use factors for the Commercial/Industrial/Office category adjusted to account for abnormally high vacancy rates in Year 2002. This work is consistent with adjustments made by SCWA when developing potable water demand projections for the 2005 Urban Water Management Plan.

TABLE B-21
ADJUSTED COMMERCIAL/INDUSTRIAL/OFFICE – WATER USE FACTORS

Land Use Classification	Building Square Footage Factor
Commercial	99.27 gpd/1000 sf
Industrial	105.53 gpd/1000 sf
Office	87.85 gpd/1000 sf

The analysis for calculations of annual water demand for each tier is included in Appendix E – Water Demand Projections of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006 and included within this appendix. A summary of the total annual water demand for each tier is included in Table B-22.

TABLE B-22
TOTAL ANNUAL WATER DEMAND PER DEVELOPMENT TIER

Tier	Annual Water Demand (MG/Year)
1	164.16
2	165.21
3	281.36
4	112.16
5	266.16
6	173.45
7	71.65
8	25.78
Total (Tier 1-8)	**1,259.94**

MG = million gallons

Tiers 1 through 8 represent all development and land use changes per the General Plan's update adjusted for potable water customers through buildout (Year 2025). Additional potable water demands have been identified in addition to the development indicated on the potable water use map (Figure B-2) and within the associated data in Appendix C of the City of Petaluma's Water

Demand and Supply Analysis Report dated May 2006. These additional potable water demands include Tier 9 uses, additional water required for expansion of the Coast Guard facility located outside the Urban Growth Boundary (UGB), and additional potable water requirements for the City's new Water Recycling Facility (WRF) scheduled to be operational in Year 2009. Tier 9 represents the potable water requirement to serve approximately 300 additional acres outside the UGB which has been indicated as a potential demand between 2018 and 2025, after the next General Plan Update. Table B-23 outlines the expected timeline for annual demand for additional potable water.

TABLE B-23
TOTAL ADDITIONAL POTABLE WATER DEMAND BY SOURCE

Water Demand	Annual Water Demand (MG/Y)	Demand Timeline
Tiers 1-8	1,259.94	2002-2025
Tier 9	161.54	2018-2025[1]
Coast Guard Expansion	21.90	2005-2010
Water Recycling Facility (WRF)	63.60	2008
Total	**1,506.98**	**2002-2025**

[1] Tier 9 water demand has been prorated for implementation between 2018 and 2025. 28.6% of the demand is expected to occur between Years 2015 and 2020; and 71.4% of the demand is expected to occur between Years 2020 and 2025.

The total additional potable water demand expected within each five year time period between 2002 and buildout is shown in Table B-24.

TABLE B-24
ADDITIONAL POTABLE WATER DEMAND AND TIMELINE

Time Period	Additional Water Demand (MG/Year)	Time Period Formula
2002-2005	164.16	(Tier 1)
2005-2010	514.01	(Tier 2+½Tier 3+½Tier 4+ ¼ Tier 5+WRF+CG)
2010-2015	373.21	(½ Tier 3+ ½ Tier 4 + ½ Tier 5 + ¼ Tier 6)
2015-2020	199.47	(¼ Tier 5 + ½ Tier 6 + 28.6% Tier 9)
2020-2025	256.14	(¼ Tier 6 +Tier 7 + Tier 8 +71.4% Tier 9)
Total	**1506.98**	

The additional potable water demand outlined in Table B-24 must be adjusted to account for lost water and the effect of the plumbing code prior to calculating the total potable water demand projections. These adjustments are shown in Table B-25 as well as the total annual potable water demand projections in five-year increments. The lost water used in Table B-25 of 223.47 MG/Year for Year 2002 is actual and the 30 year historic average of 8 percent for lost water is used to adjust future water demands. The plumbing code will reduce overall future water demands. The water reduction expected as a result of the plumbing code was obtained from the data used by SCWA to calculate demands for the 2005 Urban Water Management Plan.

TABLE B-25
ANNUAL POTABLE WATER DEMAND PROJECTIONS

Time Period	Additional Potable Water Demand (MG/Year)	Non-Adjusted Total Annual Water Demand (MG/Year)	Total Lost Water (MG/Year)	Total Plumbing Code Effect (MG/Year)	Total Annual Water Demand (MG/Year)
Base Year (2002)		3,399.72 (Actual)	223.47 (Actual)	N/A	**3,623.19 (Actual)**
2002-2005	164.16	3,563.88	285.11	-3.65	**3,845.34**
2005-2010	514.01	4,077.89	326.23	-40.15	**4,363.97**
2010-2015	373.21	4,451.10	356.09	-83.95	**4,723.23**
2015-2020	199.47	4,650.56	372.04	-124.10	**4,898.51**
2020-2025	256.14	4,906.70	392.54	-160.60	**5,138.64**

The total annual potable water demand projections shown in Table B-25 are consistent with the projections made by SCWA for the City of Petaluma during preparation of their 2005 Urban Water Management Plan.

In addition to the total annual potable water demand projections, average day demand, maximum day demand, maximum month demand, and average day max month (ADMM) demand projections were calculated. These are essential to the proper operation of the City's potable water system. Definitions for each of these parameters are outlined below.

Average Day Demand (mgd) is defined as the average potable water demand for each calendar day in a given year. Average Day Demand is calculated by dividing the total annual water demand (MG/Year) by 365 days.

Maximum Day Demand (mgd) is defined as the maximum potable water demand required on any calendar day within a given year. The maximum day demand occurs during the summer time due to peak irrigation use. The expected maximum day demand in future years is calculated based on historic use data. Historic data was available for calendar years 1994 through 2003. The ratio between the actual maximum day demand and the actual average day demand was calculated to obtain a maximum day peaking factor for each year evaluated. Since all peaking factors were similar, the peaking factors for all ten years were averaged to obtain a peaking factor of 1.84. The data and analysis is included in Appendix F – Historic Water Peaking Factors of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006.

TABLE B-26
MAXIMUM DAY DEMAND

Maximum Day Demand	= 1.84 * Average Day Demand

Maximum Month Demand (MG/month) is defined as the potable water demand in the month with the highest demand in a given calendar year. The maximum month demand occurs during the summer time and results from peak irrigation use. The expected maximum month demand in future years is calculated based on historic use data. Historic data was available for calendar years 1994 through 2003. The ratio between the actual maximum month demand and the actual average month demand was calculated to obtain a maximum month peaking factor for each year evaluated. Since all peaking factors were similar, the peaking factor for all ten years was averaged to obtain a peaking

factor of 1.55. The data and analysis is included in Appendix F – Historic Water Peaking Factors of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006.

TABLE B-27
MAXIMUM MONTH DEMAND

Maximum Month Demand	= 1.55 * Average Month Demand

Average Day Maximum Month (ADMM) Demand (mgd) is defined as the average day demand during the maximum water use month in a given year. The maximum month demand is divided by the number of days in the maximum month. To ensure conservative estimates are made for ADMM projection calculations it was assumed the maximum month is a 30 day month rather than a 31 day month. The average historic ADMM factor between Year 1994 and 2003 has been calculated as 1.57 times average day demand. The data and analysis is included in Appendix F – Historic Water Peaking Factor of the City of Petaluma's Water Demand and Supply Analysis Report dated May 2006. The ADMM demand is an important parameter since the City's agreement with SCWA are based on maximum allotments for both ADMM and annual demand.

TABLE B-28
ADMM DEMAND

ADMM Demand	= 1.57 * Average Day Demand

Table B-29 outlines potable water demand projections for total annual water demand, average day demand, maximum day demand, maximum month demand, and ADMM demand. The actual demands for Year 2002 are presented in the table and demand for Years 2005, 2010, 2015, 2020 and Buildout (2025) have been calculated using the total annual water demand projections from Table B-25 and demand factors outlined above.

TABLE B-29
POTABLE WATER DEMAND PROJECTIONS

Year	Total Annual Water Demand (MG/Year)	Average Day Demand (mgd)	Maximum Day Demand (mgd)	Maximum Month Demand (MG/Month)	ADMM Demand (mgd)
2002[1]	3,623.19	9.93	17.94	464.96	15.50
2005	3,845.34	10.54	19.38	496.69	16.54
2010	4,363.97	11.96	22.00	563.68	18.77
2015	4,723.23	12.94	23.81	610.08	20.32
2020	4,898.51	13.42	24.69	632.72	21.07
2025 (Buildout)	5,138.64	14.08	25.90	663.74	22.10

[1] Actual Demands from Billing Records
MG = Million Gallons
mgd = million gallons per day

FUTURE (TIER) WATER DEMAND SUMMARY

Total Annual Water Demand (MG/Y)

Tier 1 =	164.16
Tier 2 =	165.21
Tier 3 =	281.36
Tier 4 =	112.16
Tier 5 =	266.16
Tier 6 =	173.45
Tier 7 =	71.65
Tier 8 =	25.78
Tier 9* =	161.54
Tier 1-9 =	**1421.48**
Coast Guard=**	**21.90**
WRF* =**	**63.6**
Tier 1-9+WRF+CG =	**1506.98**

*Tier 9 = 3.35%times(City buildout water demand inside UGB=4964.17MG/Y-Coast Guard(67.9*8%)-WRF(63.6*8%)=4822.15MG/Y) =161.54MG/Y for outside urban growth boundary water demand between 2018 and 2025. This reflects water for approximately 300 acres. 300acres/8960 acres(inside UGB)=3.35%

**Additional potable water due to expansion planned for Coast Guard (not included in tier data). 60,000 gpd per EIR (July 2003) = 21.90 MG/Y

Adjusted for Plumbing Code, Increase in demand for new homes to 418 gpd/unit,

***Additional potable water due to WRF = 200,000 gpd = 73 MG/Y - existing WWTP (10.26-.87(PIPS)=9.39 MG/Y) = 63.6 MG/

and vacancy rates to 5% Office & Industrial and 2% Retail/Commercia

Water Demand by 5 year Incremen

	Incremental Water (MG/year)		Total Annual Water Demand (MG/Y) w/out lost water**	Lost Water (MG/Y)	**Total Annual Water Demanc (MG/Y)**	Average Day (mgd)	Max Day*** (mgd)	Max Month**** (MG)	ADMM***** (mgd)
Base Year (2002)			3399.72	223.47	**3623.19**	9.93	17.94	464.96	15.5
2002-2005	164.16	(Tier 1)	3563.88	285.11	**3845.34**	10.54	19.38	496.69	16.54
2005-2010	514.01	(Tier 2 + 1/2 Tier 3 + 1/2 Tier 4 + 1/4 Tier 5+WRF+CG)	4077.89	326.23	**4363.97**	11.96	22.00	563.68	18.77
2010-2015	373.21	(1/2 Tier 3 + 1/2 Tier 4 + 1/2 Tier 5 +1/4 Tier 6)	4451.10	356.09	**4723.23**	12.94	23.81	610.08	20.32
2015-2020	199.47	(1/4 Tier 5 +1/2 Tier 6+28.6%Tier 9)	4650.56	372.04	**4898.51**	13.42	24.69	632.72	21.07
2020-2025	256.14	(1/4 Tier 6 + Tier 7 + Tier 8+71.4% Tier 9	4906.70	392.54	**5138.64**	14.08	25.90	663.74	22.10
	1506.98								

**Lost water for 2002 is actual. Lost water for tiers = 8.0% of total water

***Max Day water for 2002 is actual. Max Day water for tiers = 1.84 times average day

****Max Month water for 2002 is actual. Max Month water for tiers = 1.55 times average month

*****ADMM (Average day max month) water for 2002 is actual. ADMM water for tiers = 1.57 times Average Day

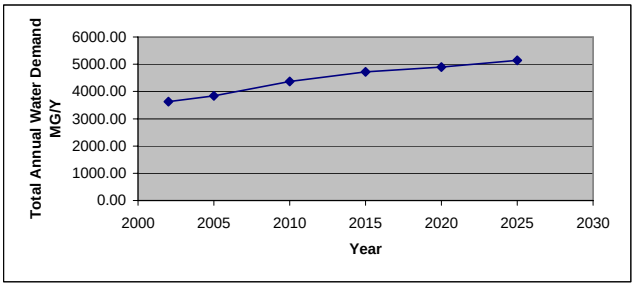
Plumbing Code Effect	Overall Decrease in Water Demand (MG/Y)
2005	3.65
2010	40.15
2015	83.95
2020	124.1
2025	160.6

Per Data by Bill Maddaus

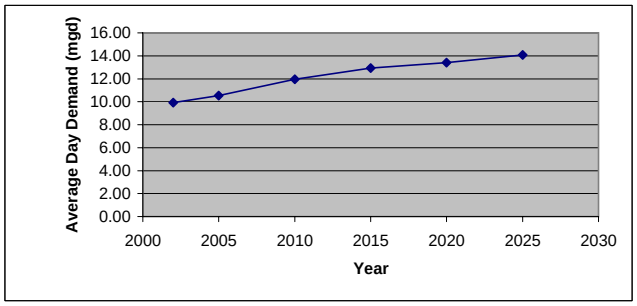
Reduction due to Rooster Run convertion to Recycled Wate	**138.34**

	Total Annual Water Demand w/ Rooster Run Reductio (MG/Y)	Average Day (mgd)	Max Day*** (mgd)	Max Month**** (MG)	ADMM***** (mgd)
Base Year (2002)	**3623.19**	9.93	17.94	464.96	15.5
2002-2005	**3707.00**	10.16	18.69	478.82	15.95
2005-2010	**4225.63**	11.58	21.30	545.81	18.18
2010-2015	**4584.89**	12.56	23.11	592.22	19.72
2015-2020	**4760.17**	13.04	24.00	614.85	20.48
2020-2025	**5000.30**	13.70	25.21	645.87	21.51

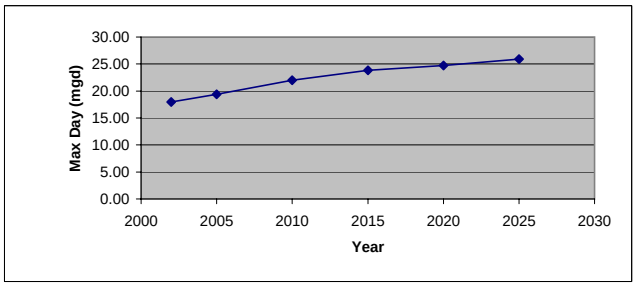
Year	Total Annual Water Demand (MG/Y)
2002	**3623.19**
2005	**3845.34**
2010	**4363.97**
2015	**4723.23**
2020	**4898.51**
2025	**5138.64**



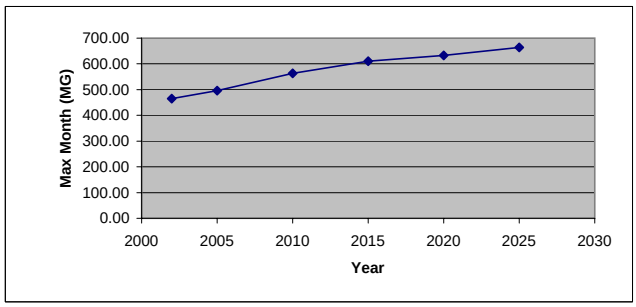
Year	Average Day (mgd)
2002	**9.93**
2005	**10.54**
2010	**11.96**
2015	**12.94**
2020	**13.42**
2025	**14.08**



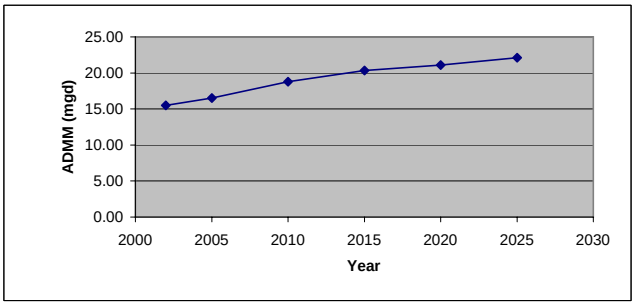
Year	Max Day (mgd)
2002	**17.94**
2005	**19.38**
2010	**22.00**
2015	**23.81**
2020	**24.69**
2025	**25.90**



Year	Max Month (MG)
2002	**464.96**
2005	**496.69**
2010	**563.68**
2015	**610.08**
2020	**632.72**
2025	**663.74**



Year	ADMM (mgd)
2002	**15.50**
2005	**16.54**
2010	**18.77**
2015	**20.32**
2020	**21.07**
2025	**22.10**



TIER 1 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

599 units * 418 = 250381.9581 gpd

* 365 days

91389414.7 gallons/y

/1,000,000

91.39 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

376 units * 192.4 = 72342.4 gpd

* 365 days

26404976 gallons/y

/1,000,000

26.40 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial =	98.29 gpd/1000 sf + 493.2 gpd/acre		
	Adjust for vacancy rate of	2%	
	Factor =	1.01	
	Commercial (indoor) =	0.099273	gpd/1000 sf
Industrial =	95.07 gpd/1000 sf + 493.2 gpd/acre		
	Adjust for vacancy rate of	5%	
	Factor =	1.11	
	Industrial (indoor) =	0.105528	gpd/1000 sf
Office =	77.74 gpd/1000 sf + 493.2 gpd/acre		
	Adjust for vacancy rate of	5%	
	Factor =	1.13	
	Office (indoor) =	0.087846	gpd/1000 sf
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Commercial

226443 SF* 0.0992729 = 22479.65329 gpd

* 365 days

8205073.453 gallons/y

/1,000,000

8.21 MG/year

13.3 acre* 493.2 = 6559.56 gpd

* 365 days

2394239.4 gallons/y

/1,000,000

2.39 MG/year

Total Water Use for Commercial = 10.60 MG/year

Industrial

-239561 SF* 0.1055277 = -25280.32134 gpd

* 365 days

-9227317.289 gallons/y

/1,000,000

-9.23 MG/year

-13.4 acre* 493.2 = -6608.88 gpd

* 365 days

-2412241.2 gallons/y

/1,000,000

-2.41 MG/year

Total Water Use for Industrial = -11.64 MG/year

Office

307706 SF* 0.0878462 = 27030.80282 gpd

* 365 days

9866243.028 gallons/y

/1,000,000

9.87 MG/year

11.5 acre* 493.2 = 5671.8 gpd

* 365 days

2070207 gallons/y

/1,000,000

2.07 MG/year

Total Water Use for Office = 11.94 MG/year

Hotel/Motel

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = 10.90 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial =	98.29	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			2%
Factor =	1.01		
Commercial (indoor) =	0.099273	gpd/1000 sf	
Industrial =	95.07	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.11		
Industrial (indoor) =	0.105528	gpd/1000 sf	
Office =	77.74	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.13		
Office (indoor) =	0.087846	gpd/1000 sf	
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Multi-Family (indoor & outdoor)

