2005 Urban Water Management Plan

Providing a reliable, safe, consistent, high-quality water supply now and in the future.

Submittal – December 2005

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PROFESSIONAL ENGINEER'S CERTIFICATION

This is to certify that this 2005 Urban Water Management Plan by Brown and Caldwell for the City of Daly City, California has been prepared under my direction and supervision.

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1.0 SECTION

INTRODUCTION

This report represents the Urban Water Management Plan (UWMP) for the water system operated by the Department of Water and Wastewater Resources (DWWR) of the City of Daly City (City). The State of California through the Urban Water Management Planning Act (Assembly Bill–AB797 as amended) requires water utilities to submit UWMPs every five years to the California Department of Water Resources (DWR). This plan fulfills several purposes:

1. Complies with Year 2005 UWMP as required by the Urban Water Master Planning Act.
2. Provides the analysis of water conservation measures in accordance the least cost demand management with the guidelines of the California Urban Water Conservation Council (CUWCC).
3. Provides a transition plan for accommodating water demands during the next 25 years.
4. Serves as the long-term water supply plan for the City Water System.

1.1 Urban Water Management Planning Act

The Urban Management Planning Act (Act) became part of the California Water Code with the passage of Assembly Bill 797 (AB 797) during the 1983-1984 regular session of the California legislature. It requires every urban water supplier providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet of water annually, to adopt and submit an UWMP every five years to DWR. Subsequently, assembly bills in 1990, 1991, 1993, 1994, 2000, and 2003 amended the Act.

According to the Act, an UWMP shall:

- Provide past, current, and projected water use data.
- Identify conservation measures currently being practiced.
- Describe and evaluate alternative conservation measures.
- Provide a schedule of implementation for proposed actions.
- Provide an urban water shortage contingency plan.
- Describe water supply alternatives.

The Department of Water Resources' (DWR's) 2005 UWMP Checklists are included in Appendix A to demonstrate that this Plan complies with all of the requirements in California Water Code

Division 6, Part 2.6 (Urban Water Management Planning). The Checklists assist the reviewer in locating the page in the plan where each section of the law is addressed.

1.2 California Urban Water Conservation Council (CUWCC)

The CUWCC is a voluntary organization of water utilities, environmental, and other interested groups that are responsible for administering the implementation of water conservation measures in California. The Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) (California Urban Water, 1999) defines the water conservation measures or best management practices (BMPs), which are now known as Demand Management Measures (DMMs). The signatories of the CUWCC submit a semi-annual report regarding their implementation of DMMs.

The City is not a MOU signatory and therefore does not submit semi-annual reports. Nevertheless, the City recognizes the importance of DMMs and participated in the San Francisco Public Utilities Commission (SFPUC) report on Wholesale Customer Water Conservation Potential Technical Report (December 2004). This report provides a summary and review of the economic analysis of 32 DMMs that the SFPUC conducted using the Demand Management Least-Cost Planning Decision Support (DSS) model. This report also presents a recommended water demand management plan.

It is important to note however, that the studies also concluded that Daly City's residential gallons per day per capita (gpdc) consumption is 57 indoor and 9 outdoors. Conservation practices instituted during two major droughts in the past two decades have contributed to this below average gpdc use. Figure 1-1 shows that the current water production is consistent with use in the early 80's despite an approximate 35 percent increase in population (US Census 1980-78,519; 2000=103,621) In addition; gross gpcd consumption for the City is 64 indoor and 12 outdoor. This is considerably lower than the San Francisco Bay Area Average residential gpcd consumption of 95 and gross consumption of 161. It is clear that Daly City is approaching demand hardening although the studies concluded that the conservation potential, while low, does lend itself to additional conservation opportunities saving an estimated 0.44 million gallons per day (mgd) annually by 2030.

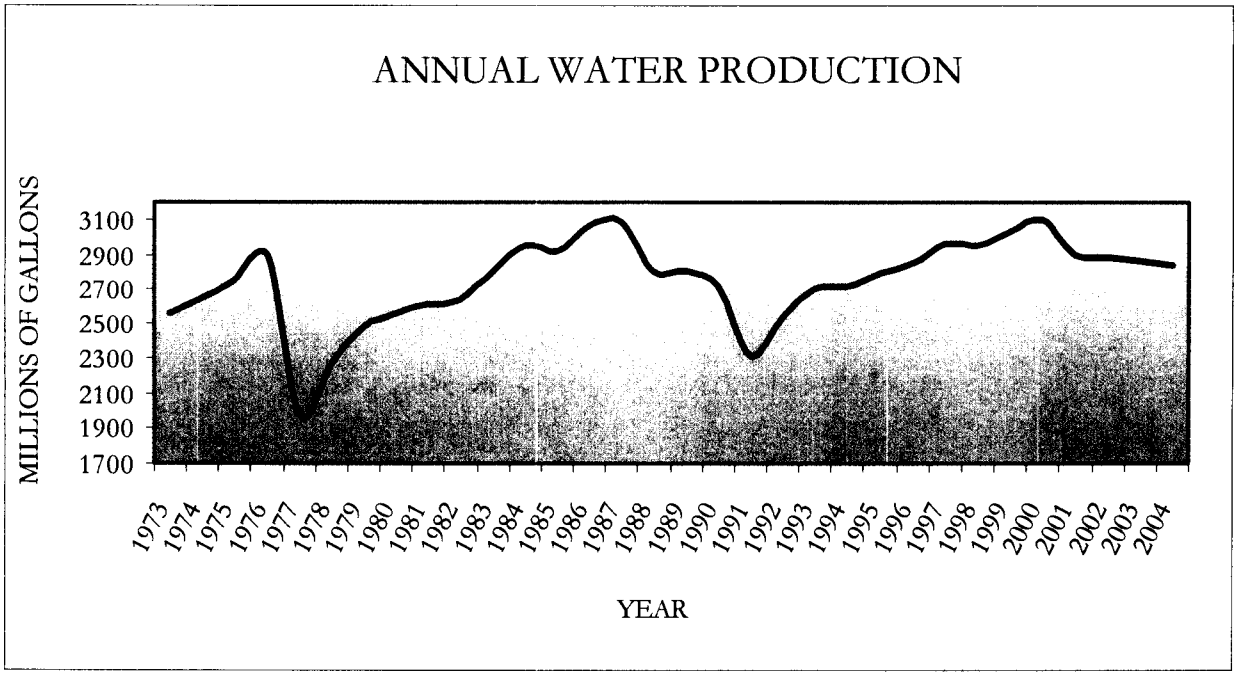

Figure 1-1. Annual Water Production 1972 to Present

1.3 Previous Reports

This Plan updates incorporated findings from reports that have been completed since the 2000 Plan, including the following:

- SFPUC Wholesale Customer Water Demand Potential Technical Report – URS; November 2004
- SFPUC Wholesale Customer Water Conservation Potential Technical Report –URS; November 2004
- SFPUC 2030 Purchase Estimates Technical Memorandum – URS; December 2004
- SFPUC Wholesale Customer Recycled Water Potential Technical Memorandum – RMC; December 2004
- Resolution No. 04-254 – Westside Ground Water Basin
- SFPUC Letters of May 27 and revised June 1, 2005 assessing water supply reliability under the following planning scenarios:
    - Projected single dry-year supply for 2005;
    - Projected multiple dry-year supply beginning 2005; and,
    - Projected supply reliability for years ending 2010,2015,2020,2025

2.0 SECTION

PUBLIC PARTICIPATION AND BACKGROUND INFORMATION

This Section describes the public participation that has been encouraged in the preparation of this document, agency coordination, and the subsequent adoption by the City Council. This Section then describes the supplier service area including climate, demographic factors, population, employment and housing. Past drought, water demand, and conservation information is provided.

2.1 Public Participation

Law

> *10642. Each urban water supplier shall encourage the 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. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

Public meetings were held prior to the adoption of the 1986, 1991, 1996 and 2000 Urban Water Management Plans. For this update to the Urban Water Management Plan, the City Council noticed the public hearing on October 24, 2005 and then held a formal public hearing on November 28, 2005 to receive public comment on the draft Plan.

Notice of the public hearing was posted on the City's homepage on the Internet. The City arranged to publish legal public notices for the hearing in the local newspaper and posted them at City facilities. Copies of the draft Plan were available at City offices, libraries and the Department of Water and Wastewater Resources (DWWR).

The hearing provided an opportunity for the City's water service customers and all residents and employees in the service area to learn about the water supply system and the plans incorporated to provide a reliable, safe, high-quality water supply in the future. The hearing also allowed people to ask questions regarding the current system and the viability of future plans. Upon City Council's approval at the conclusion of the public hearing The City finalized this plan.

2.2 Plan Adoption

The City prepared this update of its Urban Water Management Plan during Summer/Fall of 2005. The City Council scheduled a public hearing for the adoption of the updated plan on November 28,

2005 and submitted the revised Plan to the California Department of Water Resources in December 2005. Copies of the signed Resolution of Plan Adoption to was attached the cover letter addressed to the Department of Water Resources and is included as Appendix B.

2.3 Agency Coordination

Law

> *10620 (d) (2) Each urban water supplier shall 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.*

2.3.1 Coordination within the City.

City DWWR staff communicated and coordinated the development of this plan with the City Manager, City Economic and Community Development and Fire departments.

2.3.2 Interagency Coordination.

All water sources for the City are shared in common with other urban and agricultural interests in the area. The City therefore coordinated the development of this plan with the following agencies:

- Bay Area Water Supply and Conservation Association (BAWSCA)
- San Francisco Public Utilities Commission (SFPUC)
- California Water Service Company (CWS)
- Brisbane Water
- North Coast Water
- Westborough Water
- North San Mateo County Sanitation District (NSMCSD)
- San Mateo County Environmental Health (SMCEH)
- Friends of Lake Merced

The City is a member agency of BAWSCA (formerly known as the Bay Area Water Users Association, BAWUA), and was created on May 27, 2003 to represent the interests of 26 cities and water districts, and two private utilities, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the San Francisco Regional Water System.

BAWSCA is the only entity having the authority to directly represent the needs of the cities, water districts and private utilities (wholesale customers) that depend on the regional water system. BAWSCA provides the ability for the customers of the regional system to work with San Francisco on an equal basis to ensure the water system gets fixed, and 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 individual BAWSCA member agencies. BAWSCA's role in the development of the 2005 UWMP updates is to work closely with its member agencies and the SFPUC to maintain consistency among the multiple documents being developed and to ensure overall consistency with the Water System Improvement Program (WSIP) for the San Francisco Regional Water System and the associated environmental documents.

Table 2-1 summarizes the efforts the City has taken to include various agencies and citizens in its planning process.

Table 2-1. Coordination with Appropriate Agencies (DWR Table 1)

Check at least one box on each row	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not Involved / No Information
Other water suppliers					✓	✓	
Water management agencies	✓			✓	✓	✓	
Relevant public agencies	✓			✓	✓	✓	
Wastewater Agency	✓			✓	✓	✓	
Public Library					✓	✓	
Special Interest Groups					✓*	✓*	
Citizen Groups					✓*	✓*	
General Public					✓*	✓*	
Other					✓*	✓*	

* When requested

2.4 Supplier Service Area

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631. (a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

Climate. The Pacific Ocean moderates the City's climate. Coastal fog during the summer months and relatively mild winter temperatures produce mean monthly minimum temperatures between 44 and 55 degrees F and mean monthly maximum temperatures between 55 and 64 degrees F.

Precipitation. Precipitation typically occurs from October through March. No direct-measured precipitation data were available for Daly City proper; however, the City's average precipitation can be assumed to be relatively close to the data from two stations from the National Oceanic and Atmospheric Administration (NOAA). The San Francisco Richmond Station, located along the coast in San Francisco's Richmond District, falls within 5 miles of the Daly City border and should be representative of Daly City's climate from the Ocean side of San Francisco. The City's climate is also is impacted by the climate of the San Francisco Bay, which is recorded through the San Francisco WSO station at the airport, which is also within close proximity to Daly City. The average annual precipitation from each station is very similar, and the mean annual precipitation between the two stations is 20.1 inches.

Table 2-2. Climate (DWR Table 3)

	January	February	March	April	May	June
Standard Average ETo (in.)[a]	1.83	2.20	3.42	4.84	5.61	6.26
Average Rainfall (in.)						
SF Richmond [b]	4.19	3.50	2.73	1.21	0.48	0.14
SF WSO AP [c]	4.47	3.62	2.82	1.35	0.38	0.11
Average Temperature (F)[b]	50.8	52.7	53.4	54.1	55.3	57

[a] Average ETo information from California Irrigation Management System (CIMIS). Monthly averages are from San Mateo County Station #96.

[b] Source: *NOAA for Station (047767) San Francisco Richmond, CA - 1948-2004*

[c] Source: NOAA for Station (047769) San Francisco WSO AP. *CA - 1948-2004*

Table 2-3. Climate Continued (DWR Table 3)

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Standard Average ETo (in.)[a]	6.47	6.22	4.84	3.66	2.36	1.83	49.54
Average Rainfall (in.) SF Richmond [b] SF WSO AP [c]	 0.02 0.02	 0.09 0.05	 0.17 0.19	 1.04 0.98	 2.74 2.43	 3.57 3.73	 19.89 20.29
Average Temperature (F)[b]	58.3	59.4	60.2	59.0	55.1	51.0	55.5

[a] Average Eto information from California Irrigation Management System (CIMIS). Monthly averages are from San Mateo County Station #96.

[b] Source: *NOAA for Station (047767) San Francisco Richmond, CA - 1948-2004*

[c] Source: NOAA for Station (047769) San Francisco WSO AP, *CA - 1948-2004*

2.5 Demographic Factors

Daly City is located in the northern part of San Mateo County, adjacent to the southern boundary of the City and County of San Francisco. The City is bounded on the east by the cities of South San Francisco, Colma, Brisbane, the San Bruno Mountains, and state and county parks; on the south by the cities of Pacifica and South San Francisco; and on the west by the Pacific Ocean. Topography of the area is typical of the Northern California coast. Near Daly City, the Coast Range rises to an elevation of 600 feet above mean sea level (MSL). A 2-mile-wide valley separates the Coast Range from the San Bruno Mountains, which rise to a peak elevation of 1,300 feet above mean sea level (MSL) at San Bruno Mountain.

Interstate 280 (I-280), running north and south, divides the City into two geographically distinct areas with different development characteristics. Older neighborhoods of medium-density, single-family housing are located on the eastern side of I-280. Small corner markets and strip developments characterize businesses in this area. West of I-280 development is newer, primarily built after 1949. In this area, lower-density, single-family homes are concentrated around shopping centers often dedicated to serving a regional rather than a local population. The limited manufacturing enterprises in the City are located near the Cow Palace in the Bayshore neighborhood on the eastside of I-280.

The City is a center for retail trades, primarily home furnishings and appliances, apparel, general merchandise, and eating and drinking establishments. Major shopping areas include Serramonte Shopping Center, Westlake Shopping Center, Pacific Plaza and the Mission Street retail corridors.

2.6 Population, Employment, and Housing

Daly City is the most populous city in San Mateo County. It reached a population exceeding 100,000 in 1997. Table 2-4 shows the current and projected population growth calculated through the DSS model. This population includes Broadmoor Village and unincorporated Colma, which are surrounded by Daly City's land but are not in the Daly City jurisdictional boundary. Furthermore, these two areas are not serviced by the City DWWR, but by the California Water Service Company. Therefore, the population presented in Table 2-4 is slightly larger than the population served by the Daly City Water Department (DCWD).

Table 2-4. Population Growth from 2005 to 2025 (DWR Table 2)

	2005	2010	2015	2020	2025	2030
Service Area Population	108,077	110,893	113,320	114,291	114,971	115,651

Source: DSS Model Dated 2-15-05 – Daly City

Table 2-5 lists the population breakdown for households and employees for the years 2000 to 2030.

Table 2-5. Population, Housing, and Employment Estimates and Projections

Year	Households [a]	Population [b]	Employees [b]
2000	32,475	106,200	25,510
2005	32,880	108,000	27,875
2010	33,570	110,900	28,900
2015	34,660	113,300	30,600
2020	35,840	114,300	31,500
2025	36,930	115,000	32,750
2030	38,100	115,650	34,000

[a] Source Association of Bay Area Governments – Projections 2002 – Subregional Study Area

[b] Source: SFPUC Study, DSS Baseline Projections for Daly City.

Current and population projections are the basis for the City's future water use projections presented in Section 6 of this report. Figure 2-1 shows the service boundaries for the Daly City water service area.

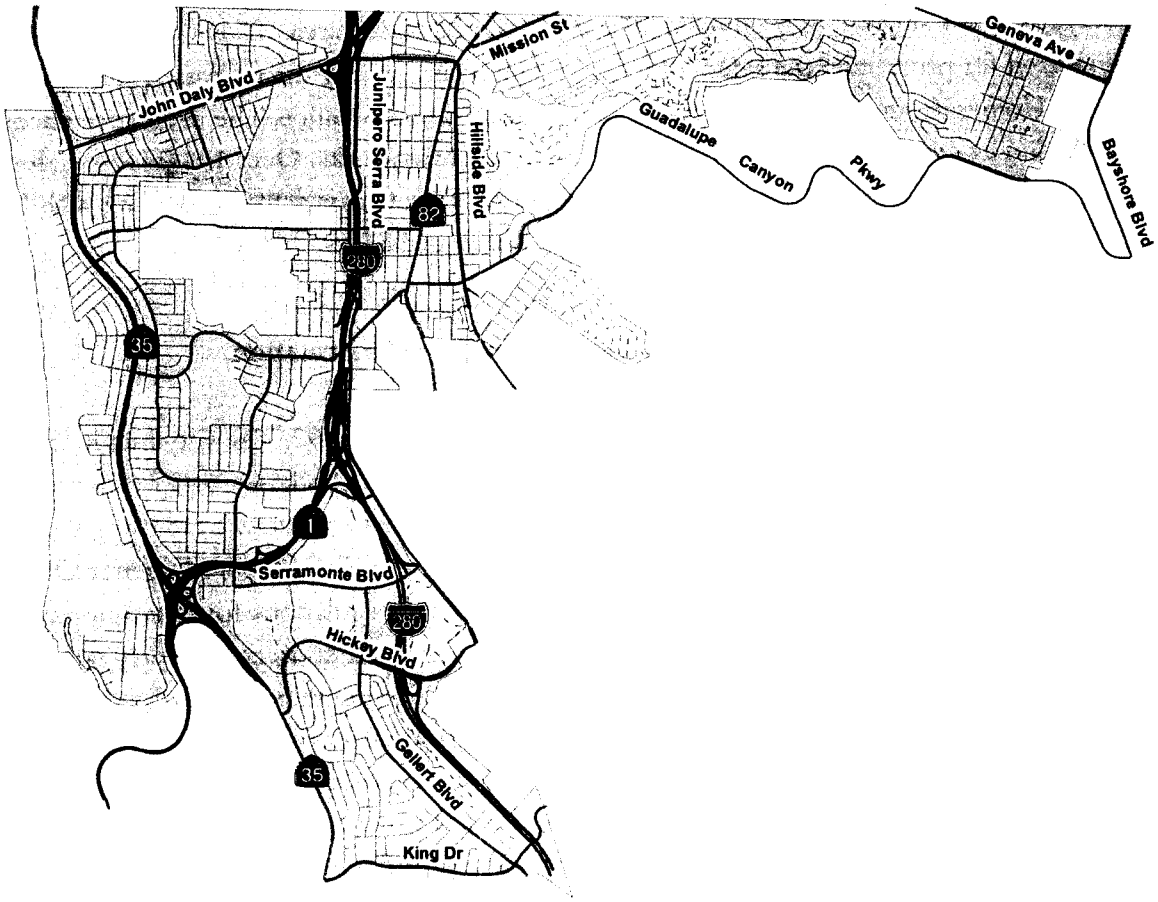

Figure 2-1. Daly City Water Department Service Area Boundary

In summary, from 2000-2005 Daly City's population increased by 2 percent. Daly City is expected to continue to experience the largest absolute gains in the number of households between 2005 and 2030 of any city in San Mateo County. Between 2005 and 2030, the population is estimated to increase about 7 percent to 115,651 persons, while the number of households will increase by approximately 4 to 5 percent to 38,100.

According to the 1987 Daly City General Plan, 53 percent of the City and unincorporated area is currently residential, 16 percent is open space, 12.5 percent is in public facilities, 10.3 percent is commercial, 7 percent is vacant, and 1.2 percent is dedicated to other uses. The City's land use distribution has not changed significantly since 1987 (Personal Communication, T. Sedik, 2005). The City plans development of 210 acres for office, retail and residential in-fill projects. Office and retail sites are in the Sullivan/Civic Center, Junipero Serra Boulevard, Serramonte Plaza, Bayshore and Gateway Plaza areas and total approximately 120 acres. An example of such development has been the Pacific Plaza Development with its anchor tenants AutoDesk and Genysis with

accompanying retail establishments supporting a Century Theatre 20-plex. Residential projects include 500 new single-family units on 40 acres in the Bayshore area. Daly City has been nationally recognized for promoting the safety of its existing housing supply through its Award-winning Project Homesafe and its progressive second-unit-housing ordinance. The ordinance encourages the legalization of owner-occupied homes with in-law secondary units. Over 1,800 Homesafe permits have been issued since the beginning of the program. Daly City is actively working with Habitat for Humanity to secure additional first time housing within in-fill lots.

2.7 Past Drought, Water Demand, and Conservation Information

Daly City experienced a prolonged drought from 1986 through 1992. The City met its customers' needs through careful management of groundwater supply and purchases, and by investing in water conservation. Community involvement made it possible to have voluntary rationing during 1987-89. By 1990, however, because of worsening local conditions, the City adopted Urgency Ordinance No. 1125 on May 14, 1990. This ordinance established rules and regulations for rationing water during a water shortage emergency and penalties for violation. This water conservation program was designed to effect a 25 percent reduction in water usage. The program was modified by amending Ordinance No 1143 on June 10, 1991 to make the program more equitable per person for families with greater than two persons, while increasing excess water rate charges to single-family and multi-family residences. When drought conditions subsided and when it was demonstrated that the conservation efforts of the residences and businesses were effective and would continue voluntarily, Ordinance No. 1156 was adopted on May 11, 1992, that suspended Ordinance Nos. 1125 and 1143. These three ordinances are presented in Appendix C of this Plan.

The citizens of Daly City have a high commitment to quality of life and environmental issues and are continuing to hold water conservation a high priority as evidenced by the below average gallons per day per capita noted earlier. Refer to Section 8 for more information on the City's current and future conservation programs and an economic evaluation of each as conducted through the DSS modeling program.

3.0 SECTION

WATER SOURCES (SUPPLY)

This section describes the surface water and groundwater sources, quantities, supply constraints, and the water quality of the water supply sources. In addition, this section describes current and projected water supplies, existing supplies, and water rates.

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a)

3.1 Water Supply Sources

Daly City (City) Department of Water and Wastewater Resources (DWWR) has three water sources including groundwater, water purchased from the San Francisco Public Utilities Commission, and recycled water. Table 3-1 summarizes the current and projected water supplies.

Table 3-1. Current and Planned Water Supplies – AFY [a] (DWR Table 4)

Water supply sources	2005	2010	2015	2020	2025	2030
Water purchased from:						
San Francisco PUC (range) [b]						
High[c]	8,237	8,815	8,720	8,524	8,351	8,212
Low	5,526	6,104	6,009	5,813	5,640	5,512
City produced groundwater: (range) [b]						
High [c]	4,212	4,212	4,212	4,212	4,212	4,212
Low	1,501	1,501	1,501	1,501	1,501	1,501
Transfers in or out	0	0	0	0	0	0
Exchanges in or out	0	0	0	0	0	0
Total high SFPUC/low GW	**9,738**	**10,316**	**10,221**	**10,025**	**9,852**	**9,713**
Total low SFPUC/high GW	**9,738**	**10,316**	**10,221**	**10,025**	**9,852**	**9,713**

[a] One acre-foot equals 325,829 gallons.

[b] Purchases from SFPUC are based on Purchase requests made by Daly City in November 04 and are in the SFPUC 2030 Purchase Estimates Technical Memorandum (URS 2004). The amounts include cumulative water conservation reductions of 0.44 mgd by 2030 as calculated by the DSS model.

[c] High and low based on purchase requests to SFPUC and are variable groundwater pumping rates.

3.2 Groundwater

Groundwater is addressed in Section 4 - Groundwater

3.3 Wholesaler Water

Daly City receives 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 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.

The Alameda and Peninsula watersheds provide the remaining 20 percent of the SFPUC water system. The Alameda watershed, located in the East Bay, represents about 10 percent of the total water supply, with water captured and stored in two reservoirs; Calaveras and San Antonio. The Peninsula watershed captures runoff in three reservoirs; Crystal Springs, San Andreas and Pilarcitos and represents the remaining 10 percent of the SFPUC supply

These local supplies are treated at the Sunol Valley Water Treatment Plant (SVWTP) in Alameda County and the Harry Tracy Water Treatment Plant (HTWTP) in San Mateo County, which contribute 60 to 65 mgd and 40 to 45 mgd, respectively.

The SFPUC has identified 285 mgd as representing the operational amount of water that can be delivered to the service area without impacting power revenues. From this amount, San Francisco reserves 101 mgd and the remaining 184 mgd becomes the contractual supply assurance provided to suburban purchasers. The City and County of San Francisco use about 32 percent and the remaining 68 percent is served to cities, water districts and other private water companies located in Alameda, Santa Clara and San Mateo Counties. The "Settlement Agreement and Master Water Sales Contract" executed in 1984 and expiring in 2009 provides a Supply Assurance of 4.292 mgd on an annual average basis to Daly City. This is subject to reduction in the event of drought, water shortage, earthquake and other acts of God, or rehabilitation and maintenance of the system. It does not guarantee that the peak daily or hourly customer demands will be met when the City's annual usage exceeds the Supply Assurance. The SFPUC/BAWUA Water Supply Master Plan identifies the need to increase the system-wide firm supply capacity from 239 mgd to 303 mgd by 2030 and to 310 mgd by 2050. Projects are being developed and funded to accomplish this. For future projections the high range purchase requests made by Daly City in November 04 and reflected in the SFPUC letters of May 27 and revised June 1 letters assessing the water supply reliability during a multiple year drought. It is assumed that Daly City's supply assurance value will increase proportionately to increases in the SFPUC firm capacity. During drought years, this projected amount may not be available.

Daly City has ten SFPUC pipeline connections called turnouts. They can supply approximately 30.89 mgd at a rate of about 21,400 gpm. Table 3-2 identifies the design capacity of each connection. During normal well operation (non conjunctive use) the purchases from SFPUC contribute approximately 57 percent of the City's annual water supply. However, Daly City has been involved in a pilot conjunctive use program (See Section 3-11) since 2002 and purchases from SFPUC currently contribute up to 82 percent of the City's annual water supply. Daly City also has emergency connections with the following water agencies:

- Westborough County Water District
- California Water Service Company (CWS)
- North Coast County Water District.
- Brisbane Water District

Note that all four of these agencies are dependent on SFPUC for most if not all of their water supply. Some are involved in the pilot conjunctive use program as well. These entities can be used if the loss of supply emergency is localized to the Daly City water system, but will not be available if a SFPUC system-wide emergency should occur.

Table 3-2. Daly City Connections with SFPUC

SFPUC source	Design capacity, gpm	Design capacity, mgd
Geneva/Allen	1,740	2.5
Guttenberg	340	0.49
Hickey	3,600	5.2
Hill	400	0.60
Midway Village	1,940	2.8
Park Plaza	1,780	2.6
Sullivan		
North South	2,900 1,200	4.2 1.7
"B" Street	2,500	3.6
McDonald Ave	5,000	7.2
Total connection capacity	**21,400**	**30.89**

Table 3-3. Wholesaler identified & quantified the existing and planned sources of water-AFY (DWR Table 20)

Wholesaler sources	2010	2015[a]	2020[a]	2025[a]	2030
Sierra Nevada - Hetch Hetchy, Alameda Watershed, San Mateo Watershed	286,800	296,600	306,500	316,300	326,200

[a] Calculated from interpretation of 2005 and 2030 demand data from DSS model

Table 3-4. Agency demand provided to wholesaler suppliers AFY (DWR Table 19)

Wholesaler	2010	2015	2020	2025	2030
SFPUC	8,815	8,720	8,524	8,351	8,212

Note: Source based on SFPUC 2030 Purchase Estimates Technical Memorandum (URS 2004). Estimates are based on the high range purchase request. Includes cumulative water conservation reductions of 0.44 mgd by 2030 as calculated by the DSS model

Table 3-5 Wholesale Supply Reliability - Percent of normal AFY (DWR Table 21)

	Multiple Dry Water Years				
Wholesale	**Single Dry**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
SFPUC – Current Day	90%	90%	80%	80%	80%
SFPUC – Future	0%	90%	90%	80%	80%

Note: Source, letter dated June 1, 2005 from SFPUC Table 1. These percentages represent a reduction in the overall deliveries that SFPUC makes, and does not directly correlate to reductions to Daly City. Storage added in the future allows delay of reductions in the future.

