

**NORTH COAST COUNTY WATER DISTRICT**

**URBAN WATER MANAGEMENT PLAN**

**2010 - 2015**

**BOARD OF DIRECTORS:**

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**JUNE 2011**



# URBAN WATER MANAGEMENT PLAN

## 2010 - 2015

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# I. INTRODUCTION

This report has been prepared in compliance with the Urban Water Management Planning Act, as amended.<sup>1</sup> It updates the North Coast County Water District's existing *Urban Water Management and Water Shortage Contingency Plan - 2006 -2010*.<sup>2</sup>

This is the fourth Urban Water Management Plan to be prepared by the District<sup>3</sup> under the terms of AB 797 (1983) and subsequent amending legislation. This Plan also includes a Water Shortage Contingency Plan, as required under the provisions of AB 11X of (1991) and addresses changes required by subsequent legislation including the Water Conservation Act of 2009 (SBx7-7). This Plan also incorporates the water conservation initiatives that the District has adopted under the terms of the Memorandum of Understanding Regarding Urban Water Conservation in California, to which the District is a signatory.

This Plan will be presented to the Water District's Board of Directors who will conduct a public hearing prior to adoption. Once adopted it will supersede the existing plan prepared in 2006, and will be filed with the Water Efficiency Office in the Department of Water Resources, the California State Library, the Bay Area Water Supply and Conservation Agency, the San Francisco Water Department, San Mateo

## ACRONYMS AND ABBREVIATIONS USED IN THIS REPORT

ABAG - Association of Bay Area Governments
AF – Acre Feet (1 AF = 325,851 gallons)
AFY – Acre Feet per Year
BAWSCA – Bay Area Water Supply and Conservation Agency
BMP - Best Management Practice
CCF unit -A billing unit of 100 cubic feet or 748 gallons
CII - Commercial, Industrial and Institutional
CIMIS – California Irrigation Management Information System
CUWCC - California Urban Water Conservation Council
DMM - Demand Management Measure
EOC - Emergency Operations Center
Eto – Evapo-transpiration rate
gpcd - Gallons per capita per day
ISA – Interim Supply Allocation
ISG – Individual Supply Guarantee
mg - million gallons
mgd - million gallons a day
MOU - Memorandum of Understanding
NCCWD – North Coast County Water District
PEIR – Programmatic Environmental Impact Report
RWS – Regional Water System; also Hetch Hetchy System
SFPUC - San Francisco Public Utilities Commission
WSA – Water Supply Agreement
WCIP - Water Conservation Implementation Plan
WSAP – Water Shortage Allocation Plan

<sup>1</sup>California Water Code, Division 6, Part 2.6; Sec. 10610, et. seq. Established by Assembly Bill 797 (1983).

<sup>2</sup>North Coast County Water District, *Urban Water Management and Water Shortage Contingency Plan*, adopted January, 2006.

<sup>3</sup> Throughout this report the North Coast County Water District may be referred to variously as the “District”, “NCCWD”, and the Water District as well as by its proper name.

County and the City of Pacifica, as required by law, and will be used by the District staff to guide the District's water conservation efforts through the year 2015. As required by Section 10621 (a) of the Water Code, the District will update the Plan again by December 2015.

## **II. PUBLIC PARTICIPATION AND INTERAGENCY COORDINATION**

### **A. PUBLIC PARTICIPATION**

The North Coast County Water District provided a notice of preparation of this Urban Water Management Plan in the local newspaper and on the District's website in the spring of 2011, and notified the agencies shown in Table 1 more than 90 days in advance of completing the Draft UWMP. The public notices were published to encourage the involvement of diverse social, cultural, and economic elements of the service area population. On June 15, 2011 the District convened a public hearing at its office in Pacifica to receive comments on the Plan prior to its final adoption by the Board of Directors and submittal to the California Department of Water Resources. The full UWMP, including the District's implementation plan for the Water Conservation Act of 2009 (SBx7-7), was to be discussed at the public hearing. Documentation related to the notices and adoption of the plan is found in Appendix E.

### **B. INTERAGENCY COORDINATION**

#### **1. BAY AREA WATER SUPPLY AND CONSERVATION AGENCY**

The Water District is a member of BAWSCA, Bay Area Water Supply and Conservation Agency and participates in a number of the regional water conservation initiatives coordinated by BAWSCA. BAWSCA was created on May 27, 2003 to represent the interests of 26 cities and water districts, a water company, and a university, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the San Francisco Regional Water System (RWS). Collectively the BAWSCA agencies are referred to as the Wholesale Customers.

BAWSCA is the only entity that has the authority to directly represent the needs of the cities wholesale customers that depend on the RWS. Through BAWSCA the wholesale customers can work with the San Francisco Public Utilities Commission (SFPUC) on an equal basis to ensure the RWS is rehabilitated and maintained to collectively and efficiently meet local responsibilities.

BAWSCA has the authority to coordinate water conservation, supply and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the regional water system; and build facilities jointly with other local public agencies or on its own to carry out the agency's purposes.

Compliance with the Urban Water Management Planning Act lies with each agency that delivers water to its customers. In this instance, the responsibility for completing an UWMP lies with the North Coast County Water District. BAWSCA’s role in the development of the 2010 UWMP updates is to work closely with its member agencies and the SFPUC to maintain consistency among the multiple documents being developed.

## 2. OTHER AGENCIES

Virtually all land use planning and development approvals within the Water District’s boundaries are the responsibility of the City of Pacifica. The City of Pacifica also provides for wastewater collection and treatment within the Water District’s service area. Fire suppression services are provided by the North County Fire Authority (serving Pacifica, Daly City and Brisbane). The coordination with these agencies is summarized in Table 1.

TABLE 1 COORDINATION AND PUBLIC INVOLVEMENT				
Agency	Was sent a Notice of Preparation	Was contacted for Assistance	Was sent a copy of the Draft Plan	Was sent a Notice of Intention to Adopt
BAWSCA	4	4	4	4
City of Pacifica	4	4	4	4
San Francisco Public Utilities Commission	4	4	4	4
San Mateo County	4		4	4
North County Fire Authority	4		4	4

# III. DISTRICT DESCRIPTION

## A. LOCATION AND SIZE

The North Coast County Water District serves the north coastal area of San Mateo County. The District's boundaries are nearly the same as those of the City of Pacifica. Figure 1 is a map of the District highlighting the District boundaries. Areas where the District's and City's boundaries are not contiguous are mostly park and open space lands, including portions of Golden Gate National Recreation Area lands (Sweeney Ridge) to the east and San Pedro Valley County Park to the south.<sup>1</sup> The District has very few service connections on lands that are outside the City's urban area.

The District is located on the western slopes of the coastal mountains overlooking the Pacific Ocean. Highway 1 forms the spine of the District, which is bounded, generally, by Daly City on the north, Skyline Boulevard and South San Francisco on the east, Montara Mountain on the south, and the Pacific Ocean on the west. The District is approximately 6.5 miles long and extends about a mile inland from the coast at the northern end to as much as 3 miles inland in the south, along San Pedro Creek in the Linda Mar district.

## B. CLIMATE

Pacifica has a semi-arid Mediterranean coastal climate typified by cool summers and mild winters. The warmest months of the year are September and October, and the coldest are December and January. As shown in Table 2, the average daily maximum temperature in September is 66.0°, while the average maximum temperature in January is 56.0°.

The average annual precipitation is 22.0 inches, virtually all of which is rainfall, with about 87 percent falling between November and April. Rainfall amounts vary widely from year to year. Long term records from nearby Half Moon Bay show a low of 13.13 inches in 1976 and a high of 55.01 inches in 1983. Because of the District's location in the Coastal Fog Belt, the evapo-transpiration rate is very low in comparison to other areas of California, particularly during the summer months. As a consequence, urban water consumption in the San Francisco Bay hydrologic region is among the lowest in the State, estimated to average 157 gallons per capita per day (gpcd) compared to the statewide average of 192 gpcd.

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<sup>1</sup> San Pedro Valley County Park is owned by the District and leased to the County.

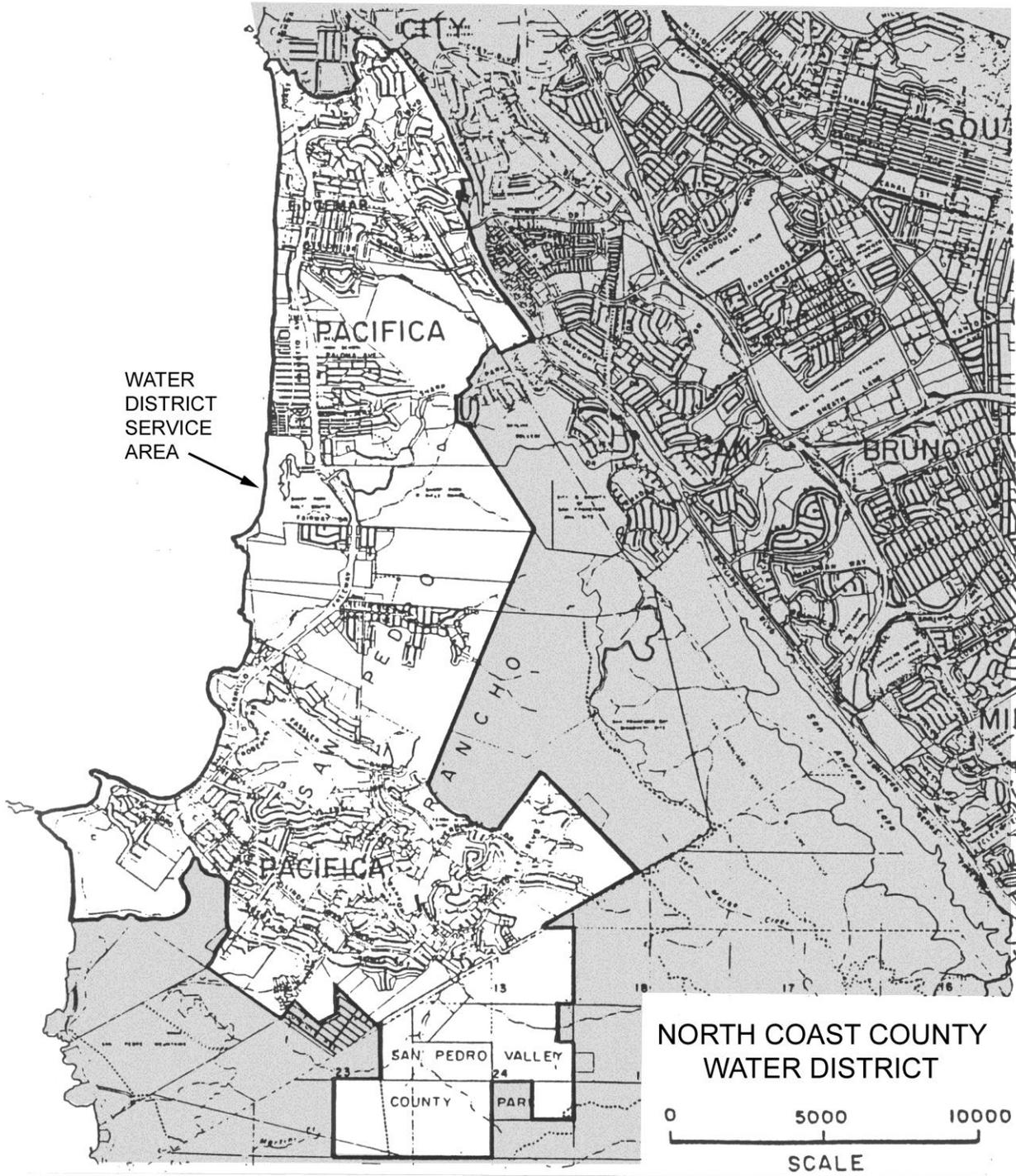
<b>Table 2</b> <b>NORTH COAST COUNTY WATER DISTRICT</b> <b>Climate Data</b>							
	January	February	March	April	May	June	July
Standard Average Eto (in./mo.)	0.93	1.40	2.48	3.30	4.03	4.50	4.65
Average Rainfall (in.)	3.22	4.27	2.24	1.33	0.64	0.25	0.13
Average Max. Temperature (°F)	56.0	57.4	59.0	58.5	61.9	63.7	64.8

	August	September	October	November	December	Annual
Standard Average Eto (in./mo.)	4.03	3.30	2.40	1.20	0.62	33.0
Average Rainfall (in)	0.07	0.17	0.70	1.65	7.54	22.0
Average Max. Temperature	65.5	66.0	63.7	59.8	56.2	61.0

Eto (Evapotranspiration) rates in inches/month from California Irrigation Management System (CIMIS) reference Evapotranspiration Zones Map for Zone 1, Coastal Plains Heavy Fog Belt.  
 Rainfall and temperature data for Pacifica 2 S monitoring station, from Western Regional Climate Center; 2000 - 2009.

DISTRICT BOUNDARIES

FIGURE 1



## C. DEMOGRAPHY

The population of Pacifica (which is considered the population of the District), was 38,700 in 1995 and 38,390 in 2000. The estimated population in 2005 was 38,700, and in 2010 the population was estimated at 39,000.<sup>1</sup> Pacifica is primarily residential. The major employers are governmental agencies (such as school districts) and retail commercial enterprises. There are no significant industrial employers. Most residents commute to nearby employment centers. According to ABAG, there are currently about 6,360 jobs in Pacifica while there are 19,050 employed residents<sup>2</sup>.

The population of the area served by the District has grown slowly in recent years. Between the 1980 Census and the 1990 Census the population grew by 771 people, and between 1990 and 2000 the population grew by 720 people, a rate of 0.2% per year. Between 2000 and 2010, it is estimated that the population grew by 610 people, equivalent to only 0.156% per year. While the City is currently updating its General Plan, the current projections for population growth show a somewhat higher rate of growth over the coming 25 years, with a projected population increase of 3,400 people by 2035. Table 3 depicts the projected population in five-year increments to 2035. On average, a population growth of 136 people per year is projected during this period.

TABLE 3 POPULATION PROJECTIONS North Coast County Water District Service Area						
	2010	2015	2020	2025	2030	2035
Pacifica Population	39,000	39,800	40,600	41,400	42,000	42,400
Source: Dyett & Bhatia, <i>Pacifica General Plan Update, Existing Conditions and Key Issues</i> , July 2010; Donaldson Associates. 2035 projection is extrapolated.						

The Water District has approximately 12,033 service connections of which 96% are residential services. Over the next 25 years it is expected that the District will add connections at a rate generally proportionate to the projected rate of growth, or approximately 50 new connections a year, on average.

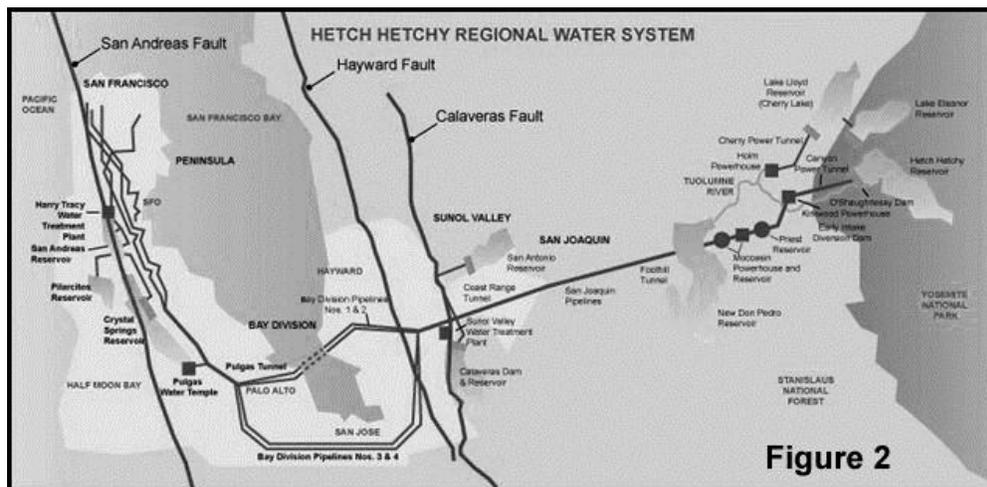
<sup>1</sup> Dyett & Bhatia, *Pacifica General Plan Update, Existing Conditions and Key Issues*, July, 2010, Table 3-4.

<sup>2</sup> ABAG, *Projections 2009*, SSA Tables, 2010 data.

## D. WATER SUPPLY SOURCES

### 1. THE HETCH HETCHY SYSTEM

Currently, the District obtains all of its water from the City and County of San Francisco's regional system, operated by the San Francisco Public Utilities Commission (SFPUC). This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties. The Hetch Hetchy Regional Water System is illustrated in Figure 2.



**Figure 2**

The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional

parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies.

The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff.

Water from the regional system<sup>1</sup> is furnished from a District-operated pumping station located at the SFPUC's Harry Tracy Water Treatment Plant. The water is filtered and treated before delivery to the District. From the District-operated pumping station, water is conveyed north to the District through a 21-inch transmission pipeline approximately three miles long.<sup>2</sup> The contractually assured supply from the San Francisco Public Utilities Commission is 3.838 mgd, equivalent to 1,400.9 mg a year or 4,299.2 acre-feet a year.