124	units *	192.4 =	23857.6 gpd
			* 365 days
			8708024 gallons/y
			/1,000,000

Total Water Use for Multi-Family = 8.71 MG/year

Commercial (indoor)

16000	SF*	0.0992729 =	1588.3664 gpd
			* 365 days
			579753.736 gallons/y
			/1,000,000
			0.58 MG/year

Industrial (indoor)

0	SF*	0.1055277 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Office (indoor)

11000	SF*	0.0878462 =	966.3082 gpd
			* 365 days
			352702.493 gallons/y
			/1,000,000
			0.35 MG/year

Hotel/Motel (indoor)

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 3.5

3.5	acre*	493.2 =	1726.2 gpd
			* 365 days
			630063 gallons/y
			/1,000,000

	0.63 MG/year
Total Annual Multi-Use =	10.27 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

39000	SF*	0.076 =	2964 gpd
			* 365 days
			1081860 gallons/y
			/1,000,000
			1.08 MG/year
1.9	acre*	493.2 =	937.08 gpd
			* 365 days
			342034.2 gallons/y
			/1,000,000
			0.34 MG/year
Total Water Use for Institution =			1.42 MG/year

Education/Schools

1000	Students*	16 =	16000 gpd
			* 365 days
			5840000 gallons/y
			/1,000,000
Total Water Use for Education/Schools =			5.84 MG/year

Church

0	SF*	0.076 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
Total Water Use for Church =			0 MG/year
Total Annual Institution =			7.26 MG/year

TURF

Turf = 1507 gpd/acre

Turf = 21.7	acres of City Park
10.9	acres of Open Space
0	acres of Other
0	acres of Golf Course
32.6	TOTAL ACRES

32.6	acre*	1507 =	49128.2 gpd
			* 365 days
			17931793 gallons/y
			/1,000,000
			17.93 MG/year

Total Tier 1 Annual Water Demand	**164.16 MG/year**

TIER 2 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

355 units * 418 = 148389.9752 gpd

* 365 days

54162340.93 gallons/y

/1,000,000

54.16 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

26 units * 192.4 = 5002.4 gpd

* 365 days

1825876 gallons/y

/1,000,000

1.83 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 2%
Factor = 1.01
Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 5%
Factor = 1.11
Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 5%
Factor = 1.13
Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Commercial

-998 SF* 0.0992729 = -99.0743542 gpd

* 365 days

-36162.13928 gallons/y

/1,000,000

-0.04 MG/year

-0.9 acre* 493.2 = -443.88 gpd

* 365 days

-162016.2 gallons/y

/1,000,000

-0.16 MG/year

Total Water Use for Commercial = -0.20 MG/year

Industrial

29500 SF* 0.1055277 = 3113.06715 gpd

* 365 days

1136269.51 gallons/y

/1,000,000

1.14 MG/year

2 acre* 493.2 = 986.4 gpd

* 365 days

360036 gallons/y

/1,000,000

0.36 MG/year

Total Water Use for Industrial = 1.50 MG/year

Office

656904 SF* 0.0878462 = 57706.52016 gpd

* 365 days

21062879.86 gallons/y

/1,000,000

21.06 MG/year

37.3 acre* 493.2 = 18396.36 gpd

* 365 days

6714671.4 gallons/y

/1,000,000

6.71 MG/year

Total Water Use for Office = 27.78 MG/year

Hotel/Motel

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = 29.08 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial =	98.29	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			2%
Factor =	1.01		
Commercial (indoor) =	0.099273	gpd/1000 sf	
Industrial =	95.07	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.11		
Industrial (indoor) =	0.105528	gpd/1000 sf	
Office =	77.74	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.13		
Office (indoor) =	0.087846	gpd/1000 sf	
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Multi-Family (indoor & outdoor)

245	units *	192.4 =	47138 gpd
			* 365 days
			17205370 gallons/y
			/1,000,000

Total Water Use for Multi-Family = 17.21 MG/year

Commercial (indoor)

72000	SF*	0.0992729 =	7147.6488 gpd
			* 365 days
			2608891.812 gallons/y
			/1,000,000
			2.61 MG/year

Industrial (indoor)

0	SF*	0.1055277 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Office (indoor)

74000	SF*	0.0878462 =	6500.6188 gpd
			* 365 days
			2372725.862 gallons/y
			/1,000,000
			2.37 MG/year

Hotel/Motel (indoor)

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 13.7

13.7	acre*	493.2 =	6756.84 gpd
			* 365 days
			2466246.6 gallons/y
			/1,000,000

	2.47 MG/year
Total Annual Multi-Use =	24.65 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

0	SF*	0.076 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
Total Water Use for Institution =			0 MG/year

Education/Schools

6780	Students*	16 =	108480 gpd
			* 365 days
			39595200 gallons/y
			/1,000,000
Total Water Use for Education/Schools =			39.60 MG/year

Church

0	SF*	0.076 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
Total Water Use for Church =			0 MG/year
Total Annual Institution =			39.60 MG/year

TURF

Turf = 1507 gpd/acre

Turf = 28.9	acres of City Park
0	acres of Open Space
0	acres of Other
0	acres of Golf Course
28.9	TOTAL ACRES

28.9	acre*	1507 =	43552.3 gpd
			* 365 days
			15896589.5 gallons/y
			/1,000,000
			15.90 MG/year

Total Tier 2 Annual Water Demand	**165.21 MG/year**

TIER 3 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

796 units * 418 = 332727.9443 gpd

* 365 days

121445699.7 gallons/y

/1,000,000

121.45 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

370 units * 192.4 = 71188 gpd

* 365 days

25983620 gallons/y

/1,000,000

25.98 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 2%

Factor = 1.01

Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.11

Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.13

Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Commercial

134320 SF* 0.0992729 = 13334.33593 gpd

* 365 days

4867032.614 gallons/y

/1,000,000

4.87 MG/year

20.4 acre* 493.2 = 10061.28 gpd

* 365 days

3672367.2 gallons/y

/1,000,000

3.67 MG/year

Total Water Use for Commercial = 8.54 MG/year

Industrial

-33696 SF* 0.1055277 = -3555.861379 gpd

* 365 days

-1297889.403 gallons/y

/1,000,000

-1.30 MG/year

-0.8 acre* 493.2 = -394.56 gpd

* 365 days

-144014.4 gallons/y

/1,000,000

-0.14 MG/year

Total Water Use for Industrial = -1.44 MG/year

Office

311450 SF* 0.0878462 = 27359.69899 gpd

* 365 days

9986290.131 gallons/y

/1,000,000

9.99 MG/year

16.8 acre* 493.2 = 8285.76 gpd

* 365 days

3024302.4 gallons/y

/1,000,000

3.02 MG/year

Total Water Use for Office = 13.01 MG/year

Hotel/Motel

0 Rooms* 116 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = 20.11 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 2%
Factor = 1.01
Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 5%
Factor = 1.11
Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 5%
Factor = 1.13
Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Multi-Family (indoor & outdoor)

937 units * 192.4 = 180278.8 gpd
* 365 days
65801762 gallons/y
/1,000,000
Total Water Use for Multi-Family = 65.80 MG/year

Commercial (indoor)

668110 SF* 0.0992729 = 66325.21722 gpd
* 365 days
24208704.28 gallons/y
/1,000,000
24.21 MG/year

Industrial (indoor)

0 SF* 0.1055277 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Office (indoor)

294110 SF* 0.0878462 = 25836.44588 gpd
* 365 days
9430302.747 gallons/y
/1,000,000
9.43 MG/year

Hotel/Motel (indoor)

0 Rooms* 116 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 87.9

87.9 acre* 493.2 = 43352.28 gpd
* 365 days
15823582.2 gallons/y
/1,000,000

15.82 MG/year

Total Annual Multi-Use = 115.26 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Institution = 0 MG/year

Education/Schools

-1000 Students* 16 = -16000 gpd
* 365 days
-5840000 gallons/y
/1,000,000
Total Water Use for Education/Schools = -5.84 MG/year

Church

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Church = 0 MG/year

Total Annual Institution = -5.84 MG/year

TURF

Turf = 1507 gpd/acre
Turf = 8 acres of City Park
0 acres of Open Space
0 acres of Other
0 acres of Golf Course
8 TOTAL ACRES

8 acre* 1507 = 12056 gpd
* 365 days
4400440 gallons/y
/1,000,000
4.40 MG/year

Total Tier 3 Annual Water Demand **281.36 MG/year**

TIER 4 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

408	units *	418 =	170543.9714 gpd
		* 365 days	
			62248549.58 gallons/y
		/1,000,000	
			62.25 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

0	units *	192.4 =	0 gpd
		* 365 days	
			0 gallons/y
		/1,000,000	
			0 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial =	98.29 gpd/1000 sf + 493.2 gpd/acre		
	Adjust for vacancy rate of		2%
	Factor =	1.01	
	Commercial (indoor) =	0.099273	gpd/1000 sf
Industrial =	95.07 gpd/1000 sf + 493.2 gpd/acre		
	Adjust for vacancy rate of		5%
	Factor =	1.11	
	Industrial (indoor) =	0.105528	gpd/1000 sf
Office =	77.74 gpd/1000 sf + 493.2 gpd/acre		
	Adjust for vacancy rate of		5%
	Factor =	1.13	
	Office (indoor) =	0.087846	gpd/1000 sf
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Commercial

0	SF*	0.0992729 =	0 gpd
		* 365 days	
			0 gallons/y
		/1,000,000	
			0 MG/year
0	acre*	493.2 =	0 gpd
		* 365 days	
			0 gallons/y
		/1,000,000	
			0 MG/year

Total Water Use for Commercial = 0 MG/year

Industrial

-39959	SF*	0.1055277 =	-4216.781364 gpd
		* 365 days	
			-1539125.198 gallons/y
		/1,000,000	
			-1.54 MG/year
-11.5	acre*	493.2 =	-5671.8 gpd
		* 365 days	
			-2070207 gallons/y
		/1,000,000	
			-2.07 MG/year

Total Water Use for Industrial = -3.61 MG/year

Office

0	SF*	0.0878462 =	0 gpd
		* 365 days	
			0 gallons/y
		/1,000,000	
			0 MG/year
0	acre*	493.2 =	0 gpd
		* 365 days	
			0 gallons/y
		/1,000,000	
			0 MG/year

Total Water Use for Office = 0 MG/year

Hotel/Motel

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = -3.61 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial =	98.29	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			2%
Factor =	1.01		
Commercial (indoor) =	0.099273	gpd/1000 sf	
Industrial =	95.07	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.11		
Industrial (indoor) =	0.105528	gpd/1000 sf	
Office =	77.74	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.13		
Office (indoor) =	0.087846	gpd/1000 sf	
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Multi-Family (indoor & outdoor)

395	units *	192.4 =	75998 gpd
			* 365 days
			27739270 gallons/y
			/1,000,000

Total Water Use for Multi-Family = 27.74 MG/year

Commercial (indoor)

75000	SF*	0.0992729 =	7445.4675 gpd
			* 365 days
			2717595.638 gallons/y
			/1,000,000
			2.72 MG/year

Industrial (indoor)

200000	SF*	0.1055277 =	21105.54 gpd
			* 365 days
			7703522.1 gallons/y
			/1,000,000
			7.70 MG/year

Office (indoor)

275000	SF*	0.0878462 =	24157.705 gpd
			* 365 days
			8817562.325 gallons/y
			/1,000,000
			8.82 MG/year

Hotel/Motel (indoor)

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 86.5

86.5	acre*	493.2 =	42661.8 gpd
			* 365 days
			15571557 gallons/y
			/1,000,000

15.57 MG/year

Total Annual Multi-Use = 62.55 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

-233574 SF* 0.076 = -17751.624 gpd
* 365 days
-6479342.76 gallons/y
/1,000,000
-6.48 MG/year

-44.7 acre* 493.2 = -22046.04 gpd
* 365 days
-8046804.6 gallons/y
/1,000,000
-8.05 MG/year

Total Water Use for Institution = -14.53 MG/year

Education/Schools

0 Students* 16 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
Total Water Use for Education/Schools = 0 MG/year

Church

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Church = 0 MG/year

Total Annual Institution = -14.53 MG/year

TURF

Turf = 1507 gpd/acre
Turf = 10 acres of City Park
0 acres of Open Space
0 acres of Other
0 acres of Golf Course
10 TOTAL ACRES

10 acre* 1507 = 15070 gpd
* 365 days
5500550 gallons/y
/1,000,000
5.50 MG/year

Total Tier 4 Annual Water Demand **112.16 MG/year**

TIER 5 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

489 units * 418 = 204401.9658 gpd

* 365 days

74606717.51 gallons/y

/1,000,000

74.61 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

727 units * 192.4 = 139874.8 gpd

* 365 days

51054302 gallons/y

/1,000,000

51.05 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 2%

Factor = 1.01

Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.11

Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.13

Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Commercial

332763 SF* 0.0992729 = 33034.34802 gpd

* 365 days

12057537.03 gallons/y

/1,000,000

12.06 MG/year

31.6 acre* 493.2 = 15585.12 gpd

* 365 days

5688568.8 gallons/y

/1,000,000

5.69 MG/year

Total Water Use for Commercial = 17.75 MG/year

Industrial

549781 SF* 0.1055277 = 58017.12443 gpd

* 365 days

21176250.42 gallons/y

/1,000,000

21.18 MG/year

55.3 acre* 493.2 = 27273.96 gpd

* 365 days

9954995.4 gallons/y

/1,000,000

9.95 MG/year

Total Water Use for Industrial = 31.13 MG/year

Office

553917 SF* 0.0878462 = 48659.50357 gpd

* 365 days

17760718.8 gallons/y

/1,000,000

17.76 MG/year

40.1 acre* 493.2 = 19777.32 gpd

* 365 days

7218721.8 gallons/y

/1,000,000

7.22 MG/year

Total Water Use for Office = 24.98 MG/year

Hotel/Motel

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = 73.86 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial =	98.29	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			2%
Factor =	1.01		
Commercial (indoor) =	0.099273	gpd/1000 sf	
Industrial =	95.07	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.11		
Industrial (indoor) =	0.105528	gpd/1000 sf	
Office =	77.74	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.13		
Office (indoor) =	0.087846	gpd/1000 sf	
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Multi-Family (indoor & outdoor)

295	units *	192.4 =	56758 gpd
			* 365 days
			20716670 gallons/y
			/1,000,000

Total Water Use for Multi-Family = 20.72 MG/year

Commercial (indoor)

503477	SF*	0.0992729 =	49981.62187 gpd
			* 365 days
			18243291.98 gallons/y
			/1,000,000
			18.24 MG/year

Industrial (indoor)

12671	SF*	0.1055277 =	1337.141487 gpd
			* 365 days
			488056.6426 gallons/y
			/1,000,000
			0.49 MG/year

Office (indoor)

106505	SF*	0.0878462 =	9356.059531 gpd
			* 365 days
			3414961.729 gallons/y
			/1,000,000
			3.41 MG/year

Hotel/Motel (indoor)

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 27.6

27.6	acre*	493.2 =	13612.32 gpd
			* 365 days
			4968496.8 gallons/y
			/1,000,000

		4.97 MG/year
Total Annual Multi-Use =		47.83 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

0	SF*	0.076 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
Total Water Use for Institution =			0 MG/year

Education/Schools

0	Students*	16 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
Total Water Use for Education/Schools =			0 MG/year

Church

0	SF*	0.076 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
Total Water Use for Church =			0 MG/year
Total Annual Institution =			0 MG/year

TURF

Turf = 1507 gpd/acre

Turf = 2.3	acres of City Park
31.9	acres of Open Space
0	acres of Other
0	acres of Golf Course
34.2	TOTAL ACRES

34.2	acre*	1507 =	51539.4 gpd
			* 365 days
			18811881 gallons/y
			/1,000,000
			18.81 MG/year

Total Tier 5 Annual Water Demand	**266.16 MG/year**

TIER 6 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

296 units * 418 = 123727.9793 gpd

* 365 days

45160712.44 gallons/y

/1,000,000

45.16 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

128 units * 192.4 = 24627.2 gpd

* 365 days

8988928 gallons/y

/1,000,000

8.99 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 2%

Factor = 1.01

Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.11

Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.13

Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Commercial

33807 SF* 0.0992729 = 3356.11893 gpd

* 365 days

1224983.41 gallons/y

/1,000,000

1.22 MG/year

-33.9 acre* 493.2 = -16719.48 gpd

* 365 days

-6102610.2 gallons/y

/1,000,000

-6.10 MG/year

Total Water Use for Commercial = -4.88 MG/year

Industrial

115073 SF* 0.1055277 = 12143.38902 gpd

* 365 days

4432336.993 gallons/y

/1,000,000

4.43 MG/year

-25.5 acre* 493.2 = -12576.6 gpd

* 365 days

-4590459 gallons/y

/1,000,000

-4.59 MG/year

Total Water Use for Industrial = -0.16 MG/year

Office

294305 SF* 0.0878462 = 25853.57589 gpd

* 365 days

9436555.2 gallons/y

/1,000,000

9.44 MG/year

10.4 acre* 493.2 = 5129.28 gpd

* 365 days

1872187.2 gallons/y

/1,000,000

1.87 MG/year

Total Water Use for Office = 11.31 MG/year

Hotel/Motel

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = 6.27 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial =	98.29	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			2%
Factor =	1.01		
Commercial (indoor) =	0.099273	gpd/1000 sf	
Industrial =	95.07	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.11		
Industrial (indoor) =	0.105528	gpd/1000 sf	
Office =	77.74	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.13		
Office (indoor) =	0.087846	gpd/1000 sf	
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Multi-Family (indoor & outdoor)

489	units *	192.4 =	94083.6 gpd
			* 365 days
			34340514 gallons/y
			/1,000,000
Total Water Use for Multi-Family =			34.34 MG/year

Commercial (indoor)

1264913	SF*	0.0992729 =	125571.5818 gpd
			* 365 days
			45833627.34 gallons/y
			/1,000,000
			45.83 MG/year

Industrial (indoor)