Table 3-6. Factors resulting in inconsistency of wholesaler's supply (DWR Table 22)

Name of supply	Legal	Environment	Water quality	Climatic
SFPUC	Institutional parameters that allocate the water supply of the Tuolumne River Possibility of removing O'Shaughnessy Dam		Treatment facilities	Hydrology

3.4 Transfers and Exchanges

Transfer and exchange opportunities are discussed in Section 5 – Reliability Planning.

3.5 Recycled Water

Recycled water is addressed in Section 10 – Water Recycling.

3.6 Desalinated Water

Desalinated water is addressed in Section 9 – Water Shortage Contingency Plan

3.7 Water Treatment and Quality

The water supplied from SFPUC is treated by that agency. The City chloraminates and fluoridates its groundwater, and it is blended with SFPUC water for nitrate control. 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 is undertaking a Water System Improvement Program (WSIP). 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 its customers in a reliable, affordable and environmentally sustainable manner.

The origins of the WSIP are rooted in the "Water Supply Master Plan" (April 2000). Planning efforts for the WSIP gained momentum in 2002 with the passage of San Francisco ballot measures Propositions A and E, which approved the financing for the water system improvements. Also in 2002, Governor Davis approved Assembly Bill No. 1823, the Wholesale Regional Water System Security and Reliability Act. The San Francisco has indicated to its suburban customers hat the WSIP project will be complete in 2016.Figure 3-1 on the next page indicates the locations of the various capital improvement projects that comprise the WSIP.

The SFPUC promotes an ongoing effort for environmentally sustainable stewardship of natural resources through its current watershed management plans and activities. The level of service chosen for water quality provides for an annual appropriation for watershed management to be made to the year 2030

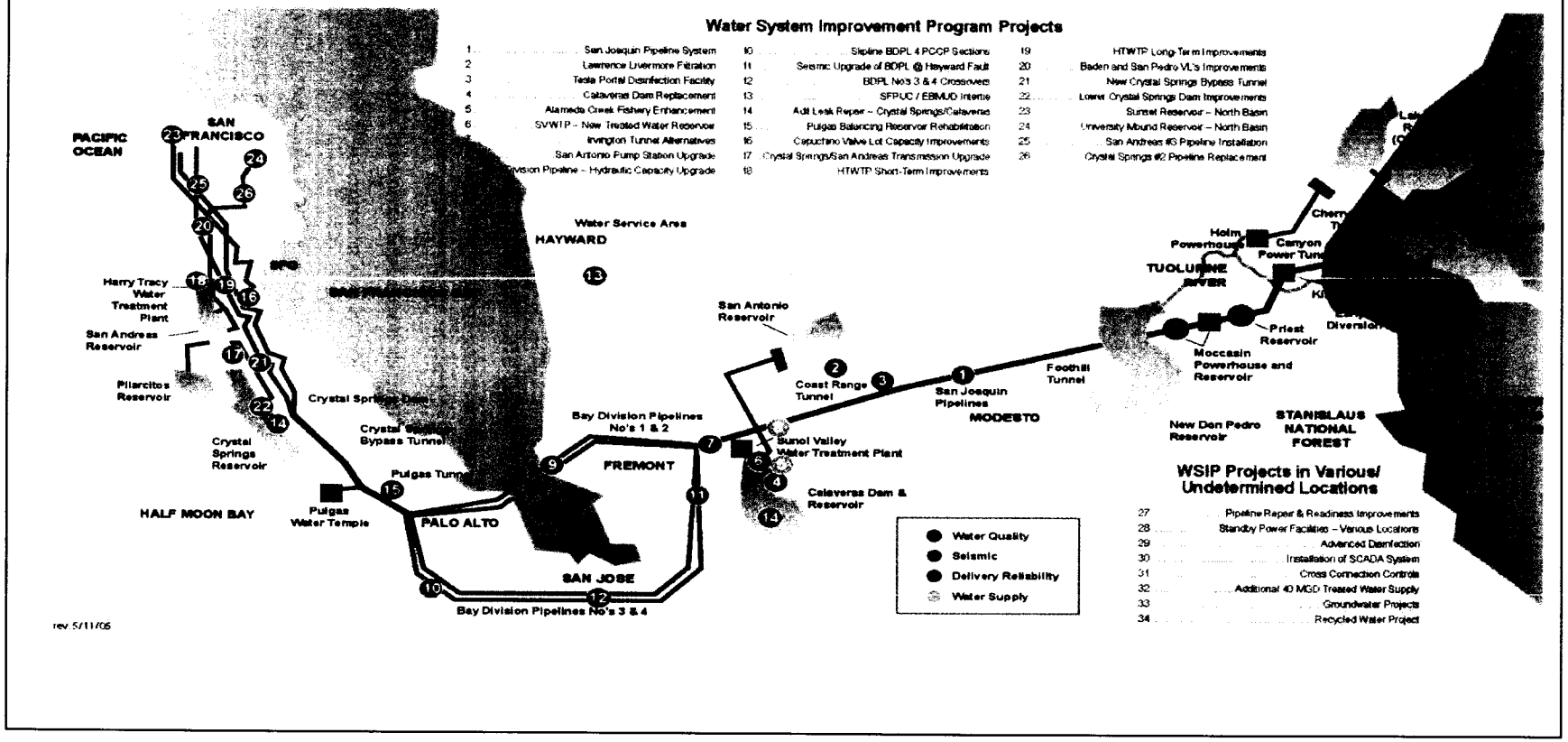

Figure 3-1. WSIP Project Map

Table 3-7. **Current & projected water supply changes due to water quality – percentage (DWR Table 39)**

Water source	2005	2010	2015	2020	2025	2030
Groundwater	0	0	0	0	0	0
Recycled water	0	0	0	0	0	0
Purchased water	0	0	0	0	0	0

Note: Source SFPUC Water System Improvement Program 2005.

3.8 Water Distribution

Figure 3-2 shows a system diagram of the City's distribution system.

The Daly City water system is divided into five separate sections:

1. Westlake
2. Citrus
3. Hickey
4. Bayshore
5. "A" Street Well Booster Zones

In the Westlake section, there are five separate pressure zones:

1. Zone 4
2. Zone 5
3. Zone 6
4. Zone 6 Reduced
5. Skyline Hydropneumatic Zone

In the Westlake section, the Westlake Well is fed into the Westlake Pump Station for disinfection, and blending with SFPUC. The SFPUC sources are from the Park Plaza turnout (60-inch diameter Sunset), and the Sullivan/87th Street turnout (54-inch diameter San Andreas #2). Disinfection is achieved with sodium hypochlorite, ammonia, with a residual range of 0.6 to 1.0 milligrams per liter (mg/L) free chlorine. Blending for nitrate reduction yields a range of 9 to 19 mg/L NO_3.

The water produced is then pumped from Westlake Pump Station to Zone 4/Reservoir 4. The Reservoir 4 Booster Station pumps to Zone 5/Reservoir 5 and will at this point; Zone 5 will "float" with Reservoir 5b (Hickey section) by system hydraulics. The Reservoir 5 Booster Station pumps to Zone 6/Reservoir 6 and Reservoir 6 will float with Reservoir 6b (Hickey section) in the same concept as 5/5b. Zone 6 gravity feeds a pressure-reduced zone.

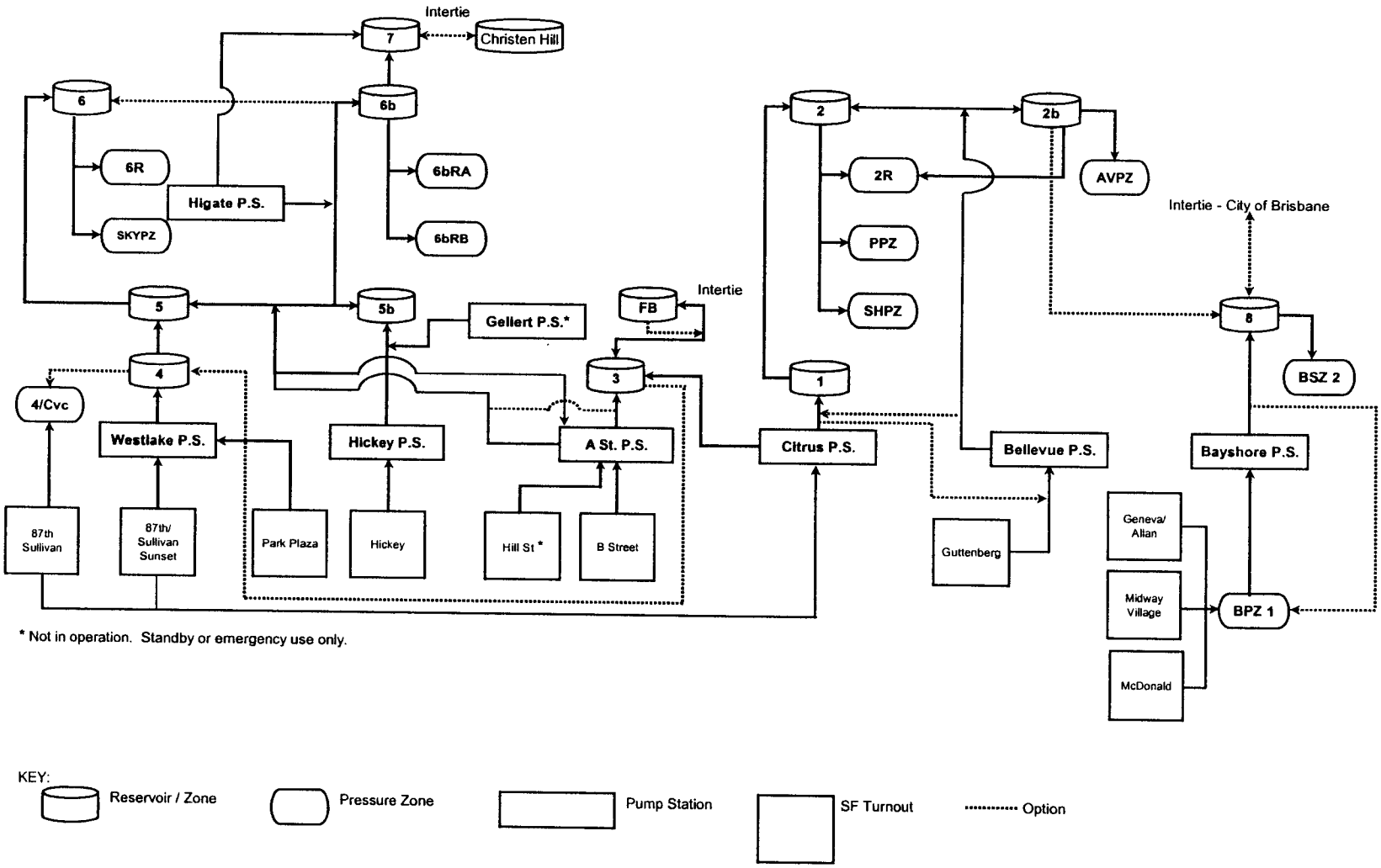

Figure 3-2. City of Daly City Water Distribution Diagram

At the Reservoir 6 site, the reservoir feeds a hydro pneumatic pumping station for the zone too high in elevation for Reservoir 6 to maintain adequate pressure and fire flow.

In the Citrus Section, there are eight separate pressure zones:

1. Zone 1
2. Pointe Pacific Hydro pneumatic Zone
3. Zone 2
4. Zone 2b
5. Zone 2/2b Reduced
6. South Hill Hydro pneumatic Zone
7. Alta Vista Hydro pneumatic Zone
8. Zone 3

In the Citrus Section, Wells 4, JS, Jeff and Vale are pumped directly into the Citrus Pump Station sump for disinfection with sodium hypochlorite and ammonia, and blending with SFPUC supply from the Sullivan/87th Street turnout (54-inch diameter San Andreas #2). Chlorine residuals for disinfection range between 0.8-to 1.0 mg/L free chlorine. Blending for nitrate reduction yields a range of 19 to 41 mg/L NO_3.

Citrus Pump Station sump pumps directly to both Zone 1/Reservoir 1 and Zone 3/Reservoir 3. Reservoir 1 Booster Pump Station into Zone 2/2b and Reservoir 2/2b. Hydraulics allow Reservoir 2/2b to float with each other similarly to 5/5b, and 6/6b. Bellevue Pump Station discharges into Zone 2/2b. The Bellevue Pump Station is usually fed by SFPUC Guttenburg Street meters turnout, as it is supplemental to Citrus' production. It is possible to change the suction valving to Zone 1 feed at Bellevue when needed. Zone 2/2b has a gravity pressure reduced zone. Zone 2/2b is available for gravity drop from Zone 2/2b Reduced into Reservoir 8 (Bayshore Section) when needed. At the site of Reservoir 2, Reservoir 2 feeds the Pointe Pacific Hydro pneumatic Station for the zone too high in elevation for Reservoir 2/2b to maintain adequate pressure and fire flow. Zone 2/2b supplies the South Hill Hydro pneumatic Station, which maintains adequate pressure and fire flow in a zone too high in elevation for Reservoir 2/2b to maintain flow. Zone 2/2b supplies the Alta Vista Hydro pneumatic Station that maintains adequate pressure and fire flow in a zone too high in elevation for Reservoir 2/2b to maintain. The City is currently adding the Reservoir 8 to transfer water from the Bayshore Area to Zone 2/2b and new pipelines to increase the transfer capability from Zone 2/2b to Reservoir 8 and future Zone 9.

In the Hickey section there are five separate pressure zones:

1. Zone 5b
2. Zone 6b
3. Zone 6b Reduced "A"
4. Zone 6b Reduced "B"
5. Zone 7

Zone 5b/Reservoir 5b is supplied from the Hickey Pump Station. Hickey Pump Station is supplied by the SFPUC Hickey Boulevard meters turnout (San Andreas # 2). Reservoir 5b will float with Reservoir 5 (Westlake section) by system hydraulics. Sodium hypochlorite is introduced into Reservoir 5b for improved disinfection residuals in the range of 0.9 to 1.0 mg/L. Reservoir Booster 5b supplies Zone 6b/Reservoir 6b. Reservoir 6b will float with Reservoir 6 (Westlake section) in the same concept as 5/5b. Zone 6b gravity feeds two Pressure Reduced zones: Zone 6b Reduced "A", and Zone 6b Reduced "B". Zone 6b Reduced "A" is a pressure reduced zone of 6b, and Zone 6b Reduced "B" is a pressure reduced zone of 6b reduced "A". Reservoir Booster 6b supplies Zone 7/Reservoir 7. In Zone 7, the Higate Hydropneumatic Station is used (only) as a pressure surge tank in a zone pocket of Zone 7 susceptible to pressure surges. Higate can be supplied with Zone 6b, discharging to Zone 7, however, pump output is too low for any supplemental flow in the event of insufficient Zone 7 flow/pressure.

In the Bayshore Zone, there are 3 separate pressure zones:

1. Bayshore Zone 1
2. Bayshore Zone 2
3. Zone 8
4. Zone 9 will be added in the near future

Zone 1receives it's supply by the head off the SFPUC Allan and Midway Meters turnout at Bayshoure (60-inch diameter Crystal Springs). Bayshore Zone 1 supplies the Bayshore Heights Booster Station which delivers to Zone 8/Reservoir 8. Bayshore Zone 2 is a pressure-reduced zone of Reservoir 8. Reservoir 8 can be supplied by Zone 2/2b Reduced (Citrus section) when needed for reserve capacity.

The SFPUC "B" Street Meter turnout (54-inch diameter San Andreas #2) and/or the D Street Meter (60 inch Crystal Springs # 2) and the "A" Street Well are three sources that supplies the The "A" Street Booster Pump Station. The "A" Street Well is blended with SFPUC, disinfected with sodium hypochlorite and ammonia, fluoridated with Sodium Fluoride then pumped from the "A" Street Booster Station into Zone 5 and/or Zone 3. Chloramine residuals for disinfection range between 2.0-to 2.4-mg/L total chlorine. Blending for nitrate reduction yields a range of 24 to 38 mg/L NO_3.

Booster Pump Stations. Table 3-8 shows booster pumping station characteristics. On the east side, Wells 4, JS, Vale and Jefferson supply water to the Citrus Pumping Station. This flow is supplemented by SFPUC water from the Sullivan turnout. Flow may also enter the east side system from any one of four SFPUC aqueduct turnouts--Guttenberg, Geneva, Midway and Macdonald. Other booster pump stations that distribute water in the east side include Reservoir 1, Bellevue Station, Alta Vista, Pointe Pacific, South Hill, and Bayshore Station.

On the west side, water from the Westlake well supplies the Westlake Pumping Station, and 'A' Street well supplies the A Street Pumping Station. The City supplements this flow through SFPUC connections located on Sullivan Avenue, Park Plaza Drive, and Hill Street. Flows may also enter the west side from Hickey pump station located on Hickey Boulevard. Other booster pump stations that distribute water in the west side include Colma 'A' Street, Reservoir No. 4, Reservoir No. 5, Reservoir No. 5B, Reservoir No. 6B, Hickey Station, and Skyline Pneumatic.

Table 3-8. Booster Pump Station Capacity

Eastside			Westside		
	Capacity, gpm			Capacity, gpm	
Pump station	Total[a]	Firm[b]	Pump station	Total[a]	Firm[b]
Citrus (for Zone1)	3,074	1,554	Westlake	3,010	2,230
Citrus (for Zone 3)	2,777	1,534	Reservoir 4	2,705	1,377
Reservoir 1	877	274	Reservoir 5	2,677	934
Bellevue	427	197	Reservoir 5B	2,132	1,027
Alta Vista	1,131	565	Reservoir 6B	2,215	1,066
Pointe Pacific	5,177	2,677	'A' Street	2,400	1,500
Bayshore	1,098	537	Gellert	605	276
South Hill	1,900	400	Hickey	3,626	1,701
			Higate	560	280
			Skyline	1,784	234

[a] All pumps operational.

[b] Capacity with largest pump out of service.

Reservoirs. Table 3-9 presents existing reservoir capacity. On the east side, water from the Citrus Pump Station pumps both to Reservoir 1 and Reservoir 3. To facilitate equalization of system demand there is an intertie between these two reservoirs. Reservoir 2, 2B, and 8 also store water for the east side. On the west side, water from the Westlake Pumping Station is pumped to Reservoir 4. Reservoir 5, 5B, 6, 6B, and 7 also store water for the west side.

Table 3-9. Existing Reservoir Characteristics

Reservoir	Volume capacity, million gallons	Overflow elevation, feet	Base elevation, feet
East Side			
1	0.70	637	624
2	2.30	779	754
2B	**0.49[a]**	**779**	**754**
3	0.98	474	454
8	0.63	438	410
Franciscan Bay Park (private)	0.29	514	481
Subtotal	5.39		
West Side			
4	1.37	405	384
5	1.53	555	533
5B	10.4	550	530
6	1.50	685	655
6B	1.45	684	655
7	1.49	768	723
Subtotal	17.7		
Total	**23.1**		

a. The city will soon replace the existing reservoir with a new 2 mg reservoir.

3.9 Water Rate Structure

Water rates, effective September 1, 2004, are based on service line sizes. Single-family residential accounts are billed a bimonthly base rate of $16.05 plus a quantity charge. Usage above 600 cubic feet (6 units) per month is billed on an inclining block rate structure. Commercial and industrial accounts are billed a bimonthly base rate of $44.72 to $1944.68, depending upon service line size. Usage above 600 cubic feet per month is billed on the same inclining block rate structure used for residential accounts. Table 3-10 lists the bimonthly base rates for other customer categories. The City's inclining block rate structure has the same quantity charges for all customer categories; the rates are given in Table 3-11.

Table 3-10. Water Rates--Minimum Bimonthly Charge

Meter size, inches	Minimum bimonthly charge (based on meter size), dollars				
	Regular	Outside city	Government	Single-family residential with fire sprinklers	Dedicated fire protection services
5/8	16.05	32.11	12.84	16.05	16.05
3/4	16.05	32.11	12.84	16.05	16.05
1	44.72	89.44	35.77	22.36	16.05
1-1/2	77.97	155.94	62.38	38.99	16.05
2	123.84	247.67	99.07	61.92	16.05
3	205.25	410.49	164.20	--	16.05
4	369.21	738.43	295.37	--	16.05
6	650.14	1,300.27	520.11	--	16.05
8	1,017.06	2,034.11	813.65	--	16.05
10	1,471.12	2,942.24	1,176.90	--	16.05
12	1,944.68	3,889.36	1,555.74	--	16.05

Table 3-11. Water Rates--Quantity Charge

Quantity charge (for all water used in excess of 6 units per billing period)			
Water use, Ccf[a]		Rate per Ccf, dollars	
From	To	Base amount	Plus
0	6	0	N/A
7	10	0	2.98/Ccf over 6 Ccf
11	14	11.92[b]	3.04/Ccf over 10 Ccf
15	20	24.32	3.12/Ccf over 14 Ccf
21	50	43.68	3.17/Ccf over 20 Ccf
51	70	139.48	3.26/Ccf over 50 Ccf
71	100	208.64	3.32/Ccf over 70 Ccf
101	200	312.08	3.40/Ccf over 100 Ccf
201	500	659.60	3.47/Ccf over 200 Ccf
501	1,000	1,714.18	3.54/Ccf over 500 Ccf
1,001	and up	3,518.76	3.62/Ccf over 1,000 Ccf

[a] Ccf - hundred cubic feet or one unit equals 748 gallons.

[b] Calculated as follows: 10 units – 6 units = 4 units @ 2.98 = $11.92.

3.10 Wastewater Collection, Treatment and Disposal

The North San Mateo County Sanitation District's (NSMCSD) collection, treatment and disposal systems serve the majority of residents of Daly City, along with Broadmoor Village, a portion of the town of Colma, the Westborough County Water District in South San Francisco and the San Francisco County jail in San Bruno. The City Council is also the Board of Directors for the NSMCSD.

3.11 Future Supply Alternatives

Other supply alternatives include acquisition of dry year supplies and emergency wells. These two alternatives are discussed below.

Acquisition of Dry Year Supplies. The City of Daly City, as a member of BAWSCA, would join in efforts aimed at securing dry years contracts with irrigation districts in the San Joaquin Valley. The Modesto Irrigation District and the Turlock Irrigation District have senior water rights on the Tuolumne River Basin. BAWSCA could independently assess, negotiate and secure contracts with the districts to transfer and wheel water into the suburban service area.

Emergency Wells. Daly City will embark upon a program of assessing sites that could be developed as additional wells for emergency and/or drought/shortage water supply uses. The activity could include the outright purchase of vacant parcels, or other properties adjacent to transmission mains/wells that feed into existing pump stations, as well as the potential conversion of irrigation wells to potable use. Assessment of available parcels would also include an evaluation of on site water treatment and disinfection in order to put the supply directly into the City's distribution system.

During emergency circumstances, conservation is a more limited option in Daly City as the City's current use is already at 57 gallons per capita per day (gpcd) vs. 95 gpcd in the Bay Area. A 10 to 15 percent reduction is anticipated to be the most achievable without affecting health and safety.

Conjunctive Use. The on-going conjunctive use program discussions with San Francisco is premised on increase surface (purchased) water use during ample supply periods, with corresponding greater dependency on groundwater source during drought/emergency periods, see Section 4 for more information on the City's pilot conjunctive use program. The SFPUC anticipates an availability of storing up to 70,000 acre-feet of additional water in the Westside Basin. A further assessment of the available groundwater yield for extended periods is necessary before determining the level of reduction of surface water usage from the regional system. If sufficient groundwater is available and the City succeeds in developing more supplies from wells at nearby golf courses now receiving tertiary recycled water, it is anticipated that about 60 to 70 percent of the total supply

needs can be provided by groundwater pump age for shorter periods of time, i.e. one year or less. The City would continue to blend water from the SFPUC at a ratio of four parts groundwater to one part SFPUC water to maintain acceptable water quality (Brown and Caldwell, March 1998).

Water System Improvement Program. In order to deliver 300 mgd (336,000 acre feet per year) to SFPUC customers in the event of concurrent and unplanned outages, modifications, additions or new construction of water treatment facilities are required. The scope of this requirement is 4.0 mgd [1] (4,480 acre feet per year) sustained delivery to the existing system.

Table 3-12. Future Water Supply Projects (DWR Table 17)

Project name	Projected start date	Projected completion date	Normal-year AF to agency	Single-dry year yield AF	Multiple-dry-year 1 AF	Multiple-dry-year 2 AF	Multiple-dry-year 3 AF
Water Supply Improvement Program	2002	2016	4,480	4,480	4,480	4,480	4,480

Note:
This is the amount of additional water to the entire SFPUC system and is not reflective of only Daly City's needs.

A Program Environmental Impact Report (PEIR) is being prepared under the California Environmental Quality Act (CEQA) for the Water Supply Improvement Program. A PEIR is a special kind of Environmental Impact Report under CEQA that is prepared for an agency program or series of actions that can be characterized as one large project. PEIRs generally analyze broad environmental effects of the program with the acknowledgment that site-specific environmental review may be required at a later date.

Projects included in the WSIP will undergo individual project specific environmental review as required. Under CEQA, project specific environmental review would result in preparation of a Categorical Exemption, Negative Declaration or Environmental Impact Report. Each project will also be reviewed for compliance with the National Environmental Policy Act and local, state and federal permitting requirements as necessary.

4.0 SECTION

GROUNDWATER

During normal operation (non conjunctive use) approximately half of the City's water supply is from groundwater produced from City wells. The City extracts groundwater from the Westside Basin. This section describes the City's groundwater supply/capacity, current use, water rights, and projected use.

Law

10631(b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

- *A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.*
- *A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as over drafted or has projected that the basin will become over drafted 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*
- *A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*
- *A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

Groundwater is one of the two primary sources of water for Daly City. Daly City has six active wells with a combined active capacity of 2,943 gallons per minute (gpm), 4.25 million gallons per day (mgd), and 4,760 acre-feet (ac-ft) per year available. During conjunctive use in an emergency or drought scenario, well water can contribute approximately 50 percent of the Daly City water supply. Table 4-1 summarizes the capacity and characteristics of the active wells.

Table 4-1. Daly City Wells – Active Capacity

Well	Actual capacity gallons per minute (gpm)	Actual capacity million gallons per day (mgd)
Westlake	410	0.59
No. 4	426	0.62
JS (new) [a]	550	0.79
Jefferson	340	0.49
Vale	693	1.0
'A' Street	524	0.76
Active well water supply	**2,943**	**4.25**

[a] Well 10 abandoned and replaced with JS well in 2004.

4.1 Aquifer Description and Capacity

The aquifer that underlies Daly City is within the Westside Groundwater Basin (Westside Basin). The Westside Basin underlies parts of San Francisco and northern San Mateo counties. The basin extends from Golden Gate Park in the north and past the San Francisco Airport in the south. The basin extends to the west beneath the Pacific Ocean at least as far as the San Andreas Fault and to the east an unknown distance beneath San Francisco Bay. The cities of San Francisco, Daly City, South San Francisco, Colma, San Bruno, Millbrae and parts of Burlingame and Hillsborough lie above the basin.

The Westside Basin can be conceptualized as a buried valley, where the walls and floor of the valley are formed by rock. This rock-bordered valley is filled with a mixture of coarse- and fine-grained sediments that can be as much as 3,700 feet thick in parts of the basin. The coarse-grained sediments consist of sand and gravel and the fine-grained sediments consist of silt and clay. Sand and gravel can transmit substantial quantities of water to wells, whereas silt and clay impede the movement of groundwater. Where silt and clay deposit form semi-continuous beds, they can effectively isolate the water table from underlying aquifer. Groundwater in the shallow water table aquifer is referred to as "unconfined" and the underlying aquifer separated from the water table by continuous and semi-continuous fine-grained beds are referred to as "confined." Both unconfined and confined conditions are found in the Westside Basin.

4.2 Groundwater Usage and Management

The Westside Basin has been a primary and reliable source of municipal and irrigation water supply for over a century. Approximately 30 percent of the total water used in the basin is currently supplied by groundwater pumping. Groundwater pumping supplies as much as 50 percent of the water for the communities of Colma, South San Francisco, San Bruno, as well as Daly City during times of non conjunctive use or during conjunctive use in an emergency or drought scenario. Water for golf courses, with the exception of Olympic, San Francisco and Lake Merced Golf Courses that irrigate with recycled water, and cemeteries also draw from the aquifer.

The Westside Basin is not an adjudicated basin. In adjudicated basins, the landowners and other parties turn to the courts to allocate how much groundwater each party can rightfully extract. In 1992, the California Legislature passed Assembly Bill 3030, which declared that groundwater is a valuable natural resource, and authorized local agencies to voluntarily develop groundwater management plans to ensure water quality and maximize supply. The question of whether to embark upon establishing a local groundwater basin management program under the terms of the AB 3030 statute remains open. Each of the municipal and private agency that have a direct stake in the process have been involved in an ongoing bi-annual testing program measuring well levels and groundwater quality. The participants are also involved in an intensive review of groundwater usage and conditions as part of the development of a regional groundwater model. Daly City is the lead agency in developing a unified groundwater model that is intended to provide a meaning tool for decision makers on the management of the Westside Basin to include pursuing a formalized basin management program.