<sup>1</sup> In this report the terms "Hetch Hetchy System" and "Regional System" are used interchangeably and are intended to refer to the entire SFPUC system.

<sup>2</sup> Under a special arrangement with the City of San Bruno, one multi-family housing development in San Bruno that is near the NCCWD pipeline is supplied with water via a direct connection to the pipeline.

## **2. SFPUC'S WATER SYSTEM IMPROVEMENT PLAN**

In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC has undertaken the Water System Improvement Program (WSIP), approved October 31, 2008. The WSIP will deliver capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high quality water to customers in a reliable, affordable and environmentally sustainable manner. Many of the water supply and reliability projects evaluated in the WSIP were originally put forth in the SFPUC's Water Supply Master Plan (2000).

A Programmatic Environmental Impact Report (PEIR) was prepared in accordance with the California Environmental Quality Act for the WSIP. The PEIR, certified in 2008, analyzed the broad environmental effects of the projects in the WSIP at a program level and the water supply impacts of various alternative supplies at a project level. Individual WSIP projects are also undergoing individual project-specific environmental review as required.

In approving the WSIP, the Commission adopted a Phased WSIP Variant for water supply that was analyzed in the PEIR. This Phased WSIP Variant established a mid-term water supply planning milestone in 2018 when the Commission would reevaluate water demands through 2030. At the same meeting, the Commission also imposed the Interim Supply Limitation, which limits the volume of water that the member agencies and San Francisco can collectively purchase from RWS to 265 mgd until at least 2018. Although the Phased WSIP Variant included a mid-term water supply planning milestone, it did include full implementation of all proposed WSIP facility improvement projects to insure that the public health, seismic safety, and delivery reliability goals were achieved as soon as possible.

As of July 1, 2010, the WSIP was 27% complete overall with the planning and design work over 90% complete. The WSIP is scheduled to be completed in December 2015.

## **3. OTHER SOURCES OF SUPPLY**

### **Local Surface Water**

The District has water rights that allow it to divert up to 500 gallons per minute (gpm) from San Pedro Creek, located in the coastal foothills in the southern portion of the District, between December 1 and April 30 and 210 gpm during May. Because the Department of Fish and Game requires a minimum instream flow, the amount of water that the District is able to divert during the winter and spring months falls significantly below the appropriation limits in years with low precipitation. The water diverted from San Pedro Creek must be treated before distribution to customers. The District-owned treatment plant adjacent to the creek has been out of commission since 1997, so no water has been diverted into the distribution system since that time.

For planning purposes it is assumed that the San Pedro Creek source of supply will not be operational during the term of this UWMP, although the District will review its potential as a future source of supply, possibly for irrigation water, that could be implemented after 2015. As shown in Table 4, it is assumed that San Pedro Creek has the potential to supply an average of 107 AFY (35 mg a year) in years of normal rainfall, but only about 9 AFY (3 mg a year) in a severe drought. This local water supply would provide less than 2.5% of the District’s demand in normal years and as little as 0.3% of demand in drought years.

TABLE 4 POTENTIAL SURFACE WATER SUPPLY		
Supply Source	Estimated Annual Maximum Supply	
	Constrained Yield <sup>a</sup>	Normal Yield <sup>b</sup>
San Pedro Creek Surface Water	0 – 9.0 AFY <sup>c</sup>	0 – 107.0 AFY <sup>d</sup>
<sup>a</sup> Supplies would typically be constrained in single or multiple years of below-normal precipitation. <sup>b</sup> Normal yields typically are available in years of normal or above-normal precipitation. <sup>c</sup> Based on 1991 production. <sup>d</sup> Based on average production in non-drought years during the 1970’s and ‘80’s.		

**Groundwater**

Local groundwater resources are not considered to be of adequate quality or quantity to be a viable augmenting resource, and have not been developed as a source of supply for the District. Nor does the District have any plans for conjunctive use projects, involving the development of surface water/groundwater resources together.

**Recycled Water**

Recycled water is available from the City of Pacifica’s wastewater treatment plant. It is used for wetland restoration, and, beginning in 2012, it will be supplied to Sharp Park Golf Course (which is not a District customer) and projects are in development to supply it to other irrigation accounts that are District customers. The Recycled Water project is discussed separately, later in this report. See Section III, I, below.

**Desalination**

The North Coast County Water District does not have an existing or planned program to develop or distribute any desalinated water. A study performed in 1996 concluded that water desalination would not be cost effective.

## **E. RELIABILITY OF SUPPLY**

### **1. CURRENT CONTRACTUAL ASSURANCES**

#### **2009 Water Supply Agreement**

The business relationship between San Francisco and its wholesale customers is largely defined by the "*Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County*" entered into in July 2009 (WSA). The new WSA replaced the Settlement Agreement and Master Water Sales Contract that expired June 2009. The WSA addresses the rate-making methodology used by San Francisco in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the RWS. The WSA has a 25-year term.

In terms of water supply, the WSA provides for a 184 million gallon per day (mgd, expressed on an annual average basis) "Supply Assurance" to the SFPUC's wholesale customers, subject to reduction, to the extent and for the period made necessary by reason of water shortage, due to drought, emergencies, or by malfunctioning or rehabilitation of the regional water system. The WSA does not guarantee that San Francisco will meet peak daily or hourly customer demands when their annual usage exceeds the Supply Assurance. The SFPUC's wholesale customers have agreed to the allocation of the 184 mgd Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth on Attachment C to the WSA. The North Coast County Water District's Supply Assurance is 3.838 mgd. The Supply Assurance survives termination or expiration of the WSA and North Coast's Individual Water Sales Contract with San Francisco.

The Water Shortage Allocation Plan between the SFPUC and its wholesale customers, adopted as part of the WSA in July 2009, addresses shortages of up to 20% of system-wide use. The Tier 1 Shortage Plan allocates water from the RWS between San Francisco Retail and the wholesale customers during system-wide shortages of 20% or less. The WSA also anticipated a Tier 2 Shortage Plan adopted by the wholesale customers, which would allocate the available water from the RWS among the wholesale customers.

#### **Individual Supply Guarantees**

In 2009, the North Coast County Water District, along with 25 other Bay Area water suppliers signed a Water Supply Agreement (WSA) with San Francisco, supplemented by an individual Water Supply Contract. These contracts, which expire in 25 years, provide for a 184 million gallon a day (mgd, expressed on an annual average basis) Supply Assurance to the SFPUC's wholesale customers collectively. The North Coast County Water District's Individual Supply Guarantee (ISG) is 3.838 mgd (or approximately 4,299.2 acre-feet per year). Although the WSA and accompanying Water Supply Contract expire in 2034, the Supply Assurance (which quantifies San Francisco's obligation to supply water to its individual wholesale customers)

survives their expiration and continues indefinitely, as noted above.

**2. INTERIM SUPPLY LIMITATION AND THE WATER CONSERVATION IMPLEMENTATION PLAN**

On October 31, 2008 the SFPUC imposed an Interim Supply Limitation on the RWS that limits the volume of water that BAWSCA member agencies and San Francisco can collectively purchase from the RWS to 265 mgd until at least 2018.

In September 2009, BAWSCA completed the Water Conservation Implementation Plan (WCIP). The goal of the WCIP is to develop an implementation strategy for BAWSCA and its member agencies to attain the water efficiency goals that the agencies committed to in 2004 as part of the Programmatic Environmental Impact Report (PEIR) of the Water System Improvement Program (WSIP), described above. The WCIP’s goal was expanded to include identification of how BAWSCA member agencies could use water conservation as a way to continue to provide reliable water supplies to their customers through 2018 given the SFPUC’s 265 million gallons per day (mgd) Interim Supply Limitation.

Based on the WCIP development and analysis process, BAWSCA and its member agencies identified five new water conservation measures that, if implemented fully throughout the BAWSCA service area, could potentially save an additional 8.4 mgd by 2018 and 12.5 mgd by 2030. The demand projections for the BAWSCA member agencies, as transmitted to the SFPUC on June 30, 2010, indicate that the collective purchases from the SFPUC will stay below 184 mgd through 2018 as a result of revised water demand projections, the identified water conservation savings, and other actions.

Several member agencies have elected to participate in the BAWSCA regional water conservation programs and BAWSCA continues to work with individual member agencies to incorporate the savings identified in the WCIP into their future water supply portfolios with the goal of maintaining collective SFPUC purchases below 184 mgd through 2018.

Table 5, below, summarizes the North Coast County Water District’s Supply Guarantee and Interim Supply Assurance (through 2018).

<p><b>TABLE 5</b></p> <p><b>ANNUAL WATER SUPPLY LIMITS</b></p> <p><b>BASED ON SFPUC CONTRACTUAL ASSURANCE</b></p>	
<p><b>Supply Source</b></p>	<p><b>Estimated Annual Maximum Purchases</b></p>

	<b>Interim Supply (through 2018)</b>	<b>Normal Supply<sup>a</sup></b>
San Francisco Public Utilities Commission	4,110.94 AFY <sup>b</sup> (3.67 mgd)	4,299.2 AFY <sup>c</sup> (3.838 mgd)
<sup>a</sup> Supplies would typically be constrained in single or multiple years of below-normal precipitation. <sup>b</sup> SFPUC, Final Interim Supply Allocations, December 14, 2010. <sup>c</sup> Individual Supply Guarantee for NCCWD from the Water Supply Agreement, July 1, 2009, Attachment C.		

### 3. LONG TERM RELIABLE WATER SUPPLY STRATEGY

BAWSCA's water management objective is to ensure that a reliable, high quality supply of water is available where and when people within the BAWSCA service area need it. A reliable supply of water is required to support the health, safety, employment, and economic opportunities of the existing and expected future residents in the BAWSCA service area and to supply water to the agencies, businesses, and organizations that serve those communities. BAWSCA is developing the Long-Term Reliable Water Supply Strategy (Strategy) to meet the projected water needs of its member agencies and their customers through 2035 and to increase their water supply reliability under normal and drought conditions.

The Strategy is proceeding in three phases. Phase I was completed in 2010 and defined the magnitude of the water supply issue and the scope of work for the Strategy. Phase II of the Strategy is currently under development and will result in a refined estimate of when, where, and how much additional supply reliability and new water supplies are needed throughout the BAWSCA service area through 2035, as well as a detailed analysis of the water supply management projects, and the development of the Strategy implementation plan. Phase II will be complete by 2013. Phase III will include the implementation of specific water supply management projects. Depending on cost-effectiveness, as well as other considerations, the projects may be implemented by a single member agency, by a collection of the member agencies, or by BAWSCA in an appropriate timeframe to meet the identified needs. Project implementation may begin as early as 2013 and will continue throughout the Strategy planning horizon, in coordination with the timing and magnitude of the supply need.

The development and implementation of the Strategy will be coordinated with the BAWSCA member agencies and will be adaptively managed to ensure that the goals of the Strategy, i.e., increased normal and drought year reliability, are efficiently and cost-effectively being met.

## F. WATER QUALITY

The SFPUC maintains and monitors the quality of the water imported from Hetch Hetchy, and

collected and distributed as part of its regional system. The Hetch Hetchy supply is treated with lime addition at River Rock for corrosion control and chlorination at Tesla Portal for disinfection. Water that is delivered to Bay Area reservoirs receives filtration and disinfection treatment at either the Sunol or Harry Tracy filtration plants. Water from either of these treatment plants may be commingled with unfiltered Hetch Hetchy water in Bay Area transmission pipelines.

The SFPUC and its wholesale customers were granted filtration avoidance for the Hetch Hetchy supply under Federal and State regulations in 1998. Under the regulations, public water systems serving water from the Hetch Hetchy supply, including the North Coast County Water District, must demonstrate to the California Department of Public Health that the supply meets the State criteria for filtration avoidance.

Monitoring of the water quality within the District’s distribution system is the District’s responsibility. The District regularly monitors the quality of water in its system following an established set of sampling and testing protocols that have been approved by the State Department of Public Health. Sampling and testing is done weekly for bacteriological quality and disinfection residual, and quarterly for trihalomethanes. The on-going water quality sampling and testing efforts have consistently demonstrated that the District’s water supply meets all applicable State and Federal drinking water standards.

## G. LOCAL STORAGE

The District’s water supply line from SFPUC’s Harry Tracy Water Treatment Plant crosses the San Andreas Fault. Because of the possibility that its primary source of supply could be disrupted by an earthquake, the District has constructed more water storage reservoirs than would be expected for a District of this size. The District’s Storage tank capacities are listed in Table 6.

TABLE 6 NORTH COAST COUNTY WATER DISTRICT TREATED WATER STORAGE FACILITIES	
# Tank Identification	Capacity (gal.)
1. Christen Hill <sup>a</sup>	0 <sup>b</sup>
2. Sharp Park	500,000
3. Vallemar	200,000
4. Hickey	600,000
5. Fassler	500,000
6. Royce (Big)	5,000,000

7. Royce (Middle)	3,000,000
8. Royce (Small)	750,000
9. Tapis	400,000
10. Park Pacifica	1,000,000
11. Alvarado (Sheila)	100,000
12. Gypsy Hill	3,000,000
13. Milagra Ridge	5,000,000
<b>TOTAL</b>	<b>20,050,000</b>
<sup>a</sup> The Westborough Water District owns 0.5 mg of the 4.0 mg tank. <sup>b</sup> This tank is being replaced. It will be back in service in 2012.	

In all, the North Coast County Water District stores approximately 20.05 million gallons of water. In addition, the District is rebuilding the Christen Hill Tank, which will add 3.5 million gallons of storage capacity. Fire defense storage is maintained at approximately 3 million gallons. The remaining supply in storage would be sufficient to meet the District's average daily demand for between 6 and 7 days.

## H. EXCHANGES WITH OTHER AGENCIES

As a wholesale customer of the San Francisco PUC, the North Coast County Water District has a direct connection to San Francisco's huge Hetch Hetchy system. As noted above, the District's water transmission system is connected with the San Francisco system via a supply pipeline originating at the Harry Tracy Water Treatment Plant and running along Skyline Boulevard in the hills above Pacifica.

In addition, the District has interties with three adjoining water systems. There are two connections with the City of Daly City's system, three with the City of San Bruno's system, and two with the Westborough Water District system. The District shares a water storage tank<sup>1</sup> with Westborough and water from the SFPUC Regional Water System is routinely transferred and exchanged between Westborough and NCCWD in the course of operating this storage tank.

The interties with Westborough, Daly City and San Bruno, and the water exchanges that do occur are neither a current nor planned source of water supply for North Coast. The interconnections are used to manage existing supplies, and also provide potential emergency back-up sources of water. As described below, the District also maintains a large volume of water in storage for potential emergency use.

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<sup>1</sup> The Christen Hill tank, which is currently being replaced. It will be back in service in 2012.

## I. PLANNED WATER SUPPLY PROJECTS AND PROGRAMS

The North Coast County Water District serves an area that is almost built out, and the District's boundaries are set. Its supply assurance of 3.838 mgd (about 4,299.2 acre feet per year) under the terms of the Water Supply Agreement with the SFPUC continues indefinitely, and is sufficient to meet current and projected water demands.

Nevertheless, the District is developing plans for two small supplemental supplies, described below, that could reduce the demand on the SFPUC's regional system by a small amount.

### 1. SAN PEDRO CREEK SURFACE WATER

The District is investigating the financial and engineering feasibility of reconstructing the San Pedro Creek treatment plant, which has been out of operation since 1997. As noted above (Section III, D, 3), this supply has the potential to marginally augment the District's Hetch Hetchy supply, possibly for irrigation uses. However, it will not be developed in the next 5 years and is not considered a planned supply project for purposes of this UWMP.

### 2. WASTEWATER DISPOSAL FACILITIES AND RECLAIMED WATER USE

The City of Pacifica is responsible for the collection, treatment and disposal of sewage in the District's service area. In the summer of 2000, the City opened its Calera Creek Water Recycling Plant, which produces treated effluent that meets the State Department of Public Health's requirements for landscape irrigation, without limitations on human contact. The treatment plant utilizes sequential batch reactor technology, has a tertiary sand filtration system for additional clarification and disinfects the water with ultraviolet light. It has a designed capacity of 4 mgd. The treated effluent is currently discharged to an adjacent restored wetland, however only a portion of the treated water is needed to support the wetland. An ample surplus of reclaimed water is available for other applications.

The Water District supported the City's efforts to rebuild the existing treatment plant in a manner that could provide Pacifica with a source of reclaimed wastewater. In 1997, the District sponsored a feasibility study to identify potential applications, quantify the potential demand and evaluate the infrastructure improvements that would be necessary to transport the reclaimed water to end users.<sup>1</sup> Potential users were identified throughout the District, although the most cost effective to serve were those located near the water treatment plant, including the Sharp Park Golf Course. While located in Pacifica, the golf course is owned and operated by the San

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<sup>1</sup> Kennedy/Jenks Engineers, *Conceptual Water Reclamation Plan*, April 1997.

Francisco Recreation and Parks Department.