336172	SF*	0.1055277 =	35475.45796 gpd
			* 365 days
			12948542.16 gallons/y
			/1,000,000
			12.95 MG/year

Office (indoor)

82491	SF*	0.0878462 =	7246.520884 gpd
			* 365 days
			2644980.123 gallons/y
			/1,000,000
			2.64 MG/year

Hotel/Motel (indoor)

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 94.8

94.8	acre*	493.2 =	46755.36 gpd
			* 365 days
			17065706.4 gallons/y
			/1,000,000

17.07 MG/year

Total Annual Multi-Use = 112.83 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

-1356 SF* 0.076 = -103.056 gpd
* 365 days
-37615.44 gallons/y
/1,000,000
-0.04 MG/year

1.3 acre* 493.2 = 641.16 gpd
* 365 days
234023.4 gallons/y
/1,000,000
0.23 MG/year

Total Water Use for Institution = 0.20 MG/year

Education/Schools

0 Students* 16 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
Total Water Use for Education/Schools = 0 MG/year

Church

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Church = 0 MG/year

Total Annual Institution = 0.20 MG/year

TURF

Turf = 1507 gpd/acre
Turf =
0 acres of City Park
0 acres of Open Space
0 acres of Other
0 acres of Golf Course
0 TOTAL ACRES

0 acre* 1507 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Tier 6 Annual Water Demand **173.45 MG/year**

TIER 7 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

44	units *	418 =	18391.99692 gpd
		* 365 days	
			6713078.876 gallons/y
		/1,000,000	
			6.71 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

0	units *	192.4 =	0 gpd
		* 365 days	
			0 gallons/y
		/1,000,000	
			0 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial =	98.29 gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of		2%
Factor =	1.01	
Commercial (indoor) =	0.099273	gpd/1000 sf
Industrial =	95.07 gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of		5%
Factor =	1.11	
Industrial (indoor) =	0.105528	gpd/1000 sf
Office =	77.74 gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of		5%
Factor =	1.13	
Office (indoor) =	0.087846	gpd/1000 sf
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre		

Commercial

-145728	SF*	0.0992729 =	-14466.84117 gpd
		* 365 days	
			-5280397.027 gallons/y
		/1,000,000	
			-5.28 MG/year
-18.9	acre*	493.2 =	-9321.48 gpd
		* 365 days	
			-3402340.2 gallons/y
		/1,000,000	
			-3.40 MG/year

Total Water Use for Commercial = -8.68 MG/year

Industrial

44287	SF*	0.1055277 =	4673.50525 gpd
		* 365 days	
			1705829.416 gallons/y
		/1,000,000	
			1.71 MG/year
21.3	acre*	493.2 =	10505.16 gpd
		* 365 days	
			3834383.4 gallons/y
		/1,000,000	
			3.83 MG/year

Total Water Use for Industrial = 5.54 MG/year

Office

-86653	SF*	0.0878462 =	-7612.136769 gpd
		* 365 days	
			-2778429.921 gallons/y
		/1,000,000	
			-2.78 MG/year
-5.1	acre*	493.2 =	-2515.32 gpd
		* 365 days	
			-918091.8 gallons/y
		/1,000,000	
			-0.92 MG/year

Total Water Use for Office = -3.70 MG/year

Hotel/Motel

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year
0	acre*	493.2 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = -6.84 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial =	98.29	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			2%
Factor =	1.01		
Commercial (indoor) =	0.099273	gpd/1000 sf	
Industrial =	95.07	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.11		
Industrial (indoor) =	0.105528	gpd/1000 sf	
Office =	77.74	gpd/1000 sf + 493.2 gpd/acre	
Adjust for vacancy rate of			5%
Factor =	1.13		
Office (indoor) =	0.087846	gpd/1000 sf	
Hotel/Motel = 116 gpd/room + 493.2 gpd/acre			

Multi-Family (indoor & outdoor)

282	units *	192.4 =	54256.8 gpd
			* 365 days
			19803732 gallons/y
			/1,000,000
Total Water Use for Multi-Family =			19.80 MG/year

Commercial (indoor)

680216	SF*	0.0992729 =	67527.01495 gpd
			* 365 days
			24647360.46 gallons/y
			/1,000,000
			24.65 MG/year

Industrial (indoor)

111292	SF*	0.1055277 =	11744.38879 gpd
			* 365 days
			4286701.908 gallons/y
			/1,000,000
			4.29 MG/year

Office (indoor)

234015	SF*	0.0878462 =	20557.32849 gpd
			* 365 days
			7503424.9 gallons/y
			/1,000,000
			7.50 MG/year

Hotel/Motel (indoor)

0	Rooms*	116 =	0 gpd
			* 365 days
			0 gallons/y
			/1,000,000
			0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 86.3

86.3	acre*	493.2 =	42563.16 gpd
			* 365 days
			15535553.4 gallons/y
			/1,000,000

15.54 MG/year

Total Annual Multi-Use = 71.78 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Institution = 0 MG/year

Education/Schools

0 Students* 16 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
Total Water Use for Education/Schools = 0 MG/year

Church

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Church = 0 MG/year

Total Annual Institution = 0 MG/year

TURF

Turf = 1507 gpd/acre
Turf = 0 acres of City Park
0 acres of Open Space
0 acres of Other
0 acres of Golf Course
0 TOTAL ACRES

0 acre* 1507 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Tier 7 Annual Water Demand **71.65 MG/year**

TIER 8 - WATER DEMAND

SINGLE FAMILY

Average Demand Factor (gpd/unit) =317.4 gpd/unit + increase for new home: 31.695

169 units * 418 = 70641.98817 gpd

* 365 days

25784325.68 gallons/y

/1,000,000

25.78 MG/year

MULTI FAMILY

Average Demand Factor (gpd/unit) = 192.4 gpd/unit

0 units * 192.4 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

COMMERCIAL/INDUSTRIAL/OFFICE

Average demand factors =

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 2%

Factor = 1.01

Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.11

Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre

Adjust for vacancy rate of 5%

Factor = 1.13

Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Commercial

0 SF* 0.0992729 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

0 acre* 493.2 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

Total Water Use for Commercial = 0 MG/year

Industrial

0 SF* 0.1055277 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

0 acre* 493.2 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

Total Water Use for Industrial = 0 MG/year

Office

0 SF* 0.0878462 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

0 acre* 493.2 = 0 gpd

* 365 days

0 gallons/y

/1,000,000

0 MG/year

Total Water Use for Office = 0 MG/year

Hotel/Motel

0 Rooms* 116 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Hotel/Motel = 0 MG/year

Total Annual Commercial/Industrial/Office = 0 MG/year

MIXED USE

Average demand factors =
Multi-Family = 192.4 gpd/unit

Commercial = 98.29 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 2%
Factor = 1.01
Commercial (indoor) = 0.099273 gpd/1000 sf

Industrial = 95.07 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 5%
Factor = 1.11
Industrial (indoor) = 0.105528 gpd/1000 sf

Office = 77.74 gpd/1000 sf + 493.2 gpd/acre
Adjust for vacancy rate of 5%
Factor = 1.13
Office (indoor) = 0.087846 gpd/1000 sf

Hotel/Motel = 116 gpd/room + 493.2 gpd/acre

Multi-Family (indoor & outdoor)

0 units * 192.4 = 0 gpd
* 365 days
0 gallons/y
/1,000,000

Total Water Use for Multi-Family = 0 MG/year

Commercial (indoor)

0 SF* 0.0992729 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Industrial (indoor)

0 SF* 0.1055277 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Office (indoor)

0 SF* 0.0878462 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Hotel/Motel (indoor)

0 Rooms* 116 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Outdoor (commercial, industrial, office, hotel/motel)

Total Mixed Use Acreage = 0

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000

0 MG/year

Total Annual Multi-Use = 0 MG/year

INSTITUTION

Average demand factors =
Institution = 76 gpd/1000 sf + 493.2 gpd/acre
Education/Schools = 16 gpd/student
Church = 76 gpd/1000 sf + 493.2 gpd/acre

Institution

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Institution = 0 MG/year

Education/Schools

0 Students* 16 = 0 gpd
* 365 days
0 gallons/y
/1,000,000

Total Water Use for Education/Schools = 0 MG/year

Church

0 SF* 0.076 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

0 acre* 493.2 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Water Use for Church = 0 MG/year

Total Annual Institution = 0 MG/year

TURF

Turf = 1507 gpd/acre

Turf =
0 acres of City Park
0 acres of Open Space
0 acres of Other
0 acres of Golf Course
0 TOTAL ACRES

0 acre* 1507 = 0 gpd
* 365 days
0 gallons/y
/1,000,000
0 MG/year

Total Tier 8 Annual Water Demand **25.78 MG/year**

APPENDIX C

CITY OF PETALUMA
URBAN WATER MANAGEMENT PLAN

WATER SHORTAGE CONTINGENCY PLAN

CITY OF PETALUMA

DRAFT

URBAN WATER SHORTAGE CONTINGENCY PLAN

2006 UPDATE

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CITY OF PETALUMA

URBAN WATER SHORTAGE CONTINGENCY PLAN - 2006 UPDATE

Section 1: Introduction

The City of Petaluma Shortage Contingency Plan (Plan) was first adopted in March 1996. The Plan was a component of the regional Urban Water Management Plan 2000, which was prepared by the Sonoma County Water Agency (SCWA). The Plan was first adopted in response to emergency legislation, California Assembly Bill 11X. Legislation has changed the requirements of water shortage contingency planning several times since the initial bill. Current requirements are in Section 10632 of the California Water Code, the Urban Water Management Planning Act, which is provided as Appendix 3 to this document.

Modifications to the Urban Water Shortage Contingency Plan from the previous version of the Plan include the modification to the stages of action in response to water supply shortages and actions to be taken in the event of a catastrophic interruption of water supplies. Estimates on the minimum water supply amounts are included in Section 3. An analysis of impacts on revenues and expenditures is described in Section 6.

The Water Shortage Action Plan in Appendix 1 describes actions at each stage of shortage. The Plan includes current water shortage emergency regulations that are located in Chapter 15, Section 18 of the City's Municipal Code and the Water Waste Ordinance that are documented in Section 15.12 of the Municipal Code. The current regulations are shown in Appendix 4. These regulations will be strictly enforced in event of a water shortage. The Water Shortage Contingency Plan builds upon the regulations specified in the Municipal Code.

Petaluma's Urban Water Shortage Contingency Plan addresses demand reduction strategies for the Petaluma distribution system. Trigger points on the Russian River system, which in turn trigger Petaluma's program, are determined by SCWA.

Section 2: City of Petaluma Water Supply

The City of Petaluma provides water to 18,869 connections, with an annual total demand in 2004 of 10,389 acre-feet (AF). The City's source of water supply is SCWA. Petaluma's demand constituted approximately 16% of SCWA's total production in 2004/2005.

Petaluma has historically received most of its potable water supply from the SCWA aqueduct system, which delivers water from the Russian River and from groundwater wells in the Santa Rosa Plain. Under a master agreement Petaluma holds an entitlement to 21.8 million gallons per day, peak month average, with an annual volume limit of 13,400 AF. The City has also historically used groundwater wells to supplement peak demand.

In December 1999, SCWA declared a state of impairment on their delivery system caused by delayed completion of critical pumping and conveyance facilities. The delay has been brought on by Endangered Species Act requirements and litigation. SCWA asked all water contractors and other customers to sign a Memorandum of Understanding (MOU) that defines certain operating agreements during this impairment condition. This MOU was executed in February 2001. The original MOU expired on September, 2005 and was replaced by an amended MOU in July 2006. The City of Petaluma's ADMM allotment is 17.1 mgd. The new temporary impairment MOU will expire on September 30, 2008.

Petaluma has never formally activated the Plan. There has not been a drought-based reduction in delivery from SCWA to the City of Petaluma since 1976-77. However, due to dry conditions on both the Russian River system and throughout the State, Petaluma adopted voluntary demand reduction resolutions in 1988 and 1991; because of the SCWA impairment condition, the City again adopted a voluntary demand reduction resolution in 2000.

Section 3: Past, Current and Projected Demand

Petaluma is a community with a water service area population of 57,050 in Year 2004. Of the approximately 18,835 potable water connections, 68% was service residential demand while 32% was service non-residential demand. Utility customers are segregated into the following large customer classes: single-family residential, multi-family residential, commercial/ industrial/office, institution, and irrigated land/parks/open space. The multi-family residential class can be further divided into number of living units. Commercial customers can be separated into the following subcategories: heavy commercial, mixed use, shopping center, and strip commercial. Office customers include mixed use and office categories. Industrial customers include the following subcategories: heavy industrial, light industrial, and warehouses. The institution category can be separated into the following subcategories: churches, education, and institutions. Turf customers can be subcategorized into parks, golf courses, institutions, and open space.

Analysis of historic dry year conditions in the "Sonoma County Water Agency Urban Water Management Plan 2000" indicates that no supply curtailment would result to Petaluma if the hydrologic conditions of the driest three-year historic sequence (1990-1992) occurred today. The following table summarizes highest historical water use and projected demand by customer class for the next three years. Actual purchase of water would be higher than demand due to normal unaccounted for water losses.

TABLE C-1 - CUSTOMER CLASS, HIGHEST YEAR DEMAND, AND ESTIMATED DEMAND

Customer Class	Number of Connections 2004 [1]	Highest Demand (AF/Y) 2004 [1]	Estimated Demand (AF/Y) 2005 [2]	Estimated Demand (AF/Y) 2006 [2]	Estimated Demand (AF/Y) 2007 [2]
Single-Family Residential	16,845	5,922	6,313	6,414	6,515
Multi-Family Residential	305	935	992	1,051	1,111
Commercial/Industrial/ Office (CIO)	1,439	2,701	1,920	1,989	2,058
Institution	279	775	577	595	613
Irrigation	Included above	Included above	981	997	1,012
Coast Guard	1	56	141 [3]	154 [3]	168 [3]
Total	**18,869**	**10,389**	**10,924**	**11,200**	**11,477**

[1] 2004 data based on City records
[2] 2005, 2005, 2006 data estimated from Water Demand and Supply Analysis Report
[3] Represents Coast Guard potable water demand
[4] Demand data does not include adjustments for the effect of the plumbing code or for lost water.

3.1 – Estimated Minimum Water Supply for the Next Three Years

The City has one primary source of potable water supply, the SCWA, with City groundwater as an emergency backup supply. The estimated minimum water supply for the next three years assumes a multiple dry year condition based on the driest three-year historic sequence (1990 to 1992). As indicated in the SCWA UWMP 2000, no supply curtailment would result to Petaluma if the hydrologic conditions of the driest three-year historic sequence occurred today. Table C-2 presents the estimated minimum water supply for the next three years. Recycled water and water

conservation are planned offset water sources. These offset sources will not be impacted by drought conditions.

TABLE C-2 – ESTIMATED MINIMUM WATER SUPPLY FOR THE NEXT THREE YEARS

Supply Source	Projected Minimum Water Supply, Acre-Feet		
	2006	2007	2008
SCWA supply [1]	13,400	13,400	13,400
Groundwater from City-owned wells (supply)	0	0	0
Recycled water (potable offset)	425	425	425
Water conservation (potable offset)	0	0	222
Total projected water supply	13,825	13,825	14,047
Total projected water demand	12,080 [2]	12,360 [2]	12,834 [2]
Projected supply shortfall	0%	0%	0%

[1] Assumes no supply curtailment based on information provided in the SCWA 2000 UWMP.
[2] Includes lost water and adjustment for effect of plumbing code.

As shown, the estimated minimum water supply is sufficient to meet the projected water demands and no supply shortfall is projected.

Section 4: Drought/Emergency Planning Actions

In addition to responding to drought conditions, the City's Water Shortage Contingency Plan can be used to respond to emergency conditions that interrupt water supplies to the City. Water supplies may be interrupted in the future due to water supply contamination, major transmission pipeline break, regional power outage, or a natural disaster such as an earthquake. In the event of an emergency, the Utilities Department would respond as outlined in the current City of Petaluma's Water System Emergency Response Plan. Actions that the City would take if these emergencies occurred today are outlined below.

4.1 No Water Available From SCWA

In the event that SCWA's Russian River supply becomes contaminated (i.e. due to a chemical spill or other environmental incident), it may be possible that no water would be available from SCWA for a period of time. In such a case, the City would need to rely on water from system storage facilities and emergency wells. Storage facilities available to provide water in an emergency event include both those in the City's distribution system and SCWA's distribution system. The City has 13.0 MG in total storage. Of the 13.0 MG, it is assumed that two thirds of the total volume, or 8.67 MG, will be available in the tanks at any given time. Of the 8.67 MG available, 1.0 MG is designated to remain in storage for fire protection. In addition to the 7.67 MG available within the City's distribution system, another 12.0 MG stored within the SCWA distribution system is allotted to the City in an emergency situation. In addition to the total storage capacity of 19.67 MG from the combined storage facilities, the City can produce an additional 3.7 mgd by utilizing their emergency wells. Based on the minimum month average usage in Year 2005 of 5.4 mgd, which was used to represent the City's minimum health and safety requirement, the City would run out of water in 11.6 days. The City plans to connect their three newest wells under future capital improvement programs, which will increase their emergency well capacity to approximately 5.0 mgd. This would allow the City to operate for more than a month without any SCWA water.

If such an event were to occur, the City would need to implement one or more stages of the Water Shortage Contingency Plan to notify customers of the need to reduce water use and use the emergency wells until the SCWA water supply could be restored.

4.2 Area-Wide Electrical Power Failure

If an area-wide electrical power failure were to occur within the City's water service area, many of the City's pumping facilities could potentially be impacted. Uninterruptible power supplies are used at the Central Control and at each of the field sites to power the radio, the RTRU, and 24 V DC to field instruments for the SCADA system. The battery is designed for approximately eight (8) hours, which should be sufficient time to return power or connect to a standby generator. At certain sites, the battery may last for as long as two days due to low PLC and radio loads. Three portable 125 kW generators are available. This has been sufficient in the past to cover outages.

SCWA's facilities may also be vulnerable to power outages; however, most of the SCWA facilities which serve the City have backup power provisions.