Table 4-2. Groundwater Pumping Rights – AF Year (DWR Table 5)

Basin name	Pumping right - AFY
Westside Basin	Not adjudicated
Total	**N/A**

Without management plans, increasing competition for water in California may negatively affect groundwater basins and could result in saltwater intrusion, groundwater contamination, or land subsidence. In 1997, in order to respond to the benefits of managing the basin and ensure local control of the process, the cities of San Francisco, San Bruno and Daly City together with the California Water Service Company formed a partnership to develop a Groundwater Management Plan for the Westside Basin. The Plan elements include the following:

- Groundwater Storage and Quality Monitoring
- Control of Saltwater Intrusion
- Conjunctive Use
- Recycled Water
- Source Water Protection

The participating parties have not yet developed operational details of all of these elements. Activities have been planned and will be implemented in two stages to enable the details of the Groundwater Management Plan to be developed. These plan elements focus on water supply reliability. To the greatest extent possible, related elements of this Urban Water Management Plan conform to the goals of the Westside Basin Groundwater Management Plan. Until more information is available on groundwater recharge and supply reliability, and a conjunctive use plan is adopted, Daly City does not plan to increase its total long-term groundwater pumping above historical values.

Conjunctive Use. Daly City entered into a pilot conjunctive use program with the SFPUC with the goal of enhancing regional water resource management. The first phase of the project, which concluded in November 2003, took advantage of the availability of surplus SFPUC system water at a reduced rate. Daly City agreed to use more SFPUC system water and reduce pumping groundwater from the Westside Basin. This action provided the opportunity to observe the response of the basin from recharge that takes place as a result of the reduction in groundwater pumping. The second phase of conjunctive use began in March 2004 and has continued into 2005.

The demonstration project was introduced to partially assess the feasibility of a permanent program, as tentatively outlined would: 1) increase groundwater levels in the Westside Basin, 2) reduce the potential for seawater intrusion, 3) develop increased SFPUC system yield from the overall surface and groundwater system, and 4) potentially improve conditions at Lake Merced. Initial results from this project show that groundwater levels have increased within the basin. Daly City has an added benefit of saving its local resource, resulting in enhanced emergency and drought protection.

The pilot conjunctive use program not only provides a significant benefit to Daly City for a water supply insurance policy, but also envisions a system-wide benefit as well. The term sheet describes "put" and "take" concepts associated with water use. The SFPUC proposes installation of new wells as a system wide asset of the SFPUC thereby becoming a joint asset (1/3, 2/3 cost share) under the 1984 Master Settlement Agreement. This aspect requires the involvement of the BAWSCA as any modification to the Master Settlement Agreement requires the unanimous approval of all 29 suburban retail agencies and the SFPUC. Under the term sheet, payment of stored conjunctive use system water would be deferred until actual extraction of that water occurs and would be made to the SFPUC at the then-applicable wholesale rate of SFPUC system surface water.

An operating committee including the SFPUC and program participants will be established along with ex-officio membership from BAWSCA. The operating committee will develop annual plans in the program. It is understood that any conjunctive use program developed as a result of this term sheet is subject to review and approval under the California Environmental Quality Act as a condition of implementation.

4.3 Projected Groundwater Use

The City anticipates continued groundwater reliability as part of its ongoing efforts. During the past five years the amount of groundwater pumped has decreased due to the implementation of the pilot conjunctive use program, see Table 4-3.

Table 4-4 is based on the range of groundwater most likely to be pumped during the pilot/permanent conjunctive use program. As stated earlier the low range is premised on increase surface (purchased) water use during ample supply periods, with the high range corresponding with a greater dependency on groundwater supply during drought/emergency periods. As part of its review associated with San Francisco's preparation of a Program Environmental Impact Report on its Water System Improvement Plan, Daly City proposed two scenarios it considers ample/drought scenarios in anticipating future surface water demands. Daly City's ample scenario is premised on at least two wells remaining in operation and during emergency or drought scenarios maximum use of existing wells and any emergency wells developed in the future.

Law

If your agency currently uses, or plans to use groundwater by 2025, your UWMP should include all the information required in the UWMP Act. The description and analysis is to be based on information that is reasonably available, including, but not limited to, historic use records from DWR, and from other sources. If there is a groundwater management plan, prepared pursuant to Part 2.75 (commencing with Section 10750), discuss its provisions and the impacts upon your use of that basin. If the groundwater plan was adopted by your agency, include a copy in the UWMP. Describe the groundwater basin(s) from which your agency extracts groundwater and provide information such as the static pumping levels, water quality, extraction rate, total storage, recharge and other factors. If the groundwater basin(s) is adjudicated, attach the order or decree and identify the quantified amount of legal pumping right.

For basins that have not been adjudicated, state whether the basins are in overdraft. The Department of Water Resources has projected estimates of overdraft, or "water shortage," based on projected amounts of water supply and demand at the hydrologic region level in Bulletin 160, California Water Plan Update (http://www.waterplan.water.ca.gov/). Estimates at the basin or subbasin level will be projected for some basins in Bulletin 118-Update 2003 (http://www.groundwater.water.ca.gov/bulletin118). Data that indicate groundwater level trends over a period of time should be collected and evaluated. If the basin is in overdraft or is projected to be in overdraft, describe in detail your plan to eliminate the overdraft condition. Provide a detailed analysis of location, amount and sufficiency (see Government Code Section 66473.7) of the groundwater pumped by the supplier for last five years and the amount recharged.

Table 4-3. Amount of Groundwater Pumped – AFY (DWR Table 6)

Basin name (s)	2000	2001	2002[a]	2003	2004
Westside Basin	3,960	3,880	2,190	1,500	1,018
Percent of total water supply	41.71	43.69	24.70	17.05	11.68

Law

Provide a detailed analysis of location and amount of the groundwater that is projected to be pumped by the supplier. This may include projected cones of depression, changes in direction and amount of groundwater flow, movement and levels of contaminants, projected average annual recharge, salinity/TDS levels and other factors.

Table 4-4. Amount of Groundwater projected to be pumped [a] - AFY (DWR Table 7)

Basin name(s)	2010	2015	2020	2025	2030
Westside Basin					
High[b]	4,212	4,212	4,212	4,212	4,212
Low	1,501	1,501	1,501	1,501	1,501
Percent of total water supply - High	40.83	41.21	42.01	42.75	43.36
Percent of total water supply - Low	14.55	14.69	14.97	15.24	15.44

[a] Current Well Active Capacity (high) totals 4,760 ac-ft per year with the replacement of well 10, although the range for the demand projections study used active capacity at the time of the study, as show in this table. This amount is subject to change in the future.

[b] High/Low dependent upon variables of pilot conjunctive use scenarios.

5.0 SECTION

RELIABILITY PLANNING

This section provides information on the City's water supply during a single dry year and multiple dry years. This section also discusses the possible limitations to the City's purchased water supply from the SFPUC and methods to overcome shortages due to system reliability.

Law

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
> *(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*
> - *An average water year.*
> - *A single dry water year.*
> - *Multiple dry water years.*
>
> *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.*
>
> *10632. The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:*
> *(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage*
> *(b) An estimate of the minimum water supply available during each of the next four water years based on the driest four-year historic sequence for the agency's water supply.*

5.1 Reliability

The costs of demand management or supply augmentation options to reduce the frequency and severity of shortages are now high enough that water supply agencies must look more carefully at the costs of unreliability to make the best possible estimate of the net benefit of taking specific actions, hence the term "reliability planning." Reliability is a measure of a water service system's expected success in managing water shortages. In addition to climate, other factors that can cause water supply shortages are earthquakes, fires, chemical spills, aqueduct or reservoir failures and energy outages at treatment and pumping facilities. The City included the probability of catastrophic outages in reliability planning. To plan for long-term water supply reliability, the City examined an increasingly wide array of supply augmentation and demand reduction options to determine the best courses of action for meeting water service needs. Table 5-1 lists factors that may result in an inconsistency of the City's supply.

Table 5-1. Factors resulting in inconsistency of City's supply (DWR Table 10)

Name of supply	Legal	Environment	Water quality	Climatic
SFPUC	*Institutional parameters that allocate the water supply of the Tuolumne River. *Possibility of removing O'Shaughnessy Dam		Treatment facilities	Hydrology
Groundwater	Adjudication of basin pumping	Salt Water Intrusion	Nitrate levels above MCL (45 ppm)	Multiple dry years that lower groundwater table

Reliability planning requires information about: (1) the expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; and (3) how available contingency measures can reduce the impact of shortages when they occur. For the City, reliability planning involves coordination with other users of both the Westside Groundwater Basin (Westside Basin) and the suburban purchasers of the SFPUC water supply. Therefore, the following planning documents have been used to prepare the reliability comparison section:

- City of Daly City Water Master Plan, Brown and Caldwell, August 1991.
- Water Supply Master Plan, SFPUC and BAWSCA, April 2000.
- Water Quality and Supplies Corrective Action Plan, City of Daly City Department of Water and Wastewater Resources, 1995.
- Westside Basin Proposed Groundwater Management Plan, Bookman-Edmonston Engineering, Inc., March 1999.
- Interim Water Shortage Allocation Plan, Allocation Between SFPUC and Collective Suburban Purchasers, SFPUC and BAWSCA, November 2000.
- Draft Suburban Customer Contingency Plan for Daly City, Olivia Chen Consultants, June 2000.

Additionally, there are ongoing planning processes and regulatory initiatives such as CALFED Bay-Delta Program, State Water Resources Control Board Bay-Delta Process, Federal Energy Regulatory Commission licensing and implementation of the Central Valley Project Improvement Act that may adversely affect supply availability or make increased demands on SFPUC water supplies in the future. The impact of these factors is uncertain. More water could be directed to the Delta or the Central Valley and reduce supply to the SFPUC suburban customers.

The San Francisco Bay Area Water Supply and Conservation Agency (BAWSCA) monitors water supply projects whose study area encompasses BAWSCA's entire regional service area, of which the City is a part. Such planning included SFPUC's preparation of a Vulnerability Study that led to prioritization of projects designed to reduce the vulnerability of San Francisco's regional water delivery system. The projects address repair or replacement of SFPUC system components that are old and not up to current seismic standards. Also, they address the need for constructing some redundancy in the SFPUC system so that the water delivery systems will not be subject to prolonged disruption following an earthquake or other natural occurrences such as rainstorms and windstorms. The improvements will add reliability to the City's water supply.

BAWSCA is also monitoring many other ongoing planning studies, customer agency general plans, and Integrated Resource Plans (IRPs). IRPs comprehensively examine water supply reliability, future service area demands, local supplies, reliability objectives, and alternative supply and demand management alternatives. SFPUC, Alameda County Water District, City of Palo Alto, and the Santa Clara Valley Water District are currently preparing IRPs that could impact reliability of the City's surface water supply. Decisions on water supply and reliability objectives for these districts could be at conflict with Daly City's objectives and reduce the availability of water supply and reliability for Daly City.

5.2 San Francisco Water Supply System Possible Limitations on Delivery Capacity

There are several limitations on water facilities owned and operated by the San Francisco Public Utilities Commission (SFPUC) that now or in the near future will limit its ability to deliver water to its suburban customers including the City. These limitations can occur during wet, average and drought conditions on water supply availability.

The business relationship between San Francisco and its wholesale customers is largely defined by the "Settlement Agreement and Master Water Sales Contract (Master Contract)" executed in 1984. The Master Contract primarily addresses the ratemaking methodology used by the City in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the regional water system. The contract expires on June 30, 2009.

In terms of water supply, the Master Contract 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 in the event of drought, water shortage, earthquake, other acts of God, or rehabilitation and maintenance of the system. The Master Contract 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 a

schedule adopted in 1993. This Supply Assurance survives the termination of the Master Contract in 2009.

The SFPUC can meet the water demands of its retail and wholesale customers in wet and normal years. The Master Contract allows the SFPUC to reduce water deliveries during droughts, emergencies, and for scheduled maintenance activities. The Interim Water Shortage Allocation Plan (IWSAP) between the SFPUC and its wholesale customers adopted in 2000 provides that the SFPUC determines the available water supply in drought years for shortages of up to 20 percent on an average, system-wide basis.

5.3 Wet and Average Conditions

During wet and average conditions there may be enough water available from rainfall and Sierra snow pack but physical limitations will shortly prevent the SFPUC from delivering such water to its customers in the City of San Francisco as well as its suburban customers. These limitations result from hydraulic bottlenecks in its pipelines and tunnels as well as fixed water treatment plant capacity at Sunol. Hydraulic limitations mean simply that pipelines and appurtenant facilities can only carry so much flow—you can only force water through so fast. To relieve these bottlenecks, the SFPUC must replace existing pipelines or tunnels with larger diameter conduits or build new, parallel conduits. Ranked by limitation, i.e., the facility with the least capacity listed first, the bottlenecks are as follows:

Pipelines west of Irvington Tunnel. These pipelines are the most immediate constraint. The existing pipelines will be unable to carry peak flows well before the collective demands of the suburban agencies reaches the level of the contractual supply assurance. A new pipeline is needed in any event to replace other aging pipelines.

Pipelines in Sunol Valley. These pipelines connect several sources of water to the Bay Area, and are too small to meet future demands reliably.

Pipelines across the San Joaquin Valley. Capacity constraints along these pipelines would restrict the ability to meet future demands during droughts.

Irvington Tunnel. This is a single pipeline through the Coast Range west of Sunol where there is no redundant capacity. A new parallel tunnel or pipeline is required now to provide reliability of operations. The added capacity would also be needed at some future date to accommodate planned growth.

These facilities are generally critical during periods of peak demand, i.e., a series of hot summer or fall days. There is also a problem with conveyance systems across the Bay. The SFPUC system uses storage in its Peninsula reservoirs to accumulate water in the winter and early spring, then treat it

and distribute it in the summer. Because of continued demand growth within the service area, the window during which such cross-Bay transfers can be made is growing smaller. Therefore, there is a developing need to add parallel or replacement pipelines.

The limitations described above also point to the fact that there is no redundancy in the existing facilities. In some cases such as the Irvington Tunnel, the facility cannot be taken out of service even for inspection. In other cases, facility inspection can occur when demands are lower but if a major component failed during maximum demand, the system's ability to deliver required flows would be immediately impaired. Many of these facilities are also at risk during emergencies since they were designed to earlier, less stringent seismic standards and cross major earthquake faults.

5.4 Drought Conditions

During drought conditions, the hydraulic limitations in the SFPUC delivery system may fade into the background and the problem becomes one of relative supply. In most years, deliveries can be met. If local runoff is low, and Bay Area storage reservoirs are low, then more Sierra water than normal must be brought into the Bay Area to augment local supplies. During such periods, the existing conveyance capacity across the San Joaquin Valley could be limiting.

5.5 Frequency and Magnitude of Supply Deficiencies

See Section 2.7 for information on previous droughts and magnitudes of supply deficiencies.

5.6 Plans to Assure a Reliable Water Supply

This section addresses the plans to assure reliability of all of the existing and feasible water supplies for the City including groundwater, water purchases and water recycling. It also addresses reliability of the distribution system including the booster pump stations and reservoirs.

5.6.1 Groundwater

The Westside Groundwater Basin has proven to be a very reliable water supply in the past. This reliability should continue and become better understood as the Westside Basin Groundwater Management Plan is developed and implemented. Physical conditions in the Westside Basin provide opportunities for conjunctive use—the coordinated use of surface water and groundwater to ensure a reliable water supply. For example, during wet years when surface supplies are plentiful, surface water would be delivered by SFPUC to water users that otherwise rely on greater quantities of

groundwater. The groundwater users would decrease their groundwater pumping, allowing the aquifer to naturally recharge. During dry years when runoff is reduced and surface water supplies are scarce, greater reliance would be placed on groundwater storage. See Section 4, for a description of the City's pilot conjunctive use program.

The aquifer within the Westside Basin represent a potential means for storing imported surface water and could be used to increase the reliability of water supply within the basin. Conjunctive use can also be used to increase the long-term yield of the SFPUC system. The Westside Basin Groundwater Management Plan includes a program to continue monitoring groundwater storage, conduct yield analyses, establish cooperative agreements, and develop facilities for aquifer storage and recovery (ASR) and delivery.

Saline water intrusion has not been a documented problem with the groundwater quality in the Westside Basin. Ongoing work by SFPUC consultants on the conceptualization of the Westside Basin note the most likely pathway for seawater intrusion would be north of Daly City through the Sunset District of San Francisco. A number of sentinel monitoring wells have been installed through DWR's AB 303 grant program and from local agency resources as a means to provide early detection should such an occurrence take place. The monitoring proposed in the Westside Basin Groundwater Management Plan will produce technical data with which to develop appropriate management response if intrusion is occurring. Such planning will improve further reliability of the aquifer resource.

5.6.2 Water Recycling

The Westside Basin Groundwater Management Plan promotes a water-recycling program. Further details on the City's Water Recycling program is addressed under Section 10 – Water Recycling.

5.6.3 Surface Water Purchases

The SFPUC can meet the demands of its retail and wholesale customers in years of average and above-average precipitation. The Master Contract allows the SFPUC to reduce water deliveries to wholesale customers during periods of water shortage. Under the Master Contract, reductions to wholesale customers are to be based on each agency's proportional purchases of water from the SFPUC during the year immediately preceding the onset of shortage, unless this formula is supplanted by a water conservation plan agreed to by all parties.

The Master Contract's default formula discouraged SFPUC's wholesale customers from reducing purchases from SFPUC during periods of normal water supply through demand management programs or development of alternative supplies. To overcome this problem, SFPUC and its wholesale customers adopted an Interim Water Shortage Allocation Plan (IWSAP) in calendar 2000

and attached as Appendix D. This IWSAP applies to water shortages up to 20 percent on a system-wide basis and will remain in effect through June 2009.

The IWSAP has two components. The Tier One component of the IWSAP allocates water between San Francisco and the wholesale customer agencies collectively. The IWSAP distributes water between two customer classes based on the level of shortage:

Table 5-2. SFPUC and Suburban Purchasers Share of Water

Level of system wide reduction in water use required, percent	Share of available water, percent	
	SFPUC share, percent	Suburban purchasers share, percent
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 Two component of the IWSAP allocates the collective wholesale customer share between each of the 28 wholesale customers. This allocation is based on a formula that takes three factors into account, the first two of which are fixed: (1) each agency's Supply Assurance from SFPUC, with certain exceptions, and (2) each agency's purchases from SFPUC during the three years preceding adoption of the Plan. The third factor is the agency's rolling average of purchases of water from SFPUC during the four years immediately preceding the onset of shortage.

The IWSAP allows for voluntary transfers of shortage allocations between SFPUC and any wholesale customer and between wholesale customer agencies. Also, water "banked" by a wholesale customer, through reductions in usage greater than required, may also be transferred.

The IWSAP will expire in June 2009 unless extended by San Francisco and the wholesale customers. The projected amount of water that Daly City expects to receive from SFPUC during dry years after 2010, shown in Table 3-5, has been calculated by SFPUC on the assumption that the Plan will in fact be extended.

The SFPUC and the City prepared a Draft Suburban Customer Contingency Plan for Daly City in June 2000. This Plan is included in this report as Appendix E. It addresses the contingency procedures if there is a loss of water supply from any of the SFPUC connections. Eight emergency planning scenarios were identified. In general, the scenarios involve loss of only one to three connections and possibly entire pipelines. The responses are generally to increase flow from other connections or groundwater wells and use system reservoir and pump station interties to continue

supplying water to all zones. Short-term contingencies of less than two days and long-term contingencies of two to three days were assessed. In extreme emergencies, untreated well water can be introduced to the system accompanied with Boil Water Order and Notice of Contamination, as described in the City of Daly City Water System Water Quality and Supplies Corrective Action Plan included as Appendix F.

5.6.4 Distribution System Reliability

The 11 reservoirs in the system currently have a total capacity of about 23 mg, which, in an emergency, could supply both the current average daily demand of 8.6 mgd and the projected future 2030 demand of 8.6 (Includes cumulative water conservation reductions of 0.44 mgd by 2030 as calculated by the DSS model) mgd for approximately 2.5 days. Once Reservoir 2B is replaced the capacity will increase to 24.61 mg and could supply the current and future demand for approximately 2.7 days. The actual emergency supply available is highly dependent on the individual reservoir size and the area served. Nonetheless, the storage capacity in the smallest reservoir in the system is equal to approximately 1.5 times the daily demand for its service areas when full. Additionally, there is emergency power at four of the six wells. The City has also developed a contingency plan for water pump stations that addresses response actions when power is interrupted or if pumps fail. The City of Daly City Water System Water Quality and Supplies Corrective Action Plan included as Appendix F describes emergency responses to contamination of water quality and interruption of City's water supplies to distribution.

5.7 Reliability Comparison

SFPUC estimates that they will have system wide reductions of 10, 20, 20, and 20 percent during multiple dry years. These reductions represent what the SFPUC will reduce overall to all of its wholesaler customers. These reductions are not necessarily what Daly City should expect. The SFPUC and BAWSCA have supplied all the wholesaler cities with tables that document what their deliveries will be during multiple dry years. The following drought analysis is based on the numbers provided.

Table 5-3. Basis of Water Year Data (DWR Table 9)

Water year type	Base year(s)
Average water year	1920 to 2002
Single dry water year	1987
Multiple dry water years	1987-1990

Table 5-4. Supply Reliability (AF Year) (DWR Table 8)

	Average/ normal water year 2005	Single dry water year 2005	Multiple dry water years			
			Year 1 2005	Year 2 2006	Year 3 2007	Year 4 2008
Groundwater well [a]	4,204	4,651	4,651	4,609	4,609	4,609
Purchased water [b]	5,534	4,570	4,570	3,977	3,977	3,977
Total	**9,738**	**9,221**	**9,221**	**8,586**	**8,586**	**8,586**
Reduction, percent [c]	None	10	10	20	20	20
Recycled water [d]	1,162	1,162	1,162	1,174	1,174	1,174

[a] Under a conjunctive use program, the City will increase its groundwater pumping to augment supply.

[b] Low deliveries from Table 3-1 were assumed and based on SFPUC letter of June 1 using low range for 2005. Actual purchases for 2005 were in line with the high range.

[c] Percent reductions of surface water based on Table 3-5. Reduction based off of supply and reductions from design drought of 10%, 20%, 20%, and 20% for four consecutive years based on SFPUC letters dated May 1 and June 1, 2005.

[d] The City plans to use 1,162 AFY in 2005 and 1,174 in 2006 and potentially increasing to 3,100 AFY by 2030 depending on the results of a recycled water master plan. It is assumed that the City will at least be able to maintain 1,174 AFY for multiple dry years, and could potentially scale up to 3,100 if additional cost effective uses are identified in the plan. Recycled water is not included in the City's total supply, as it did not replace a potable water supply.

Analysis of the current day drought scenario in Table 5-4 indicates that the City would need to supply up to 4,651 ac-ft per year to augment supply during a drought, expansion of SFPUC's water supply portfolio (described below) not withstanding. Current active pumping capacity is 4,760 ac-ft per year. As the community continues to become more water efficient, it may become more difficult for customers to reduce their water use during water shortages (this characteristic is called "demand hardening"). Staff does believe that City customers are approaching demand hardening and as a result will be looking to augment this deficit with alternative supplies and anticipates the installation of a minimum of two emergency wells or other supply alternatives as deemed prudent.

SFPUC will expand its water supply portfolio by increasing the types of water supply resources. Table 5-4 summarizes the water supply resources assumed to be available by year 2030. This

expanded portfolio is consistent with the SFPUC's adopted Water Supply Master Plan (2000), adopted Capital Improvement Program (2002) and Water Supply Program.

Table 5-5. Water Supply Options for Years 2010 through 2030 – AF Year

Source	2010	2015	2020	2025	2030
Crystal Springs Reservoir	67,500	67,500	67,500	67,500	67,500
Westside Basin Groundwater	4,500	7,000	8,100	8,100	8,100
Calaveras Reservoir (acre feet)	96,700	96,700	96,700	96,700	96,700
Districts' Transfer	23,200	23,200	29,000	29,000	29,000

The SFPUC estimated the frequency and severity of anticipated shortages given projected demands and system configuration for the period 2010 through 2030. For this analysis, SFPUC assumed that the historical hydrological period is indicative of future events and evaluated the supply reliability assuming a repeat of the actual historical period 1920 through 2002. Again, this hydrological analysis is consistent with the planning efforts that have been adopted to date by the Commission and that are currently ongoing with the development of the Water System Improvement Program.

5.8 Four-Year Minimum Water Supply

The driest 6-year hydrology period is recorded by the SFPUC as 1986 through 1992. Based on experiences during the most recent drought, the community recognized that it is better to enter into a water shortage alert early, at a minimal level, to establish necessary rationing programs and policies, to gain public support and participation, and to reduce the likelihood of more severe shortage levels later. Demand hardening aside, recent studies concluded that the conservation potential, while low, does lend itself to additional conservation opportunities in addition to potential water efficiency improvements in residential plumbing fixtures, appliances, and landscapes, and in the commercial, industrial, and institutional sectors. However, improved water use efficiency does mean that water supply reserves are critical and must be large enough to meet the demand and water shortage responses must be made early to prevent severe economic and environmental impacts.

Annually, the City forecasts 3-year minimum water supply availability for each of its sources of water, and projects its total water supply for the current and 3 subsequent years. For the 2005 UWMP, it is required that the city project 4 years of minimum water supply. Based on water availability and projected demand, a water shortage condition may be declared. Additionally, the SFPUC also annually evaluates its water supply and determines whether or not a shortage condition exists. A shortage condition exists if the SFPUC determines that the available water supply is less

than projected system-wide water purchases in the upcoming Supply Year. If the system-wide water shortage is 20 percent or less, the Interim Water Shortage Allocation Plan presented in Appendix D will be implemented.

When a shortage exists, SFPUC will determine if voluntary actions are sufficient. If so, the SFPUC will forego the imposition of excess use charges and may suspend banking privileges described below. If the SFPUC determines that mandatory actions are required, the SFPUC may implement excess use charges. The annual water supply will be allocated to the collective Suburban users including Daly City based on methods approved by the member agencies. Annual allocations will be adjusted to account for shortage allocation transfers and transfers of banked water described below.

5.9 Transfer or Exchange Opportunities

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

The Draft Interim Water Shortage Allocation Plan allows voluntary transfers of shortage allocations between the SFPUC and Suburban Purchasers or among Suburban Purchasers, including Daly City. The SFPUC and BAWSCA will be notified of each transfer, but transfers do not require SFPUC approval. The SFPUC will create a bank account for itself and each Suburban Purchaser during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts will not be used for tracking billings and payments.

When a shortage period is in effect, monthly purchases will be compared to the monthly target for that month. Any unused shortage allocation by an agency will be credited to that agency's bank. Credits will accumulate during the shortage. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water. Purchases in excess of monthly targets will be debited against an agency's bank. Bank debits remaining at the end of the fiscal year will be subject to excess use charges.

Voluntary transfers of banked water will be permitted between the SFPUC and any Suburban Purchasers and among the Suburban Purchasers. The volume of transferred water will be credited to the transferee's bank and debited against the transferor's bank. Agency transfers will be limited to the prior month's balance in its bank. Transfer and exchange opportunities have been researched by the City, however, no quantification has been determined.

Table 5-6. Transfer and Exchange Opportunities - AF Year (DWR Table 11)

Transfer Agency	Transfer or Exchange	Short term	Proposed Quantities	Long term	Proposed Quantities
	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**

6.0 SECTION

WATER USE PROVISIONS

Law

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
>
> *10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:*
>
> *(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, or conjunctive use, or any combination thereof; and (I) Agricultural.*
>
> *(2) The water use projections shall be in the same 5-year increments to 20 years or as far as data are available.*

This section discusses the past, current and projected water use. Water demand projections provide the basis for sizing and staging future water facilities to ensure adequate supply. Water consumption and production records, combined with projections of population, employment, and urban development, provide the basis for estimating future water requirements. Consumption factors, used to project future water demand, are determined on per capita, per dwelling unit or customer connection, or per acre bases. These consumption factors are used along with ABAG future population projections to calculate future demands. This section identifies the usage among water use sectors including single-family residential, multifamily residential, commercial, industrial, institutional/governmental, irrigation use, and others based on the Demand Side Management Least-Cost Planning Decision Support (DSS) model that was used for the SFPUC projections.

6.1 Historical Water Use

Water demand projections in this report are from the SFPUC Wholesaler Customer Water Demand Potential Technical Report (URS 2004a). This report uses the DSS model, which is considered the most appropriate tool for developing water demand projections in the wholesale service area (URS 2004). Population projections for Daly City were calculated based on the growth rate determined by ABAG 2002 projections. Employment population was calculated using the same model and source data. The DSS model used 2001 as the base-year for projections.