### 3. WASTEWATER RECLAMATION PROJECT

In February 2011, the District began construction of the Phase 1 infrastructure project that will enable the distribution of recycled water from the Calera Creek treatment plant to Sharp Park Golf Course and other irrigation applications within the District. The project consists of a pumping station at the Calera Creek Water Recycling Plant, a 400,000-gallon storage tank and approximately 17,000 feet of distribution pipelines. As a related activity, the SFPUC is abandoning the existing potable water line between the San Francisco Jail in San Bruno and Sharp Park Golf Course.<sup>1</sup> The recycled water project is expected to be completed and operational by the end of 2011.

In addition to providing irrigation water for the Sharp Park Golf Course, the Phase 1 project would supply irrigation water for the Sharp Park Beach Boulevard Promenade (3.5 acres), Fairway Park (5.2 acres), Highway One landscaping (between Sharp Park and Paloma Avenue), and the turf playing fields at Oceana High School and Ingrid B. Lacy Middle School. In recent years the annual average usage by the golf course has been 120 AF, while the average annual usage for the other facilities has totaled about 42.1 AF. The current and projected volumes and uses of recycled water within the District’s boundaries are summarized in Table 7.

A future Phase 2 program that would expand the distribution system to more users is under consideration, but the final planning, design and environmental studies have not commenced. The earlier planning studies identified a potential demand of 63 mg a year (193 AFY). Based on this, the future Phase 2 program could supply an additional 21 AFY for landscape irrigation uses. It is not expected that the Phase 2 program will be completed during the term of this Plan, although the planning and design work may be started.

TABLE 7 CURRENT AND PROJECTED VOLUMES AND USES OF RECYCLED WATER				
Time Period	Total Amount	Deliveries to non-NCCWD Customers	Deliveries to NCCWD Customers	Type of Use

<sup>1</sup> Sharp Park Golf Course is within the NCCWD boundaries, but has always been supplied with irrigation water directly by the SFPUC via this separate pipeline. The Golf Course has never been a North Coast customer. Until the proposed recycled water distribution system is in place, North Coast will be “wheeling” SFPUC water to the golf course through its transmission lines.

District Description

Current (2010)	Average annual flow of 3.5 mgd	0	0	Wetland Restoration
2012	162.1 AFY	120 AFY	42.1	Sharp Park Golf Course, Highway Landscaping, School Playing Fields, remainder to wetland
2012-2035	172.5 AFY	120 AFY	42.1	Same

## IV. PAST AND CURRENT WATER USE

### A. WATER PRODUCTION

The District's total annual water production, by source of supply is shown in Table 8, below. The data between 1980 and 2000 is summarized in 5-year increments. Since 1997, all of the District's water has been supplied by the San Francisco Public Utilities Commission. Prior to 1997 local production was available from San Pedro Creek, and ranged from 0 to 2.5% of the annual total, depending on the amount of local rainfall and runoff to the creek.

<b>TABLE 8</b> <b>WATER PRODUCTION</b> 1990 – 2000: 5 -Year Increments 2000 – 2010: Annual Increments in Acre-Feet per Year and Million Gallons a Day				
Year	Source		Total	
	San Francisco Public Utilities Commission	San Pedro Creek	AFY	mgd
1990	3,336.20 AFY	42.12 AFY	3,438.40	3.07
1995	3,338.12	105.56	3,448.19	3.08
2000	3,688	0	3,688	3.41
2001	3,924.27	0	3,924.27	3.39
2002	3,924.24	0	3,924.24	3.50
2003	3,898.26	0	3,898.26	3.48
2004	3,974.48	0	3,974.48	3.56
2005	3,768	0	3,768	3.41
2006	3,643.20	0	3,643.20	3.25
2007	3,424.24	0	3,424.24	3.06
2008	3,543.47	0	3,543.47	3.16
2009	3,304.26	0	3,304.26	2.95
2010	3,350.62	0	3,350.62	2.99

### B. WATER SALES AND UNMETERED WATER

The North Coast County Water District's annual water sales and unmetered water, in volume

and as a percent of production, are depicted in Table 9. The data is presented in 5-year increments from 1990-2005 and for each year since 2005.

<b>TABLE 9</b> <b>WATER SALES AND UNMETERED WATER</b> 5-Year Increments, 1990 – 2005 1-Year Increments, 2005 - 2010 in Acre Feet per Year									
Description	1990	1995	2000	2005	2006	2007	2008	2009	2010
Water Sales	3,159.43	3,233.67	3,586	3,215.67	3,199.74	3,166.80	3,237.20	3,034.92	2,948.42
Unmetered Water	278.97	214.52	102	471.20	443.24	257.44	305.67	269.34	302.2
Unmetered Water; % of purchases	8.1%	6.2%	2.8%	12.8%	12.1%	7.5%	8.6%	8.1%	9.0%

Unmetered water includes authorized and unauthorized uses. Authorized uses include water for firefighting and training, hydrant flushing and other miscellaneous uses. Unauthorized uses include pipeline leaks, water meter inaccuracy, tank overflows, and possible stolen water. The unauthorized component of unmetered water is also known as unaccounted-for water. It is estimated that about one-third of the unmetered water goes to authorized uses; the remaining two-thirds is unaccounted-for water. As can be seen in Table 9, unmetered water volumes can vary widely from year to year, particularly in the event of major pipeline breaks.

### C. WATER SALES BY USER CATEGORY

Water sales and accounts by billing category are summarized in Table 10 for the past 20 years. In the past 5 years single-family residential consumption has accounted for about 75% of the water sold by the District while multi-family sales have been about 10% of sales and commercial and public authority sales have accounted for 6% - 7% each, with about 2% for irrigation. The relative proportions of connections and sales by user category are illustrated in Figures 3 and 4.

**TABLE 10**  
**SERVICE CONNECTIONS AND WATER SALES**

1990 – 2000: 5 -Year Increments

2000 – 2010: Annual Increments

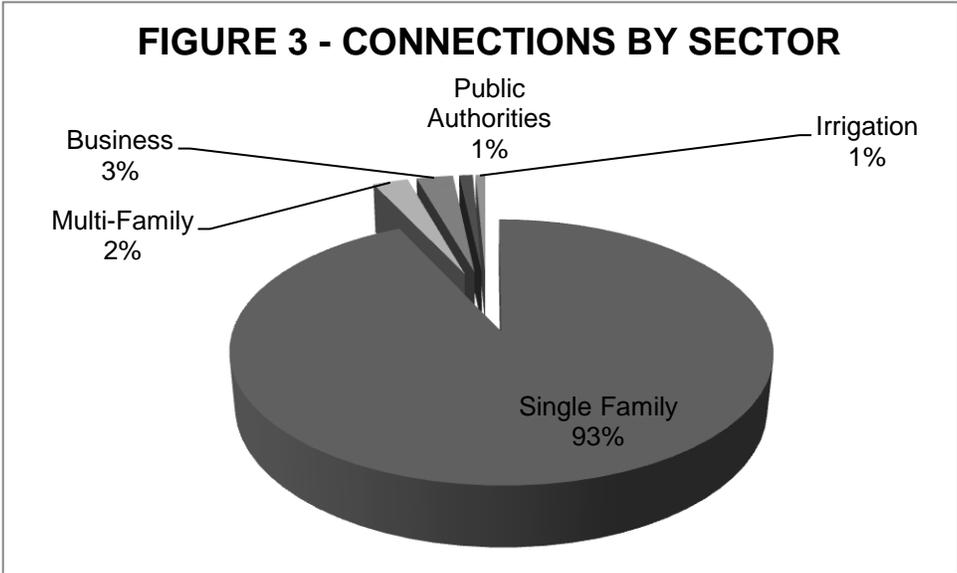
in Acre-Feet per Year

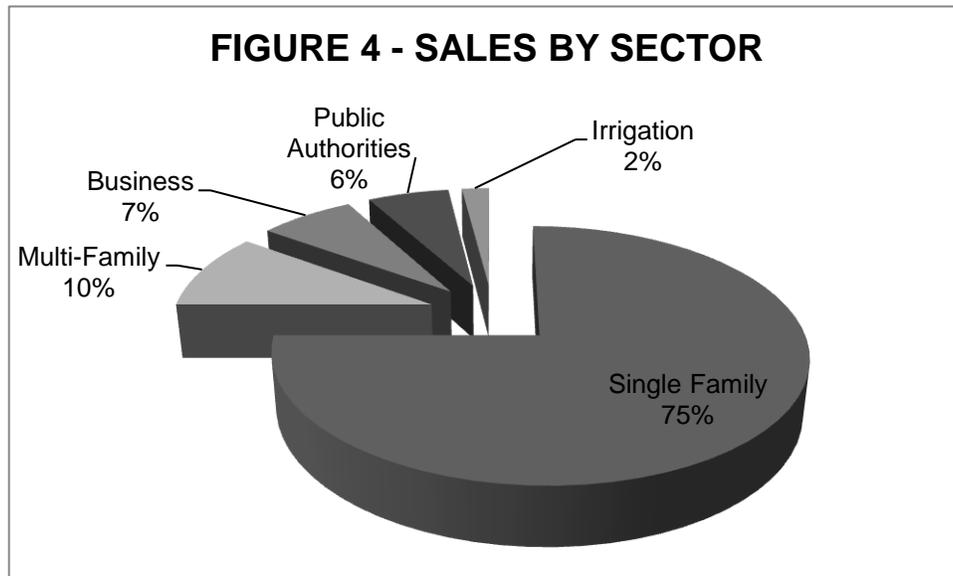
Year		User Category					Total
		Single-Family Residential	Multi-Family Residential <sup>a</sup>	Businesses	Public Authorities	Irrigation	
1990	Services	10,870	-	299	114	45	11,328
1995	Services	10,993	-	295	114	55	11,457
2000	Services	11,218	-	295	114	58	11,685
2001	Services	11,352	-	299	114	58	11,824
2002	Services	11,254	-	300	114	61	11,729
2003	Services	11,254	-	306	112	61	11,733
2004	Services	11,254	-	317	108	64	11,743
2005	Services	11,192	108	317	107	64	11,788
2006	Services	11,195	109	319	109	68	11,800
2007	Services	11,270	123	316	112	63	11,885
2008	Services	11,278	125	312	113	66	11,894
2009	Services	11,152	258	312	106	73	11,901
2010	Services	11,197	313	326	112	85	12,033
1990	Sales	2,695.4 AF	-	210.83 AF	216.05 AF	37.13 AF	3,159.43 AF
1995	Sales	2,857.66	-	204.88	126.19	45.05	3,233.67

Past and Current Water Use

2000	Sales	3078	-	254	194	60	3,586
2001	Sales	2,983.01	-	245.52	240.47	66.09	3,535.09
2002	Sales	2,990.13	-	240.43	243.11	65.19	3,538.87
2003	Sales	3,001.76	-	480.29	327.35	84.23	3,803.63
2004	Sales	3,003.23	-	241.15	241.15	89.71	3,575.24
2005	Sales	2,607.12	108.73 AF	389.70	56.91	53.21	3,215.67
2006	Sales	2,577.80	103.35	244.18	206.95	67.46	3,199.74
2007	Sales	2,532.28	120.22	245.66	195.76	72.88	3,166.80
2008	Sales	2,506.21	118.78	247.14	274.04	91.09	3,237.26
2009	Sales	2,308.83	201.87	230.50	220.36	73.73	3,034.92
2010	Sales	2,102.02	400.26	207.20	170.14	68.79	2,948.42

<sup>a</sup> The multi-family billing category was initiated in 2005.





As can also be seen in Table 10 and Figure 3, the vast majority of the District's connections are residential. In 2010, 93% of the connections were single-family residential and 2.6% were multi-family. The number of multi-family connections and sales in this category have both increased in the past 5 years, in part because there has been an increase in the number multi-family units, but primarily because the District has been updating its billing records to more accurately classify all the residential accounts. In the past 5 years the District has grown by 233 accounts, most of which are found in the multi-family category. Sales in this category have also increased substantially, but much of this increase is off-set by decreasing sales in the single-family and business categories, as the District has re-classified some accounts in these categories as "multi-family" accounts. Overall sales were approximately 8% lower in 2010 than they were 5 years ago.

## D. BASELINE WATER CONSUMPTION

The Water Conservation Act of 2009 (SBx7-7) incorporated new provisions into the California Water Code establishing a program aimed at achieving a 20% reduction in statewide urban water use by 2020.<sup>1</sup> The law and implementing guidance promulgated by the Department of Water Resources establishes procedures for water suppliers to determine their baseline water use, in gallons per capita per day, and allows water suppliers the choice of complying individually or regionally by mutual agreement with other water suppliers. Suppliers can set their water use target using one of four Target Methods.

Baseline water use is determined by dividing the agency's gross water use, less any recycled water use, by the population served to determine the baseline water use in terms of gallons per

<sup>1</sup> SBx7-7 amends Division 6, Part Section 2.55 of the California Water Code. Entitled *Sustainable Water Use and Demand Reduction*, it was approved by the Governor on November 10, 2009.

capita per day (gpcd). The average annual use during specified five-year and ten-year periods<sup>1</sup> are used for determining base daily per capita water use for purposes of assessing compliance with the water use targets established in the Act. The use of averages smoothes out the effects of short-term water demand variations due to weather or other factors.

The law permits an agency to select its applicable 5-year base daily per capita water use from a continuous period ending no earlier than December 31, 2007 and ending no later than December 31, 2010. The 10-year base daily per capita water use number can be selected from a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010. Table 11 shows the calculated 10-year baseline per capita water use for each of the eligible years, while Table 12 shows NCCWD’s calculated 5-year baseline per capita water use for each of the eligible years.

As can be seen in Table 11, the District’s highest 10-year baseline water use occurred during the period ending December 31, 2005. It is 87.3 gpcd, and will be used by the District as its selected 10-year baseline for purposes of determining compliance with the Water Conservation Act of 2009.

TABLE 11 TEN-YEAR BASELINE WATER USE Average Annual Use in Gallons per Capita per Day (GPCD)							
For the 10-Year period ending in:	2004	2005	2006	2007	2008	2009	2010
GPCD:	86.8	87.3	87.1	86.3	85.8	84.0	83.5

Table 12 FIVE-YEAR BASELINE WATER USE Average Annual Use in Gallons per Capita per Day (GPCD)				
For the 5-Year period ending in:	2007	2008	2009	2010
GPCD:	84.8	82.8	79.3	77.8

Table 12 indicates that NCCWD’s calculated 5-year baseline water use was highest in the period ending on December 31, 2007, and this level, 84.8 gpcd, will be used by the District in determining compliance with the Water Conservation Act of 2009. By comparison, the

<sup>1</sup> A fifteen-year period can be used for agencies that meet 10% of their water demand with recycled water. This would not be applicable to the North Coast County Water District.

Department of Water Resources has determined that the statewide baseline water use is 192 gallons per capita per day.

## E. WATER USE TARGETS

An urban retail water supplier must set a 2020 water use target and a 2015 interim water target using one of four methods. The supplier has discretion as to which target method<sup>1</sup> to choose so long as the supplier's water use reduction is no less than 5% of the 5-year base daily per capita usage, unless the base daily per capita use is 100 gallons per day or lower.

The North Coast County Water District has chosen Target Method 3 as its preferred method for determining compliance with Water Conservation Act of 2009's demand reduction goal. Target Method 3 sets the supplier's 2020 conservation goal at 95% of the applicable hydrologic region's target. North Coast is in the San Francisco Bay Hydrologic Region (Region 2). The 2015 interim target for Region 2 is 144 gpcd and the 2020 target is 131 gpcd. NCCWD's applicable targets under Method 3 are 137 gpcd in 2015 (95% of 144) and 124 gpcd in 2020 (95% of 131 gpcd).

As can be seen from the data in Tables 11 and 12, NCCWD's water consumption for all of the potential baseline periods is below 124 gpcd. Even the highest points in the respective baseline periods (87.3 and 84.8) are lower than the 2020 target for Region 2. Furthermore, the District's baseline consumption is below 100 gpcd, which exempts it from the requirement for a minimum demand reduction target of 5% of its 5-year baseline.<sup>2</sup> Accordingly, because of its low baseline consumption, North Coast is exempt from the demand reduction requirements of the Water Conservation Act of 2009.

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<sup>1</sup> The four target methods are:

- 1) 80% of the 10-year baseline daily per capita use.
- 2) Per capita daily water use using the sum of performance standards for various categories of service.
- 3) 95% of the applicable state hydrologic region target.
- 4) A special approach developed by DWR in December 2010.

<sup>2</sup> This exemption is found in Section 10608.24 of the Water Code.

# V. PROJECTED WATER DEMAND AND RELIABILITY

## A. PROJECTED WATER DEMAND

The City of Pacifica grew rapidly in the 1960's, experiencing a population increase of 69% in that decade. By the early 1970's, however, most of the easily developable land had been used and the rate of growth declined precipitously. In 1980 the population of Pacifica was 36,899. By 1990, it had increased by only 771 people (2%) to 37,670.<sup>1</sup> The 1995 population was 38,700; in 2000 the population had dropped slightly to 38,390.<sup>2</sup> The estimated population in 2010 is 39,000.<sup>3</sup> A land inventory completed in conjunction with the on-going General Plan update estimates that there is a residential development potential for up to 1,511 new housing units.<sup>4</sup>

Current population and employment projections between 2010 and 2035 for the City of Pacifica are presented in Table 13.