4.3 Earthquake

Water system infrastructure, including pump stations, storage tanks, and pipelines, can be damaged during a strong earthquake. The City's facilities have been constructed in accordance with the applicable building codes to minimize potential damage during an earthquake. Major reconstruction of existing facilities must also be designed to meet the provisions of the Uniform Building Code for Seismic Zone 4. However, it is expected that some facilities may be damaged as the result of a strong earthquake. A seismic evaluation of the City's reservoirs was completed in August 2005 to identify improvements required at each reservoir site. Additionally, the City has planned for this potential outage scenario by constructing system redundancy into its water system. The City has multiple storage facilities and looped distribution pipelines, to allow potentially damaged portions of the City's system to be quickly isolated and repaired.

Section 5: Stages of Action for Demand Reduction up to 50%

Demand reduction strategies will be employed at all stages of a water shortage emergency. This Section includes details of Rationing Stages, Reduction Goals, Consumption Limits, Prohibitions on Water Use, and Water Shortage Rate Structure. The entire strategy for demand reduction is summarized in Appendix 1, the Water Shortage Action Plan table.

5.1 Rationing Stages

The City has determined the following rationing stages for response to reduced supply in a water shortage emergency:

TABLE C-3 - RATIONING STAGES AND REDUCTION GOALS

Supply Shortage	Rationing Stage	Overall Demand Reduction Goal	Program Type
Up to 15%	Stage 1 – Minimal	15%	Voluntary
15% - 25%	Stage 2 – Moderate	25%	Mandatory
25% - 35%	Stage 3 – Severe	35%	Mandatory
35% - 50+%	Stage 4 – Critical	50+%	Mandatory

5.2 Demand Reduction Goals

Overall demand reduction will be achieved with different reduction goals in each user class. The following priorities have been established for use in developing demand reduction programs and allocations during a water shortage emergency. Priorities for use of available water, from highest to lowest priority, are:

- Health and Safety

- Commercial, Industrial and Governmental
- Existing Landscaping - especially trees and shrubs
- New Demand - projects without permits when shortage is declared

With these guidelines in mind, overall reduction goals by customer class for Stages 2 through 4 of the water shortage emergency is detailed in Table C-4. Reduction goals for residential customers are based on per capita water allocation. For irrigation water services, the allocation is based on change in irrigation practices. For the commercial, industrial, office, institutional, healthcare, and public safety customers, prior year demand is the basis for calculating demand reduction.

TABLE C-4 - HIGHEST YEAR DEMAND AND REDUCTION GOALS BY CUSTOMER CLASS

	Highest Year (2004)	Stage 2		Stage 3		Stage 4	
Customer Class	Annual Demand (Ac-Ft/Yr)	% Reduction	Annual Allocation	% Reduction	Annual Allocation	% Reduction	Annual Allocation
Single-Family Residential	5,922	29%	4,205	41%	3,494	58%	2,487
Multi-Family Residential	935	2%	916	14%	804	23%	720
Commercial/ Industrial/ Office	1,916 [1]	15%	1629	20%	1,533	30%	1,341
Institution	532	15%	452	20%	426	30%	372
Irrigation	979 [1]	48%	470	60%	392	79%	206
Health Care Facilities/ Public Safety	105 [1]	5%	100	10%	95	15%	90
Total	**10,389**	**25%**	**7,772**	**35%**	**6,744**	**50%**	**5,216**

[1] Data was modified from Table C-1 to distribute C/I/O and institution accounts to irrigation accounts where appropriate. In addition, Coast Guard water use was placed under the institution customer class. In addition, a customer classification for healthcare and public safety was created out of the institution customer class.

5.3 Consumption Limits:

To achieve the overall reduction goals, a community-wide goal is assigned in Stage 1, and allocations are determined for each customer within a customer class for Stages 2 through 4. The Water Waste Ordinance will be enforced more stringently during these Stages of Action. Details of reduction strategies for each customer class at each reduction stage are as follows:

Stage 1 is a voluntary program with 15% overall reduction:

- Community-wide reduction is the goal; encourage water conservation; start public information campaign; encourage night time irrigation; encourage use of commercial car washes; distribution of water saving kits; elimination of all water waste through the water waste ordinance; minimization of nonessential use; "water-on-request" restaurant program.
- Enforce Water Waste Ordinance.

Stage 2 is a mandatory program with 25% overall reduction: Allocations are developed for each water service:

- Community-wide reduction is the goal; hold training sessions for City employees who will enforce the regulations; and continue with public information campaign.
- Single-family customers receive 65 gallons per capita day (gpcd) plus a moderate landscape allotment of 2,500 gallons per month from May through October.

- Multi-family customers receive 65 gpcd plus a moderate landscape allotment if irrigation usage is not on a separate dedicated service.
- Commercial/Industrial/ Office and institution customers receive 85% of previous 12 months' usage or of the most recent 12-month period with no water shortage restrictions in place. Exemptions may be granted to preserve jobs.
- Irrigation customers receive a water budget based on the 80% of historical net evapotranspiration based demand for the square footage of the irrigated area.
- Health care and public safety customers receive 95% of previous 12 months' usage or of the most recent 12-month period with no water shortage restrictions in place.

Stage 3 is a mandatory program with 35% overall reduction. Allocations are developed for each water service:

- Community-wide reduction is the goal and continue with public information campaign.
- Single-family customers receive 57 gpcd plus a minimal landscape allotment of 2,000 gallons per month from May through October.
- Multi-family customers receive 57 gpcd plus a minimal landscape allotment if irrigation usage is not on a separate dedicated service.
- Commercial/Industrial/Office and institution customers receive 80% of previous 12 months' usage or of the most recent 12-month period with no water shortage restrictions in place.
- Irrigation customers receive a water budget based on the 50% of historical net evapotranspiration based demand for the square footage of the irrigated area.
- Health care and public safety customer receives 90% of previous 12 months' usage or of the most recent 12-month period with no water shortage restrictions in place.

Stage 4 is a mandatory program with 50% overall reduction. Allocations are developed for each water service:

- Enact Council resolution "Water Shortage Emergency Regulations"
- Single and multi-family customers receive 50 gpcd with no landscape allotment.
- Commercial/Industrial/ Office and institution customers receive 70% of previous 12 months' usage or of the most recent 12-month period with no water shortage restrictions in place.
- Irrigation customers receive allotment only for mature trees and shrubs.
- Health care and public safety customers receive 85% of previous 12 months' usage or of the most recent 12-month period with no water shortage restrictions in place.

5.4 Prohibitions on Water Use:

Petaluma adopted a Water Waste Ordinance in 2001 which prohibits the following:

- Non-essential uses such as washing of hardscape, excessive irrigation, washing of vehicles or machinery without a shutoff nozzle, water for single pass evaporative cooling systems for air conditioning, and water for non-recycling decorative water fountains, new non-recalculating car washes, and non-recalculating industrial clothes wash systems
- Leaks that are detected yet unrepaired
- New non-covered swimming pools

The Ordinance states that water service will be discontinued for continued violation once notification has been made. It also sets standards for pressure regulation and plumbing fixtures. Landscape standards and irrigation plan checks are also enforced.

In addition to the prohibitions outlined in the Water Waste Ordinance, the following program of prohibited use is established for the Water Shortage Emergency condition:

Stage 1

- Hose-end shut-off nozzles required on all garden and utility hoses
- Water served in restaurants on request only

Stage 2 - All prohibitions established in previous stage plus:

- Irrigation limited to the hours of 8:00 pm to 6:00 am
- Operating ornamental fountains prohibited
- Filling new swimming pools prohibited
- Reclaimed water must be used for construction dust control

Stage 3 - All prohibitions established in previous stage plus:

- No water using landscape installation in new construction
- New construction must offset new demand by conserving two times the new demand within the community
- Filling or topping-off of existing swimming pools prohibited

Stage 4 - All prohibitions established in previous stage plus:

- No water using landscape installation
- New construction must offset new demand by conserving three times the new demand within the community
- Use of water for irrigation of outdoor vegetation except for hand watering

A customer will be found in violation of a prohibited use if the use continues after two official City written notifications. Remedies for violation of these prohibited actions are included in Section 5.6.

5.5 Water Shortage Rate Structure

Petaluma's current rate structure consists of a fixed bi-monthly service charge, based on meter size, and a variable, consumption-based commodity charge for water consumed per billing period. All water use is metered, and bills are calculated and sent on a bi-monthly basis. The water commodity charge is "tiered", meaning the commodity charge increases stepwise as consumption increases. Tiered rates are used to increase the incentive to conserve water.

There is currently no water shortage rate structure included in the City's rates. The rate structure is, by its very nature, designed to encourage conservation through the use of a high water commodity charge and a low fixed service charge. The tiering of the water commodity charge encourages further conservation.

5.6 Violations of Water Use Restrictions and Repeated Excess Use

Any customer who exceeds the established allotment three consecutive months, or exceeds the established allotment six months within a twelve-month period, or violates one or more prohibited uses, may, at the discretion of the City of Petaluma, be subject to any of the following actions:

- At the customer's expense, undergo a complete site water audit and install certain water efficient fixtures
- Installation of a flow reducing device at the water meter
- Disconnection of water service and payment of a designated fee for reconnection of the water service

5.7 Variance Procedures

This Plan is designed to place the responsibility for managing our water resource during a water shortage emergency on the entire community. Care has been taken in the design of the Plan not to penalize any customer who has undertaken conservation measures in the past for having saved water on an ongoing basis. Furthermore, any customer meeting water use reduction goals by limiting water use to defined allocations will be able to avoid paying Excess Use Charges.

Any customer who feels their established allotment is unfair may apply to the City for a reassessment. Variances will be granted, on a case-by-case basis, at the discretion of the City of Petaluma. The following conditions are among those that may be given consideration in the variance process:

- Water uses that support public health and safety,
- Non-residential water customers (whose allotment is based on previous consumption) who can demonstrate that water efficient hardware and conservation practices were in place prior to the water shortage emergency, and
- Water used for mature trees for which an inadequate allocation has been made.

Section 6: Analysis of Revenue and Expenditure Impacts

Table C-5 details the Petaluma Water Utility's projected annual revenue and expenditure status (based on 2006) in non-shortage conditions and at each stage in the water shortage program. Because the City collects a very high proportion (approximately 90%) of its water operating revenues from the water commodity charge, it can expect to see significantly reduced revenues in times of water conservation. The lack of a water shortage surcharge means that the City would not be collecting any additional revenues to compensate for the reduction in water sales.

This lost revenue will be offset somewhat, but not completely, by reduced purchases of water from the SCWA. However the average retail rate for all water sold in the City (approximately $2.15 to $2.20) is higher than the cost of purchasing water (currently $464.33 per AF, or approximately $1.06 per hcf) so this would only offset approximately half of the lost revenue from reduced water sales.

TABLE C-5 - IMPACT OF WATER SHORTAGE ON REVENUES AND EXPENDITURES (2005)

	Normal	Stage 1 15%	Stage 2 25%	Stage 3 35%	Stage 4 50%
Revenues					
Charges for Services[1]	$909,000	$909,000	$909,000	$ 909,000	$909,000
Charges for Sales[2]	$8,551,000	$7,268,000	$6,413,000	$5,558,000	$4,276,000
Other Revenues[3]	$250,000	$250,000	$250,000	$250,000	$250,000
Total	**$9,710,000**	**$8,427,000**	**$7,572,000**	**$6,717,000**	**$5,435,000**
Expenditures					
Cost of Services	$3,024,000	$3,024,000	$3,024,000	$3,024,000	$3,024,000
Cost of Sales[4]	$4,332,000	$3,552,000	$3,032,000	$2,512,000	$1,732,000
Other Expenditures[5]	$1,706,000	$1,706,000	$1,706,000	$1,706,000	$1,706,000
Total	**$9,062,000**	**$8,282,000**	**$7,762,000**	**$7,242,000**	**$6,462,000**
Net Income / (Loss)	**$648,000**	**$145,000**	**$(190,000)**	**$(525,000)**	**$(1,027,000)**

Notes:
[1] Fixed bi-monthly meter charge
[2] Variable consumption charge
[3] Interest and misc. revenues; does not include connection fees
[4] Water purchases from SCWA; reduced from estimated 2006 demand of 11,200 AF/Y, at $464.33 per AF
[5] Intergovernmental transfers

Table C-6 summarizes the water bill for low, average, and high water users during Stages 1 through 4 of water rationing.

TABLE C-6 - SINGLE FAMILY WATER BILLS DURING STAGES OF RATIONING

Monthly Usage		Meter Charge	Total Bill Normal	Stage 1 15%	Stage 2 25%	Stage3 35%	Stage4 50%
Low Use	8 hcf	$7.58	$42.14	$36.96	$33.50	$30.04	$24.86
Average Use	12 hcf	$7.58	$60.26	$53.15	$46.46	$41.28	$33.50
High Use	18 hcf	$7.58	$88.70	$76.85	$67.37	$60.26	$46.46

Section 7: Implementation of the Plan

At the time of a water shortage emergency, the Petaluma City Council will adopt a Water Shortage Resolution. A draft Water Shortage Emergency Resolution is found in Appendix 2. A Water Shortage Emergency Ordinance will also be adopted for Stages 2 through 4.

In the event that a Water Shortage Emergency occurs and the City Council cannot assemble to adopt the Water Shortage Resolution, the Director of the Water Resources and Conservation Department is authorized to implement the appropriate stage, based on the reduction in water supply, of the Urban Water Shortage Contingency Plan. The Director of the Water Resources and Conservation Department determination to implement the Urban Water Shortage Contingency Plan shall remain effective until the City Council meeting immediately following such determination, at which time the City Council will adopt the Water Shortage Resolution.

Section 8: Monitoring Procedures

Stage 1 - Monthly delivery records from SCWA meters and from local groundwater sources, if in use, will be reported to the Director of the Water Resources and Conservation Department or the Director's designee. If overall reduction goals are not met, more aggressive measures can be implemented.

Stage 2 through 4 - Weekly delivery figures from SCWA meters and local groundwater sources, if in use, and monthly consumption data from utility billing will be reported to the Director of the Water Resources and Conservation Department or the Director's designee. If reduction goals are not met, the Director will notify the City Council and more aggressive action will be taken.

Section 9: Public Noticing and Adoption

The City prepared the first Water Shortage Contingency Plan in 1996. This 2006 revision was updated as part of the adoption of the City's 2005 Urban Water Management Plan. The City Council adopted the plan on May 7, 2007 as part of the adoption of the City's 2005 Urban Water Management Plan.

APPENDIX 1

CITY OF PETALUMA - WATER SHORTAGE ACTION PLAN 2006

Stage	Utility Department Actions	Customer Actions	Comments
Stage I - Minimal: 15 percent overall reduction	1) Adopt resolution: – Requesting voluntary water conservation with non-allotment based cut-back goals for all user classes. – Prohibiting water waste and reducing all non-essential per Water Waste Ordinance. 2) Initiate public information campaign: – Prepare and disseminate educational brochures, bill inserts, etc. – Disseminate technical information to specific customer types. – Set up public information booths urging water conservation and showing ways the public can save water. – Coordinate media outreach program; issue news releases to the media. – Explain other stages and forecast future actions. 3) Increase agency support: – Add temporary position to staff phone lines. – Initiate patrol for water waste violations and customer audits. 4) Prepare for future stages: – Develop computer capability to initiate rationing stages. – Gather census information from residential sector for per capita allotments	1) Implement voluntary water use reductions. 2) Adhere to water shortage resolution. 3) Become aware of possible further restriction.	1) Voluntary program, community-wide reduction goals. 2) Strong public information campaign. 3) Emphasis on elimination of waste and increased awareness. 4) Hose-end shut-off nozzles required on all garden and utility hoses. 5) Hosing off hard surfaces prohibited. 6) A "Water-on-request" restaurant program. 7) Encourage use of commercial car washes and night time irrigation

Stage	Utility Department Actions	Customer Actions	Comments
Stage II - Moderate: 25 percent overall reduction	In addition to Stage I: 1) Adopt rationing ordinance: – Assigning allotment to each water service: residential based on per capita allotment plus landscape; irrigation only based on ET_o water budget; non-residential based on reduction from previous consumption. – Implement Water Shortage Charge (WSC) – Expanding prohibited uses and developing penalty structure for waste violations. – Defining criteria and administrative procedures for variances. 2) Intensify public info campaign: – Notify each service of allotment goals. – Make site surveys available to all customers 3) Increase agency support: – Establish Shortage Response Center – Appoint variance officer and administer variance program for all user classes. – Increase patrol/audit support. 4) Train City employees who will enforce regulations.	1) Adhere to allotment for 25 percent overall reduction: – Single-Family - 65 gpcd, plus landscape allotment of 2,500 gallons per month May-Oct. – Multi-Family - 65 gpcd, plus moderate landscape allotment – Commercial/ Industrial/Office/ Institution: 85 % of previous 12 months usage (15% reduction) – Irrigation - 80% of ET based water budget – Health Care Facilities - 95% of previous 12 months usage (5% reduction) 2) Request variance where required. 3) Eliminate all prohibited uses.	1) Mandatory program with allotments for each service; residential with moderate landscape allotments. 2) Close tracking and feedback to community. 3) Restricted uses include: – Irrigation limited to the hours between 8pm to 6am. – Operation of ornamental fountains prohibited. – Filling new swimming pools prohibited. – Reclaimed water must be used for construction dust control.

Stage	Utility Department Actions	Customer Actions	Comments
Stage III - Severe: 35 percent overall reduction	In addition to Stage II: 1) Intensify ordinance requirements: – Prohibit installation of landscapes in new construction. – Require new construction to offset two times the new demand through upgrades to existing homes and businesses (toilet replacements, etc.). – Implement excess use charge (EUC) in addition to WSC. 2) Intensify public information campaign: – Promote participation in new construction offset program. 3) Staffing: – Expand Shortage Response Center and patrol/audit effort.	In addition to Stage II: 1) Adhere to allotment for 35 percent overall reduction: – Single-Family - 57 gpcd, plus landscape allotment of 2,000 gallons per month May-Oct. – Multi-Family - 57 gpcd, plus minimal landscape allotment – Commercial/ Industrial/Office/ Institution - 80 % of previous 12 months usage (20% reduction) – Irrigation - 50% of ET based budget – Health Care Facilities - 90% of previous 12 months usage (10% reduction) 2) Request variance when required. 3) Eliminate all prohibited uses.	1) Mandatory program with minimal landscape allotments. 2) Prohibit uses from Stage II plus: – Filling or topping off existing swimming pools is prohibited.