6.2 Annual Water Production

The service area produces approximately 40 percent of its water from wells. With the replacement of well 10 with the new JS well, well water can now supply an average of 50 percent of the water needs, conjunctive use notwithstanding. In the past, this percentage has been as high as 65 percent in drought years and as low as 35 percent in wet years. During conjunctive use years, groundwater use may be as low as 12 percent. Table 6-1 shows the breakdown between groundwater production and surface water purchases for the Daly City System from 1995 to 2004.

Table 6-1. Historical Water Well Production and Purchases, AF Year

Year	Groundwater Wells	Water Purchases	Total
1995	3,041	5,539	8,580
1996	3,425	5,352	8,776
1997	3,906	5,039	8,945
1998	4,480	4,578	9,059
1999	4,100	5,199	9,299
2000	3,960	5,533	9,493
2001	3,879	5,001	8,880
2002	2,190	6,677	8,867
2003	1,500	7,301	8,801
2004	1,018	7,681	8,699
Average from 1995 to 2004	**3,150**	**5,790**	**8,940**

6.3 Water Use by Customer Type

Metered customers are classified as single-family residential, multifamily residential, commercial, industrial, institutional/governmental, irrigation use, and other. Table 6-2 lists the water use profile percentages of each of these categories. Because only total demands were listed in the SFPUC report, the percentages in Table 6-2 were used to calculate the estimated water use by water use sector in Table 6-3. Table 6-3 and Table 6-4 show the past, current and projected water use and the number of connections in each category from 2000 to 2030. These classifications were used to analyze current consumption patterns among various types of customers. Currently, the largest number of customers (55 percent) is single-family residences including attached dwelling units with

individual meters (based on 2001 data). The second largest customer group is the multifamily with connections comprising about 30 percent of total accounts. Between 2005 and 2010 the consumption for new commercial increases account for the remaining 16 percent of connections includes all nonresidential customers, most of which are commercial enterprises.

Table 6-2. Water Use Profile Percents Used for DSS Model (based on 2001)

Category	Use profile percent
Single Family	54.50
Multifamily	30.26
Commercial	7.38
Industrial	0.13
Institutional	2.47
Governmental	2.35
Irrigation	1.64
New Commercial	1.27

Table 6-3. Past, Current and Projected Water Use by Customer Type, AF Year (DWR Table 12)

Water use sectors [a]	2001	2005	2010	2015	2020	2025	2030
Single Family	4,918	4,926	4,932	4,903	4,836	4,775	4,726
Multifamily	2,730	2,733	2,733	2,713	2,673	2,637	2,607
Commercial	666	663	646	665	672	687	704
Industrial	12	12	12	12	12	12	12
Institutional	222	230	239	253	260	270	281
Governmental	212	216	222	226	229	230	231
Irrigation	148	151	155	158	160	161	162
New Commercial [b]	115	138	763	763	763	763	763
Total	**9,023**	**9,069**	**9,702**	**9,693**	**9,605**	**9,535**	**9,486**

[a] Source: DSS Model – City of Daly City Final 2-28-05. One acre-foot equals 325,829 gallons. Includes cumulative water conservation reductions of 0.44 mgd by 2030 as calculated by the DSS model.

[b] Increase associated with new development identified during the SFPUC Wholesale Customer Water Demand Potential Technical Report (URS 2004a).

6.4 Customer Accounts

The DSS model did project number of accounts and is reflected in Table 6-4

Table 6-4. Customer Type Profile Percents Used for DSS Model (based on 2001)

Customer type	Accounts	Percentage
Single Family	18,683	83
Multifamily	2,840	13
Commercial	664	3
Industrial	3	0.01
Institutional	80	0.36
Governmental	112	0.50
Irrigation	123	0.55
New Commercial	4	0.02
Total	**22,509**	

Table 6-5. Past, Current and Projected Number of Connections by Customer Type[a] (DWR Table 12)

Customer type	2001	2005	2010	2015	2020	2025	2030
Single-family residential	18,683	19,028	19,524	19,951	20,122	20,242	20,362
Multifamily residential	2,840	2,892	2,968	3,033	3,059	3,077	3,095
Commercial	664	682	681	722	745	775	806
Industrial	3	3	3	3	3	3	3
Institutional	80	83	86	91	94	97	101
Governmental	112	114	117	120	121	121	122
Irrigation	123	125	129	131	132	133	134
New Commercial	4	5	27	27	27	27	27
Total	**22,509**	**22,932**	**23,535**	**24,078**	**24,303**	**24,475**	**24,650**

Note: Source: DSS Model - City of Daly City Final 2-15-2005

[a] Multi-family includes mobile home connections.

The relative proportion of demand which each of these customer types exerts on the water system is not the same. Although comprising 5 percent of the total connections, nonresidential customers represent 16 percent of the average annual demand. Multifamily connections account for another 30 percent of the annual water demand leaving 55 percent of the metered demand originating from single-family residential units.

6.5 Water Sales to Other Agencies

The City does not sell water to any other agencies and does not plan to sell water to other agencies during the next 25 years.

Table 6-6. Sales to Other Agencies - AF Year (DWR Table 13)

Water distributed	2000	2005	2010	2015	2020	2025	2030
None	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**

6.6 Additional Water Uses

Unaccounted-for water use is defined as the use of water resulting from unauthorized connections or use, leaks, meter inaccuracies, fire protection and training, system and street flushing, sewer cleaning, and construction uses. The City has identified that an average of 6 percent of water is lost, however, the only a small percentage is tracked see Table 6-7. The DSS model has set the default to 7 percent water losses within the City. Table 6-7 reflects the sum of Tables 3-1 and 6-3 (DWR tables 4 and 12) and is consistent with the range of loss the City has experienced.

Table 6-7. Additional Water Uses and Losses - AF Year[a] (DWR Table 14)

Water use	2000	2005	2010	2015	2020	2025	2030
Saline barriers	---	---	---	---	---	---	---
Groundwater recharge	---	---	---	---	---	---	---
Conjunctive use	---	---	---	---	---	---	---
Raw Water	---	---	---	---	---	---	---
Sewer Flushing	1.38	2.0	2.0	2.0	2.0	2.0	2.0
Hydrant Flushing							
Traveling Meter (contractor)	79	7	40	10	10	10	10
Unaccounted-for system losses	---	---	---	---	---	---	---
Total [b]	**679**	**669**	**614**	**529**	**420**	**317**	**226**
Recycled	1.5	1,162	1,174	1,174	1,174	1,174	1,174

[a] The City estimates an average of 5% water is lost, but only keeps track of a small percentage of uses.

6.7 Total Water Use

Total water use within the City is the sum of the water use by customer type and water losses. Through water conservation designed to save 0.44 mgd over the 30-year period the City's water use is estimated to remain consistent with current use. Table 6-5 summarizes the total water use for the City through 2030.

Table 6-8. Total Water Use - AF Year (DWR Table 15)

Water use	2001	2005	2010	2015	2020	2025	2030
Total of Tables 12, 13, 14	9,702	9,738	10,316	10,221	10,025	9,852	9,713

Note: Source: DSS model dated 2-28-05.

7.0 SECTION

SUPPLY AND DEMAND COMPARISON PROVISIONS

This section provides a comparison of projected water supplies and demand and water shortage expectations.

Law

> *10735 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare 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. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10731, including available data from the state, regional, or local agency population projections within the service area of the urban water supplier.*

7.1 Supply and Demand Comparison

This section compares current and projected water supply and demand. It is noted that the projections made throughout this document are predicated on the higher range of purchase requests made by Daly City to the SFPUC in November 04, to meet anticipated system demand in the future. The requests include future population estimates and the cumulative water conservation reductions of 0.44 mgd by 2030 as calculated by the DSS model. In SFPUC letters dated May 27, 2005 and the revised June 1, 2005 the higher range was used in the Table 3 calculation associated with multiyear droughts (Appendix G). The ranges can also be found in the SFPUC 2030 Purchase Estimates Technical Memorandum. The results of the following tables would be considerably different if status quo were to be reflected. However for the sake of consistency the numbers reflected in the letter have been used throughout. In order for these scenarios to work SFPUC would have to officially commit to providing future demand as reflected in their letters.

With this in mind, the comparison is based on the water demand projections in Section 6, water supply projections in Section 3, and the supply reliability evaluation in Section 5. The comparison considers the projected normal water year demands versus the projected normal water year supplies. Consideration is also given to water demand and supply conditions for a single dry water year and four consecutive (i.e., multiple) dry water years.

Normal Water Supply Years. Table 7-1 presents a comparison of the normal precipitation year, and minimum water supply to water demands by 5-year increments from 2005 to 2030. The demands are consistent with Daly City high range purchase requests to SFPUC and are also consistent with the numbers Projected by the DSS model. Decreases over the next 25 years are owing to conservation implementation.

Supply values are based on the 2004 SFPUC 2030 Purchase Estimates Technical Memorandum, high purchase water range) whereas supply is comprised of the maximum purchase requests made by Daly City to SFPUC and correspondingly low groundwater supply. This is also true if Daly City and SFPUC continue its conjunctive use program under normal year conditions and conversely during critical or drought years, then Daly City will use high groundwater and low SFPUC water (see Table 3-1).

Table 7-1. Projected Normal Water Supply - AF Year (DWR Table 40)

(From Table 4)	2010	2015	2020	2025	2030
Supply	10,316	10,221	10,025	9,852	9,713
Percent of year 2005	106	105	103	101	100

Table 7-2. Projected Normal Water Demand - AF Year (DWR Table 41)

(from Table 15)	2010	2015	2020	2025	2030
Demand	10,316	10,221	10,025	9,852	9,713
Percent of year 2005	106	105	103	101	100

Table 7-3. Projected Normal Supply and Demand Comparison - AF Year (DWR Table 42)

	2010	2015	2020	2025	2030
Supply totals	10,316	10,221	10,025	9,852	9,713
Demand totals	10,316	10,221	10,025	9,852	9,713
Difference	0	0	0	0	0
Difference as percent of supply	0	0	0	0	0
Difference as percent of demand	0	0	0	0	0

Single and Multiple Dry Water Years. The single and multiple drought scenarios are based on the SFPUC letters dated May 27, 2005 and the revised June 1, 2005, Table 3. Tables 7-4 through 7-8 show projected single and multiple dry years using the reductions stated by the SFPUC on Daly City's purchased water supply. The tables reflect a correlated reduction in groundwater pumping in conjunction with SFPUC reduction requests as depicted in Table 3-5. Daly City intends on using its local groundwater supply to buffer the impacts associated with concurrent reductions in surface

water availability. Should the length of the drought continue Daly City would pump at its historic average during the period to account for further planned reductions in surface water availability. The use of standby emergency wells would also be considered to provide for reliability/redundancy within the local groundwater basin so not to impact local health and safety.

Table 7-4. Projected single dry year Water Demand Comparison - AF Year (DWR Table 45: Summary of DWR Tables 43 and 44)

	2010	2015	2020	2025	2030
Supply totals	10,316	10,221	10,025	9,852	9,713
Demand totals	10,316	10,221	10,025	9,852	9,713
Difference	0	0	0	0	0
Difference as percent of supply	0	0	0	0	0
Difference as percent of demand	0	0	0	0	0

Table 7-5. Projected Supply and Demand Comparison during multiple dry year period ending in 2010- AF Year (DWR Table 48: Summary of DWR Tables 46 and 47)

	2006	2007	2008	2009	2010
Supply totals	10,316	9,864	9,864	9,261	9,261
Demand totals	10,316	10,316	10,316	10,316	10,316
Difference	0	(452)	(452)	(1,055)	(1,055)
Difference as percent of supply	0	(4)	(4)	(10)	(10)
Difference as percent of demand	0	0	0	0	0

Table 7-6. Projected Supply and Demand Comparison during multiple dry year period ending in 2015- AF Year (DWR Table 51: Summary of DWR Tables 49 and 50)

	2011	2012	2013	2014	2015
Supply totals	10,221	9,786	9,786	9,786	9,786
Demand totals	10,221	10,221	10,221	10,221	10,221
Difference	0	(435)	(435)	(435)	(435)
Difference as percent of supply	0	(4)	(4)	(4)	(4)
Difference as percent of demand	0	0	0	0	0

Table 7-7. Projected Supply and Demand Comparison during multiple dry year period ending in 2020- AF Year (DWR Table 54: Summary of DWR Tables 52 and 53)

	2016	2017	2018	2019	2020
Supply totals	10,025	9,629	9,629	9,075	9,629
Demand totals	10,025	10,025	10,025	10,025	10,025
Difference	0	(396)	(396)	(950)	(396)
Difference as percent of supply	0	(4)	(4)	(10)	(4)
Difference as percent of demand	0	0	0	0	0

Table 7-8. Projected Supply and Demand Comparison during multiple dry year period ending in 2025- AF Year (DWR Table 57: Summary of DWR Tables 55 and 56)

	2021	2022	2023	2024	2025
Supply totals	9,825	9,492	9,492	8,970	8,970
Demand totals	9,825	9,825	9,825	9,825	9,825
Difference	0	(360)	(360)	(882)	(882)
Difference as percent of supply	0	(4)	(4)	(9)	(9)
Difference as percent of demand	0	0	0	0	0

7.2 Supply and Demand Comparisons

In any one dry year, the City will be able to maintain regular water use, but will need to prepare for possible future multiple dry years. In the second consecutive dry year, the City will probably need to enter into a Stage I water shortage response. In the third consecutive dry year, or in the event of a major system failure, the City may continue a Stage I water shortage response or move into a Stage II water shortage response. See the Water Shortage Contingency Plan (Section 9) and Four-Year Minimum Water Supply section of Section 5 for more detailed information.

8.0 SECTION

WATER CONSERVATION DEMAND MANAGEMENT MEASURES

Water conservation is a method available to reduce water demands, thereby reducing water supply needs for the City of Daly City (City) Department of Water and Wastewater Resources (DWWR). This section presents an analysis of water demand management measures (DMMs)[1] and a description of the methods of the analysis that was performed by the SFPUC for water conservation.

8.1 California Urban Water Conservation Council

The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the California Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to develop a list of urban DMMs for conserving water. This consensus-building effort resulted in a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), as amended March 9, 2005, among parties, which formalizes an agreement to implement these DMMs and makes a cooperative effort to reduce the consumption of California's water resources. Table 8-1 presents the 14 DMMs as defined by the MOU. The California Urban Water Conservation Council (CUWCC) administers the MOU.

Table 8-1. Water Conservation Demand Management Measures listed in MOU

No.	DMM Name
1.	Water survey programs for single-family residential and multi-family residential connections.
2.	Residential plumbing retrofit.
3.	System water audits, leak detection and repair.
4.	Metering with commodity rates for all new connections and retrofit of existing connections.
5.	Large landscape conservation programs and incentives.
6.	High-efficiency washing machine rebate programs.
7.	Public information programs.
8.	School education programs.
9.	Conservation programs for commercial, industrial, and institutional accounts.
10.	Wholesale agency assistance programs.
11.	Conservation pricing.
12.	Conservation coordinator.
13.	Water waste prohibition.
14.	Residential ULFT replacement programs.

[1] Formerly refereed to as Best Management Practices (DMMs) in 2000 UWMP

The MOU requires that a water utility implement only the DMMs that are economically feasible. If a DMM is not economically feasible, the water utility may request an economic exemption for that DMM. The DMMs as defined in the MOU are generally recognized as standard definitions of water conservation measures. The City is not a signatory of the MOU. However, the City implements the DMMs that are cost beneficial.

8.2 SFPUC Wholesale Customer Water Conservation Study

In spring 2004, the SFPUC, in conjunction with its 28 wholesale customers including the City of Daly City, conducted a study to assess the potential for water conservation savings in the SFPUC's wholesale customer service area. BAWSCA participated in the study by coordinating efforts of the wholesale customers and the SFPUC.

The SFPUC used the Demand Side Management Least-Cost Planning Decision Support (DSS) model in determining water conservation potential in the wholesale customer service area including Daly City. The DSS was used to develop water demand projections and evaluate the cost-effectiveness of 32 conservation measures over a 30-year planning period (see Appendix H). This analysis included the measurable DMMs that are listed in the MOU (DMM 1, 2, 5, 6, 7, 9, 14), but did not include the DMMs that are immeasurable.

8.2.1 DSS Model Methodology and Economic Analysis

An initial list of 75 conservation measures were screened using qualitative criteria related to the following (SFPUC 2004, SFPUC Wholesale Customer Water Conservation Technical Report):

- Does the product work well and is it readily available?
- Would the measure have widespread application in the Bay Area?
- Will the retail customer participate in the measure or use the product and it is fair how the measure is applied throughout the service among the different customer types?
- Among similar measures that accomplish the same things, is this measure the best way to save water?

Thirty two-measures passed the initial screening. Market potential, costs, and benefits were identified for these 32 conservation measures and a benefit-cost analysis was performed to evaluate the cost-effectiveness of each measure. Other factors such as service area water use characteristics, retail customer behavioral patterns, budget considerations, and ease of implementation were used to develop three sets of conservation measures Programs A, B, and C which evaluated a total of 32 measures. Program A includes measures currently being implemented by the City. Program B includes Program A plus the additional measures considered to be most implementable by the City.

An implementable conservation measure is a measure that an individual wholesale customer believes can be funded and implemented with success in its service area. Program C includes all the measures included in Programs A and B plus additional measures that may be implementable in some form in the future. The programs were designed to accomplish an increasing level of water savings. The programs are not intended to be rigid programs but rather to demonstrate the range of savings if the selected measures were run together. This approach allows the DSS model to account for overlaps in water savings and benefits from the packages of measures as programs.

8.3 Water Savings Analysis Results

For the City of Daly City the 2030 water savings due to conservation programs are shown in Table 8-2. Currently the City is implementing DMMs under Program A. Programs B and C include additional DMMs that the City may consider to implement in the future to achieve an additional water savings of 0.44 mgd by 2030.

Table 8-2. Water Savings for DMM Programs Analyzed by SFPUC

Program/DMMs	Water Savings
Residential Retrofit (DMM 2)	
Large Landscape Conservation Audits (DMM5)	
Clothes Washer Rebate (DMM 6)	
Public Information Program (DMM 7)	
Commercial Water Audits (DMM 9)	
Program B (in addition to A)	0.44 mgd 102 percent of 2030 new demand
Water Budgets	
ULF Toilet and Urinal Rebates	
Residential ULF Toilet Rebate	
Rebates for 6/3 dual flush or 4 liter toilets	
Xeriscape education and staff training at retail garden/irrigation supply houses	
Rebate for efficient clothes washer	
Restaurant low flow spray rinse nozzles	
Financial incentives for complying with water use budget	

Program/DMMs	Water Savings
Program C (in addition to A and B)	0.53 mgd 121 percent of 2030 new demand
Residential Water Surveys	
Homeowner irrigation classes	
Require sub-metering multifamily units	
Enforce landscape requirements for new landscaping systems (turf limitations /regulations)	
Focused water audits for hotels/motels	
Hotel retrofit (w/financial assistance)	
(Plumbing Code) [a]	1.1 mgd

Note: Source: SFPUC Wholesale Customer Water Conservation Technical Report (URS 2004b) Table 5-1 and 5-3.

[a] Plumbing code savings represent water use savings associated with the natural replacement of plumbing fixtures with water efficient models (i.e., toilets, showerheads, or washing machines)

8.4 Final Economic Results

The analysis performed by the SFPUC analyzed all 32 DMMs for Daly City for their benefit cost ratios, 30-year average water savings, cost of savings, net utility benefit, and first five year utility cost. Appendix H shows the final results of the SFPUC analysis.

Table 8-3. Evaluation of Unit Cost of Water Resulting from Non-Implemented / Non-Scheduled DMMs and Planned Water Supply Project and Programs (DWR Table 16)

Non-implemented & Not Scheduled DMM / Planned Water Supply Projects (Name)	Per-AF Cost ($)
Program B - Planned	$4.5 M
Program C - Not Planned	$5.3 M

Table 8-4. Final Results of DMMs analyzed for the City of Daly City

Conservation Measure		Water Utility Benefit-Cost Ratio	Total Community Benefit-Cost Ratio	"30-year" Average Water Savings (MGD)	Cost of Savings per Unit Volume ($/MG)	Net Utility Benefit	First Five Years Utility Cost
1	Residential Water Surveys	1.1	1.6	0.0349	$1,754	$93,751	$178,914
2	Residential Retrofit	3.5	9.6	0.0029	$591	$48,828	$19,727
3	Large Landscape Conservation	1.8	1.5	0.0111	$1,048	$110,036	$37,376
4	Water Budgets	13.1	13.1	0.0143	$154	$301,042	$26,070
5	Clothes Washer Rebate	2.7	2.4	0.0161	$774	$240,099	$149,271
6	Public Information Program	1.3	2.4	0.0384	$1,567	$220,095	$191,781
7	Commercial Water Audits	1.4	1.3	0.0177	$1,390	$113,546	$172,050
8	Commercial ULF Toilet and Urinal Rebates	18.6	10.3	0.0036	$112	$79,931	$5,110
9	Residential ULF Toilet Rebate	1.9	1.3	0.1312	$1,648	$1,418,613	$1,057,535
10	Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	17.0	1.1	0.1463	$201	$3,170,659	$135,477
11	Home Leak Detection and Repair	0.6	0.6	0.0090	$4,041	($157,220)	$239,123
12	Rebates for 6/3 dual flush or 4 liter toilets	1.8	1.3	0.1243	$1,103	$1,227,040	$899,717
13	ET Controller Rebates	0.5	0.3	0.0096	$3,639	($196,219)	$129,690
14	Xeriscape education and staff training at retail garden/irrigation supply houses	4.4	0.3	0.0132	$413	$211,812	$16,500
15	Homeowner irrigation classes	2.0	0.1	0.0061	$890	$64,685	$16,500
16	Promote water efficient plantings at new homes	0.4	0.0	0.0002	$5,156	($8,804)	$5,640
17	Offer incentives for replacement of clothes washers in coin-operated laundries	3.8	8.2	0.0061	$535	$104,956	$39,375
18	Incentives for retrofitting sub-metering	1.1	0.4	0.0014	$1,835	$1,933	$16,357
19	Require sub-metering multifamily units	2.1	0.6	0.0085	$899	$96,077	$35,366
20	Rebate efficient clothes washers	10.0	19.4	0.0194	$210	$413,839	$48,988
21	Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	8.7	1.2	0.0071	$221	$135,393	$5,770

Table 8-4. Final Results of DMMs analyzed for the City of Daly City (continued)

Conservation Measure		Water Utility Benefit-Cost Ratio	Total Community Benefit-Cost Ratio	"30-year" Average Water Savings (MGD)	Cost of Savings per Unit Volume ($/MG)	Net Utility Benefit	First Five Years Utility Cost
22	Restaurant low flow spray rinse nozzles	15.1	41.1	0.0219	$134	$467,064	$36,218
23	Focused water audits for hotels/motels	3.8	4.5	0.0044	$515	$71,177	$15,000
24	WAVE Program (US EPA) for hotels	20.6	1.6	0.0003	$95	$6,137	$184
25	Hotel retrofit (w/financial assistance)	4.6	4.7	0.0023	$421	$40,434	$6,550
26	Award program for water savings by businesses						
27	Replace inefficient water using equipment	0.5	0.1	0.0019	$4,229	($48,292)	$51,307
28	Require 0.5 gal/flush urinals in new buildings	19.4	19.4	0.0000	$99	$66	$1
29	Financial incentives for complying with water use budget	5.2	1.8	0.0083	$376	$149,627	$23,472
30	Financial incentives for irrigation upgrades	3.9	2.2	0.0010	$499	$16,634	$2,002
31	Require dedicated irrigation meters for new accounts						
32	Water Utility / City Department water reduction goals	6.1	1.4	0.0079	$317	$146,075	$16,485

Notes:
Numbers in parentheses indicate a negative value
MG – Million Gallons
MGD – Million Gallons per Day

Table 8-5. Present Value Costs and Cumulative Water Saved

	Plumbing code	Program A	Program B	Program C
Present value of costs ($1,000s)	$0	$1,242	$4,759	$5,604
Cumulative water saved (MGD)	1.1	1.2	1.5	1.6

Because the economic analysis required for the City's UWMP has been performed in detail through the DSS model, information in Appendix H is included with the report in place of Tables A1 through N5.

8.5 Description of Daly City's Existing Conservation Program

The City currently implements all DMMs listed in Program A, with eight additional DMMs that were not analyzed in the DSS model as they are not quantifiable. The following table lists these measures and a description of them.

DMM	Description
PROGRAM A (from DSS model)	
Residential Retrofit (DMM 2)	Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install low flow showerheads, faucet aerators, and toilet tank retrofit devices.
System Water Audits, Leak Detection and Repair (DMM 3)	Annually complete a prescreening system audit to determine the need for a full-scale system audit.
Metering with commodity rates for all new connections and retrofit of existing connections. (DMM 4)	The City water distribution system is fully metered. The City is currently replacing old meters in the system in an effort to provide more accurate readings of water use within its service area.
Large Landscape Conservation Audits (DMM 5)	This DMM is a Bay Area Water Supply and Conservation Association's (BAWSCA) Regional Conservation Program developed in 2003. The City reviewed all dedicated irrigation accounts. The objective was to isolate large irrigation accounts and develop water budgets. Properties with more than 2 meters/accounts were considered to fragmented to be of value. The result was seven properties with ten irrigation meters
Clothes Washer Rebate (DMM 6)	This DMM is a Bay Area Water Supply and Conservation Association's (BAWSCA) Regional Conservation Program developed in 2001. Homeowners receive a rebate on a new water efficient clothes washer.
Public Information School Information Program (DMM 7 & 8)	Public education would be used to raise awareness of other conservation measures available to customers. Programs could include poster contests, speakers to community groups, radio and television time, and printed educational material such as bill inserts, etc. The City provides the public with conservation news articles, fliers, media coverage, community events, etc.
Commercial Water Audits (DMM 9)	High water use accounts would be offered a free water audit that would evaluate ways for the business to save water and money

DMM	Description
Wholesale agency assistance program (DMM 10)	SFPUC
Conservation Pricing (DMM 11)	Conservation pricing.
Water conservation coordinator (DMM 12)	The City's conservation coordinator is an ongoing component of a City's water conservation program. She is responsible for implementing and monitoring a City's water conservation activities.
Water waste prohibition (DMM 13)	Water conservation Ordinances
ADDITIONAL Conservation Measures	
NEW as a result of Study: Regional Spray Rinse Valve Replacement/Installation Program. (New)	This conservation measure is a Bay Area Water Supply and Conservation Association's (BAWSCA) Regional Conservation Program developed in 2005. This program replaces spray rinse valves in commercial businesses with water conserving spray valves.

8.6 Future Water Conservation

The City has committed to implementing additional conservation programs designed to save 0.44 mgd by 2030. Table 8-2, Program B, details some of the conservation measures being considered to accomplish that goal.

9.0 SECTION

WATER SHORTAGE CONTINGENCY PLAN

This section describes the water shortage contingency plan that the City has prepared to address a future drought with water restrictions, penalties, charges, and how to manage expenditures and revenues during a drought.

Law

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

10632 (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

9.1 Preparation for Catastrophic Water Supply Interruption

In 1997, in accordance with the requirements of the California Department of Public Health, Office of Drinking Water, the Daly City (City) Department of Water and Wastewater Resources (DWWR) prepared a Disaster Response Plan (DRP). This DRP also satisfied the requirements of Senate Bill 1841. The City's plan is consistent with the City of Daly City Emergency Plan, as amended under consolidated SEMS Operations Plan and was coordinated with the San Mateo County Area Office of Emergency Services.

Additionally, DWWR is a participant in the Water Agency Response Network (II-WARN) Omnibus Mutual Aid Agreement. II-WARN is an organization made up of water agencies from the 16 counties of Northern California that make up the State Office of Emergency Services Region II. The purpose of II-WARN is to support and provide intra- and interagency emergency preparedness planning, disaster response, and mutual aid matters in times of emergency.

The City's DRP establishes Standard Operating Procedures to protect the safety of DWWR employees in the event of a disaster and to ensure rapid repair and restoration of the water and wastewater systems for customers within the areas served. The DWWR establishes response priorities for returning services to customers and the procedures for issuing a Boil Water Order (BWO) or an Unsafe Water Alert (UWA). The priorities for response activities are listed in order of priority for DWWR resources and actions:

Priority 1	Restore water for fire fighting.
Priority 2	Restore water to hospitals and emergency care facilities.
Priority 3	Get sewage overflows out of the streets.
Priority 4	Restore treatment plant to normal operating conditions.

Priority 5 Restore water to residences and other customers.
Priority 6 Restore wastewater to residences and other customers.