As shown in Table 13, the population of the City of Pacifica, which is generally the same as the population of the North Coast County Water District, is projected to grow by 3,400 people over the next 25 years, an average of 136 people and 0.35% per year. The number of new households, which is considered a fairly accurate proxy for the number of new residential water connections, is projected to increase at the rate of 58 per year (0.4%/yr.). The rate of employment increase is projected to be greater, although the average annual increase of 62 new jobs would still represent a growth rate of only 0.97% per year.

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<sup>1</sup> US Census data, 1990 Census.

<sup>2</sup> US Census data, 2000 Census.

<sup>3</sup> Dyett & Bhatia, *Pacifica General Plan Update, Existing Conditions and Key Issues*, July, 2010, Table 3-4.

<sup>4</sup> Ibid, Table 4.8.

**TABLE 13  
POPULATION AND EMPLOYMENT PROJECTIONS**

YEAR:	2010	2015	2020	2025	2030	2035	INCREASE 2010 - 2035		AVERAGE ANNUAL INCREASE	
							No.	Percent	No.	Percent
Population	39,000	39,800	40,600	41,400	42,000	42,400	3,400	8.7%	136	0.35%
Households	14,320	14,550	14,820	15,140	15,440	15,760	1,440	10.0%	58	0.40%
Jobs	6,350	6,740	7,130	7,520	7,790	7,910	1,560	24.6%	62	0.97%

Source: Dyett & Bhatia, *Pacifica General Plan Update, Existing Conditions and Key Issues*, July, 2010; Donaldson Associates. 2035 projections are extrapolated.

Between 2005 and 2010 the number of service connections increased from 11,788 to 12,033, a gain of 245 in all and an average annual increase of 41 connections. Based upon the current population and employment projections, it is expected that the rate of growth in new connections will be somewhat higher in the coming years. A rate of 50 new connections per year is reasonable<sup>1</sup> and would result in 250 new connections by 2015, and almost 1,250 new connections by 2035.

The water production requirements for the District were calculated based on the projected increases in population and employment. Demand in the commercial sector is projected to increase in proportion to the projected increase in jobs, while all other sectors are projected to increase generally in proportion to population. Since some of the District's irrigation accounts will be switched to recycled water by 2015, the gross projected demand has been reduced accordingly. The projected water demand is presented in 5-year increments to 2035, in Table 14, below.

<sup>1</sup> This assumes that 80% of the new households will be individually metered (46 per year on average) and that there will be an average of 4 additional connections a year, on average, for commercial and multi-family development.

**TABLE 14**  
**PROJECTED GROWTH IN CONNECTIONS AND WATER DEMAND**  
 5-Year Increments, 2015 – 2035

	2015	2020	2025	2030	2035
<b>PROJECTED CONNECTIONS BY SECTOR <sup>a</sup></b>					
Residential – SFD	11,429	11,661	11,893	12,125	12,357
Residential - MFD	321	329	337	345	353
Business Sector	334	342	350	358	366
Industrial Sector <sup>b</sup>	0	0	0	0	0
Public Authorities	114	116	118	120	122
Irrigation	75	75	75	75	75
<b>PROJECTED WATER DEMAND BY SECTOR (AFY)</b>					
Residential - SFD	2,233.2	2,272.3	2,312.1	2,352.6	2,393.7
Residential - MFD	407	414	421	429	436
Business Sector	246.3	258.26	270.79	283.9	297.7
Industrial Sector <sup>b</sup>	0	0	0	0	0
Public Authorities	217.2	221.0	224.8	228.8	232.8
Irrigation	76.0	77.3	78.7	80.1	81.5
Recycled Water Offset	-42.1	-42.1	-42.1	-42.1	-42.1
Unmetered & Unaccounted-for water	337.3	344.1	345.6	358.2	365.5
Projected Production Requirement (AFY)	3,475.0	3,544.9	3,560.9	3,690.4	3,765.1
Net Production Requirement (mgd)	3.10	3.16	3.18	3.29	3.36
<sup>a</sup> Note: All connections are metered. The District has no unmetered customer connections.					
<sup>b</sup> The District has no industrial accounts.					

Demand from the residential sectors is expected to increase by about 328 AFY in the coming 25 years. According to the current *Pacifica Housing Element*, about 39% of all new housing will have to be affordable to lower income families.<sup>1</sup> The projected water demand from these units of new housing would be approximately 127.8 AFY, in aggregate, by 2035 and is included in the

<sup>1</sup> City of Pacifica, *Draft Pacifica Housing Element*, P. 34, Table 31. The Draft Housing Element projects a need for 104 units affordable to extremely-low income, very low income and low income families by 2014.

projections set forth in Table 9. The Housing Element does not distinguish affordable housing demand by type of unit (single-family or multi-family).

Under the terms of the contract with the San Francisco Public Utilities Commission, the District’s maximum supply (maximum wholesale allocation) is 3.838 mgd, the equivalent of 4,299.2 AFY. As can be seen in Table 14, the existing allocation is sufficient to meet the District’s needs, from the present time through 2035.

## B. DROUGHT SCENARIOS

In dry years the yield of the Regional Water System, which is the District’s sole source of supply, would decline. The SFPUC and BAWSCA members have developed plans to address potential drought scenarios. The Tier One Drought Allocations, described below, sets a framework for sharing available water between San Francisco and the wholesale customers, while the Tier Two Drought Allocations, also described below, establish a methodology for allocating the wholesale customer share among the BAWSCA members.

### 1. TIER ONE DROUGHT ALLOCATIONS

In July 2009, in connection with the WSA, the wholesale customers and San Francisco adopted a Water Shortage Allocation Plan (WSAP) to allocate water from the regional water system to retail and wholesale customers during system-wide shortages of 20% or less (the “Tier One Plan”). The Tier One Plan replaced the prior Interim Water Shortage Allocation Plan, adopted in 2000, which also allocated water for shortages up to 20%. The Tier One Plan also allows for voluntary transfers of shortage allocations between the SFPUC and any wholesale customer and between wholesale customers themselves. In addition, water “banked” by a wholesale customer, through reductions in usage greater than required, may also be transferred.

The Tier One Plan, which allocates water between San Francisco and the wholesale customers collectively, distributes water based on the level of shortage:

TABLE 15		
TIER ONE DROUGHT ALLOCATIONS		
Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier One Plan will expire at the end of the term of the Water Supply Agreement, unless extended by San Francisco and the wholesale customers.<sup>1</sup>

## 2. TIER TWO DROUGHT ALLOCATIONS

The wholesale customers have negotiated, and are in the process of adopting, the “*Tier Two Drought Implementation Plan*” (*DRIP*), the second component of the Water Shortage Allocation Plan which allocates the collective wholesale customer share among each of the 26 wholesale customers. This Tier Two allocation is based on a formula that takes multiple factors for each wholesale customer into account, including:

- Individual Supply Guarantee;
- Seasonal use of all available water supplies; and
- Residential per capita use.

The water made available to the wholesale customers collectively will be allocated among them in proportion to each wholesale customer’s Allocation Basis, expressed in millions of gallons per day (mgd), which in turn is the weighted average of two components. The first component is the wholesale customer’s Individual Supply Guarantee, as stated in the WSA, and is fixed.<sup>2</sup> The second component, the Base/Seasonal Component, is variable and is calculated using the monthly water use for three consecutive years prior to the onset of the drought for each of the wholesale customers for all available water supplies. The second component is accorded twice the weight of the first, fixed component in calculating the Allocation Basis. Minor adjustments to the Allocation Basis are then made to ensure a minimum cutback level, a maximum cutback level, and a sufficient supply for certain wholesale customers.

The Allocation Basis is used in a fraction, as numerator, over the sum of all wholesale customers’ Allocation Bases to determine each wholesale customer’s Allocation Factor. The final shortage allocation for each wholesale customer is determined by multiplying the amount of water available to the wholesale customers collectively under the Tier One Plan, by the wholesale customer’s Allocation Factor.

The DRIP requires that the Allocation Factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency. As the wholesale customers change their water use characteristics (e.g., increases or decreases in SFPUC purchases and use of other water sources, changes in monthly water use patterns, or changes in residential per capita water use), the Allocation Factor for each wholesale customer will also change. However, for long-term planning purposes, each wholesale customer shall use as its Allocation Factor, the

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<sup>1</sup> The Water Supply Agreement expires in 2034, with options for one or two five-year extensions.

<sup>2</sup> The North Coast County Water District’s supply guarantee is 3.838 MGD.

value identified in the Tier Two Plan when adopted.

The Tier Two Plan will expire in 2018 unless extended by the wholesale customers.

The SFPUC has assessed the reliability of its water supply and estimated the frequency and severity of anticipated shortages in the event of drought conditions as have occurred in the historic hydrologic period of 1920 through 2002.<sup>1</sup> Two drought scenarios are assumed. The first is a single dry year in which the supply from the Hetch Hetchy system is reduced by 10% in response to a request for voluntary conservation. The second scenario assumes multiple dry years: in the first year the San Francisco PUC requests voluntary reductions of 10%. In the second dry year the SFPUC requires 20% conservation by wholesale customers. In the third year local supplies are again at their minimum levels and San Francisco mandates 20% reductions in demand. The Drought Scenarios are presented in Table 16, below.

<b>TABLE 16</b> <b>DROUGHT SCENARIOS</b> <b>SINGLE DRY YEAR AND MULTIPLE DRY YEARS</b> <b>2010 DEMAND LEVEL <sup>a</sup></b>						
	Purchase Request (2010)	One Critical Dry Year	Multiple Dry Years			
			Year 1	Year 2	Year 3	
System-Wide Shortage (%)	0%	10%	10%	20%	20%	
Wholesale Allocation	184.0 mgd	152.6 mgd	152.6 mgd	132.5 mgd	132.5 mgd	
NCCWD Tier 2 Allocation Factor	-	2.00%	2.00%	2.00%	2.00%	
NCCWD Allocation <sup>b</sup>	2.99 mgd	3.052 mgd	3.052 mgd	2.65 mgd	2.65 mgd	
NCCWD Reduction	0%	0%	0%	11.3%	11.3%	

<sup>a</sup> See Table 17 for Drought Scenarios in future years.

<sup>b</sup> Wholesale water demands were very low relative to available supply throughout the Hetch Hetchy

<sup>1</sup>Letter from Paula Kehoe, Director of Water Resources, SFPUC to Nicole Sandkulla, Senior Water Resources Engineer, BAWSCA, March 31, 2011, with attachments

system in 2010. Based on information provided by the SFPUC and application of the Tier 1 Drought Allocation Plan and the DRIP, NCCWD’s projected drought allocation from the SFPUC in 2010 and immediately thereafter are actually greater than the District’s 2010 purchases of 2.99 mgd (3,350.62 AFY). North Coast would be projected to receive up to 3.052 mgd under a 10% system-wide rationing. As such, the District has shown that in 2010, in a critical year drought condition, or in the first year of a multi-year drought, it would be able to get 100% of its SFPUC purchase projections.

As can be seen in Table 16, the District’s customers would not have to reduce their overall demand in the event of a single year drought or in the first year of a multi-year drought. In the event of an extended drought requiring 20% system-wide reductions, North Coast could meet its drought allocation with an 11.3% reduction in demand.

## C. RELIABILITY OF THE REGIONAL WATER SYSTEM

### 1. WATER SUPPLY IMPROVEMENT PROGRAM

The SFPUC’s Water System Improvement Program (WSIP) provides goals and objectives to improve the delivery reliability of the Regional Water System (RWS) including water supply reliability. The goals and objectives of the WSIP related to water supply are:

Program Goal	System Performance Objective
<p>Water Supply – <i>meet customer water needs in non-drought and drought periods</i></p>	<ul style="list-style-type: none"> <li>• Meet average annual water demand of 265 million gallons per day (mgd) from the SFPUC watersheds for retail and wholesale customers during non-drought years for system demands through 2018.</li> <li>• Meet dry-year delivery needs through 2018 while limiting rationing to a maximum 20 percent system-wide reduction in water service during extended droughts.</li> <li>• Diversify water supply options during non-drought and drought periods.</li> <li>• Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers.</li> </ul>

The adopted WSIP had several water supply elements to address the WSIP water supply goals and objectives. The following provides the water supply elements for all year types and the dry-year projects of the adopted WSIP to augment all year type water supplies during drought.

### **Water Supply – All Year Types**

The SFPUC historically has met demand in its service area in all year types from its watersheds. They are the:

- Tuolumne River watershed
- Alameda Creek watershed
- San Mateo County watersheds

In general, 85 percent of the supply comes from the Tuolumne River through Hetch Hetchy Reservoir and the remaining 15 percent comes from the local watersheds through the San Antonio, Calaveras, Crystal Springs, Pilarcitos and San Andreas Reservoirs. The adopted WSIP retains this mix of water supply for all year types.

### **Water Supply – Dry-Year Types**

The adopted WSIP includes the following water supply projects to meet dry-year demands with no greater than 20 percent system-wide rationing in any one year:

- Restoration of Calaveras Reservoir capacity
- Restoration of Crystal Springs Reservoir capacity
- Westside Basin Groundwater Conjunctive Use
- Water Transfer with Modesto Irrigation District (MID) / Turlock Irrigation District (TID)

In order to achieve its target of meeting at least 80 percent of its customer demand during droughts, the SFPUC must successfully implement the dry-year water supply projects included in the WSIP.

### **Projected SFPUC System Supply Reliability**

As noted above, the SFPUC assessed the reliability of its water supply and estimated the frequency and severity of anticipated shortages in the event of drought conditions as have occurred in the historic hydrologic period of 1920 through 2002. These estimates are incorporated into the Drought Scenarios in Table 16 above as the respective wholesale allocations. These allocations assume that the wholesale customers purchase 184 mgd from the RWS through 2030 and the implementation of the dry-water water supply projects included in the WSIP. The numbers represent the wholesale share of available supply during historical year types per the Tier One Water Shortage Allocation Plan. This table does not reflect any potential impact to RWS yield from the additional fishery flows required as part of Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements Project.

**Impact of Recent SFPUC Actions on Dry-Year Reliability of SFPUC Supplies**

In adopting the Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements Project, the SFPUC committed to providing fishery flows below Calaveras Dam and Lower Crystal Springs Dam as well as bypass flows below Alameda Creek Diversion Dam. The fishery flow schedules for Alameda Creek and San Mateo Creek represent a potential decrease in available water supply of an average annual 3.9 mgd and 3.5 mgd, respectively with a total of 7.4 mgd average annually. These fishery flows could potentially create a shortfall in meeting the SFPUC demands of 265 mgd and slightly increase the SFPUC’s dry-year water supply needs. If a shortfall occurs, it is anticipated at the completion of construction of both the Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements Project in approximately 2015 and 2013, respectively when the SFPUC will be required to provide the fishery flows.

The adopted WSIP water supply objectives include (1) meeting a target delivery of 265 mgd through 2018 and (2) rationing at no greater than 20 percent system-wide in any one year of a drought. As a result of the fishery flows, the SFPUC may not be able to meet these objectives between 2013 and 2018 without (1) a reduction in demand, (2) an increase in rationing, or (3) a supplemental supply. The following describes these actions.

**Reduction in Demand.** The current projections for purchase requests through 2018 remain at 265 mgd. However, in the last few years, SFPUC deliveries have been below this level, as illustrated in Table 17. If this trend continues, the SFPUC may not need 265 mgd from its watersheds to meet purchase requests through 2018. As a result, the need for supplemental supplies of 3.5 mgd starting in 2013 and increasing to 7.4 mgd in 2015 to offset the water supply loss associated with fish releases may be less than anticipated.

Table 17 RECENT WATER DELIVERIES IN SFPUC SERVICE AREA					
	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
Total Deliveries <sup>a</sup>	247.5 mgd	257 mgd	254.1 mgd	243.4 mgd	225.2 mgd
<sup>a</sup> Reference: SFPUC FY09-10 J-Table Line 9 “Total System Usage” plus 0.7 mgd for Lawrence Livermore National Laboratory use and 0.4 mgd for Groveland. No groundwater use is included in this number. Unaccounted-for-Water is included.					

**Increase in Rationing.** The adopted WSIP provides for a dry-year water supply program that, when implemented, would result in system-wide rationing of no more than 20 percent. The PEIR identified the following drought shortages during the design drought; 3.5 out of 8.5 years at 10 percent rationing and 3 out of 8.5 years at 20 percent. If the SFPUC did not develop a supplemental water supply in dry years to offset the effects of the fishery flows on water supply, rationing would increase during dry years. If the SFPUC experiences a drought between 2013

and 2018 in which rationing would need to be imposed, rationing would increase by approximately 1 percent in shortage years. Rationing during the design drought would increase by approximately 1 percent in rationing years.