Stage	Utility Department Actions	Customer Actions	Comments
Stage IV - Critical: 50 percent overall reduction	In addition to Stage III: 1) Intensify ordinance requirements: – Prohibit installation or replanting of any landscaping. – Allowing residential use of grey water if State allows. – Require new construction to offset three times the new demand through upgrades to existing homes and businesses; toilet replacement, etc. – Continue WSC and EUC. – Enforce the "Water Shortage Emergency Regulations" as specified in Chapter 15.18 of the Municipal Code and train City employees to enforce the regulations. 2) Intensify public information campaign: – Develop demonstrations of grey water use. 3) Expand Drought Response Center and patrol/audit effort.	1) Adhere to allotment for 50 percent overall reduction: – Single-Family - 50 gpcd, no landscape allotment – Multi-Family - 50 gpcd, no landscape allotment – Commercial/ Industrial/Office/ Institution - 70% of previous 12 months usage (30% reduction) – Irrigation - minimal allotment – for mature trees and shrubs only – Health Care Facilities - 85% of previous 12 months usage (15% reduction) 2) Request variance where required. 3) Eliminate all prohibited uses.	1) Severe penalties for excess usage. 2) Hand watering allowed for outdoor vegetation only.

APPENDIX 2

DRAFT WATER SHORTAGE EMERGENCY RESOLUTION

RESOLUTION OF THE PETALUMA CITY COUNCIL DECLARING A WATER SHORTAGE EMERGENCY.

WHEREAS, the City of Petaluma is a City empowered to provide water service within certain boundaries; and

WHEREAS, due to (current condition – drought, contamination, etc.), water supply conditions indicate that a ____% reduction in demand is required to ensure adequate supply in 20__; and

WHEREAS, the Sonoma County Water Agency has reduced delivery to the City and all prime contractors by ____%; and

WHEREAS, the City of Petaluma has the authority and responsibility to adopt water demand reduction measures within its area of service; and

NOW, THEREFORE, IT IS RESOLVED that the City Council declares that under the current water shortage conditions a Water Shortage Emergency exists within the area served by the City water system.

BE IT FURTHER RESOLVED BY THE CITY COUNCIL OF THE CITY OF PETALUMA AS FOLLOWS:

1. The above recitals are true and correct and hereby declared to be finding of the City Council of the City of Petaluma.

2. The City Council directs the City Manager to implement a program of demand management as defined in the Petaluma Urban Water Shortage Contingency Plan to realize City-wide water use reduction of ___%.

3. This resolution shall become effective immediately.

4. All portions of this Resolution are severable. Should any individual component of this Resolution be adjudged to be invalid and unenforceable by a body of competent jurisdiction, then the remaining Resolution portions shall be and continue in full force and effect, except as to those Resolution portions that have been adjudged invalid. The City Council of the City of Petaluma hereby declares that it would have adopted this Resolution and each section, subsection, clause, sentence, phrase, and other portion, hereof, irrespective of the fact that one or more section, subsection, clause sentence, phrase or other portion may be held invalid or unconstitutional.

DULY AND REGULARLY ADOPTED this _____ day of _____, 20___

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
Chairman

_____
Recording Secretary

APPENDIX 3

URBAN WATER MANAGEMENT PLANNING WATER SHORTAGE CONTINGENCY ANALYSIS

CALIFORNIA WATER CODE SECTION 10632

10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

APPENDIX 4

CITY OF PETALUMA
WATER SHORTAGE CONTINGENCY PLAN

CITY OF PETALUMA MUNICIPAL CODE

SECTION 15.12: WATER SERVICES SUPPLIED BY CITY (INCLUDES WATER WASTE ORDINANCE)

SECTION 15.18: WATER SHORTAGE EMERGENCY REGULATIONS

CHAPTER 15.12
WATER SERVICES SUPPLIED BY CITY

15.12.010 Territory served by city.

The territory served by the city shall be all territory within the boundaries of the city now or at any time hereafter served by the water system, and, at the discretion of the council, any other territory outside the boundaries of the city in which the city at the time has water distribution pipelines. (Ord. 544 NCS §2: prior code §27.10.)

15.12.020 Extent of city's responsibility.

The city shall not be responsible for the installation or maintenance of any water lines beyond the end of its service connection or meter.

The city will not be responsible for any loss or damage caused by any negligence or unlawful act of any consumer or any other person in installing, maintaining, supplying or using any appliances, facilities or equipment for which water or water service is furnished by the city. Each consumer shall be held responsible for damage to the city's meters and other property comprising any part of the water system resulting from use or operation of any appliances or facilities on such consumer's premises, including, without limiting the generality of the foregoing, damage caused by steam, hot water or chemicals. (Ord. 544 NCS § 11: prior code §27.23.)

15.12.030 Tampering with property of water department.

A. It is a violation of this article for any person to tamper with any of the property comprising the water system.
B. Charges and penalties may be imposed for any tampering or damage to water system property.
(Ord. 1940 NCS §2 (part), 1993: Ord. 544 NCS §11: prior code §27.24.)

15.12.040 Separate premises under single control.

Separate premises under single control or management shall be furnished water through separate individual service connections unless the city elects otherwise. Separate houses, buildings, living or business quarters on the same lot, piece or parcel of land or on adjoining lots, pieces or parcels of land, under a single control or management shall be furnished water, at the option of the consumer exercising such control or management, by either of the following methods:

A. Through separate service connections to each such house, building, or living or business quarter; or
B. Through a single service connection to supply all of such houses, buildings and living and business quarters, in which case only one monthly minimum charge shall be applied and the responsibility for payment of charges for all water furnished shall be assumed by the consumer having such control or management.

(Ord. 544 NCS §3: prior code §27.25.)

15.12.050 Resale of water.

Except by special agreement with the city no consumer shall resell any water furnished by the city through the water system. (Ord. 544 NCS §3: prior code §27.26.)

15.12.060 Discontinuance of service — Notice.

A. Any consumer's water service may be discontinued for nonpayment of a bill for water service furnished if the bill is not paid within thirty days after the billing date.
B. A consumer's water service may also be discontinued for nonpayment of a bill for water service furnished at a previous or different location served by the city, if such bill is not paid within forty-five days after the billing date at the new location.
C. No service will be discontinued under this section until at least ten days after a delinquent notice is mailed to such consumer and stating the city's intention to discontinue service. The consumer may be charged for such delinquent notice. Such charges shall be set according to Chapter 15.16.

(Ord. 1940 NCS §2 (part), 1993: Ord. 544 NCS §8: prior code §27.27.)

15.12.070 Discontinuance under certain conditions without notice.

The city may refuse to furnish water and may discontinue service without notice to any premises where apparatus, appliances or equipment using water is found by the manager to be dangerous or unsafe or where the use of water on such premises is found by the manager to be detrimental or injurious to the water service furnished by the city to other consumers, or where the manager finds that negligent or wasteful use of water exists on any premises which affects the city's water service. The city shall have the right to refuse or discontinue water service to any premises if necessary to protect itself against fraud or abuse. (Ord. 544 NCS §8: prior code §27.28.)

15.12.071 Nonessential uses defined.

No customer of the city shall use or permit the use of potable water from the city for residential, commercial, institutional, industrial, agricultural, or other purpose for the following nonessential uses:

A. The washing of sidewalks, walkways, driveways, parking lots and other hard-surfaced areas by direct hosing not equipped with a shutoff nozzle, except as may be necessary to properly dispose of flammable or other dangerous

liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety;

B. The escape of water through breaks or leaks within the customer's plumbing or private distribution system for any substantial period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of seventy-two hours after the consumer discovers such a break or leak or receives notice from the city, is a reasonable time within which to correct such break or leak or, as a minimum, to stop the flow of water from such break or leak;

C. Irrigation in a manner or to the extent that allows excessive runoff of water or unreasonable over-spray of the areas being treated. Every customer is deemed to have his/her water system under control at all times, to know the manner and extent of his/her water use and any runoff, and to employ available alternatives to apply irrigation water in a reasonably efficient manner;

D. Washing cars, boats, trailers or other vehicles and machinery directly with a hose not equipped with a shutoff nozzle;

E. Water for nonrecycling decorative water fountains.

F. Water for single pass evaporative cooling systems for air conditioning in all connections installed after July 1, 2001, unless required for health or safety reasons;

G. Water for new nonrecirculating conveyor car wash systems;

H. Water for new nonrecirculating industrial clothes wash systems.

(Ord. 2114 NCS §2 (part), 2001.)

15.12.072 Actions prohibited.

A. Runoff from areas containing equipment, machines, motor vehicle parts and other equipment containing grease, oil, or other hazardous or polluting materials;

B. Intentional disposal of debris into storm drains.

(Ord. 2114 NCS §2 (part), 2001.)

15.12.073 Pressure regulation.

A pressure-regulating valve shall be installed and maintained by the consumer if static service pressure at the meter exceeds eighty pounds per square inch. The pressure-regulating valve shall be located between the meter and the house valve, and set at not more than sixty pounds per square inch when measured at the house valve. This requirement may be waived if the consumer presents evidence satisfactory to the city that high pressure is necessary in the design and that no water will be wasted as a result of high-pressure operation. (Ord. 2114 NCS §2 (part), 2001.)

15.12.074 Plumbing and fixtures.

A. All interior plumbing and appliance in new buildings shall meet the most efficient water standards as set by the state of California;

B. Toilets and associated flush valves shall use one and six-tenths gallons, or less, of water per flush;

C. Urinals and associated flush valves shall use one gallon, or less, of water per flush;

D. Shower heads shall use two and five-tenths gallons, or less, of water per minute;

E. Kitchen and lavatory faucets shall use two and two-tenths gallons, or less, of water per minute;

F. Separate landscape water service meters will be required for all new and rehabilitated industrial, commercial, and institutional landscaping and all new or rehabilitated multi-family common areas (those areas in a residential development maintained by either the developer or a homeowner's association).

(Ord. 2114 NCS §2 (part), 2001.)

15.12.075 Swimming pool covers.

Pool covers are required for all new outdoor swimming pools. (Ord. 2114 NCS §2 (part), 2001.)

15.12.076 Exempt water uses.

All water use associated with the operation and maintenance of fire suppression equipment or employed by the city for water quality flushing and sanitation purposes shall be exempt from the provisions of this section. Use of water supplied by a private well or from a reclaimed wastewater, gray water, or rainwater utilization system is also exempt. (Ord. 2114 NCS §2 (part), 2001.)

15.12.077 Variances.

Any customer of the city may make written application for a variance. Said application shall describe in detail why applicant believes a variance is justified:

A. The director of water resources and conservation may grant variances for use of water otherwise prohibited by this section upon finding and determining that failure to do so would cause an emergency condition affecting the health, sanitation, fire protection or safety of the applicant or public; or, cause an unnecessary and undue hardship on applicant or public, including but not limited to, adverse economic impacts, such as loss of production or jobs.

B. The decision of the director of water resources and conservation may be appealed to the council by submitting a written appeal to the city clerk within fifteen calendar days of the date of the decision. Upon granting any appeal, the council may impose any conditions it determines to be just and proper. Variances granted by the council shall be prepared in writing, and the council may require the variance be recorded at applicant's expense.

(Ord. 2114 NCS §2 (part), 2001.)

15.12.078 Enforcement and fees.

Depending on the extent of the water waste, the city may, after written notification to customer and a reasonable

time (seventy-two hours; see section 15.12.071B) to correct the violation as solely determined by the city, take some or all of the following actions. Penalties, fees and charges noted below shall be established by resolution of the city:

A. Personal contact with the customer at the address of the water service. If personal contact is unsuccessful, written notice of the violation including a date that the violation is to be corrected may be left on the premises, with a copy of the notice sent by certified mail to the customer.

B. The city may install a flow-restricting device on the service line.

C. The city may levy a water waste fine to the customer.

D. The city may shut off water service, and the charge for same shall be billed to the customer. Except in cases of extreme emergency as solely determined by the city manager, service shall not be reinstated until verified by the city that the violation has been corrected and all charges and fees have been paid.

(Ord. 2114 NCS §2 (part), 2001.)

15.12.080 Discontinuance for violations of article — Abatement by manager.

In the event of violation of any terms of this chapter (except under Sections 15.12.060 and 15.12.070) the water department may disconnect the premises to which such violation relates from the water system after first notifying in writing the person causing, allowing or committing such violation, specifying the violation and, if applicable, the time after which (upon the failure of such person to prevent or rectify the violation) the manager will exercise his authority to disconnect the premises from the water system; provided, that such time shall not be less than five days after the deposit of such notice in the United States Post Office at Petaluma, Sonoma County, California, addressed to the person to whom notice is given; provided, however, that in the event such violation results in a public hazard or menace, then the manager may enter upon the premises without notice and do such things and expend such sums as may be necessary to abate such hazard, and the reasonable value of the things done and the amounts expended in so doing shall be a charge upon the person so in violation. (Ord. 544 NCS §8: prior code §27.29.)

15.12.090 Request for discontinuance by consumer — Reconnection charges.

Any consumer may have his water service discontinued by giving notice to the water department requesting discontinuance not less than two days prior to the requested date of discontinuance. Each such consumer shall pay all water charges up to and including the date of discontinuance stated in such notice. In any case where such notice is not given, the consumer shall be required to pay for water service until two days after the water department has knowledge that the consumer has vacated the premises or otherwise discontinued water service. The city shall make a reconnection charge for restoring water service to any consumer whose water service has been discontinued at this request. Such charges shall be set according to Chapter 15.16. (Ord. 1940 NCS §2 (part), 1993: Ord. 1661 NCS §1, 1986: Ord. 1137 NCS §1 (part), 1974: Ord. 544 NCS §9: prior code §27.30.)

15.12.100 Reconnection after discontinuance of service.

Whenever any premises have been disconnected from the water system for any violation of this chapter, such premises shall not be reconnected to the water system until all delinquent charges have been paid, together with a reconnection charge and until credit is established pursuant to Chapter 15.16. (Ord. 1940 NCS §2 (part), 1993: Ord. 1661 NCS §2, 1986: Ord. 1137 NCS §1 (part), 1974: Ord. 544 NCS §8: prior code § 27.31.)

15.12.110 Shortage of supply and service interruptions.

A. The city will exercise reasonable diligence to provide continuous and adequate water service to consumers and to avoid any shortage or interruption of delivery of water, but cannot guarantee complete freedom from interruption. The water department shall have the right to suspend water service temporarily to make necessary repairs or improvements to the water system. In each case of temporary suspension of service the water department will notify the consumers affected as soon as circumstances permit and will prosecute the work of repair or improvement with due diligence and with the least possible inconvenience to consumers.

B. During any period of threatened or actual water shortage the city shall have the right to apportion its available water supply among consumers in such manner as appears most equitable under the circumstances then prevailing and with due regard to public health and safety.

C. The city shall not be liable for interruption, shortage or insufficiency of water supply or water pressure or any loss or damage occasioned thereby. (Ord. 544 NCS § 10: prior code §27.32.)

15.12.120 Meter testing prior to installation.

Every meter will be tested prior to being installed and no meter will be placed in service if found to register more than two percent fast or slow. (Ord. 544 NCS §4: prior code §27.33(1).)

15.12.130 Meter testing on consumer's request.

A. A consumer may, with at least one week's notice, require the city to test the meter serving the premises.

B. No charge will be made for such a test, except where a consumer requests a test within six months after installation of the meter or more often than once a year, in which case the consumer will be required to deposit with the city an amount according to Chapter 15.16.

(Ord. 1540 NCS §2 (part), 1993: Ord. 544 NCS §4; prior code §27.33(2).)

15.12.140 Quantity of water to be supplied.

The city will endeavor to supply water at the curb or property line in adequate quantities to meet the reasonable needs and requirements of consumers. (Ord. 544 NCS §3: prior code §27.34.)

15.12.150 Working pressure of water to be supplied.

The city will endeavor to supply water at the curb or property line at proper working pressures to meet the reasonable needs and requirements of consumers. (Ord. 544 NCS §3: prior code §27.35.)

15.12.160 Safe and potable water to be supplied.

Whenever water is furnished for human consumption the city will endeavor to supply at all times a safe and potable water. (Ord. 544 NCS §3: prior code §27.36.)

15.12.170 Measuring water supply by meters.

All water supplied consumers will (except as hereinafter otherwise specified) be measured by means of suitable standard water meters. A cubic foot will be the unit of measurement, unless otherwise provided for in the rate schedules hereinafter set forth. (Ord. 544 NCS §3: prior code §27.37.)

15.12.180 Fire protection service.

The fire protection service connection will be installed by the city at the cost of the applicant. Such cost shall not be subject to refund.

If a distribution main of adequate size to serve a private fire protection system in addition to all other normal service does not exist in the street or alley adjacent to the premises to be served, then a service main from the nearest existing main of adequate capacity will be installed by the city at the cost of the applicant. Such cost shall not be subject to refund.

Service under this chapter is for private fire protection systems to which no connections for other than fire protection purposes are allowed and which are regularly inspected by the underwriters having jurisdiction, are installed according to specifications of the city, and are maintained to the satisfaction of the city. The city may install the standard detector type meter approved by the Board of Fire Underwriters for protection against theft, leakage or waste of water. (Ord. 544 NCS §3: prior code §27.38.)

15.12.190 Hydrants owned by city.

Hydrants owned by the city will be installed, maintained, painted, inspected and relocated at the expense of the city from funds other than revenues of the water system. (Ord. 544 NCS §3: prior code 27.39.)

15.12.200 Hydrants owned by public authority.

Hydrants owned by the public authority will be installed, maintained, painted, inspected and relocated at the expense of the public authority. The city will install and own the tee in the main, the hydrant branch and the control valve.

Hydrants owned by the city will be maintained by it. The public authority will pay for the relocation of any hydrants owned by the city.

Number of outlets in standard outlets will be limited to two one-half inch outlets. (Ord. 544 NCS §3: prior code §27.40.)

15.12.210 Installation of fire hydrants.

Fire hydrants will be attached to the city's distribution mains only as authorized by the proper public authority. Such authorization must designate the ownership, size, and type of hydrants and specifically state the location at which each is to be installed. (Ord. 54 NCS §3: prior code §27.41.)

TOC < >

CHAPTER 15.18
WATER SHORTAGE EMERGENCY REGULATIONS

15.18.010 Purpose of provisions.

The city council has, by Resolution No. 7658 NCS, dated February 7, 1977, found and determined that the ordinary demands and requirements for water consumers of the city cannot be satisfied without depleting the water supply to the extent that there would be insufficient water for human consumption, sanitation, and fire protection and declared a water shortage emergency. This chapter is intended to prohibit any additional demands on the existing water supply, to prohibit all nonessential uses as defined herein, and to allocate, consistent with the city's ability to administer and enforce, the available water supply during the water shortage emergency to the end that sufficient water will be and remain available for human consumption, sanitation, and fire protection. (Ord. 1233 NCS §1, 1977: Ord. 1211 NCS §1, 1976.)