Facilities are inspected annually for earthquake safety. Auxiliary generators and improvements to the water storage facilities have been implemented to minimize loss of these facilities during an earthquake or any disaster causing an electric power outage. Table 9-1 is a summary of action items that may be pursued in preparing for and responding to a catastrophic water supply interruption.

Table 9-1. Preparation Actions for a Catastrophe (DWR Table 25)

Name of measures	Check if discussed
1. Stretch existing water storage.	✓
2. Obtain additional water supplies.	✓
3. Determine where the funding will come from.	✓
4. Contact and coordinate with other agencies.	✓
5. Create an Emergency Response Team/Coordinator.	✓
6. Create a catastrophe preparedness plan.	✓
7. Put employees/contractors on-call.	✓
8. Develop methods to communicate with the public.	✓
9. Develop methods to prepare for water quality interruptions.	✓

9.2 Supplemental Water Supplies

During disasters, the City may be able to use their emergency interties with the Westborough County Water District, California Water Service Company, Brisbane Water District, or North Coast County Water District. Since these sources are also largely supplied by the SFPUC, these sources would not be directly available during a drought. To offset future potential water shortage due to drought or disaster, the City has considered the following supplemental water supplies.

Reverse Osmosis Treatment of Saline Waters. The installation of a reverse osmosis system for the desalting of seawater could ensure the City a limited but continuous future water supply. Reverse osmosis is expensive and energy intensive; it would probably be cost effective only if the City's other water supplies were greatly reduced or not available at all. Desalinated salt water would probably only be made available to meet health and safety needs and not for general water use. Given the

high cost of reverse osmosis (RO) potential environmental concerns regarding RO implementation and the availability of other supplies the City is not pursuing this option now, see Table 9-2.

Table 9-2. Opportunities for Desalinated Water (DWR Table 18)

Sources of water	Check if Yes
Ocean water	
Brackish ocean water	
Brackish groundwater	
Other (such as impaired groundwater)	

Although the City has not identified any sources of desalinated water within their boundaries, the Bay Area's four largest water agencies, East Bay Municipal Utility District, the San Francisco Public Utilities Commission, Contra Costa Water District and the Santa Clara Valley Water District, are jointly exploring developing regional desalination facilities that could benefit 5.4 million Bay Area residents and businesses served by these agencies. The Bay Area Regional Desalination Project may consist of one or more desalination facilities, with an ultimate total capacity of up to 120 million gallons per day, which would enhance the purchased water supply for Daly City.

Water Transfers. See the Transfer or Exchange Opportunities section in Section 5 – Reliability Planning.

Long-Term Additional Water Supply Options. The SFPUC and BAWSCA have identified projects associated with the Water Supply Master Plan that are intended to increase the surface water supply to meet year 2050 demands. These, in turn, will enable the City to make additional purchases in normal year and ensure adequate supply in drought years. The City is also planning to appropriately increase its groundwater pumping capacity and expand its water recycling program.

9.3 Water Shortage Contingency Ordinance/Resolution

Law

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

10632 (h) A draft water shortage contingency resolution or ordinance.

9.3.1 Water Shortage Response.

As mentioned earlier, the City adopted Ordinance No. 1125 on May 14, 1990 and Ordinance No. 1143 on June 10, 1991. These ordinances were suspended with Ordinance No. 1156 on May 11, 1992. New ordinances and/or resolutions will be prepared and adopted as needed. The exact measure will depend on the provisions in the final Interim Water Shortage Allocation Plan, which has not yet been adopted. Note: This has now been adopted by BAUWA and SFPUC and is in the process of being adopted by all 29 agencies. This process should be complete no later than June 2001.

9.3.2 Water Supply Shortage Stages and Conditions

Law

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

10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage.

This section describes the stages of action to be undertaken in response to water supply shortages. Included is an outline of specific water supply conditions that are applicable to each stage. Four stages of action to be taken during a water supply shortage are defined. The stages will be implemented during water supply shortages according to shortage level, ranging from 5 percent shortage in Stage I to 50 percent shortage in Stage IV. The DWWR management will make the determination and declaration during a water supply shortage. Table 9-3 lists the three-year estimated minimum water supply in acre-feet. Table 9-4 describes the water supply shortage levels and stages that are to be taken during minimum water supply years.

Table 9-3. Three-Year Estimated Minimum Water Supply – AF Year (DWR Table 24)

Source	Normal	2006	2007	2008
Purchased water	5,534	4,570	3,977	3,977
Groundwater	4,204	4,651	4,609	4,609
Total	**9,738**	**9,221**	**8,586**	**8,586**

Note: See Table 5-4. Recycled water not considered, as it does not replace a potable supply.

Table 9-4. Water Supply Shortage Stages (DWR Table 23)

Supply shortage	Stage	Demand reduction goal	Type of program
Minimum 5-10 %t	I	10 %	Voluntary
Moderate 10-20 %	II	20 %	Mandatory Conservation Phase – Voluntary Allotments and/or Mandatory Conservation Rules
Severe 20-35 %	III	35 %	Rationing Phase - Allotments and Mandatory Conservation Rules
Critical 35-50 %	IV	50 %	Intense Rationing Phase - Allotments and Mandatory Conservation and Rules

Stage I. During Stage I, water alert conditions are declared and voluntary conservation encouraged. The drought situation is explained to public and governmental bodies. DWWR explains other stages and forecasts future actions. Also, DWWR requests voluntary water conservation.

Existing ongoing water conservation measures are continued and emphasized as necessary to alert the public of the nature of the water supply shortage. DWWR maintains an ongoing public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conservation messages printed in local newspapers. Educational programs in area schools are ongoing and utilized as necessary. The "800" number Conservation Hotline is used with trained Conservation Representatives to answer customer questions about the water shortage, as well as conservation and water use efficiency.

Stage II. During Stage II of a water supply shortage, the shortage is moderate, 10 to 20 percent, and conservation may be voluntary, consisting of allotments and/or mandatory conservation rules. The severity of actions depends upon the percent shortage. DWWR aggressively continues its public information and education programs. Consumers are asked for 10 to 20 percent voluntary or mandatory water use reductions. If necessary, DWWR also supports passage of drought ordinances by the City. The SFPUC may also determine that their supply shortage requires mandatory actions. The SFPUC may establish allocations for the City and set up a banking system. The SFPUC may impose excess use charges that will need to be passed onto the City's customers for effectiveness.

Stage III. In Stage III, the water supply shortage is severe, 20 to 35 percent, and conservation consists of allotments and mandatory conservation rules. This phase becomes effective upon notification by the SFPUC and BAWUA that water usage is to be reduced by a mandatory percentage. DWWR implements mandatory reductions and rate changes are implemented to penalize excess usage.

Water use restriction is put into effect; i.e., prohibited uses can include restrictions on daytime hours for watering, excessive watering resulting in gutter flooding, using hose without shutoff device, non-recycling fountains, washing down sidewalks or patios, un-repaired leaks, etc. DWWR monitors production weekly for compliance with necessary reductions. In the case of a customer consistently abusing use, a flow restrictor is installed.

Stage IV. During Stage IV of a water supply shortage, the shortage is critical, 35 to 50 percent. Conservation consists of allotments and mandatory conservation rules. All steps taken in prior stages are intensified and production is monitored daily for compliance with necessary reductions.

9.4 Prohibitions, Consumption Reduction Methods and Penalties

Law

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

10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

10632 (f) Penalties or charges for excessive use, where applicable.

9.4.1 Prohibitions

During Stage II, DWWR may support passage of drought ordinances by the City that include mandatory conservation, water use reductions, and excess use penalties. The City may impose prohibitions on various wasteful water uses, including, but not limited to, the hose washing of sidewalks and driveways using potable water, cleaning or filling decorative fountains, and allowing plumbing leaks to go uncorrected for more than 72 hours. Table 9-3 identifies prohibitions and the stages during which the prohibition is voluntary and mandatory.

Table 9-5. Mandatory Prohibitions (DWR Table 26)

Prohibitions	Stage when prohibition is voluntarily requested	Stage when prohibition becomes mandatory
Cleaning of streets/sidewalks/ walkways/parking areas/patios/ porches or verandas	I	II, III, IV
Washing cars	I	II, III, IV
Watering lawns/landscapes	I	II, III, IV
Non-permanent agriculture	I	II, III, IV
Uncorrected plumbing leaks	I	II, III, IV
Gutter flooding	I	II, III, IV
Cleaning/filling/operating/maintaining levels in non-recycling decorative fountains	I	II, III, IV

9.4.2 Consumption Reduction Methods

Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, is appropriate for its area, and has the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. California Water Code Section 10632 (e) requires the water supplier to provide consumption reduction methods in the most restrictive stages of a water shortage. DWWR will use the consumption reduction methods defined in Table 9-6 to reduce water use in the most restrictive stages.

Table 9-6. Consumption Reduction Methods (DWR Table 27)

Consumption reduction methods	Stage when method takes effect	Projected Reduction % [a]
Demand reduction program	All Stages	5-50
Reduce pressure in water lines		5-10
Flow restriction	III, IV	10-30
Restrict building permits		5-10
Restrict for only priority uses	II, III, IV	5-20
Use prohibitions	II, III, IV	5-20
Water shortage pricing	All Stages	10-20

Consumption reduction methods	Stage when method takes effect	Projected Reduction % [a]
Per capita allotment by customer type	III, IV	10-50
Plumbing fixture replacement	All Stages	5
Voluntary rationing	I, II	5-15
Mandatory rationing	III, IV	5-50
Incentives to reduce water consumption		5-15
Excess use penalty	III, IV	10-20
Water conservation kits	All Stages	5
Education Program	All Stages	5
Percentage reduction by customer type	III, IV	10-20

[a] Because the City has not quantified the percent reductions in the past for its consumption reduction methods, engineering judgment and other UWMP's have been used to make reduction estimates

9.4.3 Reduction Measuring Mechanism

Production meters and customer meters measure reductions in water use. Water production figures are recorded daily. Totals are reported monthly and are incorporated into water supply reports. Customer meters are read on a bimonthly basis. Exceptionally high usage is identified at meter reading time by reviewing water use data. The City investigates these accounts for potential water loss or abuse problems. During all stages of water shortages, daily production figures are reported to and monitored by the water system superintendent. DWWR may elect to read customer meters on a more frequent basis. Table 9-7 summarizes these measuring mechanisms.

Table 9-7. Water Use Monitoring Mechanisms (DWR Table 31)

Mechanism for determining actual reductions	Type data expected
Production meters	Water production figures daily. Totals reported monthly
Customer meters	Read bimonthly, high usage reported at time of reading high meter
Investigation of accounts for potential water loss or abuse problems	Identification of any leaks in the system or over use by any customer

9.4.4 Penalties or Charges for Excessive Use

After one written warning, a flow-restricting device may be installed on the service line of any customer observed to be using water for any non-essential or unauthorized use as will be defined in a City Ordinance. An excess use penalty per 100 cubic feet of water used in excess of the applicable allocation during each billing period shall be charged by DWWR for all service rendered on and after the effective date of the Ordinance. Repeated violations of unauthorized water use will result in discontinuance of water service. Types of penalties and charges and the stage during which they take effect are displayed in Table 9-8.

Table 9-8. Types of Penalties and Charges (DWR Table 28)

Types of penalties and charges	Stage when penalty takes effect
Penalties for not reducing consumption	III, IV
Charges for excess use	III, IV
Flat fine	All Stages
Charge per unit over allotment	III, IV
Flow restriction	III, IV
Termination of Service	III, IV

9.5 Analysis of Revenue and Expenditure Impacts

Law

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

10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier…

10632 (g) [An analysis of the impacts of each of the] proposed measures to overcome those [revenue and expenditure] impacts, such as the development of reserves and rate adjustments.

During water shortages, the DWWR will establish memorandum accounts to track expenses and revenue shortfalls caused by both mandatory rationing and voluntary conservation efforts. A surcharge to recover revenue shortfalls recorded in its drought memorandum accounts may be imposed. The impacts to DWWR revenues and expenditures resulting from a water shortage will be evaluated and defined soon after the water shortage has started. Tables 9-8 and 9-9 display the items that need to be addressed as part of the evaluation of impacts to revenue and expenditure.

Table 9-9. Items to Address for Revenue Impact Analysis (DWR Table 29)

Name of measures	Check if discussed
Review of rate adjustment	✓
Development of reserves	✓
Change in quantity of sales	✓
Impact on customer's bill	✓
Distribution of customer impacts between customer types	✓
Impacts to water supplier of higher rates and penalties	✓
Cost recovery reviews	✓

Table 9-10. Items to Address for Expenditure Analysis (DWR Table 30)

Names of measures	Check if discussed
Change in quantity of sales	✓
Cost recovery reviews	✓
Increased staff salaries/overtime	✓
Increased costs of new supplies, transfers or exchanges	✓
Distribution of customer impacts between customer types	✓
Impacts to water supplier of higher rates and penalties	✓

10.0 SECTION

WATER RECYCLING

This chapter describes the wastewater collection and treatment system, evaluates wastewater disposal and recycled water uses, and presents a recycled water optimization plan.

Law

> *10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:*
>
> *10633 (a) A description of 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.*
> *(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*
> *(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*
> *(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
> *(e) 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 pursuant to this subdivision.*
> *(f) A description of 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.*
> *(g) 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.*

10.1 Participation in Regional Recycled Water Planning

Daly City along with other wholesale customers of the San Francisco Public Utilities Commission and members of the Westside Basin Partners, has participated in discussions of a regional recycled water plan. Such a plan could potentially contribute to groundwater regeneration and the surface water level of Lake Merced.

The SFPUC and its wholesale water customers completed a study in 2005 that documents on-going recycled water use and estimates of future recycled water potential for the SFPUC wholesale customer service area (RMC 2004, URS 2004b, URS 2004c).

Another relevant planning study is the 1999 Bay Area Regional Water Recycling Program (BARWRP). The BARWRP Master Plan presents an assessment of potential recycled water use in 2010, 2025 and 2040. The BARWRP Master Plan is the only existing comprehensive study on the recycled water potential of the Bay Area.

Table 10-1. Participating agencies (DWR Table 32)

Participating agencies	Role in development
City of Daly City	Discussions of regional recycled water plan, Installed recycled water lines
North San Mateo County Sanitation District (a subsidiary of the City of Daly City)	Modified wastewater treatment plant to include tertiary facilities
Westside Basin Partners	Discussions of regional recycled water plan
Wholesale water Customers of the San Francisco Public Utilities Commission	Discussions of regional recycled water plan
Friends of Lake Merced	Discussions of regional recycled water plan

10.2 WateReuse Association Membership

The City is a member of the California WateReuse Association, which helps implement water recycling in California.

10.3 Wastewater Collection and Treatment in Daly City

The North San Mateo County Sanitation District (NSMCSD) manages wastewater collection and treatment for Daly City. All of the wastewater flows from the City (excluding storm water runoff and a small part of the City that is tributary to the City of San Francisco sewers) and is collected and treated at the NSMCSD Wastewater Treatment Plant (WWTP). Inflow to the WWTP averaged 7.44 million gallons per day (mgd) in 2004.

Table 10-2. Wastewater Collection and Treatment – AF Year (DWR Table 33)

Type of wastewater	2000	2005	2010	2015	2020	2025	2030
Wastewater collected & treated in service area	7,760	7,842	8,334	8,334	8,244	8,244	8,134
Volume that meets recycled water standards	7,760	7,842	8,334	8,334	8,244	8,244	8,134
Secondary Disinfected 23[a]	6,210	6,292	6,784	6,784	6,690	6,690	6,584
Unrestricted Tertiary	1,550	1,550	1,550	1,550	1,550	1,550	1,550

[a] Although the plant effluent meets the secondary disinfected 23 standards it is not reused at this time.

Table 10-3. Disposal of Wastewater (non-recycled)– AF Year (DWR Table 34)

Method of disposal	Treatment level	2005	2010	2015	2020	2025	2030
Outfall Diffuser	Secondary	6,292	6,784	6,784	6,690	6,690	6,584
	Total	**6,292**	**6,784**	**6,784**	**6,690**	**6,690**	**6,584**

10.3.1 Wastewater Treatment Processes

Current wastewater treatment at the NSMCSD WWTP includes the following processes:

Micro Screens – Two (2) Screens that have an increased efficiency of removing objects that could damage pumps and equipment and are controlled by the level in the influent channel. When the level increases the screens are pulled up and scraped on to a belt and dumped into a washer/compactor that washes the organics into the influent channel and the screening are compacted and discarded into a dumpster for disposal.

Primary Clarifiers – The screened flow enters the clarifiers and is slowed down to allow the heavier and lighter solids to settle on the bottom and top for extraction from the tanks. The heavier solids are pumped to the Gravity Thickners and allowed to settle further until the solids are pumped to the digesters. The lighter solids are collected by troughs at the far end of the tank and pumped to the Air Floatation Thickner after the addition of polymer the material raises to the top and is skimmed then pumped to the digesters.

Equalization – Because the plants flow varies (high flows in AM and PM) staff allows for some of the flow during these peak periods to be stored in holding tanks for pumping during low influent

flow periods (late evening/early morning). This allows for a constant flow through the secondary system and a stable environment for the biological treatment that takes place in the process.

Aeration - the suspended solids left over from the primary treatment flows to two (2) reactor tanks that mix with the biological mass (bugs) and with turbine mixers pure oxygen is injected into the mixture (activated sludge). The mass then ingests the suspended solids where they flow to the secondary clarifiers.

Secondary Clarifiers – The activated sludge flows in the secondary clarifiers where the flow is then slowed down to allow for the settling of the heavy mass and the clear effluent flowing over the weirs to the outfall where it is then discharged in to the ocean.

Chorination/Dechlorination – After the flow comes out of the secondary clarifiers it enters a mixing chamber where Sodium Hypochlorite is added this chemical is a disinfectant that kills the disease causing bugs. After the addition the flow goes through a serpent tank that allows for optimum killing time (30 minutes minimum). When the flow reaches the end it is injected with Sodium Bisulfite that neutralizes the leftover Hypo Chlorite and leaves no residual. The flow is then released to the outfall in the Pacific Ocean.

Tertiary Treatment - The wastewater plant effluent flows through the secondary effluent pump station, where it either flows by gravity to the ocean or is diverted through the tertiary system. The tertiary system is capable of treating 2.77 MGD (1923 GPM max) through the 6 Parkson DynaSand filters. There are two variable speed 40 HP vertical turbine secondary effluent pumps, each capable of pumping 2200 GPM. Following the pumps there is a Mag meter that records the influent flow to the filters on the tertiary SCADA. Downstream of the meter there is an automatically controlled secondary effluent discharged valve. This controls the starting of the secondary effluent pumps.

The water is then dosed with Aluminum Chloride Hydroxide solution (Alum polymer blend). The Alum is injected into a 12 in. line. Just after the alum injection point there is a rapid mixer, a 3 HP pump takes a small amount of the filter effluent flow and pumps it into the influent pipe to combine or mix the alum. The plant has a 4600-gallon storage tank and 2 alum injection pumps, 1 active and 1 stand-by. Note the alum tank and injection lines have a leak detection system on them. These pumps are flow paced controlled via SCADA. After the alum injection point there is a second injection point where pre chlorine can be added or an alternant coagulate like polymer can be added. The polymer pumps and scale is located at the end of the filters.

The flow then goes up into a 2-stage u-shaped flocculation Basin. In each stage there are 2 variable speed 1 HP three blade vertical impeller mixers. The tank is 5000 gallons and has a minimum detention time of 15 minutes. There is a telescoping valve overflow pipe that can adjust the level in the basin. After the first stage of the tank polymer can be dosed as a filter aid and the PH is monitored. A 2-inch drain valve is located on the backside of the flocculation basin that drains to the new headworks.

From the flocculation basin the water flows by gravity to 6 separate filters each having 2 cells. Each filter has an automatic valve that opens based on the flow the secondary pump is set at. Every 350 GPM another filter comes on line. The water enters the filter at the bottom. Then it is passed upward through the sand bed and exits the top of the filter as clean water. At the same time the sand is continuously removed from the bottom of the filter bed through a center pipe, mixed with air, cleaned and distributed on top of the filter. The backwash or reject water is returned to the new headworks through a 4-inch line. About 10percent of the influent flow is used for the backwash water. After the water is filtered it flows over a weir down the side of the filter structure through a 12-inch pipe and through another Mag meter. Following the meter the pipe increases to 14-inchs off this line there is a continuous turbidity analyzer. As well the rapid mixer pump draws from the same 14-inch line. If the turbidity is grater than 2.0 NTU's the water has to be returned back to the secondary effluent pump station and retreated.

This is done through two automatically controlled valves, one that sends the high NTU water back to the start of the process to be retreated and the second valve diverts the flow to the chlorine contact basin. Prior to the water entering the chlorine contact basin chlorine is injected into the line. In the chlorine containment tank there are 3 chlorine pumps 1 active and 2 standby pumps. The standby pumps can dosed at the recycle effluent pump station and in the equalization basins. There is a minimum of 90 minutes of detention time at a peak flow of 1923 GPM. At the end of the chlorine contact basin there is a continuous chlorine analyzer that should read a minimum of 5.0 ppm.

Once the water leaves the chlorine contact basin it passes through a mixing channel where Gypsum is added and mixed. The gypsum system is contracted out where it is monitored and repaired by an outside company (Wastewater Solutions). The Gypsum is added to adjust the sodium adsorption ratio (SARS). Following the mixing channel the water enters a 10,000-gallon Recycle Effluent Pump Station. At this point there are 5 pumps that distribute the water to the 3 golf courses. Pumps 1 & 2 each 50 HP feed the Olympic Club. Pumps 3,4 & 5 each 100 HP can be valve to pump to either Lake Merced Club of San Francisco Club. As the water is pump to the golf clubs there is a bank of four analyzers (Turbidity, Chlorine, PH and Conductivity), that information is recorded on SCADA. If the golf clubs are full and don't need any water there is a weir at the end of the Recycle Effluent Pump Station where the water flows over and down to 2 Equalization Basins. The Equalization Basins have a combined storage capacity of 1.3 million gallons. When the golf clubs call for water three 40 Hp pumps send the water back up to the Recycle Effluent Pump Station. Then pumped out to the Golf Clubs or City Parks and medians.

Solids Removal – The solids that go to the digesters are heated to 95 to 100 degrees that allows for the volatile organic matter to be decreased. The solids are then treated with polymer and pumped to a centrifuge that eliminates most of the liquid and forms a higher density material (biosolids) to

about 25 percent. The biosolids then are pumped to a storage hopper where a tractor-trailer unloads the hopper and is hauled to a landfill for disposal.

10.4 Recycled Water Uses

Law

> *10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:*
>
> *10633 (c) A description of 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 (e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.*

10.4.1 Recycled Water Currently Being Used

The recycled water program at Daly City consists of the use of recycled water for irrigation of three golf courses (Olympic, San Francisco and Lake Merced), a city park and median strips on John Daly Boulevard between Poncetta and Ashland. The other use is in-plant use at the North San Mateo County Sanitation District WWTP. In plant use is not metered and is estimated to be approximately 550 ac-ft/yr.

Based on one year of historical use, June 05 was the month of peak demand. The June 2005 use at the golf courses was calculated by the City to be approximately 50 ac-ft and City uses were calculated to be approximately 2 ac-ft. In the 2002-2003 fiscal year, the City installed a 12-inch-diameter recycled water line over Highway I-280 and down Junipero Serra Boulevard to Citrus Avenue and then branched an 8-inch diameter line through the new Pacific Plaza Development just north of Westlake Avenue and into Marchbank Park. Currently a recycled water booster pump station is being designed to provide adequate line pressure for the remainder of the recycled water infrastructure with construction slated for Late Spring 2006. The addition of this line segment will use an additional 2 ac-ft/month.

10.5 Potential Users of Recycled Water

Law

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:

10633 (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

10633 (f) A description of 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.

In 2004, the City completed a 7.5 million dollar tertiary treatment project at the North San Mateo County Sanitation district wastewater treatment plant. The upgrades provided the City with an unrestricted tertiary recycled water capacity of approximately 3,100 acre-feet. Based on the June 2005 golf course use, annual golf course recycled water use is estimated at approximately 600 acre-feet and City use is estimated at approximately 12 acre-feet. In plant use is 550 acre-feet. Once the recycled water booster pump station is completed, the City has estimated that an additional 12 acre-feet of water will be used for landscape irrigation of median strips on Junipero Serra Boulevard and at Marchbank Park.

The remaining unrestricted recycled water potential of approximately 1,300 ac-ft/yr will be evaluated by conducting a recycled water master plan to identify and evaluate the alternatives and feasibility.

Other potential uses that could be considered in the recycled water master planning effort are:

- Expanding distribution lines to other high irrigation areas such as schools, parks, cemeteries and other golf courses. The conceptual plan for this type of expansion would be to optimize distribution and use in close proximity to the WWTP and distribution lines. As part of the recycled water master plan, the City will conduct feasibility and cost benefit analyses of potential recycled water uses.

- Evaluate the feasibility and cost effectiveness of using recycled water to recharge groundwater or raise the level of Lake Merced.

Table 10-4. Recycled Water Uses– Actual and Potential (AFY) (DWR Table 35)

User type	Treatment level	2005	2010	2015	2020	2025
Agriculture						
Landscape	Tertiary	12	24	24	24	24
Wildlife habitat						
Wetlands						
Industrial						
Groundwater recharge						
Reuse within plant	Secondary 23	550	550	550	550	550
Golf course irrigation	Tertiary	600	600	600	600	600
Other						
	Total	**1,162**	**1,174**	**1,174**	**1,174**	**1,174**

Note: Based on June 2005 use data extrapolated to annual use from a very wet winter. May vary annually due to climate and precipitation.

Table 10-5. Methods to Encourage Recycled Water Use (DWR Table 38)

Actions	AF of use projected to result from this action				
	2010	2015	2020	2025	2030
Subsidized costs	**Not Available. New Tertiary facility completed in 2004. A recycled water master plan will be conducted to identify further uses.**				
Grants					
Dual Plumbing Standards					
Regulatory Relief					
Regional Planning					
Incentive Program					
Long-Term Contracts (Price/Reliability)					
Rate Discounts					
Prohibit specific fresh water uses					
Low interest loans					
Public education					
Total					

10.5.1 Projected Results

The City has the ability and the permits to produce a maximum of 3,100 ac-ft of tertiary treated recycled water. Currently the City is operating the recycled water facilities at approximately 50 percent capacity and will be producing approximately 1,174 acre-feet of tertiary treated recycled water in 2006.

Table 10-6. Projected Future Use of Recycled Water in Service Area AF Year (DWR Table 36)

	2010	2015	2020	2025
Projected use of Recycled Water	1,174	1,174	1,174	1,174

Table 10-7. Recycled Water Use – 2000 Projection compared with 2005 Actual AFY (DWR Table 37)

User type	2000 Projection for 2005	2005 Actual use
Agriculture		
Landscape	120	612
Wildlife habitat		
Wetlands		
Industrial		
Groundwater recharge		
Other (user type)	550	550
Other (user type)		
Total	**670**	**1,162**

11.0 SECTION

REFERENCES

Brown and Caldwell 2001. *City of Daly City Urban Water Management Plan.* Brown and Caldwell, Walnut Creek, CA. August 2001.

Daly City 2004. Resolution No. 04-254 Re: Westside Groundwater Basin. City Council. December 2004.

Daly City 2002. Resolution No. 02-43 Re: Execution of 1st Amendment to Water Supply Contract. City Council. February, 2002.

RMC 2004. *SFPUC Wholesale Customer Recycled Water Potential.* RMC, December 2004.

URS 2004a. *SFPUC Wholesale Customer Water Demand Potential Technical Report.* URS Corporation, Oakland, CA. November 2004.

URS 2004b. *SFPUC Wholesale Customer Water Conservation Potential Technical Report.* URS Corporation, Oakland, CA. November 2004.

URS 2004c. *SFPUC 2030 Purchase Estimates Technical Memorandum.* URS Corporation, Oakland, CA. December 2004.