**Supplemental Supply.** The SFPUC may be able to manage the water supply loss associated with the fishery flows through the following actions and considerations:

- Development of additional conservation and recycling
- Development of additional groundwater supply
- Water transfer from Modesto and/or Turlock Irrigation Districts
- Increase in Tuolumne River supply
- Revising the Upper Alameda Creek Filter Gallery Project capacity<sup>1</sup>
- Development of a desalination project

The SFPUC has stated a commitment to meeting its contractual obligation to its wholesale customers of 184 mgd and its delivery reliability goal of 265 mgd with no greater than 20 percent rationing in any one year of a drought. In Resolution No. 10-0175 adopted by the Commission on October 15, 2010, the Commission directed staff to provide information to the Commission and the public by March 31, 2011 on how the SFPUC has the capability to attain its water supply levels of service and contractual obligations. This directive was in response to concerns expressed by the Commission and the Wholesale Customers regarding the effect on water supply of the instream flow releases required as a result of the Lower Crystal Springs Dam Improvement Project and the Calaveras Dam Replacement Project. In summary, the SFPUC has a projected shortfall of available water supply to meet its LOS goals and contractual obligations. The SFPUC has stated that current decreased levels of demand keep this from being an immediate problem, but that in the near future, the SFPUC must resolve these issues. Various activities are underway by the SFPUC to resolve the shortfall problem. SFPUC staff will report back to the Commission by August 31, 2011 to provide further information on actions to resolve the shortfall problem.

## **2. CLIMATE CHANGE**

The issue of climate change has become an important factor in water resources planning in the State, and is frequently being considered in urban water management planning, though the

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<sup>1</sup> The adopted WSIP included the Alameda Creek Fishery Enhancement project, since renamed the Upper Alameda Creek Filter Gallery (UACFG) project, which had the stated purpose of recapturing downstream flows released under a 1997 California Department of Fish and Game MOU. Implementation of the UACFG project was intended to provide for no net loss of water supply as a result of the fishery flows bypassed from ACDD and/or released from Calaveras Dam. At the time the PEIR was prepared, the UACFG was described in the context of recapturing up to 6300 AF per year. The UACFG will undergo a separate CEQA process in which all impacts associated with the project will be analyzed fully.

extent and precise effects of climate change remain uncertain. As described by the SFPUC in its *Final Water Supply Availability Study for the City and County of San Francisco*, dated October 2009, there is evidence that increasing concentrations of greenhouse gasses have caused and will continue to cause a rise in temperatures around the world, which will result in a wide range of changes in climate patterns. Moreover, there is evidence that a warming trend occurred during the latter part of the 20th century and will likely continue through the 21st century. These changes will have a direct effect on water resources in California, and numerous studies have been conducted to determine the potential impacts to water resources. Based on these studies, climate change could result in the following types of water resource impacts, including impacts on the watersheds in the Bay Area:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low and medium elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, intensity and variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality;
- Sea level rise and an increase in saltwater intrusion;
- Increased water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation need; and
- Changes in urban and agricultural water demand.

According to the SFPUC (2009), other than the general trends listed above, there is no clear scientific consensus on exactly how climate change will quantitatively affect the state's water supplies, and current models of water systems in California generally do not reflect the potential effects of climate change.

Initial climate change modeling completed by the SFPUC indicates that about seven percent of runoff currently draining into Hetch Hetchy Reservoir will shift from the spring and summer seasons to the fall and winter seasons in the Hetch Hetchy basin by 2025. This percentage is within the current interannual variation in runoff and is within the range accounted for during normal runoff forecasting and existing reservoir management practices. The predicted shift in runoff timing is similar to the results found by other researchers modeling water resource impacts in the Sierra Nevada due to warming trends associated with climate change.

The SFPUC has stated that based on this preliminary analysis, the potential impacts of climate change are not expected to affect the water supply available from the San Francisco Regional Water System (RWS), or the overall operation of the RWS through 2030.

The SFPUC views assessment of the effects of climate change as an ongoing project requiring

regular updating to reflect improvements in climate science, atmospheric/ocean modeling, and human response to the threat of greenhouse gas emissions. To refine its climate change analysis and expand the range of climate parameters being evaluated, as well as expand the timeframes being considered, the SFPUC is currently undertaking two additional studies. The first utilizes a newly calibrated hydrologic model of the Hetch Hetchy watershed to explore sensitivities of inflow to different climate change scenarios involving changes in air temperature and precipitation. The second study will seek to utilize state-of-the-art climate modeling techniques in conjunction with water system modeling tools to more fully explore potential effects of climate change on the SFPUC water system as a whole. Both analyses will consider potential effects through the year 2100.

### **3. 2018 INTERIM SUPPLY LIMITATION**

As part of its adoption of the Water System Improvement Program (WSIP) in October 2008, discussed separately herein, the Commission adopted a water supply element, the Interim Supply Limitation (ISL), to limit sales from San Francisco Regional Water System (RWS) watersheds to an average annual of 265 million gallons per day (mgd) through 2018. The wholesale customers' collective allocation under the ISL is 184 mgd and San Francisco's is 81 mgd. Although the wholesale customers did not agree to the ISL, the WSA provides a framework for administering the ISL.

BAWSCA has developed a strategy to address each of its member agencies' unmet needs flowing from the ISL through its Water Conservation Implementation Plan and the Long-term Reliable Water Supply Strategy, separately addressed herein.

#### **Interim Supply Allocations**

The Interim Supply Allocations (ISA) refers to each individual wholesale customer's share of the Interim Supply Limitation (ISL). On December 14, 2010, the Commission established each agency's ISA through 2018. In general, the Commission based the allocations on the lesser of the projected fiscal year 2017-18 purchase projections or Individual Supply Guarantees. The ISAs are effective only until December 31, 2018 and do not affect the Supply Assurance or the Individual Supply Guarantees, both discussed separately herein. San Francisco's Interim Supply Allocation is 81 million gallons per day (mgd).

The North Coast County Water District's ISA is 3.67 mgd. (See Table 5).

As stated in the Water Supply Agreement, the wholesale customers do not concede the legality of the Commission's establishment of the ISAs and Environmental Enhancement Surcharge, discussed below, and expressly retain the right to challenge either or both, if and when imposed, in a court of competent jurisdiction.

### **Environmental Enhancement Surcharge**

The Commission plans to establish the Environmental Enhancement Surcharge concurrently with the budget-coordinated rate process. This surcharge will be unilaterally imposed by SFPUC on individual wholesale customers, and SFPUC retail customers, when each agency's use exceeds their Interim Supply Allocation and when sales of water to the wholesale customers and San Francisco retail customers, collectively, exceeds the Interim Supply Limitation of 265 mgd.

The SFPUC is in the process of developing the methodology and amount of this volume-based charge. The Environmental Enhancement Surcharge will become effective beginning fiscal year 2011-12.

# VI. WATER SHORTAGE CONTINGENCY PLAN

## A. INTRODUCTION

Section 10632 of the California Water Code requires Urban Water Management Plans to include the preparation of a water shortage contingency analysis. The first part of the *Water Shortage Contingency Plan* presented in this chapter describes the North Coast County Water District's emergency plan for responding to a sudden water shortage or water quality emergency such as might occur in the event of significant system damage from a major earthquake, or during a prolonged power outage, or in the event of a water quality emergency from bacteriological or chemical contamination of the water supply. The second part of the *Water Shortage Contingency Plan* describes the District's planning to address potential long-term water shortage conditions that could occur following one or more years of low precipitation (a drought), or in the event of a loss of a significant part of the District's source of supply.

## B. WATER SUPPLY EMERGENCY RESPONSE

The District has a written Emergency Operating Plan, designed to provide guidance and direction for the activities of the District's staff both during a water supply or water quality emergency and in mobilizing the post-disaster response. Key provisions of the plan are summarized below:

**Readiness.** Key District personnel have specific assigned roles for a coordinated emergency response. Individual responsibilities vary depending on the magnitude of the emergency as well as the time of occurrence. On non-business days and after hours, the maintenance staff provides rotating duty personnel who can be reached by the Pacifica Department or the North County Fire Authority through assigned pager or cell phone numbers.

The District's primary emergency operations center would be created at the District office, at 2400 Francisco Boulevard in Pacifica. The District office is equipped with radios, telephones, telemetry equipment for operating the system, spare parts, emergency power equipment, and supplementary documents and supplies. A secondary emergency operations center is located at the Royce Pump Station. It has emergency power, telephone, and radio transmitters for the Water District, Police Department and Fire Authority frequencies.

Communication protocols have been established and damage evaluation procedures have been defined. In the immediate period following a major disaster, such as an earthquake, the District's

initial task would be to evaluate the water supply system and file a status report with the General Manager as quickly as possible.

The District has assembled an inventory of spare parts and equipment, including a portable hydrant interconnect system that could be used to bypass areas of severe damage. Key vehicles are maintained in a “ready to respond” condition. The District also has arrangements with several local contractors for emergency backhoe and underground work, in the event there is more damage than the District staff can manage.

**Response.** The goal of the District’s post-disaster response actions is to maintain the water transmission and storage system intact and operational to the greatest extent possible. Emergency response protocols specify reporting instructions for all management and field personnel, who, in turn, are aware of their individual responsibilities in a post-disaster situation. The District’s action priorities are first, to inspect the system including all storage tanks and file a report on the system status with the General Manager or other Supervisory Personnel in charge. Secondly, repair and/or shutdown projects would be undertaken following an order of priority that would be set by the Emergency Operations Center (EOC). Outside equipment and personnel would be called in to assist with repair work, if necessary.

The repair or shut down work would be coordinated from the District Office and field crews would report progress to the emergency operations team. Regular progress reports would then be filed with the Pacifica Police Department and/or Fire Authority and the San Mateo County Disaster Relief Coordinator, as appropriate. Members of the NCCWD Board of Directors would also receive regular status reports, and the President of the Board and/or General Manager would be responsible for media contacts and press briefings.

The Emergency Operating Plan specifically addresses a number of plausible emergency response scenarios including loss of supply, electric service interruptions, bomb threats, vandalism at District storage reservoirs, attempts to contaminate the water supply, earthquakes and major fires.

**Interties and Back-Up Supplies.** As noted in Section III, H, above, the District has interties with the adjoining water systems operated by the Westborough Water District, the City of Daly City, and the City of San Bruno. The District shares a water storage tank with the Westborough Water District. It is on the east side of the San Andreas Fault, whereas the majority of NCCWD is located west of the fault line. Since all of these agencies are largely supplied by the SFPUC, these sources would not be available during a drought or regional disaster, but they could be used to augment supplies in the event of a local emergency.

## **C. STAGED RESPONSE PLAN FOR WATER SUPPLY SHORTAGES**

The North Coast Water District has in the past, and will continue in the future, to respond to water supply shortages on an individual basis as they develop. Generally, for droughts or any other long-term water supply shortage, the District will implement a program of water conservation measures that will result in use restrictions proportional to the severity of the reductions needed. In the past, such use restrictions have been associated with droughts. Although the circumstances surrounding future droughts (or any other long-term supply shortages) may not be identical to the droughts that the District faced in the past, the programs of voluntary and mandatory rationing developed in response to the increasingly severe actual or potential shortages in the 1989-1992 period provide the District with its model for planning future responses to severe water shortages.

As noted in Section V, B, above, the SFPUC has prepared predictive models of the supplies that would be available to its respective wholesale purchasers in single- and multiple-year drought scenarios in which aggregate demand on the Hetch Hetchy system would have to be reduced. Table 16, above, shows the projected NCCWD deliveries under single- and multiple-year droughts should they have occurred under 2010 demand conditions. Table 18, below, identifies the potential conservation requirements should any of these drought scenarios occur in any of the future consecutive 5-year planning periods. These scenarios consider the projected delivery capabilities of the Hetch Hetchy system in any given planning period in conjunction with the SFPUC/BAWSCA agreements and formulas that were developed to fairly allocate the potential cutbacks between a) San Francisco city and suburban areas (the Tier 1 Allocations), and b) among the 26 suburban wholesale purchasers (the Tier 2 DRIP Allocations).

<b>TABLE 18</b> <b>SUPPLY AND DEMAND COMPARISONS</b> <b>NORMAL AND DROUGHT SCENARIOS</b> in mgd						
		2015	2020	2025	2030	2035
Normal Year	Supply	3.67 mgd	3.838 mgd	3.838 mgd	3.838 mgd	3.838 mgd
	Demand	3.10	3.16	3.18	3.29	3.36
Single Dry Year	Supply	3.052	3.052	3.052	3.052	3.052
	Demand	3.10	3.16	3.18	3.29	3.36
	NCCWD Reduction Requirement	1.5%	3.4%	4.0%	7.2%	9.9%
Multiple Dry Year – First Year	Supply	3.052	3.052	3.052	3.052	3.052
	Demand	3.10	3.16	3.18	3.29	3.36
	NCCWD Reduction Requirement	1.5%	3.4%	4.0%	7.2%	9.9%
Multiple Dry Year – Second Year	Supply	2.65	2.65	2.65	2.65	2.65
	Demand	3.10	3.16	3.18	3.29	3.36
	NCCWD Reduction Requirement	14.5%	16.1%	17.7%	19.5%	26.7%
Multiple Dry Year – Third Year	Supply	2.65	2.65	2.65	2.65	2.65
	Demand	3.10	3.16	3.18	3.29	3.36
	NCCWD Reduction Requirement	14.5%	16.1%	16.7%	19.5%	26.7%

As can be seen in Table 18, it is unlikely that the District will have to ask its customers to respond as aggressively as they did during the 1989-92 drought when they reduced demand by over 30%. However, a rationing program approaching that level could be required if there were a severe multi-year drought in 2035. The programs of voluntary and mandatory rationing developed in response to the increasingly severe shortages in 1989 - 1992 provide the District with its model for planning future responses to severe water shortages. This plan was updated in the 2000 UWMP and is described below.

**Four-Stage Plan.** The four-stage plan of increasingly stringent rationing that was developed for the 1995 Urban Water Management Plan is presented in Table 19. Stage One is an example of the type of program that would be implemented if there were less than a 5% reduction in supplies. It is a voluntary conservation program. Stage Two is somewhat more restrictive and is projected to result in a 12% reduction in demand. Potentially, Stage Two could be made mandatory, if necessary, to result in higher compliance rates and a higher level of water conservation.

Stage Three would require mandatory water conservation and would have lower water usage limits. It would be designed to result in demand reductions of 20% to 25%. Stage Four would be the most austere, plan and would only be implemented in the event of a severe shortage. Potentially, it could result in a reduction in demand of up to 50%, although community resistance could be expected and it would be difficult to achieve the level of reduction that would be expected in a Stage Four mandatory conservation program.

**TABLE 19**  
**WATER SHORTAGE RESPONSES**  
**A Sample Program of Staged Responses**

Type of Program	<i>Stage One<sup>a</sup></i>	<i>Stage Two<sup>b</sup></i>	<i>Stage Three<sup>c</sup></i>	<i>Stage Four<sup>d</sup></i>
Residential Limits:	Voluntary	Voluntary	Mandatory	Mandatory
One Person	60 gpd/ 2.4 CCF/mo.	58 gpd/ 2.3 CCF/mo.	45 gpd/ 1.8 CCF mo.	30 gpd/ 1.2 CCF/mo.
Each Additional	50 gpd/ 2 CCF/mo.	45 gpd/ 1.8 CCF/mo.	40 gpd/ 1.6 CCF/mo.	25 gpd/ 1 CCF/mo.
Apartments	110 gpd/ 4.4 CCF/mo.	105 gpd/ 4.2 CCF/mo.	90 gpd/ 3.6 CCF/mo.	60 gpd/ 2.4 CCF/mo.
Commercial/Industrial/ Public Authority (Indoor) <sup>e</sup>	90%	80%	70%	55%
Outside Irrigation <sup>e</sup>	60%	60%	50%	10%

<sup>a</sup> Would respond to a supply reduction of 6% or less, assuming 2020 population levels.

<sup>b</sup> Would respond to a supply reduction of 12%, assuming 2025 population levels.

<sup>c</sup> Would respond to a supply reduction of up to 22%, assuming 2020 population levels.

<sup>d</sup> Would respond to a supply reduction of up to 50%, assuming 2020 population levels.

<sup>e</sup> Expressed in terms of percent of base year use. The base year would be a recent year with normal precipitation.

It is important to recognize that the programmatic responses for all the stages of water shortages presented in Table 19 are planning guidelines; the District's actual response to a water shortage emergency will always require action by the Board of Directors and nothing in this Plan is intended to limit the District's available options in tailoring a unique and specific program to respond to any future water shortages.

## D. MANDATORY PROHIBITIONS TO REDUCE WATER USE

In the past, the District has implemented a number of increasingly broad mandatory restrictions on water use in response to increasingly severe water shortages. The Stage One (voluntary) and Stages Two and Three (mandatory) water rationing programs would include prohibitions on

wasteful use of water such as any use which results in runoff to gutters or streets, use of water to clean hard surfaces such as sidewalks, driveways, patios, etc., use of water for vehicle washing except with a positive-shutoff nozzle, service of water in restaurants except on request, use of water on new landscaping unless it consists of low water using, drought-tolerant plants.

A Stage Four water shortage would incorporate additional mandatory reductions such as total prohibitions on the use of water for certain construction purposes, for refilling swimming pools, hot tubs and spas, for all car washing, or for any new landscaped areas.