15.18.020 Definitions.

For the purpose of this chapter, the following terms, phrases, words, and their derivations shall have the meaning given in this section. The word "shall" is always mandatory and never directory.

A. "City" means the city of Petaluma.

B. "Customer" means the person using water supplied by the city.

C. "Director" means the director of water utility operations of the city, or his designated representative.

D. "Department" means the water department of the city.

E. "Hand-watering" means water supplied to a customer or person which is used for exterior water use only and is being conveyed through a hose connected to the customer's or person's interior piping system while such hose is hand-held.

F. "Irrigate" means to water land or landscaping of any kind, whether by channels, by flooding, by sprinkling, or any other means whatsoever.

G. "Person" means any person, firm, partnership, association, corporation, company, or organization of any kind.

H. "Wastewater" means effluent from the city water pollution control plant which has been treated to secondary treatment standards as defined by the Regional Water Quality Control Board.

I. "Water" means all water, except wastewater, supplied by the city unless expressly provided otherwise or required by the context.

(Ord. 1246 NCS §1, 1977: Ord. 1233 NCS §2, 1977: Ord. 1211 NCS §2, 1976.)

15.18.030 Prohibition on new water service facilities.

No new additional, further expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or other water service facilities of any kind shall be made, allowed, approved, installed, or accepted by the city after February 14, 1977, except as expressly provided in this chapter. (Ord. 1233 NCS §3, 1977: Ord. 1211 NCS §3, 1976.)

15.18.040 Prohibition of nonessential water use.

It is unlawful for any person to use water for any nonessential use as defined in Sections 15.18.040 and 15.18.050. (Ord. 1233 NCS §4, 1977: Ord. 1211 NCS §4, 1976.)

15.18.050 Nonessential uses defined.

On and after March 1, 1977, the following uses of water are nonessential:

A. Use of water from public or private hydrants for any purpose other than fire fighting or such other uses as the director may approve;

B. Use of water through any meter when the consumer has been given notice by the director to repair one or more leaks and has failed to complete such repairs within five days of such notice;

C. Use of water by a carwash in excess of seventy percent of the prior water use for the period November 1, 1976, to February 14, 1977, as determined by the department from its records. Where no such records exist, prior water use shall be deemed to be the average water use of similar existing services for such period as shall be determined by the department from its records, except where the director has determined pursuant to this chapter that any such use is nonessential and written notice of such determination has been provided;

D. Use of water by a golf course to irrigate any portion of its grounds except those areas designated as tees and greens; except where the director has determined that any such use is nonessential and written notice of such determination has been provided;

E. Use of water to irrigate grass, lawns, ground cover, shrubbery, vegetable gardens, trees, or other outdoor vegetation, except:

1. Hand-watering and other irrigation in reasonable amounts on odd-numbered dates east of U.S. Highway 101, and on even-numbered dates west of said freeway, and throughout the city on the thirty-first of any month;
2. Nothing in subsection 1 above shall be deemed to supersede or render invalid any other section or subsection of this chapter,

F. Use of water for the construction of any structure, including such use in dust control, except for construction pursuant to a building permit issued on or before February 14, 1977. In no event shall water be used for dust control;

G. Use of water to wash any sidewalk, walkway, driveway, street, parking lot, tennis court, or other hard-surfaced area by hand-watering or by other direct use of water from faucets or other outlets;
H. Use of water to wash any motor vehicle, trailer, airplane, or boat by hand-watering or otherwise using water directly from a faucet or other outlet;
I. Use of water to fill or refill any swimming pool, except make-up water.
(Ord. 1258 NCS §1, 1977: Ord. 1256 NCS §1, 1977: Ord. 1246 NCS §2, 1977: Ord. 1245 NCS §1, 1977: Ord. 1244 NCS §1, 1977: Ord. 1233 NCS §5, 1977: Ord. 1211 NCS §5, 1976.)

15.18.060 Further nonessential uses defined.

In addition to the nonessential uses set forth in Section 15.18.050, the following additional uses are determined to be nonessential on and after August 1, 1977, or such other date as the council may determine by resolution:
A. Use of water in excess of the daily usage allotment hereinafter set forth:
Residential Units
For each permanent resident, fifty gallons per day;
B. For all other uses not expressly set forth in subsection A hereof:
Fifty percent of the average daily prior water use for the period November 1, 1976, through February 14, 1977, as determined by the department from its records. Where no such records exist, prior water use shall be deemed to be the average prior water use of similar existing services for such period as shall be determined by the department from its records;
C. Use of water to irrigate, the provisions of Section 15.18.050 above to the contrary notwithstanding;
D. Use of water for hand-watering;
E. Use of water to wash any sidewalk, walkway, driveway, street, parking lot, tennis court, or other hard-surfaced area or any motor vehicle, airplane, or boat.
(Ord. 1246 NCS §3, 1977: Ord. 1244 NCS §2, 1977: Ord. 1233 NCS §6, 1977: Ord. 1211 NCS §6, 1976.)

15.18.070 Number of permanent residents.

Each customer in whose name water is supplied to a residence shall, upon request of the director, advise him under penalty of perjury the number of permanent residents using water supplied to that residence. If such a residential customer shall fail to so advise the director, such residence shall be permitted the water allocation provided in this chapter for one permanent resident. (Ord. 1233 NCS §7, 1977: Ord. 1211 NCS §7, 1976.)

15.18.080 Tampering with water meters prohibited.

It is unlawful for any person to remove, replace, alter, damage, bypass, or otherwise tamper with any water meter or components thereof, including but not limited to the meter face, dials, or other water usage indicators, and any flow-restricting device installed thereon. (Ord. 1233 NCS §8, 1977: Ord. 1211 NCS §8, 1976.)

15.18.090 Draining swimming pools prohibited.

It shall be unlawful to drain any swimming pool. (Ord. 1233 NCS §9, 1977: Ord. 1211 NCS §9, 1976.)

15.18.100 Variances.

A. The director may:
1. Grant temporary variances for uses of water otherwise prohibited; or
2. Adjust temporarily any consumer's allotment if he finds and determines that due to unusual circumstances to fail to grant such a variance would cause an emergency condition affecting health, sanitation, or fire protection of the applicant or the public; further, he may grant such adjustment in the case of a mixed residential/nonresidential use if he finds that such adjustment is necessary to place an equivalent allotment burden on said applicant. The city council shall ratify, modify, or revoke any such variance or adjustment at its next scheduled meeting. Any such variance or adjustment ratified may be revoked at any time by the city council upon a finding and determination of changed conditions;
3. Grant variances for new or increased-in-size water connections for commercial or industrial construction where he finds that such variance will not materially impair the city's ability to provide water for human consumption, sanitation and fire protection or the builder thereof has provided a well or other alternative source of water as provided in Section 15.18.150.

No such variance or adjustment shall be retroactive or otherwise justify any violations of the ordinance codified in this chapter accruing prior to issuance of said temporary variance or adjustment.

An applicant for a variance under this subsection and the mayor or any councilman may apply for review of the director's decision by the entire city council if said application is made within five days from the date of the director's decision. The council shall hear the matter at its next regular meeting and shall ratify, modify or revoke the decision of the director, and provide such relief, consistent herewith, which is reasonable. The council's decision shall be final.
(Ord. 1258 NCS §2, 1977: Ord. 1233 NCS §10, 1977: Ord. 1211 NCS §11, 1976.)

15.18.110 Wasting water prohibited.

It is unlawful for any person or customer to cause or permit any water to run to waste in any gutter or otherwise at any time. (Ord. 1233 NCS §11, 1977: Ord. 1211 NCS §12, 1976.)

15.18.130 Purpose and intent — Statutory construction.

It is the purpose and intent of this chapter to prohibit an increase in the water demand on the city's available water

supply, to eliminate all nonessential water usage, and to provide for allocation of existing water recourses to insure sufficient water for human consumption, sanitation, and fire protection. This chapter shall be liberally construed to effectuate such purpose and intent. (Ord. 1233 NCS §13, 1977.)

15.18.140 Replacement and repair of existing facilities.

Notwithstanding any other provisions of this chapter, no restriction or prohibition is imposed upon the repair or replacement of existing water service facilities in a manner which the director determines will not materially increase the consumption of water. (Ord. 1233 NCS §14, 1977.)

15.18.150 Alternative sources — Effect on water connections.

Notwithstanding any other provisions of this chapter, new additional or increased-in-size water connections may be permitted where the city council finds:

A. A reliable well or other source of water meeting state health requirements provided by the applicant will supply potable water in excess of that required for human consumption, sanitation, and fire protection, as determined by the director, for any development proposed by the applicant and

B. Such well or alternative source can be connected to the city's water supply system without endangering existing customers or the system itself; and

C. The owner of such well or alternative source has developed and conveyed to the city such well or other source and appurtenant easements and equipment as required to the city. The council shall be the sole judge as to the easements and equipment to be required.

(Ord. 1233 NCS §15, 1977.)

15.18.160 Additional exceptions — When water connection.

A. Notwithstanding any other provision of this chapter, new, additional, or increased-in-size water connections may be permitted for residential development where the city council finds either of the following:

1. Such residential development is made up of four or fewer residential units. The total number of residential units permitted under this exception shall not exceed fifty in calendar year 1977.
2. Such residential development is a subdivision of fifteen or fewer parcels, the final map for which has been submitted to the city by February 14, 1977.

B. For purposes of this section, "residential unit" means a single-family dwelling, apartment, or condominium unit. Any building permit issued for any residential unit hereunder shall be subject to a surcharge to be established by the city council by resolution.

(Ord. 1233 NCS §16, 1977.)

15.18.170 Ordinance controlling.

The provisions of the ordinance codified in this chapter shall prevail and control in the event of any inconsistency between this chapter and any other rule, regulation, ordinance, or code of the city. (Ord. 1233 NCS §17, 1977.)

15.18.180 Water service to be disconnected.

Water may be shut off and the meter removed by the department without notice whenever the director determines there has been a failure to comply with the provisions of this chapter, any other provisions of this code to the contrary notwithstanding. Charges for reconnection or restoration of service which has been terminated pursuant to this section shall be at the rates and on the conditions set by the city council by resolution. (Ord. 1233 NCS §18, 1977.)

15.18.190 Enforcement — Designated persons.

A. Each police officer and police service aide of the city shall, in connection with his duties imposed by law, diligently enforce the provisions of this chapter.

B. The director and all employees of the city's water utility operations, sewer utility operations, public works department, building inspectors, and fire department shall have the duty and are authorized to enforce the provisions of this chapter and shall have all the powers and authority permitted under California Penal Code Section 8736.5, including the power to issue written notice to appear.

(Ord. 1233 NCS §19, 1977.)

15.18.200 Director may prohibit irrigation and other uses.

Whenever the director determines that the water available to the city's water department is insufficient to permit any irrigation, watering, or sprinkling and that all water then available to said department should be used solely for human consumption, sanitation, and fire protection, he may order and direct that irrigation, watering, or sprinkling shall not be permitted by any person or customer. While such order is in effect, no person or customer shall irrigate, sprinkle, or water any shrubbery, trees, lawns, grass, ground covers, plants, vines, gardens, vegetables, flowers, or any other vegetation, or engage in such other use as the director may prohibit. Violations shall be punished as provided in Section 15.18.120.

The director shall use every reasonable means under the circumstances to advise customers that such order is in effect. (Ord. 1244 §3, 1977.)

15.18.210 Abatement of chapter.

Notwithstanding any other provisions of this chapter, the city council may by resolution suspend the effectiveness of this chapter, or any part thereof, for a fixed period or indefinitely, upon making a finding that the water supply available to the city is adequate to insure that the resulting increased usage will leave sufficient water available for human

consumption, sanitation and fire protection (Ord. 1273 NCS §1, 1977.)

Part II. Water Wells

APPENDIX D

CITY OF PETALUMA
URBAN WATER MANAGEMENT PLAN

BEST MANAGEMENT PRACTICES REPORT FILING

BEST MANAGEMENT PRACTICES REPORT FILING FOR YEAR 2003

Water Supply & Reuse

Reporting Unit: **City of Petaluma**

Year: **2003**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
SCWA	10642	Imported
Wells	152	Groundwater

Total AF: 10794

Reported as of 11/20/06

Accounts & Water Use

Reporting Unit Name:	Submitted to	Year:
City of Petaluma	CUWCC **12/20/2004**	**2003**

A. Service Area Population Information:

1. Total service area population 55850

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	16811	5795	0	0
2. Multi-Family	278	875	0	0
3. Commercial	1357	2364	0	0
4. Industrial	26	294	0	0
5. Institutional	175	824	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	1	28	0	0
9. Unaccounted	NA	614	NA	0
Total	18648	10794	0	0
	Metered		**Unmetered**	

Reported as of 11/20/06

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Based on your signed MOU date, 01/31/2002, your Agency STRATEGY DUE DATE is:	01/31/2004
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	no	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		None
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	30000	15000
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

The City of Petaluma has developed an RFP that will be distributed to reputable contractors to meet the requirements of this BMP prior to the end of the fiscal year (July 2004). The City anticipates auditing 244 homes and 50 businesses in May and June of 2004. Followed by 244 homes and 50 businesses in July and August of 2004 for FY2005.

Reported as of 11/20/06

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no

   a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? no

3. Estimated percent of single-family households with low-flow showerheads: 68%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? no

5. Estimated percent of multi-family households with low-flow showerheads: 68%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? yes

   a. If YES, when did your agency begin implementing this strategy? 05/01/1991

   b. Describe your targeting/ marketing strategy.

   Low flow shower heads, aerators, hose end faucets and dye tabs are being given away at city offices, public forums and city fair.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	790	166
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	250	287

6. Does your agency track the distribution and cost of low-flow devices? yes

   a. If YES, in what format are low-flow devices tracked? Manual Activity

   b. If yes, describe your tracking and distribution system :

   Low flow shower heads, aerators, hose end faucets, and dye tabs are still being given at city offices, public forums and city fairs.

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	10000	10000
2. Actual Expenditures	5815.42	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

The Sonoma County Water Agency supplied hardware to the City of Petaluma at no cost to the City for the 2002 year. The City purchased hardware for the 2003 year in 2002.

Reported as of 11/20/06

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	10433
b. Determine other system verifiable uses (AF)	26
c. Determine total supply into the system (AF)	11119
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.94
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	yes
4. Did your agency complete a full-scale audit during this report year?	no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6. Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

Pre-screening on-going survey system every 3 - 5 years. Large meter testing every 3 years.

B. Survey Data

1. Total number of miles of distribution system line.	220
2. Number of miles of distribution system line surveyed.	0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	44600	50000
2. Actual Expenditures	44600	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Our loss water remains below 8% consistently. We have an agressive meter maintenance program and pre-screening system in place

Reported as of 11/20/06

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use? yes

2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use? no

   a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?

   b. Describe the program:

   All aconnections are metered.

3. Number of previously unmetered accounts fitted with meters during report year. 0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no

   a. If YES, when was the feasibility study conducted? (mm/dd/yy)

   b. Describe the feasibility study:

2. Number of CII accounts with mixed-use meters. 100

3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

The City has been splitting mixed use water meter services for approx. 20 years. Most of the significant use accounts have been split via an incentive program. Standards were changed in the late 1980's that did not allow new installations of mixed use CII meters. There are very few left and are split on request by the customer under our incentive program. Retrofit customers are charged time and materials.

Reported as of 11/20/06

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	595
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	9
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	66
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	48
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	yes
a. If YES, when did your agency begin implementing this strategy?	01/01/2000

b. Description of marketing / targeting strategy:

We market surveys to City owned parks. To date, all parks greater than 1 acre have had surveys. Phase 2 marketing will be to sites with water consumption greater than their water budgets.

2. Number of Surveys Offered.	7
3. Number of Surveys Completed.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	no
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
6. Does your agency provide follow-up surveys for previously completed surveys?	no

a. If YES, describe below:

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	yes
2. Number of CII mixed-use accounts with landscape budgets.	5
3. Do you offer landscape irrigation training?	yes
4. Does your agency offer financial incentives to improve landscape water use efficiency?	yes

Type of Financial Incentive:	Budget (Dollars/	Number Awarded to Customers	Total Amount Awarded

	Year)		
a. Rebates	29500	1	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? no

b. If yes, does it have dedicated irrigation metering? no

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	29500	80000
2. Actual Expenditures	0	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Petaluma sends annual notices to all accounts with water budgets. BMP 5 is partially funded through SCWA BMP 10 funds.

Reported as of 11/20/06

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	yes
a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.	
Pacific Gas and Electric	
2. Does your agency offer rebates for high-efficiency washers?	yes
3. What is the level of the rebate?	75
4. Number of rebates awarded.	296

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

SCWA implements regional program and funds BMP 6 through their BMP 10 funds.

Reported as of 11/20/06

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

Petaluma promotes indoor and outdoor water conservation through monthly newspaper advertisments during the spring and summer, on 2 local buses and streaming videos on local television.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	25
b. Public Service Announcement	yes	15
c. Bill Inserts / Newsletters / Brochures	yes	5
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	0
f. Special Events, Media Events	yes	1
g. Speaker's Bureau	yes	3
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	92000	92000
2. Actual Expenditures	10000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

SCWA maintains an active public information program that benefits Petaluma.

Reported as of 11/20/06

BMP 08: School Education Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? Yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	Yes	20	499	4
Grades 4th-6th	Yes	14	564	4
Grades 7th-8th	Yes	0	0	3
High School	Yes	0	0	3

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 09/01/1988

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/20/06

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	2	0	0
b. Number of New Surveys Completed	2	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	no	no
f. Evaluation of all water-using apparatus and processes	yes	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	yes	no	no

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	1	50

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes

6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	41.5
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	37000	80000
2. Actual Expenditures	17067	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Petaluma participates in SCWA regional CII audits and restaurant nozzles programs. SCWA funds CII audits and restaurant nozzles through BMP 10 funds.