APPENDIX A

DWR CHECKLISTS

2005 Urban Water Management Plan "Review for Completeness" Form - DALY CITY
For DWR Review Staff Use

Yes

☐ Participated in area, regional, watershed or basin wide plan _____ Reference

Name of plan _____ Lead Agency _____ _____ Reference

☒ Describe the coordination of the plan preparation and anticipated benefits. Section 2.3.2 Reference

Table 1
Coordination with Appropriate Agencies

Other water suppliers					✓	✓	
Water management agencies	✓			✓	✓	✓	
Relevant public agencies	✓			✓	✓	✓	
Wastewater Agency	✓			✓	✓	✓	
Public Library					✓	✓	
Special Interest Groups					✓*	✓*	
Citizen Groups					✓*	✓*	
General Public					✓*	✓*	
Other					✓*	✓*	

*When requested

☒ Describe how water management tools / options maximize resources & minimize need to import water Section 2.7 Reference

☐ Date updated and adopted plan received _____ (enter date) _____ Reference

☒ Notify any city or county within service area of UWMP of plan review & revision Section 2.1 Reference

☒ Consult and obtain comments from cities and counties within service area Section 2.1 Reference

☒ Include current and projected population Section 2.6 Reference

☒ Population projections were based on data from state, regional or local agency Section 2.6 Reference

Table 2
Population - Current and Projected

	108,077	110,893	113,320	114,291	114,971	115,651

X	Describe climate characteristics that affect water management	Section 2.4	Reference
X	Describe other demographic factors affecting water management	Section 2.5	Reference

Table 3
Climate

1.83	2.2	3.42	4.84	5.61	6.26
4.33	3.56	2.775	1.28	0.43	0.125
50.8	52.7	53.4	54.1	55.3	57

Table 3 (continued)
Climate

6.47	6.22	4.84	3.66	2.36	1.83	**49.54**
0.02	0.07	0.18	1.01	2.585	3.65	**20.09**
58.3	59.4	60.2	59	55.1	51	**55.5**

X	Identify existing and planned water supply sources	Section 3.1	Reference
X	Provide current water supply quantities	Section 3.1	Reference
X	Provide planned water supply quantities	Section 3.1	Reference

Table 4
Current and Planned Water Supplies - AFY

San Francisco PUC (range)						
High	8,237	8,815	8,720	8,524	8,351	8,212
Low	5,526	6,104	6,009	5,813	5,640	5,512
City produced groundwater: (range)						
High	4,212	4,212	4,212	4,212	4,212	4,212
Low	1,501	1,501	1,501	1,501	1,501	1,501
Transfers in or out	0	0	0	0	0	0
Exchanges in or out	0	0	0	0	0	0

X	Has management plan	Section 4.2	Reference
	Attached management plan (b)(1)	Document in process	
X	Description of basin(s) (b)(2)	Section 4.1	Reference
	Basin is adjudicated	Section 4.2	Reference
	If adjudicated, attached order or decree (b)(2)		Reference
	Quantified amount of legal pumping right (b)(2)		Reference

Table 5
Groundwater Pumping Rights - AF Year

Westside Basin	not adjudicated

	DWR identified, or projected to be, in overdraft (b)(2)		Reference
	Plan to eliminate overdraft (b)(2)		Reference
X	Analysis of location, amount & sufficiency, last five years (b)(3)	Section 4.3	Reference
X	Analysis of location & amount projected, 20 years (b)(4)	Section 4.3	Reference

Table 6
Amount of Groundwater Pumped - AFY

Westside Basin	**3,960**	**3,880**	**2,190**	**1,500**	**1,018**
	41.71	**43.69**	**24.70**	**17.05**	**11.68**

Table 7
Amount of Groundwater Projected to be Pumped - AFY

Westside Basin					
High	4,212	4,212	4,212	4,212	4,212
Low	1,501	1,501	1,501	1,501	1,501

[X] Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage — Section 5.7 Reference

Table 8
Supply Reliability - AF Year

Groundwater wells	4,204	4,651	4,651	4,609	4,609	4,609
Purchased water	5,534	4,570	4,570	3,977	3,977	3,977
Reduction, percent	None	10	10	20	20	20
Recycled Water	1,162	1,162	1,162	1,174	1,174	1,174

Table 9
Basis of Water Year Data

Base Year(s)		
1920 to 2002	Section 5.7	Reference
1987	Section 5.7	Reference
1987-1990	Section 5.7	Reference

[X] Describe the reliability of the water supply due to seasonal or climatic shortages — Section 5.1 Reference

[X] Describe the vulnerability of the water supply to seasonal or climatic shortages — Section 5.1 Reference

[ ] No unreliable sources — Reference

Table 10
Factors Resulting in Inconsistency of Supply

SFPUC	see Table 5-1			
Groundwater	see Table 5-1			

[X] Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs — Section 5.6 Reference

[ ] No inconsistent sources — Reference

[ ] Describe short term and long term exchange or transfer opportunities — Reference

[X] No transfer opportunities — Section 5.9 Reference

Table 11
Transfer and Exchange Opportunities - AF Year

n/a	0	0	0	0	0

X	Quantify past water use by sector	Section 6.3, 6 Reference
X	Quantify current water use by sector	Section 6.3, 6 Reference
X	Project future water use by sector	Section 6.3, 6 Reference

TABLE 12 - Past, Current and Projected Water Deliveries

	2001- Base Year				2005				
	metered		unmetered		metered		unmetered		metere
	18,683	4,918			19,028	4,926			19,5
	2,840	2,730			2,892	2,733			
	664	666			682	663			
	3	12			3	12			
	80	222			83	230			
	112	212			114	216			
	123	148			125	151			
	4	115			5	138			

TABLE12 (continued) - Past, Current and Projected

	2015				2020			
	metered		unmetered		metered		unmetered	
	19,951	4,903			20,122	4,836		
	3,033	2,713			3,059	2,673		
	722	665			745	672		
	3	12			3	12		
	91	253			94	260		
	120	226			121	229		
	131	158			132	160		
	27	763			27	763		

[ ]	Identify and quantify sales to other agencies		Reference
[X]	No sales to other agencies	Section 6.5	Reference

Table 13 Sales to Other Agencies - AF Year							
n/a	0	0	0	0	0	0	0

[X]	Identify and quantify additional water uses	Section 6.6	Reference

Table 14 Additional Water Uses and Losses - AF Year							
	---	---	---	---	---	---	---
	---	---	---	---	---	---	---
	---	---	---	---	---	---	---
Raw water	---	---	---	---	---	---	---
Sewer Flushing	1.38	2	2	2	2	2	2
Hydrant Flushing							
Traveling Meter (contractor)	79	7	40	10	10	10	10
Unaccounted-for system losses	---	---	---	---	---	---	---

Table 15 Total Water Use - AF Year							
	9,702	9,738	10,316	10,221	10,025	9,852	9,713

(Water Code §10631 (f) & (g)), the 2005 Urban Water Management Plan "Review of DMMs for Completeness" Form is found on Sheet 2

[X]	No non-implemented / not scheduled DMMs	Section 8.5	Reference
[X]	Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors)	Section 8.4	Reference
[X]	Cost-Benefit analysis includes total benefits and total costs	Section 8.4	Reference
[ ]	Identifies funding available for Projects with higher per-unit-cost than DMMs		Reference
[X]	Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners	Section 8.6	Reference

Table 16 Evaluation of Unit Cost of Water Resulting from Non-implemented / Non-scheduled DMMs and Planned Water Supply Project and Programs		
Program B - Planned	$4.5 M	Present value of costs
Program C - Not Planned	$5.3 M	

	No future water supply projects or programs		
X	Detailed description of expected future supply projects & programs	Section 3.11	Reference
X	Timeline for each proposed project	Section 3.11	Reference
X	Quantification of each projects normal yield (AFY)	Section 3.11	Reference
X	Quantification of each projects single dry-year yield (AFY)	Section 3.11	Reference
X	Quantification of each projects multiple dry-year yield (AFY)	Section 3.11	Reference

Table 17
Future Water Supply Projects

Water Supply Improvement Program	2002	2016	4,480	4,480	4,480	4,480	4,480

	Describes opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply		
X	No opportunities for development of desalinated water	Section 9.2	Reference

Table 18
Opportunities for Desalinated Water

other	
other	

Urban suppliers that are California Urban Water Conservation Council members may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g). The supplier's CUWCC Best Management Practices Report should be attached to the UWMP.

	Agency is a CUWCC member		Reference
	2003-04 annual updates are attached to plan		Reference
	Both annual updates are considered completed by CUWCC website		Reference

Yes			
X	Agency receives, or projects receiving, wholesale water	Section 3.3	Reference
X	Agency provided written demand projections to wholesaler, 20 years	Section 3.3	Reference

Table 19
Agency Demand Projections Provided to Wholesale Suppliers - AFY

SFPUC	8,815	8,720	8,524	8,351	8,212

[X] Wholesaler provided written water availability projections, by source, to agency, 20 years — Section 3.3 Reference
(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 20 Wholesaler Identified & Quantified the Existing and Planned Sources of Water- AFY					
Sierra Nevada - Hetch Hetchy, Alameda Watershed, San Mateo Watershed	286,800	296,600	306,500	316,300	326,200

[X] Reliability of wholesale supply provided in writing by wholesale agency — Section 3.3 Reference
(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 21 Wholesale Supply Reliability - % of Normal AFY					
SFPUC – Current Day	90%	90%	80%	80%	80%
SFPUC – Future	0%	90%	90%	80%	80%

Table 22 Factors Resulting in Inconsistency of Wholesaler's Supply				
SFPUC	Institutional parameters that allocate the water supply of the Tuolumne River		Treatment facilities	Hydrology
	Possibility of removing O'Shaughnessy Dam			

[X] Provide stages of action — Section 9.3.2 Reference
[X] Provide the water supply conditions for each stage — Section 9.3.2 Reference
[X] Includes plan for 50 percent supply shortage — Section 9.3.2 Reference

Table 23 Water Supply Shortage Stages and Conditions RATIONING STAGES		
I	Voluntary	Minimum 5 -10 percent
II	Mandatory Conservation Phase – Voluntary Allotments and/or Mandatory Conservation Rules	Moderate 10-20 percent
III	Rationing Phase - Allotments and Mandatory Conservation Rules	Severe 20-35 percent
IV	Intense Rationing Phase - Allotments and Mandatory Conservation and Rules	Critical 35-50 percent

X	Identifies driest 3-year period	Section 9.3.2	Reference
X	Minimum water supply available by source for the next three years	Section 9.3.2	Reference

Table 24 Three-Year Estimated Minimum Water Supply - AF Year				
Purchased Water	5,534	4,570	3,977	3,977
Groundwater	4,204	4,651	4,609	4,609

*Note: If reporting after 2005, please change the column headers (Year 1, 2, & 3) to the appropriate years

X	Provided catastrophic supply interruption plan	Section 9.1	Reference

Table 25 Preparation Actions for a Catastrophe	
1. Stretch existing water storage.	✓
2. Obtain additional water supplies.	✓
3. Determine where the funding will come from.	✓
4. Contact and coordinate with other agencies.	✓
5. Create an Emergency Response Team/Coordinator.	✓
6. Create a catastrophe preparedness plan.	✓
7. Put employees/contractors on-call.	✓
8. Develop methods to communicate with the public.	✓
9. Develop methods to prepare for water quality interruptions.	✓

X	List the mandatory prohibitions against specific water use practices during water shortages	Section 9.4.1	Reference

Table 26 Mandatory Prohibitions		
Cleaning of streets/sidewalks/ walkways/parking areas/patios/ porches or verandas	I	II, III, IV
Washing Cars	I	II, III, IV
Watering lawns/landscapes	I	II, III, IV
Non-permanent agriculture	I	II, III, IV
Uncorrected plumbing leaks	I	II, III, IV
Gutter flooding	I	II, III, IV
Cleaning/filling/operating/maintaining levels in non-recycling decorative fountains	I	II, III, IV

X List the consumption reduction methods the water supplier will use to reduce water use in the most restrictive stages with up to a 50% reduction. Section 9.4.2 Reference

Table 27 Consumption Reduction Methods		
Demand reduction program	All Stages	5-50
Reduce pressure in water lines		5-10
Flow restrictions	III, IV	10-30
Restrict building permits		5-10
Restrict for only priority uses	II, III, IV	5-20
Use prohibitions	II, III, IV	5-20
Water shortage pricing	All Stages	10-20
Per capita allotment by customer type	III, IV	10-50
Plumbing fixture replacement	All Stages	5
Voluntary rationing	I, II	5-15
Mandatory rationing	III, IV	5-50
Incentives to reduce water consumption		5-15
Excess use penalty	III, IV	10-20
Water conservation kits	All Stages	5
Education Programs	All Stages	5
Percentage reduction by customer type	III, IV	10-20

X List excessive use penalties or charges for excessive use Section 9.4.4 Reference

Table 28 Penalties and Charges	
Penalties for not reducing consumption	III, IV
Charges for excessive use	III, IV
Flat fine	All stages
Charge per unit over allotment	III, IV
Flow restriction	III, IV
Termination of service	III, IV

X	Describe how actions and conditions impact revenues	Section 9.5	Reference
X	Describe how actions and conditions impact expenditures	Section 9.5	Reference
X	Describe measures to overcome the revenue and expenditure impacts	Section 9.5	Reference

Table 29
Items to Address for Revenue Impact Analysis

Review of rate adjustment	✓
Development of reserves	✓
Change in quantify of sales	✓
Impact on customer's bill	✓
Distribution of customer impacts between customer types	✓
Impacts to water supplier of higher rates and penalties	✓
Cost recovery reviews	✓

Table 30
Items to Address for Expenditure Analysis

Change in quantify of sales	✓
Cost recovery reviews	✓
Increased staff salaries/overtime	✓
Increased costs of new supplies, transfers or exchanges	✓
Distribution of customer impacts between customer types	✓
Impacts to water supplier of higher rates and penalties	✓

X	Attach a copy of the draft water shortage contingency resolution or ordinance.	Appendix E	Reference

X	Provided mechanisms for determining actual reductions	Section 9.4.3	Reference

Table 31
Water Use Monitoring Mechanisms

Production meters	Water production figures daily. Totals reported monthly
Customer meters	Read bimonthly, high usage reported at time of reading high meter
Investigation of Accounts for Potential Water Loss or Abuse Problems	Identification of any leaks in the system or over use by any customer

[X] Describe the coordination of the recycling plan preparation information to the extent available.. Section 10.1 Reference

Table 32 Participating Agencies	
City of Daly City	Discussions of regional recycled water plan, Installed recycled water lines
North San Mateo County Sanitation District (a subsidiary of the City of Daly City)	Modified wastewater treatment plant to include tertiary facilities
Westside Basin Partners	Discussions of regional recycled water plan
Wholesale water Customers of the San Francisco Public Utilities Commission	Discussions of regional recycled water plan
Friends of Lake Merced	Discussions of regional recycled water plan

[X] Describe the wastewater collection and treatment systems in the supplier's service area Section 10.3 Reference

[X] Quantify the volume of wastewater collected and treated Section 10.3 Reference

Table 33
Wastewater Collection and Treatment - AF Year

	7,760	7,842	8,334	8,334	8,244	8,244	8,134
	7,760	7,842	8,334	8,334	8,244	8,244	8,134
	6,210	6,292	6,784	6,784	6,690	6,690	6,584
	1,550	1,550	1,550	1,550	1,550	1,550	1,550

X	Describes methods of wastewater disposal	Section 10.3	Reference
X	Describe the current type, place and use of recycled water	Section 10.4.1	Reference
X	Describe and quantify potential uses of recycled water	Section 10.5	Reference

Table 34
Disposal of Wastewater (Non-recycled) AF Year

Outfall Diffuser	Secondary	6,292	6,784	6,784	6,690	6,690	6,584

Table 35
Recycled Water Uses - Actual and Potential (AFY)

Agriculture						
Landscape	Tertiary	12	24	24	24	24
Wildlife Habitat						
Wetlands						
Industrial						
Groundwater Recharge						
Reuse within Plant	Secondary 23	550	550	550	550	550
Golf Course Irrigation	Tertiary	600	600	600	600	600

	Determination of technical and economic feasibility of serving the potential uses		Reference

X	Projected use of recycled water, 20 years	Section 10.5.1	Reference

Table 36
Projected Future Use of Recycled Water in Service Area - AF Year

	1,174	1,174	1,174	1,174

X	Compare UWMP 2000 projections with UWMP 2005 actual	(§ 10633 (e))	Section 10.5.1	Reference
	None			Reference

Table 37
Recycled Water Uses - 2000 Projection Compared with 2005 Actual - AFY

Agriculture		
Landscape	120	612
Wildlife Habitat		
Wetlands		
Industrial		
Groundwater Recharge		
Other (user type)	550	550
Other (user type)		

X	Describe actions that might be taken to encourage recycled water uses	Section 10.5	Reference
X	Describe projected results of these actions in terms of acre-feet of recycled water used per year	Section 10.5	Reference

Table 38
Methods to Encourage Recycled Water Use

Subsidized costs	Not Applicable. New Tertiary facility completed in 2004. A recycled water				
Grants	master plan will be conducted to identify further uses				
Dual Plumbing Standards					
Regulatory Relief					
Regional Planning					
Incentive Program					
Long-Term Contracts (Price/Reliability)					
Rate Discounts					
Prohibit specific fresh water uses					
Low interest loans					
Public education					

X	Provide a recycled water use optimization plan which includes actions to facilitate the use of recycled water (dual distribution systems, promote recirculating uses)	Section 10.5	Reference

	Discusses water quality impacts (by source) upon water management strategies and supply reliability		Reference
X	No water quality impacts projected	Section 3.7	Reference

Table 39
Current & Projected Water Supply Changes Due to Water Quality - Percentage

Groundwater	0	0	0	0	0	0
Recycled water	0	0	0	0	0	0
Purchased Water	0	0	0	0	0	0

X Compare the projected normal water supply to projected normal water use over the next 20 years, in 5-year increments.

Section 7.1 Reference

Table 40
Projected Normal Water Supply - AF Year

10,316	10,221	10,025	9,852	9,713
106	105	103	101	100

Table 41
Projected Normal Water Demand - AF Year

10,316	10,221	10,025	9,852	9,713
106	105	103	101	100

Table 42
Projected Supply and Demand Comparison - AF Year

10,316	10,221	10,025	9,852	9,713
10,316	10,221	10,025	9,852	9,713
0	0	0	0	0

X Compare the projected single-dry year water supply to projected single-dry year water use over the next 20 years, in 5-year increments.

Section 7.1 Reference

Table 43
Projected Single Dry Year Water Supply - AF Year

10,316	10,221	10,025	9,852	9,713

Table 44
Projected Single Dry Year Water Demand - AF Year

10,316	10,221	10,025	9,852	9,713

Table 45
Projected Single Dry Year Supply and Demand Comparison - AF Year

10,316	10,221	10,025	9,852	9,713
10,316	10,221	10,025	9,852	9,713
0	0	0	0	0

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2006-2010 and compare projected supply and demand during those years — Section 7.1 Reference

Table 46
Projected Supply During Multiple Dry Year Period Ending in 2010 - AF Year

10,316	9,864	9,864	9,261	9,261

Table 47
Projected Demand Multiple Dry Year Period Ending in 2010 - AFY

10,316	10,316	10,316	10,316	10,316

Table 48
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2010- AF Year

10,316	9,864	9,864	9,261	9,261
10,316	10,316	10,316	10,316	10,316
0	-452	-452	-1,055	-1,055

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2011-2015 and compare projected supply and demand during those years — Section 7.1 Reference

Table 49
Projected Supply During Multiple Dry Year Period Ending in 2015 - AF Year

10,221	9,786	9,786	9,786	9,786

Table 50
Projected Demand Multiple Dry Year Period Ending in 2015 - AFY

10,221	10,221	10,221	10,221	10,221

Table 51
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2015- AF Year

10,221	9,786	9,786	9,786	9,786
10,221	10,221	10,221	10,221	10,221
0	-435	-435	-435	-435

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 and compare projected supply and demand during those years — Section 7.1 Reference

Table 52
Projected Supply During Multiple Dry Year Period Ending in 2020 - AF Year

10,025	9,629	9,629	9,075	9,629

Table 53
Projected Demand Multiple Dry Year Period Ending in 2020 - AFY

10,025	10,025	10,025	10,025	10,025

Table 54
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2020- AF Year

10,025	9,629	9,629	9,075	9,629
10,025	10,025	10,025	10,025	10,025
0	-396	-396	-950	-396

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 and compare projected supply and demand during those years — Section 7.1 Reference

Table 55
Projected Supply During Multiple Dry Year Period Ending in 2025 - AF Year

9,825	9,492	9,492	8,970	8,970

Table 56
Projected Demand Multiple Dry Year Period Ending in 2025 - AFY

9,825	9,825	9,825	9,825	9,825

Table 57
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2025- AF Year

9,825	9,492	9,492	8,970	8,970
9,825	9,825	9,825	9,825	9,825
0	-360	-360	-882	-882

	Provided Water Service Reliability section of UWMP to cities and counties within which it provides water supplies within 60 days of UWMP submission to DWR		Reference

X	Attach a copy of adoption resolution	Appendix B	Reference
X	Encourage involvement of social, cultural & economic community groups	Section 2.1	Reference
X	Plan available for public inspection	Section 2.1	Reference
X	Provide proof of public hearing	Appendix B	Reference
X	Provided meeting notice to local governments	Appendix B	Reference

	Reviewed implementation plan and schedule of 2000 UWMP		Reference
X	Implemented in accordance with the schedule set forth in plan	Section 2.2	Reference
	2000 UWMP not required		Reference

X	Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption

X	Does UWMP or correspondence accompanying it show where it is available for public review	Section 2.1	Reference

APPENDIX B

RESOLUTION TO SET TIME AND PLACE OF PUBLIC HEARING ON ADOPTION OF UWMP, PUBLIC HEARING NOTICE AND RESOLUTION TO ADOPT THE URBAN WATER MANAGEMENT PLAN

RESOLUTION NO. 05-193

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DALY CITY SETTING TIME AND PLACE OF PUBLIC HEARING ON ADOPTION OF URBAN WATER MANAGEMENT PLAN, 2005 FOR THE CITY OF DALY CITY

WHEREAS, pursuant to the provisions of the California Urban Water Management Planning Act, the City of Daly City, an agency that provides water to more than 3,000 urban customers per year, is required to adopt an Urban Water Management Plan every five years; and

WHEREAS, in accordance with the provisions of said code, the legislative body is directed to conduct a public hearing on the proposed Urban Water Management Plan and make the proposed Plan available for public inspection prior to its adoption.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Daly City does hereby set the 28th day of November, 2005, at the hour of 7 P.M., in the Daly City Council Chambers located at City Hall, 333-90th Street, Daly City, California, as the time and place for hearing on adoption of said proposed Urban Water Management Plan, 2005, for the City of Daly City.

BE IT FURTHER RESOLVED that the City Clerk's Office shall publish a notice of said hearing and of the filing of said report once a week for two successive weeks, with at least five days intervening between the respective publication dates, prior to the time and date set for hearing, in a newspaper of general circulation printed and published within the County within which the Water Service Area is located.

BE IT FURTHER RESOLVED that a copy of the proposed Urban Water Management Plan shall be available for public inspection in the Department of Water/Wastewater Resources, 153 Lake Merced Boulevard, Daly City, California, during regular working hours.

I hereby certify the foregoing to be a true copy of a Resolution adopted by the City Council of Daly City, California, at a regular meeting thereof held on the 24th day of October, 2005, by the following vote of the members thereof:

AYES, and in favor thereof, Councilmembers: Christensen, Guingona, Torres, Klatt

NOES, Councilmembers: None

Absent, Councilmembers: Gomez

Maria E. Cortez
CITY CLERK OF THE CITY OF DALY CITY

APPROVED:

CAROL L. KLATT
MAYOR OF THE CITY OF DALY CITY

NOTICE OF PUBLIC HEARING

CONSIDERATION AND ADOPTION OF URBAN WATER MANAGEMENT PLAN, 2005 FOR THE CITY OF DALY CITY

NOTICE IS HEREBY GIVEN that pursuant to the California Urban Water Management Planning Act, the City Council of the City of Daly City will hold a Public Hearing on the date and time specified below to consider the adoption of a proposed Urban Water Management Plan for the City of Daly City Water Service Area.

NOTICE IS FURTHER GIVEN that on November 28, 2005, at the hour of 7:00 P.M., in the Daly City City Council Chambers located in the Council Chambers, City Hall, City of Daly City, 333-90th Street, Daly City, California, the City Council will review all material and reports submitted and hear and consider testimony of interested person concerning adoption of said proposed Urban Water Management Plan.

A copy of the proposed Urban Water Management Plan for the City of Daly City Water Service Area is available for public inspection in the Office of the City Clerk during regular working hours.

All persons desiring to be heard on this matter should be present at the abovesaid time and place.

Dated: October 24, 2005

Maria E. Cortes

Maria E. Cortes, City Clerk

CITY OF DALY CITY

333-90TH STREET

DALY CITY, CA 94015-1895

PHONE: (650) 991-8000

October 25, 2005

PUBLIC NOTICE

URBAN WATER MANAGEMENT PLAN ADOPTION

The Daly City City Council will consider adopting the City's draft 2005 Urban Water Management Plan at their regularly scheduled meeting on:

Monday, November 28, 2005, 7:00 p.m.
City Council Chamber – Daly City City Hall
333 - 90th Street, Daly City

Beginning on Tuesday, October 25, 2005, copies of the plan will be available for review at the North San Mateo County Sanitation District, 153 Lake Merced Boulevard, Daly City, CA 94015.

An electronic copy of the plan can be sent to you via electronic mail upon request.

To request a copy of the plan or if you have any questions or comments, please contact:

Cynthia Royer
City of Daly City
Department of Water and Wastewater Resources
153 Lake Merced Boulevard
Daly City, CA 94015
(650) 991-8203
croyer@dalycity.org

RESOLUTION NO. 05-216

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DALY CITY ADOPTING THE URBAN WATER MANAGEMENT PLAN 2005 FOR THE CITY OF DALY CITY AND AUTHORIZING SUBMITTAL THEREOF TO THE CALIFORNIA DEPARTMENT OF WATER RESOURCES

A. The Urban Water Management Planning Act requires water utilities to submit urban water management plans every five years to the California Department of Water Resources.

B. An updated Urban Water Management Plan has been prepared and submitted to the City Council for consideration and adoption.

C. As part of the adoption process, the City Council held a public hearing on the Daly City Urban Water Management Plan 2005 on November 28, 2005. A copy of the Plan has been available for public review at City Hall, at all Daly City libraries, and at the Department of Water and Wastewater Resources.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Daly City that it does hereby adopt the 2005 Update to the Daly City Urban Water Management Plan and authorizes City staff to submit the Plan to the California Department of Water Resources.

I hereby certify the foregoing to be a true copy of a Resolution adopted by the City Council of Daly City, California, at a regular meeting thereof held on the 28th day of November, 2005, by the following vote of the members thereof:

AYES, and in favor thereof, Councilmembers: Christensen, Gomez, Guingona Torres, Klatt

NOES, Councilmembers: None

Absent, Councilmembers: None

Maria E. Cortes
CITY CLERK OF THE CITY OF DALY CITY

APPROVED:

CAROL L. KLATT
MAYOR OF THE CITY OF DALY CITY

APPENDIX C

WATER CONSERVATION ORDINANCES

ORDINANCE NO. 1156

AN ORDINANCE OF THE CITY OF DALY CITY SUSPENDING ORDINANCES NOS. 1125 AND 1143 RE: RULES AND REGULATIONS FOR RATIONING WATER DURING A WATER SHORTAGE EMERGENCY AND PENALTIES FOR VIOLATION

BE IT ORDAINED by the City Council of the City of Daly City, as follows:

Section 1: Findings

A. The City of Daly City, by means of Urgency Ordinance 1125, and amending Ordinance 1143, instituted a water conservation program that sought and secured significant reductions in water use by the residents and businesses of the City of Daly City; and

B. The conservation practices heretofore adopted by the City and implemented by the residents and businesses of the City of Daly City have ameliorated those emergency conditions supporting the penalties and fines instituted by Urgency Ordinance 1125 and thereafter amended by Ordinance 1143; and

C. Pursuant to California Water Code §355, the City Council finds and determines that the current conservation efforts of the residents and businesses of Daly City will not deplete water resources beyond those necessary for human consumption, sanitation and fire protection.

Section 2: Suspension of Ordinances

The City Council of the City of Daly City hereby suspends Urgency Ordinance 1125, and amending Ordinance 1143, in their entirety.

Section 3: Severability

If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall be affect the validity of the remaining portions of this Ordinance. The City Council of the City of Daly City declares that it would have adopted each section, subsection, sentence, clause, phrase or portion thereof, irrespective of the fact that any one or more sections, subsections, clauses, phrases or portions be declare invalid or unconstitutional.

Section 4: Publication

This Ordinance shall be published once in The Record, a newspaper of general circulation published in the City of Daly City.

Introduced this 11th day of May, 1992.

Passed and adopted as an Ordinance of the City of Daly City at a regular meeting of the City Council of the City of Daly City held on the 26th day of May, 1992, by the following vote:

AYES, Councilmen: Agrimonti, Giammona, Nevin, Teglia, Powell

NOES, Councilmen: None

Absent, Councilmen: None

City Clerk of the City of Daly City

APPROVED:

JANE POWELL
Mayor of the City of Daly City

ORDINANCE NO. 1143

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF DALY CITY AMENDING URGENCY ORDINANCE NO. 1125 (ESTABLISHING RULES AND REGULATIONS FOR RATIONING WATER DURING WATER SHORTAGE EMERGENCY AND ESTABLISHING PENALTIES FOR VIOLATIONS THEREOF), AS TO SECTION 4 (NONESSENTIAL USES DEFINED) AND AS TO SECTION 6 (EXCESS WATER RATE CHARGES)

BE IT ORDAINED by the City Council of the City of Daly City, as follows:

Section 1: Urgency Ordinance No. 1125 adopted May 14, 1990 Establishing Rules and Regulations for Rationing Water During a Water Shortage Emergency and Establishing Penalties for Violations Thereof is hereby amended as to Section 4 thereof, to read as follows:

"Section 4. Non essential uses defined.