## **E. CONSUMPTION LIMITS**

The District's response to any recognized water shortage requiring the adoption of a mandatory water-rationing program would include consumption limits on a per capita basis for residential customers and a percentage reduction from a normal base year level of usage for non-residential customers.

## **F. PENALTIES OR CHARGES FOR EXCESS USE**

The District's conservation pricing structure effectively includes a charge for excess use, as the cost per unit of residential water increases as the amount consumed increases. Commercial customers pay a relatively high uniform rate for each unit consumed, which also discourages excess use.

In addition, any mandatory water-rationing program adopted by the District will include excess use charges as an enforcement mechanism. Excess use charges have been incorporated in all of the District's past mandatory water rationing programs.

## **G. IMPACTS ON REVENUES AND EXPENDITURES**

Successful water rationing programs lead to reduced water sales and revenues to the District. However, not all of the District's expenditures decline in proportion to reduced sales, because they are associated with fixed capital costs or on-going maintenance and operations. Consequently, water rates must typically be increased during years of water shortages, when water rationing programs are implemented.

The administration of a water rationing program will also have a definite, but relatively small, impact on the District's general and administrative costs, which must be considered whenever the District's budget is adopted during a drought year.

Revenue from excess use charges is received whenever mandatory water rationing is in effect. These additional revenues can be applied toward administration of the program, or to other programs. Excess use charges, however, cannot make up for the lost revenue from reduced water sales.

## **H. DRAFT ORDINANCE**

The North Coast County Water District has had actual experience in the implementation of programs very similar to the Stage One through Stage Three programs, under Ordinances 49, 50 and 53. In 1991, a draft ordinance of a stringent mandatory rationing program, similar to Stage Four was under consideration, but was withdrawn in April 1991, following the heavy rains and Sierra snowfall that occurred in March. These previous ordinances would serve as draft ordinances, and could be updated and enacted quickly in the event of a water shortage emergency.

## **I. MECHANISM FOR DETERMINING ACTUAL REDUCTIONS**

Since all North Coast County Water District customers are metered and the sources of supply are metered, the District is able to measure the effectiveness of any water shortage contingency plan that is implemented. As can be seen in Tables 9 and 10, the District collects sufficient data, in the normal course of operations, to determine actual reductions in sales, by user category, as compared to a given base year. In 1989, the District successfully administered questionnaires to determine the number of people served by each residential connection. The questionnaires could be re-issued in the future should it be necessary to implement a water rationing program with allotments based on the number of people served per connection.

# **VII. WATER CONSERVATION, BEST MANAGEMENT PRACTICES, AND DEMAND MANAGEMENT MEASURES**

## **A. INTRODUCTION**

This chapter describes and evaluates the District's Water Conservation programs for the 2010 - 2015 period. It describes the water conservation programs that have been in effect for some time, as well as the Best Management Practices (BMPs) and Demand Management Measures (DMMs) programs that are being implemented.

The North Coast County Water District is a signatory to the Memorandum of Understanding regarding Urban Water Conservation in California (MOU) and is therefore a member of the California Urban Water Conservation Council (CUWCC). The MOU contains 8 foundational and 6 programmatic Best Management Practices (BMPs) that signatories to the MOU agree to implement as part of their good faith efforts to optimize water savings. The California Urban Water Management Planning Act sets forth 14 Demand Management Measures (DMMs).

The BMPs/DMMs are examples of sound water management practices that have been found to be cost effective and practicable in most instances throughout California. The BMPs are generally consistent with the water conservation practices that have been implemented by the Water District under the existing Urban Water Management Plan (and in some cases, for much longer). The Urban Water Management Planning Act permits an agency to demonstrate compliance with the DMMs by filing a current, completed 2010 BMP report in lieu of documenting DMM compliance in its 2010 Urban Water Management Plan.<sup>1</sup> The North Coast County Water District has filed its 2010 BMP report, and has been found to be in compliance with the BMPs. A copy of the compliance letter is found in Appendix A. Compliance with the BMPs demonstrates compliance with the respective DMMs, which are summarized later in this chapter.

## **B. PREEXISTING WATER CONSERVATION PROGRAMS**

A number of important water conservation policies and practices had been implemented by the District even prior to the preparation of its first Urban Water Management Plan in 1992. These

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<sup>1</sup> California Water Code, §10632(j)

measures include the following:

## **1. METERING**

All District water connections are metered. This practice is recognized as sound urban water management practice as well as a basic water conservation measure (BMP 1.3/DMM D). The District's sources of supply are also metered, and the supply meters can be cross-checked against sales data to allow the District to identify water loss in the transmission/distribution system. The District is currently implementing a multi-year program to replace and upgrade the meters to a touch-read system. It is expected that the program will be completed in the near future, at which point virtually all of the District's meters will be less than 15 years old.

## **2. MAINTENANCE OF WATER USE RECORDS BY USER TYPE**

While the record keeping itself does not save water, the data it provides is fundamental to evaluating the effectiveness of water conservation programs.

## **3. SYSTEM PRESSURE CONTROL PROGRAM**

The District has constructed 33 pressure reduction stations at locations throughout the District so as to reduce high static pressures in its system and at individual water connections to about 60 psi (lbs/sq. in.) or lower. Pressure management is particularly important for the District because of the steep topography in the service area. Pressure reducers help conserve water by reducing the quantities lost when fixtures leak or water is inefficiently applied.

## **4. LEAK REDUCTION**

The amount of water loss in the transmission and distribution system is very low and has been declining as a result of the District's pipeline replacement, meter replacement and leak detection programs.

**Pipeline Replacements.** The District has an on-going program to replace old and deteriorated pipelines, which account for most leaks. It is currently undertaking a project in the Reina Del Mar/Vallemar areas of the District.

**Use of Leak Detection Equipment.** The District owns three Fisher LT-3 leak detectors and one Fisher XLT-20 leak detector. The Fisher LT-3 is used to detect and locate leaks on private property (in a customer's plumbing). The Fisher XLT-20 is used to detect and locate leaks in District pipelines. The District Assistant General Manager - Operations reports that several District operations personnel have become very adept at finding leaks and correcting them,

based on many years of experience with this equipment.

**Alerts by Meter Readers.** If, during the billing process, the staff notices an unusually high water use, they notify customers, so that if the use is due to a leak or plumbing malfunction, it can be repaired promptly.

## **5. HOME RETROFIT OF PLUMBING FIXTURES**

The District has been providing free water service retrofitting devices since 1978 and continues to provide free kits to customers requesting them. The program has evolved over the years. Initially, kits with low-flow showerhead inserts, toilet water displacement bags and dye kits for toilet leak detection were offered, while in recent years actual low-flow showerheads, kitchen and bathroom faucet nozzles with shutoff valves, and auto shutoff handheld sprinkler nozzles have been offered. Thousands of home retrofit devices have been distributed since the program began.

## **6. MAIN FLUSHING IN WINTER MONTHS**

The District undertakes most water main flushing projects every other year and in the winter when there is a surplus of water within its system.

## **7. LEAK REPAIRS**

District staff repairs all distribution system leaks as quickly as possible after they are discovered.

## **8. PUBLIC EDUCATION**

Since the 1977-78 drought, the District has had an on-going public relations campaign to encourage water conservation. The current District Manager and/or his predecessors have spoken on water conservation at service clubs, neighborhood association meetings, local high schools, etc.

The District has purchased and developed a number of pamphlets, flyers and information sheets containing water conservation information. These are available at the District office or can be mailed upon request. The following is a partial list of the brochures and leaflets that are currently available from the District:

- 25 Things You Can Do To Prevent Water Waste
- Using Household Wastewater On Plants

- A bumper sticker: Rain or Shine, There's Never Enough Water to Waste
- There's a Lot You Can Do to Save Water
- The Story of Drinking Water
- Landscape Design
- Water Conservation at Home
- Water for Tomorrow

The District also maintains a library of video programs and other educational materials that are available upon request. Local teachers are asked to participate in programs and occasionally obtain materials from the District's library for classroom use. The District also provides videos regarding water conservation to Pacifica Community TV.

## **9. DEMONSTRATION GARDENS**

In 1998 the District developed a demonstration garden featuring low water using plants from a palette of California native shrubs and flowers. The Garden is adjacent to the District's office in a highly visible location in the community. Subsequently, the District, in cooperation with the City, developed two additional demonstration gardens – one at the Sanchez Library and the other at the Community Center. The newest demonstration gardens also feature drought tolerant plants that grow well in the Pacifica climate. The District is currently working in cooperation with the Rotary Club developing another demonstration garden at Rotary Plaza in the Linda Mar area of Pacifica.

## **C. DEMAND MANAGEMENT PROGRAMS (DMMs)**

### **1. DMM A. WATER SURVEY PROGRAMS FOR SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL CUSTOMERS (PROGRAMMATIC BMP 3.1, 3.2)**

**Past Efforts.** The District has offered water audits to its single-family and multi-family residential customers on an on-going basis since 2000. Through the end of 2004, 473 surveys had been completed. Of these, 448 were for single-family customers and 25 were multi-family dwelling units. The surveys have included leak checks of the toilets, faucets and water meter; flow rate checks of showerheads, faucets and toilets and checks of the irrigation system and irrigation controllers. Residents have been routinely offered new, low flow showerheads and when older toilets have been identified, the customers have been directed to the District's ULFT replacement program.

**BMP Implementation:** The District will continue to implement BMPs 3.1 (residential indoor) and 3.2 (residential landscaping) during the term of this UWMP, and will document its progress through the CUWCC BMP reporting system.

In addition, the District will also continue to notify customers with anomalous increases in water consumption when identified by billing records and will offer home water conservation kits, and, upon request, residential surveys in order to assist these customers.

## **2. DMM B. RESIDENTIAL PLUMBING RETROFIT (PROGRAMMATIC BMP 3.1)**

**Past Efforts.** The District has operated a voluntary residential water conservation program almost continuously since the severe drought of 1976-77, although the program has been given extra emphasis during the years when mandatory conservation has been in effect.

The program consists of the distribution of water conservation kits containing informational packets, water bags to place in toilet tanks, showerhead flow restrictors and dye tablets for toilet leak detection. Between 1985 and 2000, over 2,000 kits were distributed. In addition, an unknown number of kits were distributed in the community during the 1976-77 drought period. In the 2000 *Urban Water Management Plan* it was estimated that up to 25% of the District's 4,000 pre-1992 residential connections had some of these devices installed, conserving as much as 25 AF each year.

Furthermore, as noted above, the District has conducted a large number of residential water audits in the past decade. In the course of these audits an almost equal number of high quality low-flow showerheads have been distributed, along with a large number of associated retrofit devices.

**BMP Implementation:** The District will continue to implement BMP 3.1 during the term of this UWMP, and will document its progress through the CUWCC BMP reporting system.

## **3. DMM C. DISTRIBUTION SYSTEM AUDITS AND LEAK DETECTION AND REPAIR (FOUNDATIONAL BMP 1.2)**

**Past Efforts.** On a regular basis, the District staff surveys the entire distribution system using leak detection equipment owned by the District. District personnel are trained in the methodology presented by the American Water Works Association in the Manual of Water Supply Practices, Water Audits and Leak Detection. Leaks found during leak detection work are prioritized and scheduled for repair as quickly as possible. Larger leaks are given higher priority (but lower than emergency repairs.)

**BMP Implementation.** The District will continue to implement BMP 1.2 by searching for, identifying and remediating water losses; by continuing leak detection programs on a regular basis, as staffing is available, and by initiating a system-wide audit if unaccounted-for water exceeds 10% of production.

In addition, the on-going pipeline replacement and meter replacement programs will be continued.

#### **4. DMM D. METERING WITH COMMODITY RATES (FOUNDATIONAL BMP 1.3)**

**Past Efforts.** The North Coast County Water District is fully metered and bills all customers by volume of use. The current rate structure provides financial incentives for conservation by its low volume customers. It provides for a low (“Lifeline”) charge of \$2.53 per unit for the first 5 units per bimonthly billing period (1 unit = 100 cubic feet = 748 gallons), which is equivalent to 3,740 gallons per period or an average of approximately 62 gallons/day per residence. A higher rate of \$5.62 per unit is charged for units 6–16 and a still higher rate of \$8.04 for residential consumption from 17-28 units. Consumption over 28 units is billed at the highest rate of \$14.75 per unit. All non-residential customers are billed on a uniform, volume of use, basis. Currently they pay \$5.62 per unit.

**BMP Implementation.** BMP 1.3 has been fully implemented for many years and will be continued. The inclining block rate structure applies to all residential customers, which account for almost 85% of the District’s water sales.

#### **5. DMM E. LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES (PROGRAMMATIC BMP 5)**

**Past Efforts.** The largest irrigators in the District are the Jefferson Union High School District, the Laguna Salada Elementary School District, and the City of Pacifica (for parks). Sharp Park Golf Course is in the District boundaries but is supplied with irrigation water directly by San Francisco Water Department.) Because of its cool, marine climate the demand for irrigation water is among the lowest in California. In all, the District has 85 dedicated irrigation meters and, in 2010, the irrigation demand was 69 AF, less than 2.3% of the District’s production.

**BMP 5 Implementation:.** In 2012, some of the largest irrigated facilities now served by the District are projected to begin receiving recycled water for irrigation, and the District’s sales of non-recycled water to irrigation accounts will drop by almost 60%. The application of recycled water to landscaped areas now receiving potable water from the District will result in an immediate, and substantial, conservation benefit, far greater than any potential benefits from implementation of DMM E/BMP5.

However, for the remaining large commercial or institutional accounts without dedicated irrigation meters (but with large landscape irrigation use) the District will offer the following services when found to be cost effective:

- a. Preparation of a voluntary water use budget;
- b. Installation of a dedicated landscape water meter.

Implementation of this program would generally satisfy the implementation criteria for BMP 5.

## **6. DMM F. HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM (PROGRAMMATIC BMP 3.3)**

**Past Efforts.** The District has offered rebates to residential customers purchasing high-efficiency clothes washers since 2001. The rebate program has been conducted jointly with BAWSCA and PG&E, and has been in conformance with the CUWCC criteria for BMP 3.3. During this time, the NCCWD awarded 2,369 rebates.

**BMP 3.3 Implementation.** The District intends to continue offering High-Efficiency Washing Machine Rebates in conformance with BMP 3.3. As occurred in 2005 and 2007, the qualifying criteria for rebates will tighten so as to offer incentives for customers to purchase machines with water use factors that are lower than the current plumbing code requirements.

## **7. DMM G. PUBLIC INFORMATION (FOUNDATIONAL BMP 2.1)**

**Past Efforts.** The North Coast County Water District has an on-going public information program and has conducted many community outreach and public education activities in past years. In the early 1990's the public information program efforts were aimed at motivating people to respond to the specific drought emergencies that were occurring, while in recent years the public information efforts have focused on general water conservation and wise water use.

**Implementation.** The District will continue a Public Information program in conformance with BMP 2.1. Activities that have been accomplished in past years and will be continued in the coming 5-year UWMP cycle include the following:

*Brochures and Flyers.* The District has prepared and mailed the District newsletter "The Reservoir" to all customers on a semi-annual basis. The Newsletter includes articles and information on water conservation issues and informs customers of the types of assistance the District can offer to help customers conserve. The District has also prepared annual consumer confidence reports to customers for the past 16 years. They have been distributed as separate mailings and have included conservation messages relating to water shortages (in dry years) or messages with a water awareness theme (in normal or wet years). Water conservation messages such as "Water Conservation Begins at Home" and "Water Responsibility" are also routinely included in District communications with customers questioning bills, or raising other related questions.

Water conservation flyers and brochures are kept at the reception desk in the District Office and made available to interested customers coming to pay bills or make inquiries. Many

brochures have been distributed through this means.

*Bill Stuffer Inserts.* The District has the ability to distribute informational bill inserts. They can be purchased from AWWA and other sources, or developed in-house. The District will continue to use bill inserts to communicate with customers throughout the term of this plan.

*Past Usage Information.* The District has shown past usage information on customer bills since 1996 and will continue to do so in future years.

*Local Newspaper Advertisements.* In recent years, the District has purchased advertisements in conjunction with Water Awareness Week and also purchases ads announcing dates of the BAWSCA landscape classes. The District also runs a continuing ad with a Water Wise Use theme in the Pacifica telephone directory published by the Chamber of Commerce.

In past dry years, mandatory water conservation programs implemented by the District have been announced with full-page ads in the Pacifica Tribune. In the event of a future drought, the District will again implement an active advertising effort to reinforce the need for active citizen participations in the conservation effort.

*Local Television.* The District runs water conservation messages during Water Awareness Month on public access television, and makes water education videos available to the television station for broadcast. Public service announcements have been scheduled most frequently during periods of water shortages. The District also produced its own commercials giving water conservation tips and has made available the video series "California's Water" also to be aired.

*Speaker's Bureau.* The District will respond to requests for speakers on water supply and water conservation issues for local community gatherings and service club meetings.

*District Web site.* The District hosts a web site at [www.nccwd.com](http://www.nccwd.com) that focuses on billing, District projects, water conservation and rebates.