Reported as of 11/20/06

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10. — No

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.

   a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

2. How does your agency advertise this program? Check all that apply.

   a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.)	Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency?	No
3. What is the total number of customer accounts participating in the program during the last year ?	5

CII Subsector	Number of Toilets Replaced				
4.	**Standard Gravity Tank**	**Air Assisted**	**Valve Floor Mount**	**Valve Wall Mount**	**Type Not Specified**
a. Offices					0
b. Retail / Wholesale					0
c. Hotels					0
d. Health					0
e. Industrial					0
f. Schools: K to 12					0
g. Eating					0
h. Govern-ment					0

i. Churches	0
j. Other	0

5. Program design.

6. Does your agency use outside services to implement this program? Yes

a. If yes, check all that apply.

7. Participant tracking and follow-up.

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a. Disruption to business

b. Inadequate payback

c. Inadequate ULFT performance

d. Lack of funding

e. American's with Disabilities Act

f. Permitting

g. Other. Please describe in B. 9.

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

The City of Petaluma does not participate in this BMP. Petaluma signed on January 31, 2002.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor		
b. Materials		
c. Marketing & Advertising		
d. Administration & Overhead		
e. Outside Services		
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	
b. State agency contribution	

c. Federal agency contribution	
d. Other contribution	
e. Total	0

D. Comments

Reported as of 11/20/06

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$5303999
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$652116
2. Commercial	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$1632158
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$62205
3. Industrial	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$257293
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$2877
4. Institutional / Government	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$516075
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$8022
5. Irrigation	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
6. Other	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform

c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	5000
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported non-volumetric charges were estimated and deducted from combined water revenues. Dedicated irrigation meter accounts are reported with indoor and mixed-use accounts. Petaluma's accounting system does not currently support reporting these separately. Petaluma is working to improve its accounting system to generate necessary reports.

Reported as of 11/20/06

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	yes
4. Partner agency's name:	Sonoma County Water Agency
5. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	10%
b. Coordinator's Name	Dave Spriggs
c. Coordinator's Title	Water Utility Technician
d. Coordinator's Experience and Number of Years	3 conservation and 14 cross connection control
e. Date Coordinator's position was created (mm/dd/yyyy)	1/21/1997
6. Number of conservation staff, including Conservation Coordinator.	6

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	107450	166847
2. Actual Expenditures	50907	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

SCWA funds a part-ime coordinator through BMP 10 funds. The City supports this BMP through our Department Director (5%), Engineering Manager (10%), Utility Manager (10%), Water Utility Technician, Office Professional (5%), and computer support valued at $10,750 this fiscal year and $11,300 next. The City of Petaluma will be hiring a full time Water Conservation Specialist in FY(2005)

Reported as of 11/20/06

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

a. If YES, describe the ordinance:

The effective date of the ordinance is 6/20/01. The ordinance defines non-essential uses of water , prohibits certain actions, requires pressure regulation valves and swimming pool covers on new construction, gives certain exemptions and variances, and explains the enforcement procedures.

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

City of Petaluma	less than 4

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding yes

b. Single-pass cooling systems for new connections yes

c. Non-recirculating systems in all new conveyor or car wash systems yes

d. Non-recirculating systems in all new commercial laundry systems yes

e. Non-recirculating systems in all new decorative fountains yes

f. Other, please name no

2. Describe measures that prohibit water uses listed above:

Section 15.12.071 of the City ordinance; titled "non-essential uses defined."

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no

4. Does your agency include water softener checks in home water audit programs? yes

5. Does your agency include information about DIR and exchange-

type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/20/06

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2003**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	325	82
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	**325**	**82**

6. Describe your agency's ULFT program for single-family residences.

$100 rebate for replacing high flow toilet.

7. Describe your agency's ULFT program for multi-family residences.

$100 rebate for replacing high flow toilet.

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	60000	60000
2. Actual Expenditures	41450	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/20/06

BEST MANAGEMENT PRACTICES REPORT FILING FOR YEAR 2004

Water Supply & Reuse

Reporting Unit: **City of Petaluma**

Year: **2004**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
SCWA	11325	Imported
Wells	52	Groundwater

Total AF: 11377

Reported as of 11/20/06

Accounts & Water Use

Reporting Unit Name:	Submitted to	Year:
City of Petaluma	CUWCC **12/20/2004**	**2004**

A. Service Area Population Information:

1. Total service area population 57050

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	16852	6539	0	0
2. Multi-Family	303	988	0	0
3. Commercial	1376	2667	0	0
4. Industrial	24	332	0	0
5. Institutional	279	930	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	1	56	0	0
9. Unaccounted	NA	0	NA	0
Total	18835	11512	0	0
	Metered		**Unmetered**	

Reported as of 11/20/06

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Based on your signed MOU date, 01/31/2002, your Agency STRATEGY DUE DATE is:	01/31/2004
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	no	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		None
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	77000	88200
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

The City of Petaluma is in the process of negotiating a contract with a contractor to complete 488 single-family and 100 multi-family homes by the end of 2004.

Reported as of 11/20/06

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no

   a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? no

3. Estimated percent of single-family households with low-flow showerheads: 71%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? no

5. Estimated percent of multi-family households with low-flow showerheads: 71%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? yes

   a. If YES, when did your agency begin implementing this strategy? 05/01/1991

   b. Describe your targeting/ marketing strategy.

   Low flow shower heads, aerators, hose end faucets and dye tabs are being given away at city offices, public forums and city fair.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	413	87
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	100	75

6. Does your agency track the distribution and cost of low-flow devices? yes

   a. If YES, in what format are low-flow devices tracked? Manual Activity

   b. If yes, describe your tracking and distribution system :

   Low flow shower heads, aerators, hose end faucets, and dye tabs are still being given at city offices, public forums and city fairs. Recipents provide contact information on a sign-up sheet.

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	11000
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

They City distributed hardward from inventory and did not need to purchase hardware in 2003.

Reported as of 11/20/06

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	11456
b. Determine other system verifiable uses (AF)	56
c. Determine total supply into the system (AF)	11377
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	1.01
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	yes
4. Did your agency complete a full-scale audit during this report year?	no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6. Does your agency operate a system leak detection program?	yes
a. If yes, describe the leak detection program:	

Pre-screening ongoing. Large Meter Testing every 3 years.

B. Survey Data

1. Total number of miles of distribution system line.	225
2. Number of miles of distribution system line surveyed.	0

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	50000	50000
2. Actual Expenditures	50000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

E. Comments

Our sales exceeded our supply this reporting period.

Reported as of 11/20/06

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use?	yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no
a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?	
b. Describe the program:	
3. Number of previously unmetered accounts fitted with meters during report year.	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no
a. If YES, when was the feasibility study conducted? (mm/dd/yy)	
b. Describe the feasibility study:	
2. Number of CII accounts with mixed-use meters.	372
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.	5

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

E. Comments

The City has been splitting mixed use water meter services for approx. 20 years. Most of the significant use accounts have been split via an incentive program. Standards were changed in the late 1980's that did not allow new installations of mixed use CII meters. There are very few left and are split on request by the customer under our incentive program. Retrofit customers are charged time and materials.

Reported as of 11/20/06

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	609
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	9
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	45
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	34
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	yes
a. If YES, when did your agency begin implementing this strategy?	01/01/2000

b. Description of marketing / targeting strategy:

We market surveys to City owned parks. To date, all parks greater than 1 acre have had surveys. Phase 2 marketing will be to sites with water consumption greater than their water budgets.

2. Number of Surveys Offered.	7
3. Number of Surveys Completed.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
6. Does your agency provide follow-up surveys for previously completed surveys?	no

a. If YES, describe below:

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0
3. Do you offer landscape irrigation training?	yes
4. Does your agency offer financial incentives to improve landscape water use efficiency?	yes

Type of Financial Incentive:	Budget (Dollars/	Number Awarded to Customers	Total Amount Awarded

	Year)		
a. Rebates	10000	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? no

b. If yes, does it have dedicated irrigation metering? no

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	27500	399617
2. Actual Expenditures	27500	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 11/20/06

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	yes
a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.	
Pacific Gas and Electric	
2. Does your agency offer rebates for high-efficiency washers?	yes
3. What is the level of the rebate?	75
4. Number of rebates awarded.	369

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

SCWA implements regional program and funds BMP 6 through their BMP 10 funds.

Reported as of 11/20/06

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

Petaluma promotes indoor and outdoor water conservation via advertisements on local buses, special events, direct mail, bill inserts, web with streaming videos on the City's website in addition to SCWA's regional BMP7 activities.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	3
b. Public Service Announcement	no	0
c. Bill Inserts / Newsletters / Brochures	yes	5
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	no	0
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	40000	30000
2. Actual Expenditures	6000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

SCWA maintains an active public information program that benefits Petaluma.

Reported as of 11/20/06

BMP 08: School Education Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	14	423	6
Grades 4th-6th	yes	16	724	6
Grades 7th-8th	yes	0	21	4
High School	yes	0	480	4

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 09/01/1988

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/20/06

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	100	0	100
b. Number of New Surveys Completed	60	0	14
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	12	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	3	0	1

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	no	yes
f. Evaluation of all water-using apparatus and processes	yes	no	yes
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	66568	7	46780
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes

6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	66.2
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	11.2

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	66568	117000
2. Actual Expenditures	46780	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Petaluma participates in SCWA regional CII audits and restaurant nozzles programs. SCWA funds CII audits and restaurant nozzles through BMP 10 funds.

Reported as of 11/20/06

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10. — No

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.

   a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

2. How does your agency advertise this program? Check all that apply.

   a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.)

2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency?

3. What is the total number of customer accounts participating in the program during the last year ?

CII Subsector	Number of Toilets Replaced				
4.	**Standard Gravity Tank**	**Air Assisted**	**Valve Floor Mount**	**Valve Wall Mount**	**Type Not Specified**
a. Offices					
b. Retail / Wholesale					
c. Hotels					
d. Health					
e. Industrial					
f. Schools: K to 12					
g. Eating					
h. Govern-ment					

i. Churches

j. Other

5. Program design.

6. Does your agency use outside services to implement this program?

a. If yes, check all that apply.

7. Participant tracking and follow-up.

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a. Disruption to business

b. Inadequate payback

c. Inadequate ULFT performance

d. Lack of funding

e. American's with Disabilities Act

f. Permitting

g. Other. Please describe in B. 9.

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

The City of Petaluma does not participate in this BMP. Petaluma signed on January 31, 2002.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor		
b. Materials		
c. Marketing & Advertising		
d. Administration & Overhead		
e. Outside Services		
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution

b. State agency contribution

c. Federal agency contribution	
d. Other contribution	
e. Total	0

D. Comments

Reported as of 11/20/06

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$6019354
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$675221
2. Commercial	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$1632158
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$62205
3. Industrial	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$257293
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$2877
4. Institutional / Government	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$516075
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$8022
5. Irrigation	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
6. Other	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Uniform

c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5000	20000
2. Actual Expenditures	1000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported non-volumetric charges were estimated and deducted from combined water revenues. Dedicated irrigation meter accounts are reported with indoor and mixed-use accounts. Petaluma's accounting system does not currently support reporting these separately. Petaluma is working to improve its accounting system to generate necessary reports.

Reported as of 11/20/06

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	yes
4. Partner agency's name:	Sonoma County Water Agency
5. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	10%
b. Coordinator's Name	Margaret P. Orr, PE
c. Coordinator's Title	Engineering Manager
d. Coordinator's Experience and Number of Years	Environmental Engineer, 14 years
e. Date Coordinator's position was created (mm/dd/yyyy)	1/21/1997
6. Number of conservation staff, including Conservation Coordinator.	6

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	166847	181852
2. Actual Expenditures	52434	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

SCWA funds a part-time coordinator through BMP 10 funds. The City supports this BMP through our Department Director (5%), Engineering Manager (10%), Associate Engineer (10%), Utility Manager (10%), Water Utility Technician, Office Professional (5%), and computer support.

Reported as of 11/20/06

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

a. If YES, describe the ordinance:

The effective date of the ordinance is 6/20/01. The ordinance defines non-essential uses of water , prohibits certain actions, requires pressure regulation valves and swimming pool covers on new construction, gives certain exemptions and variances, and explains the enforcement procedures.

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

City of Petaluma	less than 4

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding	yes
b. Single-pass cooling systems for new connections	yes
c. Non-recirculating systems in all new conveyor or car wash systems	yes
d. Non-recirculating systems in all new commercial laundry systems	yes
e. Non-recirculating systems in all new decorative fountains	yes
f. Other, please name	no

2. Describe measures that prohibit water uses listed above:

Section 15.12.071 of the City ordinance; titled "non-essential uses defined."

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models.	no
b. Develop minimum appliance efficiency standards that:	
i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used.	no
ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced.	no
c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply.	no

4. Does your agency include water softener checks in home water audit programs? yes

5. Does your agency include information about DIR and exchange-

type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	20000
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/20/06

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
City of Petaluma	**100% Complete**	**2004**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	350	39
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	**350**	**39**

6. Describe your agency's ULFT program for single-family residences.

$100 rebate for replacing high flow toilet.

7. Describe your agency's ULFT program for multi-family residences.

$100 rebate for replacing high flow toilet.

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

City of Petaluma	None

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	40000	55000
2. Actual Expenditures	40060	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/20/06

BEST MANAGEMENT PRACTICES

BASE YEAR DATA 2002

Best Management Practices Report Filing

Print Report

Memorandum of Understanding

Back to BMP Reports List

Base Year Data

Reporting Unit: **City of Petaluma**	Form Status: **CUWCC Reviewed**
1. Your **BASE YEAR is 2002**. NOTE: Many calculations in determining credit history and coverage requirements are contingent on your BASE YEAR, which is calculated based on the following criteria. If a Signatory signed the MOU in 1997 or earlier, then the Base Year is 1997. If a Signatory signed the MOU after 1997, then the Base Year is the year the MOU was signed. The same holds true for USBR Contractors, except the date their Base Year is calculated from is the date that their Plan was noticed in the Federal Register.	
BMP 1	
2. Number of single-family customers in 2002	16286
3. Number of multi-family units in 2002	3325
BMPs 2 and 14	
4. Number of single-family housing units constructed prior to 1992	13353
5. Number of multi-family units prior to 1992	2808
BMP 4	
6. Number of unmetered accounts in 2002	0
BMPs 5 and 9	
7. Number of commercial accounts in 2002	1296
8. Number of industrial accounts in 2002	27
9. Number of institutional accounts in 2002	148
10. Number of mixed used meters in Field:'base_year']	1471
11. Total water use (AF) by commercial, industrial and institutional accounts in 2002	3194
BMP 14	
12. Average number of toilets per single-family household	2
13. Average number of toilets per multi-family household	2
14. Five-year average resale rate of single-family households	4.81
15. Five-year average resale rate of multi-family households	7.57
16. Average persons per single-family household	3
17. Average persons per multi-family household	3

BEST MANAGEMENT PRACTICES
2005/2006 COVERAGE REPORTS

Reported as of 1/10/07

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1.

Condition 1: Adopt survey targeting and marketing strategy on time

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

	Single-Family	Multi-Family
City of Petaluma to Implement Targeting/Marketing Program by:	2004	
Year City of Petaluma Reported Implementing Targeting/Marketing Program:	2004	2004
City of Petaluma Met Targeting/Marketing Coverage Requirement:	YES	YES

Test for Condition 2

			Single-Family	Multi-Family
Survey Program to Start by:	2003	Residential Survey Offers (%)	208.77%	24.06%
Reporting Period:	05-06	Survey Offers ≥ 20%	YES	YES

Test for Condition 3

	Completed Residential Surveys	
	Single Family	Multi-Family
Total Completed Surveys 1999 - 2006:	387	107
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):		
Total + Credit	387	107
Residential Accounts in Base Year	16,286	3,325
City of Petaluma Survey Coverage as % of Base Year Residential Accounts	2.38%	3.22%
Coverage Requirement by Year 3 of Implementation per Exhibit 1	2.50%	2.50%
City of Petaluma on Schedule to Meet 10-Year Coverage Requirement	NO	ON TRACK

BMP 1 COVERAGE STATUS SUMMARY:
Water supplier is not currently on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit: **City of Petaluma**

Reporting Period: **05-06**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1: The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2: An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3: The agency has distributed or directly installed low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period.

Test for Condition 1

		Single-Family		Multi-Family	
Report Year	Report Period	Reported Saturation	Saturation ≥ 75%?	Reported Saturation	Saturation ≥ 75%?
1999	99-00	39.00%	NO	39.00%	NO
2000	99-00	47.00%	NO	47.00%	NO
2001	01-02	54.00%	NO	54.00%	NO
2002	01-02	62.00%	NO	62.00%	NO
2003	03-04	68.00%	NO	68.00%	NO
2004	03-04	71.00%	NO	71.00%	NO
2005	05-06	74.00%	NO	74.00%	NO
2006	05-06	77.00%	YES	77.00%	YES

Test for Condition 2

Report Year	Report Period	City of Petaluma has ordinance requiring showerhead retrofit?
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO
2005	05-06	NO
2006	05-06	NO

Test for Condition 3

Reporting Period: 05-06

1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	Single-Family Coverage Ratio	SF Coverage Ratio > 10%
13,353	830	6.2%	NO
1992 MF Accounts	**Num. Showerheads Distributed to MF Accounts**	**Multi-Family Coverage Ratio**	**MF Coverage Ratio > 10%**
2,808	170	6.1%	NO

BMP 2 COVERAGE STATUS SUMMARY:
Water supplier is not currently on track to meet the coverage requirements for this

BMP.