The following uses of water are hereby determined to be nonessential, except as further provided herein:

A. Use of water in excess of the following allotment:

1. Single Family Residential, Commercial, Industrial and Governmental Customers.

Each single family unit shall be allocated a total number of 1000 cubic feet, bi-monthly, based upon a maximum of two (2) persons residing full time at said premises. An additional allotment will be granted:

a. For the third person residing full time at said premises, an additional 200 cubic feet bimonthly, and for the fourth person an additional 400 cubic feet bimonthly; and for each person above four (4) persons, an additional 300 cubic feet bimonthly for each additional person. The total allocation shall not exceed 3600 cubic feet bimonthly, regardless of the number of residents; or

b. 85% of the average winter usage above 1000 cubic feet, bi-monthly, for the months of December, January, February and March; and

c. 70% of the average summer usage above 1000 cubic feet bi-monthly for the months of April, May, June, July, August, September, October and November of the Base Year."

Section 2: Urgency Ordinance No. 1125 adopted May 14, 1990 Establishing Rules and Regulations for Rationing Water During a Water Shortage Emergency and Establishing Penalties for Violations Thereof is hereby further amended as to Section 6 thereof, to read as follows:

"Section 6. Excess Water Rate Charges.

An excess use water charge rate shall be levied on all water used in excess of the Customer allotment as defined in Section 4 above. The excess use rate is an follows:

A. Single-Family and Multi-Family Residential:

1. For excess amounts up to and including two (2) units bimonthly over allotment:

...Five dollars ($5.00) per unit in addition to the current rate for water.

2. For excess amounts over two (2) units bimonthly and up to and including five (5) units bimonthly over allotment:

...Eight dollars ($8.00) per unit in addition to the current rate for water.

3. For excess amounts of over five (5) units bimonthly over allotment:

...Fifteen dollars ($15.00) per unit in addition to the current rate for water."

B. All Other:

1. For excess amounts up to and including ten percent (10%) over allotment:

...Two hundred percent (200%) of the highest current rate per unit or portion thereof.

2. For excess amounts over ten percent (10%) and up to and including twenty percent (20%) over allotment:

...Six hundred percent (600%) of the highest current rate per unit or portion thereof.

3. For excess amounts over twenty (20%) of allotment:

...One thousand percent (1000%) of the highest current rate per unit or portion thereof."

Section 3. Severability.

If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council of the City of Daly City declares that it would have adopted each section, subsection, sentence, clause, phrase or portion thereof, irrespective of the fact that any one or more sections, subsections, clauses, phrases or portions be declared invalid or unconstitutional.

Section 4. The City Council finds that this ordinance is statutorily exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to Article 21080, Section 15273, "Rates, Tolls, Fares and Charges" of the CEQA Guidelines which provides that CEQA does not apply to the establishment, modification, structuring, restructuring or approval of rates, tolls, fares or other charges of public agencies which are for the purpose of meeting operating expenses, financial reserve needs or funding for capital projects.

Section 5. Publication.

This Ordinance shall take effect and be enforced thirty (30) days from and after its adoption. The City Clerk shall publish this ordinance or ordinance summary according to law.

Introduced this 10th day of June, 1991.

Passed and adopted as an Ordinance of the City of Daly City at a regular meeting of the City Council of the City of Daly City held on the 24th day of June, 1991, by the following vote:

AYES, Councilmen: Agrimonti, Nevin, Powell, Teglia, Giammona

NOES, Councilmen: None

Absent, Councilmen: None

Lorraine O'Neill
City Clerk of the City of Daly City

APPROVED:

ANTHONY A. GIAMMONA
Mayor of the City of Daly City

ORDINANCE NO. 1125

AN URGENCY ORDINANCE OF THE CITY COUNCIL OF THE CITY OF DALY CITY RE: ESTABLISHING RULES AND REGULATIONS FOR RATIONING WATER DURING A WATER SHORTAGE EMERGENCY AND ESTABLISHING PENALTIES FOR VIOLATIONS THEREOF

BE IT ORDAINED by the City Council of the City of Daly City, as follows:

Section 1. Findings and Determinations.

A. A water shortage emergency condition prevails within the area served by the City of Daly City.

B. The City of Daly City, at the direction of the San Francisco Public Utilities Commission, has requested that all resale customers, including the City of Daly City, immediately institute a water conservation program designed to effect a 25% reduction in water usage.

C. The rules, regulations and restrictions set forth in this Ordinance are intended to conserve the water supply of the City of Daly City for the greatest public benefit with particular regard to domestic use, sanitation and fire protection.

D. The specific uses prohibited or restricted by this Ordinance are nonessential, if allowed would constitute wastage of the City of Daly City water, and should be prohibited pursuant to the City of Daly City's power under Water Code Section 350 et. seq., Water Code Section 71640 et. seq., and the common law.

E. The actions taken hereinafter are exempt from the provisions of Section 21000 et. seq., of the Public Resources Code as a project undertaken as immediate action necessary to prevent or mitigate an emergency pursuant to Title 14, California Administrative Code Section 15269.

F. The City Council of the City of Daly City further finds and determines that because of the drought conditions prevailing, it would be in the best interests of the citizens of Daly City and for the immediate preservation of the peace, health or safety that this Ordinance take effect immediately.

Section 2. Definitions.

A. 'City' shall mean the City of Daly City.

B. 'City Manager' shall mean the City Manager of the City of Daly City, or his designated representative.

C. 'Person' means any person, firm, partnership, association, corporation, company, organization or governmental entity.

D. 'Customer' means any person, whether within or without the geographic boundaries of City who uses water supplied by City.

E. 'Base year' shall mean calendar year 1987.

Section 3. Prohibition of Nonessential Water use.

It shall be unlawful for any person, firm, partnership, association, corporation or political entity to use water obtained from the water system of City for nonessential uses as hereinafter defined.

Section 4. Nonessential uses defined.

The following uses of water are hereby determined to be nonessential, except as further provided herein:

A. Use of water in excess of the following allotment:

1. Single Family Residential, Commercial, Industrial and Governmental Customers.

Each single family unit shall be allocated a total number of 1000 cubic feet, bi-monthly, based upon a maximum of four (4) persons residing full time at said premises. An additional allotment will be granted:

a) For each person over four (4) persons, 250 cubic feet bi-monthly; or

b) 85% of the average winter usage above 1000 cubic feet, bi-monthly, for the months of December, January, February and March; and

c) 70% of the average summer usage above 1000 cubic feet bi-monthly for the months of April, May, June, July,

August, September, October and November.

2. Multi-Residential Units:

The amount allotted for each number of units or buildings shall be the total number of units hooked up to a meter times 1000 to arrive at the total number of cubic feet bi-monthly for the building or number of units hooked up to one meter, plus the additional allotments as described in Section 4 A.1.

3. Irrigation and Outside Water Usage Customers:

Fifty percent 50% of the water used for irrigating parks, common greens, median strips, recreational areas, cemeteries, golf courses and other similar uses during base year.

B. Use of water through any meter when the customer has been given five (5) days' notice to repair broken or defective plumbing, sprinkler, watering or irrigation systems and has failed to effect such repairs or that a single residential unit uses in excess of 3600 cubic feet bi-monthly.

1. In emergency situations, the City may immediately install a flow restricting device or terminate all water service at the premises of customer. Notice shall be given to the customer of such action by immediately posting notice upon the property or by personal service within twenty-four 24 hours of such action. Posting shall be made upon the front entrance of the property and upon the garage door.

2. In the event of a non-emergency, City shall have the right to install a flow restricting device or terminate all water service at the premises of customer upon the second notice concerning such broken or defective plumbing, sprinkler, watering or irrigation systems, when customer fails to effectuate repairs within twenty-four (24) hours of such second notice. Said notice shall be posted upon the front entrance of the property and upon the garage door.

3. In the event that the customer uses excess water hereinabove set forth, City shall have the right to install a flow

restricting device or terminate all water service at the premis of customer upon the second notice concerning such excessive water use. Said notice shall be posted upon the front entrance of the property and upon the garage door or personally served on the customer.

C. Use of water which results in flooding or runoff in the gutters or streets.

D. Use of water to clean or fill decorative fountains, unless existing in an interior location using recycled water.

E. Use of water for construction purposes such as consolidation of backfill unless no other source of water or other method can be used.

F. Service of water by restaurants except upon the request of a customer.

G. Use of water to clean sidewalks, driveways, patios, parking lots or other hard-surfaced areas.

H. Use of water for cleaning cars, boats, trailers or othe. vehicles unless a positive shutoff value is used.

I. Failure to use cooling water which is recycled where possible.

J. Use of water for irrigation between 11:00 A.M. and 6:00 P.M.

K. Unapproved use of water for irrigation of new landscaping.

The City Manager may modify, delay or otherwise restrict the installation of new landscaping.

Section 5. Exceptions.

Written application for an exception, adjustment or appeal of any action by City under this Ordinance may be made to the City Manager or his designated representative.

The City Manager, or his representative, may:

A. Grant permits for the uses of water otherwise prohibited; or

B. Adjust the allotments in Section 4 A if he finds that:

1. to fail to do so would cause an emergency condition adversely affecting the health, sanitation, fire protection or safety of customer or public; and

2. the customer has adopted all practicable water conservation measures;

C. Rescind any termination notice upon adequate cause being shown for the failure to do the acts as prohibited in Section B, including the excessive use of water.

D. Service connections for new construction may be granted so long as owner thereof agrees to abide by all conditions of this Ordinance and no landscaping shall be allowed until termination of the emergency.

E. Any customer may appeal the determination of the City Manager or his designated representative to the City Council by filing written notice of the appeal within seven (7) days after receipt of the notice of determination. The City Council may reverse, modify or uphold the determination of the City Manager, or his designated representative if it finds that to fail to do so would cause an unnecessary and undue hardship to the customer or the public.

Section 6. Excess Water Rate Charges.

An excess use water charge rate shall be levied on all water used in excess of the Customer allotment as defined in Section 4 above. The excess use rate is as follows:

A. For excess amounts up to and including ten percent (10%) over allotment:

...Two hundred percent (200%) of the highest current rate per unit or portion thereof.

B. For excess amounts over ten percent (10%) and up to and including twenty percent (20%) over allotment:

...Six hundred percent (600%) of the highest current rate per unit or portion thereof.

C. For excess amounts over twenty (20%) of allotment:

...One thousand percent (1000%) of the highest current rate per unit or portion thereof.

Section 7. Enforcement.

A. Installation of Flow-Restricting Devices.

In lieu of or in addition to the penalties provided for in Section 356 and Section 71640 of the Water Code, the City may install a flow-restricting device on the service line of any customer violating any of the provisions of this Ordinance, including use of water in excess of the allotments set out in Section 4 A.

No flow-restricting device shall be installed until after one written notice to the offender. Said person shall have the right to request a hearing for determination by the City Manager, or his designated representative, by giving written notice of such request to the City Manager within ten (10) days after receipt of notice of written warning. Determination of the City Manager shall be subject to appeal to the City Council which appeal must be in writing and filed with the City Clerk within five (5) days after receipt of notice of determination by the offender. First installation shall remain in place a minimum of three (3) days; succeeding installation, ten (10) days minimum.

Section 8. Charges.

Charges for installation of Flow-Restricting Devices and Restoration of Service:

Meter Size	Installation Charge	Removal Charge
5/8" to 1"	$ 50	$ 50
1-1/2" to 2"	$100	$100
3" and larger	Actual Cost*	Actual Cost*

*Actual Cost shall include all material, labor, equipment and overhead charges.

Section 9. Penalties.

A. It shall be a misdemeanor and punishable by a fine not exceeding the sum of Five Hundred ($500) Dollars or by imprisonment for a period not exceeding six (6) months, or both, in the event any person applying for additional allocation of water makes any false or misleading statements in any application for additional water.

B. Violation of any other provision of this Ordinance shall be an infraction punishable by a fine not to exceed $50.00 for a first violation, a fine not exceeding $100.00 for a second violation of this Ordinance within one (1) year and a fine not exceeding $250.00 for each additional violation of this Ordinance within one (1) year.

Section 10. This Ordinance is hereby declared to be an urgency Ordinance and is adopted under the provisions of the Government Code of the State of California, Section 36937, subsection (b) thereof, and is to take effect immediately.

Section 11. Severability.

If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council of the City of Daly City declares that it would have adopted each section, subsection, sentence, clause, phrase or portion thereof, irrespective of the fact that any one or more sections, subsections, clauses, phrases or portions be declared invalid or unconstitutional.

Section 12. The City Council finds that this ordinance is statutorily exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to Article 18, Section 15269 "Emergency Projects" of the CEQA Guidelines which states:

> "The following emergency projects are exempt from the requirements of CEQA:
>
> (c) Specific actions necessary to prevent or mitigate an emergency."

Section 13. Publication.

This Ordinance shall be published once in the Daly City Record, a newspaper of general circulation published in the City of Daly City, and shall take effect immediately.

Introduced this 14th day of May, 1990.

Passed and adopted as an Ordinance of the City of Daly City at a regular meeting of the City Council of the City of Daly City held on the 14th day of May, 1990, by the following vote:

AYES, Councilmen: Nevin, Powell, Teglia, Tucker

NOES, Councilmen: None

Absent, Councilmen: Giammona

City Clerk of the City of Daly City

APPROVED:

JAMES J. TUCKER
Mayor of the City of Daly City

APPENDIX D

BAWSCA AND SFPUC,
INTERIM WATER SHORTAGE ALLOCATION PLAN

Interim Water Shortage Allocation Plan

Example Application – Daly City
Identification of Benefits/Impacts of Alternative Supply Development

Scenario
Let's assume that Daly City would like to examine the benefits/impacts of the recommended IWSAP allocation method in considering the implementation of a recycling program.

FY 98-99 Purchases	4.55 mgd
FY 98-99 Purchases w/Proposed Project	4.10 mgd
FY 10-11 Projected Purchases	6.88 mgd
FY 10-11 Projected Purchases w/Proposed Project	6.43 mgd

The recycling project is designed to reduce current purchases by 10%.

	27% Average BAWUA Cutback		**Desired**	**Adjusted**	**Adjusted**	
	Shortage Alternative	**Year**	**Purchases**	**Allocation**	**Purchase**	**Cutback**
Current Purchase Scenario	Master Contract	98-99	4.55	3.32	1.23	27.07%
	Inside/Outside	98-99	4.55	3.75	0.80	17.58%
	IWSAP	98-99	4.55	3.14	1.41	30.99%
	IWAP w/Prop. Project*	98-99	4.10	3.05	1.05	25.52%
Future Purchase Scenario	Master Contract	10-11	6.88	5.02	1.86	27.07%
	Master Contract w/Prop.	10-11	6.43	4.69	1.74	27.07%
	IWSAP	10-11	6.88	4.08	2.80	40.70%
	IWSAP w/Prop. Project*	10-11	6.43	3.96	2.47	38.37%

INTERIM WATER SHORTAGE ALLOCATION PLAN AMONG SUBURBAN PURCHASERS

This Interim Water Shortage Allocation Plan ("Tier Two Plan") describes the method for allocating the water made available by the San Francisco Public Utilities Commission ("SFPUC"), during shortages caused by drought, among the Suburban Purchasers. This Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan is adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and the Suburban Purchasers ("Master Contract").

SECTION 1. APPLICABILITY AND INTEGRATION

Section 1.1 **Applicability**. This Tier Two Plan applies when, and only when, the SFPUC determines that a system-wide water shortage of 20 percent or less exists, as set forth in a declaration of water shortage emergency adopted by the SFPUC pursuant to California Water Code Sections 350 *et seq.* This Tier Two Plan applies only to water acquired and distributed by the SFPUC to the Suburban Purchasers and has no effect on water obtained by a Suburban Purchaser from any source other than the SFPUC.

Section 1.2 **Integration with SFPUC Interim Water Shortage Allocation Plan (Tier One Plan)**. The SFPUC has adopted an Interim Water Shortage Allocation Plan (Tier One Plan) which, among other things, (a) provides for the allocation by the SFPUC of water between Direct City Water Users (e.g., retail water customers within the City and County of San Francisco) and the Suburban Purchasers collectively during system-wide water shortages of 20 percent or less, (b) contemplates the adoption by the Suburban Purchasers of this Tier Two Plan for allocation of the water made available to Suburban Purchasers collectively among the 29 individual Suburban Purchasers, (c) commits the SFPUC to implement this Tier Two Plan, and (d) provides for the transfer of both "banked" water and shortage allocations between and among the Suburban Purchasers and commits the SFPUC to implement such transfers.

This Tier Two Plan is intended to be integrated with the Tier One Plan described in this Section 1.2. Both Plans becoming operative only if both have been approved by all 29 Suburban Purchasers. Terms used in this Tier Two Plan are intended to have the same meaning as such terms have in the Tier One Plan.

SECTION 2. ALLOCATION OF WATER AMONG SUBURBAN PURCHASERS

Section 2.1 **Annual Allocations Among the Suburban Purchasers**. The annual water supply allocated by the SFPUC to the Suburban Purchasers collectively during system-wide shortages of 20 percent or less shall be apportioned among them based on the methodology described in this Section 2.

Section 2.2 **Methodology for Allocating Water Among Suburban Purchasers**. The water made available to the Suburban Purchasers collectively will be allocated among them in

proportion to each Suburban Purchaser's allocation factor, adjusted as described in Section 2.2.4 below.

Section 2.2.1 Step One: Determination of Allocation Basis for Each Suburban Purchaser. Each Suburban Purchaser's Allocation Basis is an amount, expressed in millions of gallons per day (mgd), which in turn is the arithmetic average of three components. Two of these components are fixed as of the date this Tier Two Plan is adopted; the third component is variable and will be determined when a shortage has been declared by the SFPUC.

The first component is (i) the greater of a Suburban Purchaser's Supply Assurance provided for in the Master Contract or its average purchases from SFPUC during three fiscal years 1996-97, 1997-98, and 1998-99, or (ii) in the case of Hayward and Estero Municipal Improvement District, their projected purchases from SFPUC in FY 2010-11 as reported in the 1998-99 Annual Survey published by BAWUA, or (iii) in the case of San Jose and Santa Clara, the limits on purchases from SFPUC set forth on Exhibit M to the Master Contract. The amount of this first component for each Suburban Purchaser is shown on Attachment A-1.

The second component is the average of each Suburban Purchaser's purchases from SFPUC during the fiscal years 1996-97, 1997-98, and 1998-99. The amount of this second component for each Suburban Purchaser is shown on Attachment A-2.

The third component is the average of each Suburban Purchaser's purchases from SFPUC during the three fiscal years immediately preceding the declaration of water shortage emergency by the SFPUC.

Section 2.2.2 Step Two: Determination of Allocation Factor for Each Suburban Purchaser. Each Suburban Purchaser's Allocation Factor is a percentage derived from a fraction, the numerator of which is the particular Suburban Purchaser's Allocation Basis (in mgd) as calculated in Step One and the denominator of which is the sum (in mgd) of all Suburban Purchasers' Allocation Bases.

Section 2.2.3 Step Three: Determination of Initial Shortage Allocation for Each Suburban Purchaser. The initial shortage allocation for each Suburban Purchaser is determined by multiplying the amount of water available to the Suburban Purchasers collectively (determined pursuant to Section 2.1 of the Tier One Plan) by the Suburban Purchaser's Allocation Factor (i.e., the percentage calculated pursuant to Section 2.2.2).

Section 2.2.4 Step Four: Determination of Final Shortage Allocation for Each Suburban Purchaser. Once the initial shortage allocations are determined, the percentage reductions from each Suburban Purchaser's purchases from the SFPUC in the fiscal year immediately preceding the declaration of water shortage emergency will be calculated as a fraction, the numerator of which is the Suburban Purchaser's initial shortage allocation (determined pursuant to Section 2.2.3), and the denominator of which is the amount purchased from the SFPUC during such fiscal year. The result, as a percentage carried to two places to the right of the decimal, will be subtracted from 100%; the result is the Suburban Purchaser's percentage reduction.

The percentage reductions for San Jose and Santa Clara will be compared to the highest percentage reduction of the other Suburban Purchasers. If both San Jose's and Santa Clara's percentage reduction is larger than the highest percentage reduction among other Suburban Purchasers, the initial shortage allocations established under Section 2.2.3 will become the final

shortage allocations. If either San Jose's percentage reduction or Santa Clara's percentage reduction, or both, is smaller than the highest percentage reduction of other Suburban Purchasers, the shortage allocation (in mgd) of San Jose or Santa Clara, or both, will be reduced so that the percentage reduction of each is no smaller than that of the otherwise highest percentage reduction.

The amount of shortage allocation (in mgd) removed from San Jose and/or Santa Clara will be reallocated among the remaining Suburban Purchasers in proportion to the initial shortage allocation of each calculated as a fraction the numerator of which is the individual initial shortage allocation and the denominator of which is the sum of the initial shortage allocation for the remaining Suburban Purchasers (not including San Jose and Santa Clara).

After such reallocation, the resulting amounts will be the final shortage allocation for each Suburban Purchaser.

Section 2.2.5 Example Calculation. Attachment A-3 presents a sample of the calculations involved in Steps One through Four, using the values from Attachments A-1 and A-2 and recent water use data for the other values. It is presented for illustrative purposes only and does not supersede the foregoing provisions of this Section 2.2. In the event of any inconsistency between this Section 2.2 and Attachment A-3, the text of this section will govern.

Section 2.3 Calculation of Individual Suburban Purchaser's Allocations: Directions to SFPUC. The Tier One Plan contemplates that in any year in which the methodology described above must be applied, the Bay Area Water Users Association ("BAWUA") will calculate each Suburban Purchaser's individual percentage share of the amount of water made available to the Suburban Purchasers collectively, following the methodology described above. The Tier One Plan requires SFPUC to allocate water to each Suburban Purchaser in accordance with calculations delivered to it by BAWUA.

The Tier One Plan requires that each year, the SFPUC will provide to BAWUA by November 1 a list showing the amount of water purchased by each Suburban Purchaser during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT 440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be signed by the SFPUC General Manager.

Each Suburban Purchaser authorizes BAWUA to perform the calculations required, using water sales data furnished to it by the General Manager of the SFPUC, and to deliver a list of individual Suburban Purchasers' percentage shares so calculated to SFPUC as contemplated by the SFPUC Plan. Neither BAWUA nor any officer or employee of BAWUA shall be liable to any Suburban Purchaser for any such calculations made in good faith, even if incorrect.

SECTION 3. GENERAL PROVISIONS

Section 3.1 Construction of Terms. This Tier Two Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

Section 3.2 Governing Law. This Tier Two Plan is made under and shall be governed by the laws of the State of California.

Section 3.3 **Effect on Master Contract**. This Tier Two Plan describes the method for allocating water from the SFPUC among the Suburban Purchasers during system-wide water shortages of 20 percent or less declared by the SFPUC. The provisions of this Tier Two Plan, and the Tier One Plan with which it is intended to be integrated, are intended to implement Section 7.03(a) of the Master Contract. Both the Tier One and Tier Two Plans constitute the water conservation plan contemplated by Section 7.03(a) and supersede the provisions of Section 7.03(b). The Plans do not affect, change or modify any other section, term or condition of the Master Contract.

Section 3.4 **Amendment**. This Tier Two Plan may be amended only by written agreement of all Suburban Purchasers.

Section 3.5 **Termination**. This Tier Two Plan shall expire on June 30, 2009. It may be terminated prior to that date only by the written agreement of all Suburban Purchasers.

ATTACHMENT A-1

The amount of the first component for each Suburban Purchaser is shown below.

Suburban Purchasers	First Fixed Component (mgd)
ACWD	13.76
Belmont	3.89
Brisbane	0.46
Burlingame	5.23
Coastside	2.18
Cordilleras	0.01
CWS Total	35.39
Daly City	4.49
East Palo Alto	2.18
Estero	7.23
Guadalupe	0.52
Hayward	24.00
Hillsborough	4.09
Los Trancos	0.11
Menlo Park	4.24
Millbrae	3.15
Milpitas	9.23
Mountain View	13.46
North Coast	3.84
Palo Alto	17.07
Purissima Hills	1.85
Redwood City	10.93
San Bruno	3.25
Skyline	0.18
Stanford	3.03
Sunnyvale	12.58
Westborough	1.32
San José	2.68
Santa Clara	6.57

ATTACHMENT A-2

The amount of the second component for each Suburban Purchaser is shown below.

Suburban Purchasers	Second Fixed Component (mgd)
ACWD	11.95
Belmont	3.26
Brisbane	0.30
Burlingame	4.68
Coastside	1.35
Cordilleras	0.01
CWS Total	33.42
Daly City	4.49
East Palo Alto	2.10
Estero	5.45
Guadalupe	0.27
Hayward	17.56
Hillsborough	3.60
Los Trancos	0.10
Menlo Park	3.43
Millbrae	2.64
Milpitas	6.80
Mountain View	10.36
North Coast	3.29
Palo Alto	12.96
Purissima Hills	1.85
Redwood City	10.92
San Bruno	2.01
Skyline	0.16
Stanford	2.58
Sunnyvale	10.73
Westborough	0.98
San José	4.10
Santa Clara	4.72

ATTACHMENT A-3

Sample Calculation

Attachment A-3 Sample Calculation

23.6% Average Suburban Reduction from FY 98-99 Purchases

(Units in million gallons per day unless otherwise noted)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
	Allocation Basis				Unadjusted Allocations					Allocations Adj. for Santa Clara & San José				
Suburban Purchasers	First Fixed Component	Second Fixed Component	Variable Component	Average	Allocation Factors	Initial Shortage Allocation	FY 98-99 Purchases	Initial Purchase Cutback		Subtotal Allocation Factors	Adjusted Shortage Allocation	Adjusted Purchase Cutback		Final Individual Share
ACWD	13.76	11.95	11.95	12.55	7.12%	9.16	11.96	-2.80	-23.41%	7.50%	9.18	-2.78	-23.23%	7.13%
Belmont	3.89	3.26	3.26	3.47	1.97%	2.53	3.35	-0.81	-24.25%	2.07%	2.54	-0.81	-24.08%	1.97%
Brisbane	0.46	0.30	0.30	0.35	0.20%	0.26	0.34	-0.08	-23.61%	0.21%	0.26	-0.08	-23.43%	0.20%
Burlingame	5.23	4.68	4.68	4.86	2.76%	3.55	4.65	-1.10	-23.57%	2.91%	3.56	-1.09	-23.40%	2.76%
Coastside	2.18	1.35	1.35	1.62	0.92%	1.19	1.48	-0.29	-19.74%	0.97%	1.19	-0.29	-19.56%	0.92%
Cordilleras	0.01	0.01	0.01	0.01	0.00%	0.00	0.01	0.00	-25.89%	0.00%	0.00	0.00	-25.72%	0.00%
CWS Total	35.39	33.42	33.42	34.07	19.32%	24.87	33.45	-8.58	-25.64%	20.36%	24.93	-8.52	-25.48%	19.37%
Daly City	4.49	4.49	4.49	4.49	2.55%	3.28	4.55	-1.27	-27.85%	2.69%	3.29	-1.26	-27.68%	2.55%
East Palo Alto	2.18	2.10	2.10	2.13	1.21%	1.55	2.07	-0.52	-25.13%	1.27%	1.55	-0.52	-24.96%	1.21%
Estero	7.23	5.45	5.45	6.05	3.43%	4.41	5.57	-1.15	-20.73%	3.61%	4.42	-1.14	-20.55%	3.44%
Guadalupe	0.52	0.27	0.27	0.35	0.20%	0.26	0.28	-0.02	-7.39%	0.21%	0.26	-0.02	-7.18%	0.20%
Hayward	24.00	17.56	17.56	19.71	11.18%	14.39	17.77	-3.38	-19.04%	11.77%	14.42	-3.35	-18.86%	11.20%
Hillsborough	4.09	3.60	3.60	3.76	2.13%	2.75	3.39	-0.64	-18.83%	2.25%	2.75	-0.63	-18.65%	2.14%
Los Trancos	0.11	0.10	0.10	0.10	0.06%	0.07	0.10	-0.03	-26.93%	0.06%	0.07	-0.03	-26.77%	0.06%
Menlo Park	4.24	3.43	3.43	3.70	2.10%	2.70	3.39	-0.69	-20.45%	2.21%	2.71	-0.69	-20.27%	2.10%
Millbrae	3.15	2.64	2.64	2.81	1.59%	2.05	2.63	-0.58	-21.91%	1.68%	2.06	-0.57	-21.74%	1.60%
Milpitas	9.23	6.80	6.80	7.61	4.31%	5.55	6.80	-1.24	-18.29%	4.55%	5.57	-1.23	-18.11%	4.32%
Mountain View	13.46	10.36	10.36	11.40	6.46%	8.32	10.25	-1.93	-18.81%	6.81%	8.34	-1.91	-18.62%	6.48%
North Coast	3.84	3.29	3.29	3.47	1.97%	2.54	3.34	-0.80	-24.02%	2.07%	2.54	-0.80	-23.85%	1.97%
Palo Alto	17.07	12.96	12.96	14.33	8.13%	10.46	13.04	-2.58	-19.78%	8.56%	10.49	-2.56	-19.60%	8.15%
Purissima Hills	1.85	1.85	1.85	1.85	1.05%	1.35	1.93	-0.59	-30.37%	1.10%	1.35	-0.58	-30.21%	1.05%
Redwood City	10.93	10.92	10.92	10.92	6.19%	7.97	11.42	-3.45	-30.19%	6.52%	7.99	-3.43	-30.03%	6.21%
San Bruno	3.25	2.01	2.01	2.42	1.37%	1.77	2.47	-0.71	-28.54%	1.45%	1.77	-0.70	-28.38%	1.37%
Skyline	0.18	0.16	0.16	0.17	0.09%	0.12	0.16	-0.04	-24.69%	0.10%	0.12	-0.04	-24.52%	0.10%
Stanford	3.03	2.58	2.58	2.73	1.55%	1.99	2.56	-0.57	-22.23%	1.63%	2.00	-0.57	-22.06%	1.55%
Sunnyvale	12.58	10.73	10.73	11.34	6.43%	8.28	11.22	-2.94	-26.19%	6.78%	8.30	-2.92	-26.02%	6.45%
Westborough	1.32	0.98	0.98	1.09	0.62%	0.80	1.00	-0.20	-20.27%	0.65%	0.80	-0.20	-20.09%	0.62%
Subtotal	187.67	157.23	157.23	167.38		122.19	159.17	-36.98	-23.24%	100.00%	122.47	-36.71	-23.06%	
San José	2.68	4.10	4.10	3.63	2.06%	2.65	4.13	-1.48	-35.85%		2.65	-1.48	-35.85%	2.06%
Santa Clara	6.57	4.72	4.72	5.34	3.03%	3.90	5.20	-1.30	-25.04%		3.62	-1.58	-30.37%	2.81%
Total	196.92	166.06	166.06	176.35	100.00%	128.73	168.50	-39.77	-23.60%		128.73	-39.77	-23.60%	100.00%

Derivation of the Santa Clara/San José adjustment:

1. Largest permanent customer cutback: -30.37%
2a. Adjusted Santa Clara shortage allocation: 3.62 (Applying largest permanent customer cutback)
2b. Santa Clara adjustment: -0.28 (Difference between initial and adjusted alloc.)
3a. Adjusted San José shortage allocation: 2.87 (Applying largest permanent customer cutback)
3b. San José adjustment: 0.00 (Difference between initial and adjusted alloc.)
4. Total Adjustment: -0.28 (2b + 3b)

Attachment A-3. Suburbar ortage Allocations

Assumptions and Column Notes

23.6% shortage for the Suburban Purchasers compared to FY 1998-99 purchases.