*Bulletin Boards.* The District maintains 3 bulletin boards that provide information to the public. They are located at the District office, at San Pedro Valley Park and at the Milagra Ridge Trail.

*Demonstration Garden.* The District has developed four Demonstration Gardens in the community. One is adjacent to the District Office and the others are at the Community Center, the Sanchez Library and at Rotary Plaza in Linda Mar. The gardens showcase drought tolerant landscape plantings that are appropriate for the Pacifica climate.

## **8. DMM H. SCHOOL PROGRAMS (FOUNDATIONAL BMP 2.2)**

**Past Efforts.** The District has participated in past BAWSCA (and, its predecessor, BAWUA) programs that have provided a) packets of educational materials and curriculum guides for schools, b) sponsored local and regional poster contests with a water conservation theme, c) printed and distributed Water Awareness Calendars featuring poster contest winners, and d) participated in the “Our Water” program for elementary students.

In addition, the District has provided materials to schools for Water Awareness Month activities and student tours of District facilities, teacher training materials and water education videos to complement the local School Districts science curriculum.

**Implementation.** The District will continue to implement BMP 2.2 by working with BAWSCA, and the faculties of the Laguna Salada Elementary School District and the Jefferson Union High School District to support the inclusion of water conservation and water education topics in the school curriculum. The District will encourage the School District’s participation in BAWSCA’s expanded Water Wise program for fifth graders.

## **9. DMM I. CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL (CII) ACCOUNTS (PROGRAMMATIC BMP 4)**

**Past Efforts.** The District has no industrial accounts and less than 440 commercial and institutional accounts. In aggregate they account for about 13% of the District’s sales. The District has responded to requests for water audits and conservation suggestions to all customers in these categories as they have been made. Outreach programs have been conducted during water shortages, and have included the distribution of water conservation placards to all hotels and restaurants in the community. These have been accepted and displayed in almost every case. Hotels and restaurants account for most of the District’s water sales in the commercial category.

The District reviews the landscape plans and inside water fixture appliances for all new commercial customers. This ensures that landscaping and water fixtures that require low water use are installed before the new customer is connected to the District’s system.

The District has ranked its top commercial water customers and is conducting water audits of these accounts. In 2010 a survey went out to the top 20 commercial users and the top 5 hotels. Water audits are currently underway. The District has purchased low-flow spray valve nozzles and provided them free of charge to commercial customers. In addition, the District has its own in-house low flow toilet rebate program for all customers. The District also sponsors a “Water Served Only on Request” campaign and provides all Pacifica restaurants with table tents.

The SFPUC Wholesale Customer Water Conservation Potential study evaluated several commercial water conservation measures that are essentially equivalent to BMPs 9 and 9a. According to the DSS Model results, commercial water audits would not have a favorable benefit-cost ratio (0.8) and would cost over \$2,500 per mg saved.

However, the potential benefits of a commercial ULF Toilet and Urinal Rebate program would be greater. The DSS Model calculated that this program would have a benefit-cost ratio of 8.8 with a projected cost of \$239 for each mg saved for North Coast. Since water use by this sector is low, the net long-term benefit for the District was estimated at only 1.12 AFY.

**Implementation.** Based on the unfavorable benefit-cost ratio projected for CII water audits, the District will claim an exemption from BMP 9, and will not initiate a program of water audits targeted to these sectors during the term of this UWMP.

However, the low flow toilet rebate program for all customers, including CII customers, will be continued.

## **10. DMM J. WHOLESALE AGENCY ASSISTANCE PROGRAMS (FOUNDATIONAL BMP 1.1.3)**

**Description.** This demand management BMP requires wholesale water suppliers to provide financial incentives, or equivalent resources, to their retail water agency customers for the advancement of water conservation efforts.

**BMP 1.1.3 Implementation.** Since the North Coast County Water District is not a wholesale water supplier, this BMP is not applicable to the District.

## **11. DMM K. CONSERVATION PRICING (FOUNDATIONAL BMP 1.4)**

**Existing Rate Structure.** The North Coast County Water District has a 4-tier inclining block rate for all residential customers and a uniform rate for all commercial and institutional accounts. See DMM D, above. The inclining block rate structure provides powerful incentives for residential conservation.

The North Coast County Water District has no jurisdiction over sewer rates, which are set by the City of Pacifica. The City charges by volume of use, which is derived from the Water District's sales to individual accounts during wet weather months when outdoor water use is the lowest. The sewer charges are billed annually in conjunction with the collection of property taxes.

**Implementation.** The District's pricing structure is in full conformance with DMM K/BMP 1.4.

## 12. DMM L. CONSERVATION COORDINATOR (FOUNDATIONAL BMP 1.1.1)

**Description.** This DMM calls for the agency to designate a water conservation coordinator and support staff (if necessary) whose duties are to include the coordination and oversight of conservation programs, the preparation and submittal of annual BMP Implementation Reports, the coordination of conservation programs with operations staff and with management, and related activities.

**BMP 1.1.1 Implementation.** The District's Assistant General Manager – Administration serves as the Water Conservation Coordinator. She has a Water Conservation Practitioner certification from AWWA, and has been overseeing all of North Coast's water conservation programs since 1995. She is assisted, as necessary, by other District Staff. The District is in conformance with DMM L/BMP 1.1.1.

## 13. DMM M. WATER WASTE PROHIBITION (FOUNDATIONAL BMP 1.1.2)

**Description.** This BMP calls for water agencies to enact and enforce certain prohibitions against wasteful water use on an on-going basis, i.e. during drought and non-drought periods. The ordinances should prohibit, at a minimum, gutter flooding, non-recirculating fountains, non-recirculating systems in any new car wash or commercial laundry installations, and any new single-pass cooling systems.

**Past Activities.** The North Coast County Water District has prohibited the waste of water as well as a number of non-essential uses of water in conjunction with water rationing programs that were implemented in 1976-77 and again 1990 and 1991. In these situations the District's ordinances prohibited non-essential water uses, which were defined as uses in excess of the specific allotments which varied by meter size. In addition, a number of defined uses of water were also prohibited as non-essential uses. These ordinances were enforced with excess use charges, warnings, and ultimately, a disconnection of service. The ordinances were suspended when the water shortage emergencies ended.

**BMP 1.1.2 Implementation.** In order to implement DMM M so as to prohibit water waste during non-drought periods, the District will consider adoption of an ordinance prohibiting wasteful water use in a broad range of circumstances. The ordinance could cover the wasteful water practices mentioned in the DMM as well as several others that would be relevant in the community. As an example, it could prohibit:

- a) Use of water when the customer has been given notice to repair broken plumbing, sprinkler, or irrigation systems and has not done so after 10 days;
- b) Use of water that results in flooding or runoff to gutters or streets;

- c) Use of water for washing vehicles with a hose, unless the hose has a positive shutoff nozzle or valve;
- d) Use of landscape irrigation water that results in runoff to the street or pooling due to super-saturation of the ground;
- e) Use of water for cooling purposes;
- f) Use of water by new commercial carwashes unless it is recycled through on-site filter systems.

## **14. DMM N. ULTRA LOW FLUSH TOILET REPLACEMENT (PROGRAMMATIC BMP 3.4)**

The District has an on-going ULF toilet rebate program for all customers. The program was initiated in 1996 for residential customers, and expanded to all customers a year later. Currently, the program offers rebates of \$50 per toilet for residential customers. To qualify for a rebate the customer must show proof of purchase of a new, qualifying toilet and proof of disposition of the old toilet. The program has been promoted in press releases, bill stuffers, the District's website, and at community outreach events.

**BMP 3.4 Implementation.** The District is in compliance with BMP 3.4.

## **15. OTHER CONSERVATION PROGRAMS**

In the *Water Conservation Implementation Plan (2009)*, BAWSCA evaluated a suite of potential conservation measures with the goal of identifying a group that could be feasibly implemented and achieve the goal of reducing water consumption among the BAWSCA members by 10 mgd by 2018. The screening process reviewed potential water conservation measures included in the 2004 SFPUC's *Wholesale Customer Water Conservation Potential* report plus 18 potential new measures. The screening and evaluation considered targeted customer types, range in unit costs, and potential water savings. Five conservation programs were selected for implementation. They include:

1. High Efficiency Toilet Rebate Program
2. Education/Training Program for Residential Landscape Water Use Efficiency
3. High Efficiency Washing Machine Rebates
4. New Building Indoor Water Efficiency Regulations
5. New Building Landscape Water Efficiency Regulations

BAWSCA has determined that implementation of these measures on a regional basis has the potential to achieve a water savings of 8.4 mgd by 2018, and, as a member of BAWSCA, the North Coast County Water District intends to implement all of these programs. Programs 1-3 are incorporated into DMMs F, G and N, as described above.

## **D. IMPLEMENTATION PROGRAM AND SCHEDULE**

Table 20 summarizes the District's implementation program for the *Urban Water Management Plan*. The implementation program is based on a five-year time horizon, beginning in 2011. The schedule is intended to provide general guidance to the District for the enactment of the water conservation programs described in this report. The Board of Directors will maintain full flexibility in funding and scheduling the various programs, and the implementation schedule may be modified as a result of Board actions. As required by State law, the entire plan will be reviewed after five years.

**TABLE 20  
IMPLEMENTATION PLAN SUMMARY**

<b>DMM #</b>	<b>Program</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
A.	Residential Water Surveys	O	O	O	O	O
B.	Residential Plumbing Retrofit	O	O	O	O	O
C.	System Water Audit, Leak Repairs	O	O	O	O	O
D.	Metering with Commodity Rates	O	O	O	O	O
E.	Large Landscape Conservation	O	O	O	O	O
F.	High-Efficiency Washing Machine Rebates	O	O	O	O	O
G.	Public Information Program	O	O	O	O	O
H.	School Programs	O	O	O	O	O
I.	CII Water Conservation	O	O	O	O	O
J.	Wholesale Agency Assistance	NA	NA	NA	NA	NA
K.	Conservation Pricing	O	O	O	O	O
L.	Water Conservation Coordinator	O	O	O	O	O
M.	Water Waste Prohibition	D	D	D	O	O
N.	Ultra Low Flush Toilet Replacement	O	O	O	O	O
	Other Measures	O	O	O	O	O
-	Wastewater Reclamation	D	O	O	O	O

Key to Symbols:

- = No Activity; Not Cost Effective
- O = Ongoing Program
- D = Develop Program
- NA = Not Applicable

**APPENDIX A**  
**2010 BMP REPORT**

Agency: **North Coast County Water District**  
Retail

District Name: **North Coast County Water District**

CUWCC Unit #: **173**



**CUWCC BMP RETAIL COVERAGE REPORT 2009-2010**  
**Foundation Best Management Practices for Urban Water Efficiency**

**Foundational BMPs**

**BMP 1.1 Operational Practices**

		<b>2009</b>		<b>2010</b>	
1. Conservation Coordinator provided with necessary resources to implement BMPs?	Name Title Email	<b>Cari Lemke</b> Assistant General Manager <a href="mailto:clmke@nccwd.com">clmke@nccwd.com</a> <b>On Track</b>		<b>Cari Lemke</b> Assistant General Manager <a href="mailto:clmke@nccwd.com">clmke@nccwd.com</a> <b>On Track</b>	Conservation Coordinator provided with necessary resources to implement BMPs?
2. Water waste prevention documentation	Describe Ordinance Terms	The City of Pacifica is following the State Landscap Ordinance. In addition the District has a Ordinance prohibiting wasteful water practices at times of Drought.			On Track if any one of the 8 ordinance actions done, plus documentation or links provided
	Describe Ordinance Terms 2010	The City of Pacifica is the responsible agency and the District has worked with them on these issues.			
		<b>On Track</b>		<b>On Track</b>	



**CUWCC BMP RETAIL COVERAGE REPORT 2009-2010**  
**Foundation Best Management Practices for Urban Water Efficiency**

Agency: **North Coast County Water District**

District Name: **North Coast County Water District**

CUWCC Unit #: **173**

Primary Contact **Cari Lemke**

Telephone **850-355-3462**

Email: [clmke@nccwd.com](mailto:clmke@nccwd.com)

Compliance Option Chosen By Reporting Agency:  
(Traditional, Flex Track or GPCD)

GPCD if used:

GPCD in 2010	77
GPCD Target for 2018	73

Year	Report	Target	Highest Acceptable Bound			
			% Base	GPCD	% Base	GPCD
2010	1	96.4%	85	100%	89	
2012	2	92.8%	82	96%	85	
2014	3	89.2%	79	93%	82	
2016	4	85.6%	76	89%	79	
2018	5	82.0%	73	82%	73	

Not on Track if 2010 GPCD is  $\geq$  than target

GPCD in 2010	<b>77</b>
Highest Acceptable GPCD for 2010	<b>89</b>
	<b>On Track</b>





## CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

### Foundation Best Management Practices for Urban Water Efficiency

#### 1.3 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

	2009		2010		
Exemption or 'At least as Effective As' accepted by CUWCC					If signed MOU prior to 31 Dec 1997, On Track if all connections metered; If signed after 31 Dec 1997, complete meter installations by 1 July 2012 or within 6 yrs of signing and 20% biannual reduction of unmetered connections.
Numbered Unmetered Accounts	0	On Track	0	On Track	On Track if no unmetered accounts
Metered Accounts billed by volume of use	Yes	On Track	Yes	On Track	Volumetric billing required for all connections on same schedule as metering
Number of CII accounts with Mixed Use meters	66		0		Info only
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	No	On Track until 2012	No	On Track until 2012	On Track if Yes, Not on Track if No
Feasibility Study provided to CUWCC?	No	On Track until 2012	No	On Track until 2012	On Track if Yes, Not on Track if No
Completed a written plan, policy or program to test, repair and replace meters	No		No		On Track if Yes, Not on Track if No



## CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

### Foundation Best Management Practices for Urban Water Efficiency

#### BMP 1.2 Water Loss Control

	2009			
Compile Standard Water Audit using AWWA Software?	Yes	On Track		On Track if Yes, Not on Track if No
AWWA file provided to CUWCC?	Yes	On Track		On Track if Yes, Not on Track if No
AWWA Water Audit Validity Score?	no			Info only until 2012
Completed Training in AWWA Audit Method?	No			Info only until 2012
Completed Training in Component Analysis Process?	No			Info only until 2012
Complete Component Analysis?	0			Info only until 2012
Repaired all leaks and breaks to the extent cost effective?	Yes	On Track		On Track if Yes, Not on Track if No
Locate and repair unreported leaks to the extent cost effective.	Screening of meter reads for unusual high consumption. Discovery of leaks on main and service lines.	On Track		On Track if Yes, Not on Track if No

	2010					
Compile Standard Water Audit using AWWA Software?	Yes	On Track		On Track if Yes, Not on Track if No		
AWWA file provided to CUWCC?	Yes	On Track		On Track if Yes, Not on Track if No		
AWWA Water Audit Validity Score?	78			Info only until 2012		
Completed Training in AWWA Audit Method?	No			Info only until 2012		
Completed Training in Component Analysis Process?	No			Info only until 2012		
Complete Component Analysis?	No			Info only until 2012		
Repaired all leaks and breaks to the extent cost effective?	Yes	On Track		On Track if Yes, Not on Track if No		
Locate and repair unreported leaks to the extent cost effective.	Yes	On Track		On Track if Yes, Not on Track if No		
Maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.				Info only until 2012		
Provided 7 types of Water Loss Control Info				Info only until 2012		
Leakage Repaired	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost of Interventions	Water Saved
33	\$ 1,700,200	125	Y	\$	-	0



## CUWCC BMP RETAIL COVERAGE REPORT 2009-2010

### Foundation Best Management Practices for Urban Water Efficiency

Agency: **North County Water District**

District Name: **NCCWD**

CUWCC Unit #: **173**

Retail

Primary Contact: **Carli Lemke**

Email: [clemke@nccwd.com](mailto:clemke@nccwd.com)

On Track if: Increasing Block, Uniform, Allocation, Standby Service; Not on Track if otherwise

#### 1.4 Retail Conservation Pricing

##### Metered Water Rate Structure

Customer Class	2009 Rate Type	Conserving Rate?	Customer Class	2010 Rate Type	Conserving Rate?
Single-Family	Increasing Block	Yes	Single-Family	Increasing Block	Yes
Other	Uniform	Yes	Multi-Family	Uniform	Yes
Commercial	Uniform	Yes	Commercial	Uniform	Yes
Dedicated Irrigation	Uniform	Yes	Dedicated Irrigation	Uniform	Yes
<b>On Track</b>			<b>On Track</b>		

Year Volumetric Rates began for Agencies with some Unmetered Accounts

Info only

Agencies with Partially Metered Service Areas: If signed MOU prior to 31 Dec. 1997, implementation starts no later than 1 July 2010. If signed MOU after 31 Dec. 1997, implementation starts no later than 1 July 2013, or within seven years of signing the MOU.