Reported as of 1/10/07

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

Report Year	Report Period	Pre-Screen Completed	Pre-Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00				
2000	99-00				
2001	01-02	YES	93.6%	No	YES
2002	01-02				
2003	03-04	YES	94.1%	No	NO
2004	03-04	YES	101.2%	No	NO
2005	05-06	YES	96.1%	No	NO
2006	05-06	YES	91.8%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	Reporting Period:
City of Petaluma	**05-06**

MOU Exhibit 1 Coverage Requirement

No exemption request filed	
Agency indicated "at least as effective as" implementation during report period?	No

An agency must be on track to retrofit 100% of its unmetered accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits Reported through 2006	
No. of Unmetered Accounts in Base Year	
Meter Retrofit Coverage as % of Base Year Unmetered Accounts	
Coverage Requirement by Year 2 of Implementation per Exhibit 1	10.0%
RU on Schedule to meet 10 Year Coverage Requirement	YES

BMP 4 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

Year	Report Period	BMP 5 Implementation Year	No. of Irrigation Meter Accounts	No. of Irrigation Accounts with Budgets	Budget Coverage Ratio	90% Coverage Met by Year 4
1999	99-00					NA
2000	99-00					NA
2001	01-02		595			NA
2002	01-02		595			NA
2003	03-04		595	9	1.5%	NA
2004	03-04		609	9	1.5%	NA
2005	05-06	1	543	318	58.6%	NA
2006	05-06	2	563	488	86.7%	NA

Test for Condition 2a (survey offers)

Select Reporting Period:	05-06
Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts	105.8%
Survey Offers Equal or Exceed 20% Coverage Requirement	YES

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through	28
Credit for Surveys Completed Prior to Implementation of Reporting Database	
Total + Credit	28
CII Accounts in Base Year	1,471
RU Survey Coverage as a % of Base Year CII Accounts	1.9%
Coverage Requirement by Year of Implementation per Exhibit 1	1.5%
RU on Schedule to Meet 10 Year Coverage Requirement	ON TRACK

Test for Condition 2b (mixed use budget or meter retrofit program)

Report Year	Report Period	BMP 5 Implementation Year	Agency has mix-use budget program	No. of mixed-use budgets
1999	99-00			

2000	99-00			
2001	01-02		NO	
2002	01-02		NO	
2003	03-04		YES	5
2004	03-04		NO	
2005	05-06	1	NO	
2006	05-06	2	NO	

Report Year	Report Period	BMP 4 Implementation Year	No. of mixed use CII accounts	No. of mixed use CII accounts fitted with irrig. meters
1999	99-00			
2000	99-00			
2001	01-02			
2002	01-02			
2003	03-04		100	
2004	03-04		372	5
2005	05-06	1	367	
2006	05-06	2	367	

Test for Condition 3

Report Year	Report Period	BMP 5 Implementation Year	RU offers financial incentives?	No. of Loans	Total Amt. Loans
1999	99-00				
2000	99-00				
2001	01-02		YES		
2002	01-02		YES		
2003	03-04		YES		
2004	03-04		YES		
2005	05-06	1	NO		
2006	05-06	2	NO		

Report Year	Report Period	No. of Grants	Total Amt. Grants	No. of rebates	Total Amt. Rebates
1999	99-00				
2000	99-00				
2001	01-02			1	1,681
2002	01-02			7	24,879
2003	03-04			1	
2004	03-04				
2005	05-06				
2006	05-06				

BMP 5 COVERAGE STATUS SUMMARY:
Water supplier is not currently on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 6.

Condition 1: Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

Year	Report Period	BMP 6 Implementation Year	Rebate Offered by ESP?	Rebate Offered by RU?	Rebate Amount

Year	Report Period	BMP 6 Implementation Year	No. Rebates Awarded	Coverage Met?

BMP 6 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 07 Coverage: Public Information Programs

Reporting Unit: **City of Petaluma**

Reporting Period: **05-06**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program?
1999	99-00		
2000	99-00		
2001	01-02		
2002	01-02		
2003	03-04		
2004	03-04	1	
2005	05-06	2	
2006	05-06	3	

BMP 7 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 08 Coverage: School Education Programs

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program?
1999	99-00		
2000	99-00		
2001	01-02		
2002	01-02		
2003	03-04		
2004	03-04	1	
2005	05-06	2	
2006	05-06	3	

BMP 8 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit: **City of Petaluma**

Reporting Period: **05-06**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?	No

An agency must meet three conditions to comply with BMP 9.

Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence.
OR
Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence.
OR
Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation.

Test for Condition 1

Year	Report Period	BMP 9 Implementation Year	Ranked Com. Use	Ranked Ind. Use	Ranked Inst. Use
1999	99-00		NO	NO	NO
2000	99-00		NO	NO	NO
2001	01-02		NO	NO	NO
2002	01-02		NO	NO	NO
2003	03-04		YES	YES	YES
2004	03-04		YES	YES	YES
2005	05-06	1	YES	YES	YES
2006	05-06	2	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2006	76	1	18
Credit for Surveys Completed Prior to Implementation of Reporting Databases			
Total + Credit	76	1	18
CII Accounts in Base Year	1,296	27	148
RU Survey Coverage as % of Base Year CII Accounts	5.9%	3.7%	12.2%
Coverage Requirement by Year 2 of Implementation per Exhibit 1	1.0%	1.0%	1.0%
RU on Schedule to Meet 10 Year Coverage Requirement	YES	YES	YES

Test for Condition 2a

Year	Report Period	BMP 9 Implementation Year	Performance Target Savings (AF/yr)	Performance Target Savings Coverage	Performance Target Savings Coverage Requirement	Coverage Requirement Met
1999	99-00		25	0.8%		
2000	99-00		31	1.0%		
2001	01-02		39	1.2%		
2002	01-02		41	1.3%		
2003	03-04		42	1.3%		

2004	03-04		69	2.2%		
2005	05-06	1	69	2.2%	0.5%	YES
2006	05-06	2	69	2.2%	1.0%	YES

Test for Condition 2c

Total BMP 9 Surveys + Credit	95
BMP 9 Survey Coverage	6.5%
BMP 9 Performance Target Coverage	2.2%
BMP 9 Survey + Performance Target Coverage	8.6%
Combined Coverage Equals or Exceeds Coverage Requirement?	YES

BMP 9 COVERAGE STATUS SUMMARY:
Water supplier is on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates);rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Conserving WATER Rate Structure	RU Employed Conserving SEWER Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00			
2000	99-00			
2001	01-02			
2002	01-02			
2003	03-04	YES	YES	YES
2004	03-04	YES	YES	YES
2005	05-06	YES	YES	YES
2006	05-06	YES	YES	YES

BMP 11 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl. CC)
1999	99-00		
2000	99-00		
2001	01-02	YES	2
2002	01-02	YES	2
2003	03-04	YES	6
2004	03-04	YES	6
2005	05-06	YES	1
2006	05-06	YES	2

BMP 12 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:
City of Petaluma

Reporting Period:
05-06

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 13.

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1

Agency or service area prohibits:

Year	Gutter Flooding	Single-Pass Cooling Systems	Single-Pass Car Wash	Single-Pass Laundry	Single-Pass Fountains	Other	RU has ordinance that meets coverage requirement
1999							
2000							
2001							
2002							
2003	YES	YES	YES	YES	YES	NO	YES
2004	YES	YES	YES	YES	YES	NO	YES
2005	YES	YES	YES	YES	YES	NO	YES
2006	YES	YES	YES	YES	YES	NO	YES

BMP 13 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Petaluma**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1: Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2: Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement.
An agency with an exemption for BMP 14 is not required to meet one of the above conditions. This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14.

Status: Water supplier is on track to meet the coverage requirements for this BMP. as of 2006

Coverage Year	BMP 14 Data Submitted to CUWCC	Exemption Filed with CUWCC	ROR Ordinance in Effect	Exhibit 6 Coverage Req'mt (AF)	Toilet Replacement Program Water Savings* (AF)
2003	YES	NO	NO	28.16	112.04
2004	YES	NO	NO	80.72	152.28
2005	YES	NO	NO	154.30	197.50
2006	YES	NO	NO	245.90	248.83
2007	NO	NO	NO	352.83	
2008	NO	NO	NO	472.72	
2009	NO	NO	NO	603.44	
2010	NO	NO	NO	743.10	
2011	NO	NO	NO	890.04	
2012	NO	NO	NO	1042.78	

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year. Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:
Water supplier is on track to meet the coverage requirements for this BMP.

BEST MANAGEMENT PRACTICES
2003/2004 COVERAGE REPORTS

Reported as of 1/10/07

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1.

Condition 1: Adopt survey targeting and marketing strategy on time

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

	Single-Family	Multi-Family
City of Petaluma to Implement Targeting/Marketing Program by:	2004	
Year City of Petaluma Reported Implementing Targeting/Marketing Program:		
City of Petaluma Met Targeting/Marketing Coverage Requirement:	NO	NO

Test for Condition 2

			Single-Family	Multi-Family
Survey Program to Start by:	2003	Residential Survey Offers (%)		
Reporting Period:	03-04	Survey Offers ≥ 20%	NO	NO

Test for Condition 3

	Completed Residential Surveys	
	Single Family	Multi-Family
Total Completed Surveys 1999 - 2004:		
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):		
Total + Credit		
Residential Accounts in Base Year	16,286	3,325
City of Petaluma Survey Coverage as % of Base Year Residential Accounts		
Coverage Requirement by Year 1 of Implementation per Exhibit 1	0.70%	0.70%
City of Petaluma on Schedule to Meet 10-Year Coverage Requirement	NO	NO

BMP 1 COVERAGE STATUS SUMMARY:
Water supplier is not currently on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit: **City of Petaluma**

Reporting Period: **03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?	No

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1: The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2: An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3: The agency has distributed or directly installed low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period.

Test for Condition 1

		Single-Family		Multi-Family	
Report Year	Report Period	Reported Saturation	Saturation ≥ 75%?	Reported Saturation	Saturation ≥ 75%?
1999	99-00	39.00%	NO	39.00%	NO
2000	99-00	47.00%	NO	47.00%	NO
2001	01-02	54.00%	NO	54.00%	NO
2002	01-02	62.00%	NO	62.00%	NO
2003	03-04	68.00%	NO	68.00%	NO
2004	03-04	71.00%	NO	71.00%	NO
2005	05-06	74.00%	NO	74.00%	NO
2006	05-06	77.00%	YES	77.00%	YES

Test for Condition 2

Report Year	Report Period	City of Petaluma has ordinance requiring showerhead retrofit?
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO
2005	05-06	NO
2006	05-06	NO

Test for Condition 3

Reporting Period: 03-04

1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	Single-Family Coverage Ratio	SF Coverage Ratio > 10%
13,353	1,203	9.0%	NO
1992 MF Accounts	**Num. Showerheads Distributed to MF Accounts**	**Multi-Family Coverage Ratio**	**MF Coverage Ratio > 10%**
2,808	253	9.0%	NO

BMP 2 COVERAGE STATUS SUMMARY:
Water supplier is not currently on track to meet the coverage requirements for this

BMP.

Reported as of 1/10/07

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

Report Year	Report Period	Pre-Screen Completed	Pre-Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00				
2000	99-00				
2001	01-02	YES	93.6%	No	YES
2002	01-02				
2003	03-04	YES	94.1%	No	NO
2004	03-04	YES	101.2%	No	NO
2005	05-06	YES	96.1%	No	NO
2006	05-06	YES	91.8%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	Reporting Period:
City of Petaluma	**03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed	
Agency indicated "at least as effective as" implementation during report period?	No

An agency must be on track to retrofit 100% of its unmetered accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits Reported through 2004	
No. of Unmetered Accounts in Base Year	
Meter Retrofit Coverage as % of Base Year Unmetered Accounts	
Coverage Requirement by Year 0 of Implementation per Exhibit 1	
RU on Schedule to meet 10 Year Coverage Requirement	YES

BMP 4 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

Year	Report Period	BMP 5 Implementation Year	No. of Irrigation Meter Accounts	No. of Irrigation Accounts with Budgets	Budget Coverage Ratio	90% Coverage Met by Year 4
1999	99-00					NA
2000	99-00					NA
2001	01-02		595			NA
2002	01-02		595			NA
2003	03-04		595	9	1.5%	NA
2004	03-04		609	9	1.5%	NA
2005	05-06	1	543	318	58.6%	NA
2006	05-06	2	563	488	86.7%	NA

Test for Condition 2a (survey offers)

Select Reporting Period:	03-04
Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts	1.0%
Survey Offers Equal or Exceed 20% Coverage Requirement	NO

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through	21
Credit for Surveys Completed Prior to Implementation of Reporting Database	
Total + Credit	21
CII Accounts in Base Year	1,471
RU Survey Coverage as a % of Base Year CII Accounts	1.4%
Coverage Requirement by Year of Implementation per Exhibit 1	
RU on Schedule to Meet 10 Year Coverage Requirement	ON TRACK

Test for Condition 2b (mixed use budget or meter retrofit program)

Report Year	Report Period	BMP 5 Implementation Year	Agency has mix-use budget program	No. of mixed-use budgets
1999	99-00			

2000	99-00			
2001	01-02		NO	
2002	01-02		NO	
2003	03-04		YES	5
2004	03-04		NO	
2005	05-06	1	NO	
2006	05-06	2	NO	

Report Year	Report Period	BMP 4 Implementation Year	No. of mixed use CII accounts	No. of mixed use CII accounts fitted with irrig. meters
1999	99-00			
2000	99-00			
2001	01-02			
2002	01-02			
2003	03-04		100	
2004	03-04		372	5
2005	05-06	1	367	
2006	05-06	2	367	

Test for Condition 3

Report Year	Report Period	BMP 5 Implementation Year	RU offers financial incentives?	No. of Loans	Total Amt. Loans
1999	99-00				
2000	99-00				
2001	01-02		YES		
2002	01-02		YES		
2003	03-04		YES		
2004	03-04		YES		
2005	05-06	1	NO		
2006	05-06	2	NO		

Report Year	Report Period	No. of Grants	Total Amt. Grants	No. of rebates	Total Amt. Rebates
1999	99-00				
2000	99-00				
2001	01-02			1	1,681
2002	01-02			7	24,879
2003	03-04			1	
2004	03-04				
2005	05-06				
2006	05-06				

BMP 5 COVERAGE STATUS SUMMARY:
Water supplier is not currently on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 6.

Condition 1: Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

Year	Report Period	BMP 6 Implementation Year	Rebate Offered by ESP?	Rebate Offered by RU?	Rebate Amount

Year	Report Period	BMP 6 Implementation Year	No. Rebates Awarded	Coverage Met?

BMP 6 COVERAGE STATUS SUMMARY:
Water supplier is on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 07 Coverage: Public Information Programs

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program?
1999	99-00		
2000	99-00		
2001	01-02		
2002	01-02		
2003	03-04		
2004	03-04	1	
2005	05-06	2	
2006	05-06	3	

BMP 7 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 08 Coverage: School Education Programs

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program?
1999	99-00		
2000	99-00		
2001	01-02		
2002	01-02		
2003	03-04		
2004	03-04	1	
2005	05-06	2	
2006	05-06	3	

BMP 8 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit: **City of Petaluma**

Reporting Period: **03-04**

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?	No

An agency must meet three conditions to comply with BMP 9.

Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence.
OR
Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence.
OR
Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation.

Test for Condition 1

Year	Report Period	BMP 9 Implementation Year	Ranked Com. Use	Ranked Ind. Use	Ranked Inst. Use
1999	99-00		NO	NO	NO
2000	99-00		NO	NO	NO
2001	01-02		NO	NO	NO
2002	01-02		NO	NO	NO
2003	03-04		YES	YES	YES
2004	03-04		YES	YES	YES
2005	05-06	1	YES	YES	YES
2006	05-06	2	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2004	62	0	14
Credit for Surveys Completed Prior to Implementation of Reporting Databases			
Total + Credit	62		14
CII Accounts in Base Year	1,296	27	148
RU Survey Coverage as % of Base Year CII Accounts	4.8%		9.5%
Coverage Requirement by Year 0 of Implementation per Exhibit 1			
RU on Schedule to Meet 10 Year Coverage Requirement	YES	YES	YES

Test for Condition 2a

Year	Report Period	BMP 9 Implementation Year	Performance Target Savings (AF/yr)	Performance Target Savings Coverage	Performance Target Savings Coverage Requirement	Coverage Requirement Met
1999	99-00		25	0.8%		
2000	99-00		31	1.0%		
2001	01-02		39	1.2%		
2002	01-02		41	1.3%		
2003	03-04		42	1.3%		

2004	03-04		69	2.2%		
2005	05-06	1	69	2.2%	0.5%	YES
2006	05-06	2	69	2.2%	1.0%	YES

Test for Condition 2c

Total BMP 9 Surveys + Credit	76
BMP 9 Survey Coverage	5.2%
BMP 9 Performance Target Coverage	2.2%
BMP 9 Survey + Performance Target Coverage	7.3%
Combined Coverage Equals or Exceeds Coverage Requirement?	YES

BMP 9 COVERAGE STATUS SUMMARY:
Water supplier is on track to meet the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates);rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Conserving WATER Rate Structure	RU Employed Conserving SEWER Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00			
2000	99-00			
2001	01-02			
2002	01-02			
2003	03-04	YES	YES	YES
2004	03-04	YES	YES	YES
2005	05-06	YES	YES	YES
2006	05-06	YES	YES	YES

BMP 11 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl. CC)
1999	99-00		
2000	99-00		
2001	01-02	YES	2
2002	01-02	YES	2
2003	03-04	YES	6
2004	03-04	YES	6
2005	05-06	YES	1
2006	05-06	YES	2

BMP 12 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:
City of Petaluma

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 13.

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1

Agency or service area prohibits:

Year	Gutter Flooding	Single-Pass Cooling Systems	Single-Pass Car Wash	Single-Pass Laundry	Single-Pass Fountains	Other	RU has ordinance that meets coverage requirement
1999							
2000							
2001							
2002							
2003	YES	YES	YES	YES	YES	NO	YES
2004	YES	YES	YES	YES	YES	NO	YES
2005	YES	YES	YES	YES	YES	NO	YES
2006	YES	YES	YES	YES	YES	NO	YES

BMP 13 COVERAGE STATUS SUMMARY:
Water supplier has met the coverage requirements for this BMP.

Reported as of 1/10/07

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Petaluma**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1: Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2: Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement.
An agency with an exemption for BMP 14 is not required to meet one of the above conditions. This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14.

Status: Water supplier is on track to meet the coverage requirements for this BMP. as of 2006

Coverage Year	BMP 14 Data Submitted to CUWCC	Exemption Filed with CUWCC	ROR Ordinance in Effect	Exhibit 6 Coverage Req'mt (AF)	Toilet Replacement Program Water Savings* (AF)
2003	YES	NO	NO	28.16	112.04
2004	YES	NO	NO	80.72	152.28
2005	YES	NO	NO	154.30	197.50
2006	YES	NO	NO	245.90	248.83
2007	NO	NO	NO	352.83	
2008	NO	NO	NO	472.72	
2009	NO	NO	NO	603.44	
2010	NO	NO	NO	743.10	
2011	NO	NO	NO	890.04	
2012	NO	NO	NO	1042.78	

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year. Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:
Water supplier is on track to meet the coverage requirements for this BMP.