**CUWCC BMP RETAIL COVERAGE REPORT 2009-2010**  
**Foundation Best Management Practices for Urban Water Efficiency**

**BMP 2. EDUCATION PROGRAMS**

**BMP 2.1 Public Outreach Actions Implemented and Reported to CUWCC**

	2009	2010	
Does a wholesale agency implement Public Outreach Programs for this utility's benefit?	Yes	Yes	Yes/No
Names of Wholesale Agencies	SFPUC	SFPUC	
1) Contacts with the public (minimum = 4 times per year)	4	4	
2) Water supplier contacts with media (minimum = 4 times per year, i.e., at least quarterly)	4	4	
3) An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly).	Yes	Yes	All 6 action types implemented and reported to CUWCC to be 'On Track'
4) Description of materials used to meet minimum requirement	Website Newsletter articles on conservation General water conservation information Television contacts Articles or stories resulting from outreach	Newsletter articles on conservation Website Newsletter articles on conservation News releases Television contacts	
5) Annual budget for public outreach program.	\$ 30,000	\$ 30,000	
6) Description of all other outreach programs	Description is too large for text area. Data will be stored in the BMP Reporting database when online.	Description is too large for text area. Data will be stored in the BMP Reporting database when online.	
	<b>OnTrack for 5 Actions</b>	<b>OnTrack for 5 Actions</b>	

## **APPENDIX B**

### **DWR CHECKLIST**

**Table A-1 Urban Water Management Plan checklist, organized by subject**

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
<b>PLAN PREPARATION</b>				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		pps. 3-4
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		p. 4
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Appendix E
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Appendix E
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Appendix E
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Appendix E
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix E
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Table 20, p. 56

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Appendix E
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Appendix E
<b>SYSTEM DESCRIPTION</b>				
8	Describe the water supplier service area.	10631(a)		p. 5; Fig. 1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		p. 5; Table 2
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Table 3; p. 8
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Table 3, p. 8 Table 13, p. 26
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		P. 8
<b>SYSTEM DEMANDS</b>				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		pps. 23-24; Tables 11, 12
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Appendix E

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		p. 24
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Past & Current: Table 8, 9 & 10, p. 19 - 21; Figures 3 & 4; Projected: Table 12, p. 27
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Table 14, p. 27
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		p. 27
<b>SYSTEM SUPPLIES</b>				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	pps. 9 - 11; Pps. 16 - 18
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	NO; p. 11
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		NA
16	Describe the groundwater basin.	10631(b)(2)		NA
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		NA

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		NA
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		NA
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		NA
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	NA
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		p. 16
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		pps. 28 – 30; Table 16, p. 30 Table 18, p. 40
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		p. 11
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		pps. 17–18; Table 7, p 18
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		pps. 17-18

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		pps. 17-18
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		pps. 17-18
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		pps. 17-18
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		pps. 17-18
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		pps. 17-18
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		pps. 17-18
<b>WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING <sup>b</sup></b>				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		pps. 11-13
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		pps. 28-36; Table 16, p. 30 Table 18, p.40
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		pps. 11-13
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Table 19, p. 41

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide 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.	10632(b)		Table 16, p. 30
37	Identify 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.	10632(c)		p. 37
38	Identify 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.	10632(d)		Table 19, p. 41
39	Specify 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.	10632(e)		Table 19, p. 41
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		p. 42
41	Provide 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.	10632(g)		p. 43
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		P. 43
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		p. 43
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	p. 14

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Table 16, p. 30; Table 18, p. 40 and related text.
<b>DEMAND MANAGEMENT MEASURES</b>				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	pps. 44-56
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		pps. 44-56
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		pps. 44-56
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	pps. 44-56
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix A

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

**APPENDIX C**  
**BASELINE CALCULATIONS**

**North Coast County Water District  
Baseline Calculations**

Year	Population	Gross Water Use (mg)	GPCD	Baseline Water Use Calculation Period ending							Current Water Use Period Ending:							
				2004	2005	2006	2007	2008	2009	2010	2007	2008	2009	2010				
1995	38,700	1,123.6	79.5	79.5														
1996	38,650	1,184.95	83.9	83.9	83.9													
1997	38,600	1,204.88	85.5	85.5	85.5	85.5												
1998	38,550	1,185.21	84.2	84.2	84.2	84.2	84.2											
1999	38,560	1,232.7	87.5	87.5	87.5	87.5	87.5	87.5										
2000	38,490	1,201.74	85.7	85.7	85.7	85.7	85.7	85.7	85.7									
2001	38,568	1,278.73	90.8	90.8	90.8	90.8	90.8	90.8	90.8	90.8								
2002	38,746	1,278.71	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4								
2003	38,934	1,270.25	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4							
2004	39,102	1,304.87	91.4	91.4	91.4	91.4	91.4	91.4	91.4	91.4	91.4	91.4						
2005	39,280	1,201.44	83.7		83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7				
2006	39,458	1,187.30	82.4			82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	
2007	39,637	1,115.79	77.1				77.1	77.1	77.1	77.1	77.1	77.1	77.1	77.1	77.1	77.1	77.1	
2008	39,815	1,154.64	79.4					79.4	79.4	79.4			79.4	79.4	79.4	79.4	79.4	
2009	39,995	1,076.69	73.7							73.7	73.7				73.7	73.7	73.7	
2010	39,000	1,091.80	76.6								76.6						76.6	
Calculated Baseline:				86.8	87.3	87.1	86.3	85.8	84.0	83.5	84.8	82.8	79.3	77.8				

## **APPENDIX D**

# **SFPUC EMERGENCY RESPONSE PLANNING**

# SFPUC EMERGENCY RESPONSE PLANNING

## Planning, Training and Exercise

Following San Francisco's experience with the 1989 Loma Prieta Earthquake, the SFPUC created a departmental *SFPUC Emergency Operations Plan (EOP)*. The *SFPUC EOP*, originally released in 1992, and has been updated on average every two years. The latest plan update will be released in Spring, 2011. The *EOP* addresses a broad range of potential emergency situations that may affect the SFPUC and that supplements the City and County of San Francisco's *Emergency Operations Plan* prepared by the Department of Emergency Management and most recently updated in 2008. Specifically, the purpose of the *SFPUC EOP* is to describe the department's emergency management organization, roles and responsibilities and emergency policies and procedures.

In addition, SFPUC divisions and bureaus have their own EOPs that are in alignment with the SFPUC EOP and describe each division's/bureau's specific emergency management organization, roles and responsibilities and emergency policies and procedures. The SFPUC tests its emergency plans on a regular basis by conducting emergency exercises. Through these exercises the SFPUC learns how well the plans will or will not work in response to an emergency. Plan improvements are based on exercise and sometime real world event response and evaluation. Also, the SFPUC has an emergency response training plan that is based on federal, state and local standards and exercise and incident improvement plans. SFPUC employees have emergency training requirements that are based on their emergency response role.

## Emergency Drinking Water Planning

In February 2005, the SFPUC Water Quality Bureau published a *City Emergency Drinking Water Alternatives* report. The purpose of this project was to develop a plan for supplying emergency drinking water in the City after damage and/or contamination of the SFPUC raw and/or treated water systems resulting from a major disaster. The report addresses immediate response after a major disaster. Since the publication of this report, the SFPUC has implemented a number of projects to increase its capability to support the provision of emergency drinking water during an emergency. These projects include:

- Public Information and materials for home and business
- Designation and identification of 67 emergency drinking water hydrants throughout San Francisco
- Purchase of emergency related equipment including water bladders and water bagging machines to help with distribution post-disaster
- Coordinated planning with City Departments, neighboring jurisdictions and other public and private partners to maximize resources and supplies for emergency response

With respect to emergency response for the SFPUC Regional Water System, the SFPUC has prepared the *SFPUC Regional Water System Emergency Response and Recovery Plan (ERRP)*, completed in 2003 and updated in 2006. The purpose of this plan is to describe the

SFPUC RWS emergency management organizations, roles and responsibilities within those organizations, and emergency management procedures. This contingency plan addresses how to respond to and to recover from a major RWS seismic event, or other major disaster. The ERRP complements the other SFPUC emergency operations plans at the Department, Division and Bureau levels for major system emergencies.

The SFPUC has also prepared in an *SFPUC-Suburban Customer Water Supply Emergency Operations and Notification Plan*. The plan was first prepared in 1996 and has been updated several times – most recently in July of 2010. The purpose of this plan is to provide contact information, procedures and guidelines to be implemented by the following entities when a potential or actual water supply problem arises: the SFPUC Water Supply and Treatment Division (WS&TD), Water Quality Bureau (WQB), and SFPUC wholesale customers, BAWSCA, and City Distribution Division (CDD – considered to be a customer for the purposes of this plan). For the purposes of this plan, water quality issues are treated as potential or actual supply problems.

### **Power Outage Preparedness and Response**

SFPUC's water transmission system is primarily gravity fed, from the Hetch Hetchy Reservoir to the City and County of San Francisco. Within San Francisco's in-city distribution system, the key pump stations have generators in place and all others have connections in place that would allow portable generators to be used.

Although water conveyance throughout the RWS would not be greatly impacted by power outages because it is gravity fed, the SFPUC has prepared for potential regional power outages as follows:

- The Tesla disinfection facility, the Sunol Valley Water Treatment Plant, and the San Antonio Pump Station, have back-up power in place in the form of generators or diesel powered pumps. Additionally, both the Sunol Treatment Plant and the San Antonio Pump Station would not be impacted by a failure of the regional power grid because it runs off of the SFPUC hydro-power generated by the RWS.
- Both the Harry Tracy Water Treatment Plant and the Baden Pump Station have back-up generators in place.
- Additionally, as described in the next section, the WSIP includes projects which will expand the SFPUC's ability to remain in operation during power outages and other emergency situations.

### **Capital Projects for Seismic Reliability and Overall System Reliability**

As discussed in Section III, D of this UWMP, the SFPUC is also undertaking a WSIP in order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply. The WSIP projects include several projects located in San Francisco to improve the seismic reliability of the in-city distribution system, as well as many projects related to the SFPUC RWS to address both seismic reliability and overall system reliability. All WSIP projects are expected to be completed by 2016.

In addition to the improvements that will come from the WSIP, San Francisco has already

constructed the following system interties for use during catastrophic emergencies, short-term facility maintenance and upgrade activities, and in times of water shortages:

- A 40 mgd system intertie between the SFPUC and the Santa Clara Valley Water District (Milpitas Intertie); and
- One permanent and one temporary intertie to the South Bay Aqueduct, which would enable the SFPUC to receive State Water Project water.

The WSIP includes intertie projects, such as the EBMUD-Hayward-SFPUC Intertie. The SFPUC and EBMUD have completed construction of this 30 mgd intertie between their two systems in the City of Hayward, as part of the WSIP.

The WSIP also includes projects related to standby power facilities at various locations. These projects will provide for standby electrical power at six critical facilities to allow these facilities to remain in operation during power outages and other emergency situations. Permanent engine generators will be provided at four locations (San Pedro Valve Lot, Millbrae Facility, Alameda West, and Harry Tracy Water Treatment Plant), while hookups for portable engine generators will be provided at two locations (San Antonio Reservoir and Calaveras Reservoir).

## **APPENDIX E**

### **NOTICES AND RESOLUTION OF ADOPTION**

February 25, 2011

Mr. Art Jensen, Chief Executive Officer  
Bay Area Water Supply and Conservation Agency  
155 Bovet Road, Suite 302  
San Mateo, CA 94402

**Re: Urban Water Management Plan Update**

This is to notify you that the North Coast County Water District will be reviewing and updating its Urban Water Management Plan in the coming months. We invite your agency's participation in this process.

We will make any proposed revisions to our plan available for public review and will hold a public hearing on the revised plan prior to its adoption. You will be given notice of the District's meeting in which the Urban Water Management Plan will be considered.

Should you have any questions, please call me at (650) 355-3462.

Sincerely,

Kevin O'Connell  
General Manager

February 25, 2011

David S. Boesch, County Manager  
San Mateo County  
400 County Center, 1<sup>st</sup> Floor  
Redwood City, CA 94063

**Re: Urban Water Management Plan Update**

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Sincerely,

Kevin O'Connell  
General Manager

February 25, 2011

Steven A. Rhodes, City Manager  
170 Santa Maria Avenue  
Pacifica, CA 94044

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Sincerely,

Kevin O'Connell  
General Manager

February 25, 2011

Ron Meyers, Fire Chief  
North County Fire Authority  
10 Wembley Drive  
Daly City, CA 94015-4314

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Should you have any questions, please call me at (650) 355-3462.

Sincerely,

Kevin O'Connell  
General Manager

February 25, 2011

Mr. Steven Ritchie, Assistant General Manager, Water Enterprise  
San Francisco Public Utilities Commission  
1155 Market Street, 11<sup>th</sup> Floor  
San Francisco, CA 94103

**Re: Urban Water Management Plan Update**

This is to notify you that the North Coast County Water District will be reviewing and updating its Urban Water Management Plan in the coming months. We invite your agency's participation in this process.

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Should you have any questions, please call me at (650) 355-3462.

Sincerely,

Kevin O'Connell  
General Manager

**NORTH COAST COUNTY WATER DISTRICT  
PUBLIC HEARING ON UPDATE OF URBAN WATER MANAGEMENT PLAN**

The Urban Water Management Plan Act (California Water Code Section 10610-10657) requires that the North Coast County Water District review and update its Urban Water Management Plan every five years. The Board of Directors of the North Coast County Water District will hold a public hearing to consider proposed revisions and updates to the Plan for 2010-2015. The hearing will be held at 7:00 p.m. on Wednesday, June 15, 2011 at the District Offices located at 2400 Francisco Boulevard, Pacifica, California 94044. Comments on the draft may be made prior to the public hearing to Cari Lemke at the address below or at the public hearing. A draft of the 2010 Urban Water Management Plan *including the implementation plan for compliance with the Water Conservation Act of 2009 (SBx7-7)* is available for review at the District Offices or on the District's website at: [www.nccwd.com](http://www.nccwd.com). If you have any questions regarding the draft 2010 UWMP, please contact:

Cari Lemke  
Assistant General Manager – Administration  
2400 Francisco Boulevard  
Pacifica, CA 94044  
(650) 355-3462

RESOLUTION NO. 1043

ADOPTING THE 2010-2015 URBAN WATER MANAGEMENT PLAN  
AND THE SBX7-7 COMPLIANCE METHOD

NORTH COAST COUNTY WATER DISTRICT

WHEREAS, pursuant to the Urban Water Management Planning Act, California Water Code Sections 10610 *et seq.* (Act), the North Coast County Water District (District) must prepare and adopt an Urban Water Management Plan (UWMP);

WHEREAS, beginning with the 2010-2015 UWMP, the District also must prepare and adopt a method for determining its urban water use target for compliance with the Water Conservation Bill of 2009, California Water Code Sections 10608 *et seq.* (SBX7-7);

WHEREAS, the analysis and selection of the District's SBX7-7 compliance method is set forth in its UWMP;

WHEREAS, the District met and exceeded the procedural requirements of both the Act and SBX7-7 by doing all of the following: (1) coordinated the preparation of the UWMP with other appropriate agencies in the area; (2) notified the County of San Mateo and City of Pacifica that the District will be reviewing the UWMP and considering its adoption at least 60 days prior to the public hearing; (3) distributed the draft UWMP to numerous local and regional agencies and other parties who requested a copy of the UWMP; (4) made the draft UWMP available at the District office; (5) posted the draft UWMP on the District's website; (6) encouraged active involvement of different elements of the population and the community; (7) published a notice of the June 15 public hearing in the local newspaper once a week for two successive weeks beginning at least fourteen days prior to the public hearing and posted that notice on the District's website; (8) held a public hearing inviting public input regarding the draft UWMP and the SBX7-7 compliance method, including the District's SBX7-7 implementation plan, the economic impacts of that implementation plan, and the method selected for determining the District's urban water use target; and (9) considered all comments received during the public hearing; and

WHEREAS, the SBX7-7 compliance method recommended by staff is target method 3. Target method 3 sets the supplier's 2020 conservation goal at 95% of the applicable hydrologic region's target. The District is in the San Francisco Bay Hydrologic Region (Region 2). The 2015 interim target for Region 2 is 144 gpcd and the 2020 target is 131 gpcd.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of North Coast County Water District as follows:

1. The Board adopts Method 3 for determining its urban water use target for compliance with SBX7-7.
2. The Board adopts the 2010-2015 Urban Water Management Plan as presented by staff, and authorizes staff to incorporate the public hearing comments as approved by the Board after the close of the public hearing.
3. The Board authorizes and directs the General Manager to submit copies of the final UWMP to the Department of Water Resources, the California State Library, the County of San Mateo, and the City of Pacifica by July 15, 2011.

PASSED AND ADOPTED this 15th day of June 2011 by the following vote:

AYES: Directors Brown, Cosgrove, Vetter, Ash and Piccolotti

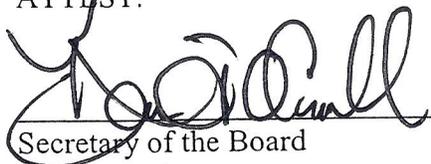
NOES: None

ABSENT: None



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President, Board of Directors  
North Coast County Water District

ATTEST:

  
\_\_\_\_\_  
Secretary of the Board