Column notes:

Allocation Basis. The Allocation Basis is used for calculating Allocation Factors and is the average of the following three components:

1. First Fixed Component: The greater of either the Supply Assurance values or the three-year average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99, with certain exceptions.
   a. Daly City's and Purissima Hill's values are based on their three-year averages, which is greater than their Supply Assurance values.
   b. Hayward's and Estero's values are based on their 2010-11 projected purchases, as reported in the BAWUA 1997-98 Annual Survey.
   c. San José's and Santa Clara's values are based on the water supply caps in their individual water supply contracts with the SFPUC.
2. Second Fixed Component: The average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99.
3. Variable Component: The rolling three-year average, updated annually, beginning with FYs 1996-97, 1997-98, and 1998-99.
4. Average: The average of columns 1, 2, and 3.

Unadjusted Allocations. The initial shortage allocations in column 6 are adjusted for Santa Clara and San José in columns 10 through 13.

5. Allocation Factors: The ratio of each Suburban Purchaser's column 4 average to the column 4 total.
6. Initial Shortage Allocation: The product of each Suburban Purchaser's column 5 Allocation Factor times the column 6 total, which represents the assumed available water supply.
7. FY 1998-99 Purchases: The most recent year's purchases to which the Shortage Allocation can be compared to determine the effective cutback.
8. Purchase Cutback: Column 6 minus column 7, in mgd.
9. Purchase Cutback: The ratio of column 8 to column 7, in percent.

Allocations Adjusted for Santa Clara and San José. This adjustment is made so that Santa Clara's and San José's cutbacks are at least as great as the highest cutback by the permanent customers. In this example, there is no adjustment required for San José because the formula results in an unadjusted cutback that is already greater than the highest cutback by a permanent customer.

10. Subtotal Allocation Factors: The ratio of each permanent Suburban Purchaser's column 4 average to the column 4 subtotal.
11. Adjusted Shortage Allocation: The product of each Suburban Purchaser's column 10 Subtotal Allocation Factor times the Column 11 subtotal.
    a. The column 11 subtotal is the sum of the column 6 subtotal plus the Santa Clara adjustment, 0.26.
    b. The Santa Clara adjustment is the difference between its column 6 Initial Shortage Allocation, 3.72, and its Adjusted Shortage Allocation, 3.48.
    c. Santa Clara's Adjusted Shortage Allocation is the product of its column 4 average and the largest Purchase Cutback, 33.53%, received by the permanent Suburban Purchasers.
12. Adjusted Purchase Cutback: Column 11 minus column 7, in mgd.
13. Adjusted Purchase Cutback: The ratio of column 12 to column 7, in percent.

0

INTERIM WATER SHORTAGE ALLOCATION PLAN

This Interim Water Shortage Allocation Plan ("Plan") describes the method for allocating water between the San Francisco Public Utilities Commission ("SFPUC") and the Suburban Purchasers collectively during shortages caused by drought. The Plan implements a method for allocating water among the individual Suburban Purchasers which has been adopted by the Suburban Purchasers. The Plan includes provisions for transfers, banking, and excess use charges. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan is adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract ("Master Contract").

SECTION 1. SHORTAGE CONDITIONS

1.1. Projected Available SFPUC Water Supply. The SFPUC shall make an annual determination as to whether or not a shortage condition exists. The determination of projected available water supply shall consider, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, allowance for carryover storage, and water bank balances, if any, described in Section 3.

1.2 Projected SFPUC Purchases. The SFPUC will utilize purchase data, including volumes of water purchased by the Suburban Purchasers and by Direct City Water Users (as those terms are used in the Master Contract) in the year immediately prior to the drought, along with other available relevant information, as a basis for determining projected system-wide water purchases from the SFPUC for the upcoming year.

1.3. Shortage Conditions. The SFPUC will compare the available water supply (Section 1.1) with projected system-wide water purchases (Section 1.2). A shortage condition exists if the SFPUC determines that the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year (defined as the period from July 1 through June 30). When a shortage condition exists, SFPUC will determine whether voluntary or mandatory actions will be required to reduce purchases of SFPUC water to required levels.

1.3.1 Voluntary Response. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area, the SFPUC and the Suburban Purchasers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of bank credits, consistent with Section 3.2.1 of this Plan.

1.3.2 Mandatory Response. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reduction in water use in the SFPUC service area, the SFPUC may implement excess use charges as set forth in Section 4 of this Plan.

1.4. Period of Shortage. A shortage period commences when the SFPUC determines that a water shortage exists, as set forth in a declaration of water shortage emergency issued by the SFPUC pursuant to California Water Code Sections 350 et seq. Termination of the water shortage emergency will be declared by resolution of the SFPUC.

SECTION 2. SHORTAGE ALLOCATIONS

2.1. Annual Allocations between the SFPUC and the Suburban Purchasers. The annual water supply available during shortages will be allocated between the SFPUC and the collective Suburban Purchasers as follows:

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Suburban Purchasers 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 water allocated to the SFPUC shall correspond to the total allocation for all Direct City Water Users as defined in Section 4.01 of the Master Contract.

2.2 Annual Allocations among the Suburban Purchasers. The annual water supply allocated to the Suburban Purchasers collectively during system wide shortages of 20 percent or less will be apportioned among them based on a methodology adopted by all of the Suburban Purchasers, which shall supersede the provisions of Section 7.03(b) of the Master Contract, as contemplated in Section 7.03(a) of the Master Contract. In any year for which the methodology must be applied, the Bay Area Water Users Association ("BAWUA") will calculate each Suburban Purchaser's individual percentage share of the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1. Following the declaration or reconfirmation of a water shortage emergency by the SFPUC, BAWUA will deliver to the SFPUC General Manager a list, signed by the President of BAWUA's Board of Directors and its General Manager, showing each Suburban Purchaser together with its percentage share and stating that the list has been prepared in accordance with the methodology adopted by the Suburban Purchasers. The SFPUC shall allocate water to each Suburban Purchaser, as specified in the list. The shortage allocations so established may be transferred as provided in Section 2.5 of this Plan.

The methodology adopted by the Suburban Purchasers utilizes the rolling average of each individual Suburban Purchaser's purchases from the SFPUC during the three immediately preceding Supply Years. The SFPUC agrees to provide BAWUA by November 1 of each year a list showing the amount of water purchased by each Suburban Purchaser during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report

MGT440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be transmitted by the SFPUC General Manager or his designee.

2.3. Limited Applicability of Plan to System Wide Shortages Greater Than Twenty Percent. The allocations of water between the SFPUC and the Suburban Purchasers collectively, provided for in Section 2.1, apply only to shortages of 20 percent or less. The SFPUC and Suburban Purchasers recognize the possibility of a drought occurring which could create system-wide shortages greater than 20 percent despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide water shortage greater than 20 percent exists, the SFPUC and the Suburban Purchasers agree to meet within 10 days and discuss whether a change is required to the allocation set forth in Section 2.1 in order to mitigate undue hardships that might otherwise be experienced by individual Suburban Purchasers or Direct City Water Users. Following these discussions, the water allocation set forth in Section 2.1 of this Plan, or a modified version thereof, may be adopted by mutual written consent of the SFPUC and the Suburban Purchasers. If the SFPUC and Suburban Purchasers meet and cannot agree on an appropriate allocation within 30 days of the SFPUC's determination of water shortage greater than 20 percent, then (1) the provisions of Section 7.03(b) of the Master Contract will apply, unless (2) all of the Suburban Purchasers direct in writing that an allocation methodology agreed to by them be used to apportion the water to be made available to the Suburban Purchasers collectively, in lieu of the provisions of Section 7.03(b).

The provisions of this Plan relating to transfers (in Section 2.5), banking (in Section 3), and excess use charges (in Section 4) shall continue to apply during system-wide shortages greater than 20 percent.

2.4. Monthly Water Budgets. Within 10 days after adopting a declaration of water shortage emergency, the SFPUC will determine the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1. The SFPUC General Manager, using the percentages shown on the list delivered by BAWUA pursuant to Section 2.2, will calculate each Suburban Purchaser's individual annual allocation. The SFPUC General Manager, or his designee, will then provide each Suburban Purchaser with a proposed schedule of monthly water budgets based on the pattern of monthly water purchases during the Supply Year immediately preceding the declaration of shortage (the "Default Schedule"). Each Suburban Purchaser may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual shortage allocation over the course of the succeeding Supply Year. If a Suburban Purchaser does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC.

Monthly water budgets will be derived from annual allocations for purposes of accounting for excess use. Monthly water budgets shall be adjusted during the year to account for transfers of shortage allocation under Section 2.5 and transfers of banked water under Section 3.4.

2.5. Transfers of Shortage Allocations. Voluntary transfers of shortage allocations between the SFPUC and any Suburban Purchasers, and between any Suburban Purchasers, will be permitted

using the same procedure as that for transfers of banked water set forth in Section 3.4. The SFPUC and the Bay Area Water Users Association (BAWUA) shall be notified of each transfer. Transfers of shortage allocations shall be deemed to be emergency transfers described in Sections 7.05 and 7.07(a) of the Master Contract and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. Transfers of shortage allocations shall be in compliance with Section 7.05 of the Master Contract. The transferring parties will meet with the SFPUC, if requested, to discuss any effect the transfer may have on its operations.

SECTION 3. SHORTAGE WATER BANKING

3.1. Water Bank Accounts. The SFPUC shall create a water bank account for itself and each Suburban Purchaser during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts are not used for tracking billings and payments. When a shortage period is in effect (as defined in Section 1.4), the following provisions for bank credits, debits, and transfers shall be in force. A statement of bank balance for each Suburban Purchaser will be included with the SFPUC's monthly water bills.

3.2. Bank Account Credits. Each month, monthly purchases will be compared to the monthly budget for that month. Any unused shortage allocation by an agency will be credited to that agency's water bank account. Credits will accumulate during the entire shortage period, subject to potential restrictions imposed pursuant to Section 3.2.1. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water.

3.2.1. Maximum Balances. The SFPUC may suspend the prospective accumulation of credits in all accounts. Alternatively, the SFPUC may impose a ceiling on further accumulation of credits in water bank balances based on a uniform ratio of the bank balance to the annual water allocation. In making a decision to suspend the prospective accumulation of water bank credits, the SFPUC shall consider the available water supply as set forth in Section 1.1 of this Plan and other reasonable, relevant factors.

3.3. Account Debits. Each month, monthly purchases will be compared to the budget for that month. Purchases in excess of monthly budgets will be debited against an agency's water bank account. Bank debits remaining at the end of the fiscal year will be subject to excess use charges (see Section 4).

3.4. Transfers of Banked Water. In addition to the transfers of shortage allocations provided for in Section 2.5, voluntary transfers of banked water will also be permitted between the SFPUC and any Suburban Purchaser, and among the Suburban Purchasers. The volume of transferred water will be credited to the transferee's water bank account and debited against the transferor's water bank account. The transferring parties must notify the SFPUC and BAWUA of each transfer in writing (so that adjustments can be made to bank accounts), and will meet with the SFPUC, if requested, to discuss any affect the transfer may have on SFPUC operations. Transfers of banked water shall be deemed to be emergency transfers described in Sections 7.05 and 7.07(a) of the Master Contract and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. If the SFPUC incurs extraordinary costs

in implementing transfers, it will give written notice to the transferring parties within ten (10) business days after receipt of notice of the transfer. Extraordinary costs means additional costs directly attributable to accommodating transfers and which are not incurred in non-drought years nor simply as a result of the shortage condition itself. Extraordinary costs shall be calculated in accordance with the procedures in the Master Contract and shall be subject to the disclosure and auditing requirements in the Master Contract. In the case of transfers between Suburban Purchasers, such extraordinary costs shall be considered to be expenses chargeable solely to individual Suburban Purchasers and shall be borne equally by the parties to the transfer. In the case of transfers between the SFPUC and a Suburban Purchaser, the SFPUC's share of any extraordinary transfer costs shall not be added to the Suburban Revenue Requirement.

3.4.1. Transfer Limitations. The agency transferring banked water will be allowed to transfer no more than the accumulated balance in its bank. Transfers of estimated prospective banked credits and the "overdrafting" of accounts shall not be permitted. The price of transfer water originally derived from the SFPUC system is to be determined by the transferring parties and is not specified herein. Transfers of banked water shall be in compliance with Section 7.05 of the Master Contract.

SECTION 4. WHOLESALE EXCESS USE CHARGES

4.1. Amount of Excess Use Charges. Monthly excess use charges shall be determined by the SFPUC at the time of the declared water shortage consistent with the calendar in Section 6 and in accordance with Section 5.03 of the Master Contract. The excess use charges will be in the form of multipliers applied to the rate in effect at the time the excess use occurs.
The same excess use charge multipliers shall apply to the Suburban Purchasers and all Direct City Water Users. The excess use charge multipliers apply only to the charges for water delivered at the rate in effect at the time the excess use occurred.

4.2 Monitoring Suburban Water Use. During periods of voluntary rationing, water usage greater than a customer's allocation (as determined in Section 2) will be indicated on each SFPUC monthly water bill. During periods of mandatory rationing, monthly and cumulative water usage greater than a Suburban Purchaser's shortage allocation and the associated excess use charges will be indicated on each SFPUC monthly water bill.

4.3. Suburban Excess Use Charge Payments. An annual reconciliation will be made of monthly excess use charges according to the calendar in Section 6. Annual excess use charges will be calculated by comparing total annual purchases for each Suburban Purchaser with its annual shortage allocation (as adjusted for transfers of shortage allocations and banked water, if any). Excess use charge payments by those Suburban Purchasers with net excess use will be paid according to the calendar in Section 6. The SFPUC and the Suburban Purchasers have discussed the possibility of dedicating excess use charges paid by Suburban Purchasers toward the purchase of water from the State Drought Water Bank or other willing sellers in order to provide additional water to the Suburban Purchasers. The parties may continue discussions of this concept in order to develop the accounting and operational details of such a program. However, unless and until the SFPUC and the Suburban Purchasers agree in writing to an amendment of the Plan to implement such a program, excess use charges paid by the Suburban Purchasers constitute "revenues received from the Suburban Purchasers for the sale of water" for purposes

of Section 5.07 of the Master Contract.

SECTION 5. GENERAL PROVISIONS GOVERNING WATER SHORTAGE ALLOCATION PLAN

5.1. Construction of Terms. This Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

5.2. Governing Law. This Plan is made under and shall be governed by the laws of the State of California.

5.3. Effect on Master Contract. This Plan describes the method for allocating water between the SFPUC and the collective Suburban Purchasers during system-wide water shortages of 20 percent or less. This Plan also provides for the SFPUC to allocate water among the Suburban Purchasers in accordance with directions provided by the Suburban Purchasers through BAWUA under Section 2.2, and to implement a program by which such allocations may be voluntarily transferred among the Suburban Purchasers. The provisions of this Plan are intended to implement Section 7.03(a) of the Master Contract and do not affect, change or modify any other section, term or condition of the Master Contract.

5.4. Role of Suburban Advisory Group. Section 8.04 of the Master Contract identifies the Suburban Advisory Group as a forum for ensuring that the Suburban Purchasers are informed of matters affecting the SFPUC water system. Regularly scheduled meetings of the Suburban Advisory Group will be used to ensure that the important information concerning potential water shortages is provided to the Suburban Purchasers for consideration and examination. The parties agree to meet upon request up to two times per month in order to keep the SFPUC and the Suburban Advisory Group (or a subset of that group) informed of the status of the available water supply and measures under consideration to alleviate shortage conditions affecting the SFPUC water system.

5.5. Inapplicability of Plan to Allocation of SFPUC System Water During Non-Shortage Periods and to Water Wheeling. The SFPUC's agreement in this Plan to a respective share of SFPUC system water during years of shortage shall not be construed to provide a basis for the allocation of water between the SFPUC and the Suburban Purchasers when no water shortage emergency exists. Nor shall this Plan provide any precedent for the transfer, banking, determination of available capacity, or rate to be charged for water proposed to be wheeled through the SFPUC system from non-SFPUC sources by any person or entity under Water Code Section 1810 et seq.

5.6. Termination. This Plan shall expire on June 30, 2009. The SFPUC and the Suburban Purchasers can mutually agree to revise or terminate this Plan prior to that date due to changes in the water delivery capability of the SFPUC system, the acquisition of new water supplies, and other factors affecting the availability of water from the SFPUC system during times of shortage.

SECTION 6. ALLOCATION CALENDAR

6.1. Annual Schedule. The annual schedule for the shortage allocation process is shown below. This schedule may be changed by the SFPUC to facilitate implementation.

6.1.1

In All Years	Target Dates
1. SFPUC delivers list of annual purchases by each Suburban Purchaser during the immediately preceding Supply Year	November 1
2. SFPUC meets with the Suburban Advisory Group and presents water supply forecast for the following Supply Year	January 1-30
3. SFPUC issues initial estimate of available water supply	February 1
4. SFPUC announces potential first year of drought (if applicable)	February 1
5. SFPUC and Suburban Advisory Group meet upon request to exchange information concerning water availability and projected system-wide purchases	February 1-May 31
6. SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable	March 1
7. SFPUC issues final estimate of available water supply	March 15
8. SFPUC determines amount of water available to Suburban Purchasers collectively	March 15

In Drought Years	Target Dates
9. SFPUC formally declares the existence of water shortage emergency (or end of water shortage emergency, if applicable) under Water Code Sections 350 et. seq.	March 15-31
10. SFPUC declares the need for a voluntary or mandatory response	March 15-31
11. BAWUA submits calculation to SFPUC of individual Suburban Purchasers' percentage shares of water allocated to Suburban Purchasers collectively	March 15- 31
12. SFPUC determines individual shortage allocations, based on BAWUA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule)	March 25—April 10
13. Suburban Purchasers submit alternative monthly water budgets (optional)	April 8-April 24
14. Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30	May 1
15. Monthly water budgets become effective	July 1
16. Excess use charges indicated on monthly Suburban bills	July 1 (of the beginning year) through June 30 (of the succeeding year)
17. Excess use charges paid by Suburban Purchasers for prior year	July of the succeeding year

APPENDIX E

DRAFT SUBURBAN CUSTOMER CONTINGENCY PLAN FOR DALY CITY

San Francisco Public Utilities Commission
&
City of Daly City of Daly City

Suburban Customer Contingency Plan
Daly City

Draft
June 2000

Olivia
Chen
Consultants

San Francisco Public Utilities Commission
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City of Daly City of Daly City

Suburban Customer Contingency Plan
Daly City

Draft

June 2000

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1.0 Introduction

Purpose

The purpose of this document is to provide information for San Francisco Public Utilities Commission (SFPUC) Water Supply and Treatment Division (WS&TD) planning in the event that SFPUC water supply pipelines serving the Daly City water system are not available.

Under emergency operations, the SFPUC may opt to issue a water use reduction alert, boil water notice, or unsafe water alert to maintain system pressures and fire protection capabilities. The goal of this effort is to document contingency operations to ensure that Daly City's water supply can be maintained under emergency scenarios that may reduce SFPUC service levels. The contingency operations documented in this plan were identified in several working sessions held with City of Daly City Operations Staff.

Scope

The scope of this evaluation is to:

- Provide an overview of the City of Daly City's water distribution system.
- Identify SFPUC supply lines that supply the Daly City water system.
- Identify scenarios that could result in a reduction in water supply from SFPUC to Daly City.
- Document contingency operations plans for each potential failure.

Relationship to Other Plans

The SFPUC has established response notification procedures under the "SFPUC – Suburban Customer Water Supply Emergency Operations and Notification Plan" for all its suburban customers. The Incident Commander (IC) responding to an emergency resulting from loss of SFPUC supply must be familiar with this notification plan.

Supplement to the notification plan is the 'SFPUC/Suburban Customer Emergency Operations Plan - Phase 2, Emergency Demand Survey.' This document provides important background information with regard to the SFPUC suburban customers, including an assessment of suburban customer alternate water supply sources and dependency on SFPUC supply to these customers. The information provided in this demand survey along with information provided in this document may be used to evaluate the impact of a loss of supply emergency on the Daly City water supply.

This document may be used as a supplement to the above documents and the Daly City Department of Water & Wastewater Resources' (DWWR) Disaster Response Plan (DRP). The DRP establishes standard operation and management procedures for rapid

repair and restoration of water system by the DWWR in the event of a disaster. The contingencies included herein address emergencies arising from a loss of SFPUC supply lines only.

Like all emergency response documents, this contingency planning effort should be reviewed annually to ensure that the information contained herein is complete, accurate, and up-to-date. Contingency procedures should be reviewed regularly, particularly following actual emergency events or exercises and drills (see below). All shortcomings of the plan should be clearly identified and improved as needed.

Training, Exercises, and Drills

An initial orientation training session should be held to familiarize SFPUC WS&TD and DWWR staff with the contingency plans established by this document. In preparation for an emergency and to test the feasibility of the contingency plans identified in this document, an initial exercise should be conducted by SFPUC WS&TD Operations Staff jointly with DWWR staff to ensure that the water system will function as anticipated during an emergency.

The DWWR conducts annual disaster preparedness training sessions during the month of April. Additionally, the DWWR also participates in county-wide exercises during the month of October. If feasible, drills on the contingency procedures identified in this document may be incorporated as pad of these events.

2.0 Daly City Water Supply

Overview of SFPUC System

The SFPUC is responsible for providing water to the City and County of San Francisco and over thirty suburban customer agencies on the San Francisco Peninsula, in the South Bay and parts of the East Bay, totaling over 2.5 million people. The SFPUC system originates in the Sierra Nevadas and consists of several watersheds and reservoirs connected by a series of aqueducts and tunnels, known as the Hetch Hetchy Water Supply System. This system supplies approximately 80 to 85 percent of the SFPUC water supply and is augmented by local surface water resources from the Alameda and Peninsula watersheds. These local supplies are treated at the Sunol Valley Water Treatment Plant in Alameda County and the Harry Tracy Water Treatment Plant (HTWTP) in San Mateo County. Harry Tracy Water Treatment Plant and Sunol Valley Water Treatment Plant (SVWTP) contribute an average of 60 to 65 mgd and 40 to 45 mgd, respectively, to the 200 mgd from the Hetch Hetchy (HH) system.

Of this total supply of 300 mgd, about 32 percent is served to customers in the City and County of San Francisco; the remaining 68 percent is served to thirty suburban customers, including cities, water districts and other private water companies, located in

Alameda, Santa Clara and San Mateo Counties. From an operations point of view, SFPUC's suburban customers are divided into two geographical categories: Peninsula and South Bay. A list of SFPUC's suburban customers is presented in Table 1. A map showing the locations of each of the suburban customer agencies is provided in Figure 1.

Table 1. SFPUC's Suburban Customers

Peninsula

- California Water Service Company) (Palomar, San Carlos, San Mateo and South San Francisco)
- City of Brisbane/Guadalupe Valley Municipal Improvement District
- City of Burlingame
- City of Daly City
- City of Millbrae
- City of San Bruno
- Coastside County Water District
- Estero Municipal Improvement District
- North Coast County Water District
- San Francisco County Jail (retail)
- San Francisco International Airport (retail)
- Town of Hillsborough
- Westborough County Water District

South Bay

- Alameda County Water District
- Belmont County Water District
- California Water Service Company (Bear Gulch)
- City of Hayward
- City of Menlo Park
- City of Milpitas
- City of Mountain View
- City of Palo Alto
- City of Redwood City
- City of San Jose (North San Jose Service Area)
- City of Sunnyvale
- City of Santa Clara
- Cordilleras Mutual Water Association
- East Palo Alto Water District
- Lawrence Livermore National Laboratory (retail)
- Los Trancos Water District
- NASA (retail)
- Purissima Hills Water District
- Skyline County Water District
- Stanford University
- Town of Sunol (retail)

Although many of the suburban customers rely solely on the SFPUC for their water supply, some of the suburban customers have other local supplies including surface water and groundwater and other supply sources such as the South Bay Aqueduct (State Water Project) and the Santa Clara Valley Water District (SCVWD).

Daly City System

Location & Size

Daly City is located in northern San Mateo County adjacent to the southern boundary of the City and County of San Francisco. The DWWR serves a population of nearly 102,000, primarily in the City of Daly City and some unincorporated portions of the County. The service area encompasses approximately 7.4 square miles. The predominant land use is residential.

Water Demand

The maximum daily demand in the City water service area, including unaccounted-for water, was 8.01 million gallons per day (MGD) for the fiscal year 1996-97. Of this 8.01 MGD, 6.01 MGD was used for residential uses and 1.31 MGD was used to support various industries, commercial businesses, and government and other offices within the City service area. The remaining 0.7 MGD of the total consumption was unaccounted for.

Supply Sources

The City obtains its water from six City wells and from eight SFPUC pipeline connections. Figure 2 shows a map of the Daly City water system, along with locations of the eight SFPUC connections.

Water from the six wells is blended with the SFPUC supply water to meet peak demands and accounts for about 50% of the City's needs. Blending of the SFPUC supply and local groundwater is required because groundwater may exceed the nitrate maximum contamination level (MCL). Blending the two supplies reduces the overall nitrate concentration below the MCL, and utilizes a less costly source of water. There is no treatment of the groundwater other than chlorination prior to distribution.

Tables 2 and 3 provide locations of SFPUC supply connections and well supply sources, respectively.

Additionally, the City has emergency supply connections with North Coast County Water District (North Coast), Westborough Water District (Westborough), and California Water Service (CWS). It is important to note that all three of these entities are dependent on SFPUC for most of their water supply. North Coast receives 96% of its water supply from SFPUC, while CWS and Westborough receive approximately 95% and 100%, respectively. These interties can be used if the loss of supply emergency is localized to the Daly City water system, but will not be available if a SFPUC system wide emergency should occur.

Table 2. SFPUC Supply Connections

Location	SFPUC Supply Line	Meters	Primary Supply Source[a]	Pump Station Supplied	Supply Capability[b] (MGD)
Park Plaza Drive	60-inch Sunset Supply	One 8"	HH & SVWTP	Westlake	2.56
D & Hill Streets	60-inch Sunset Supply	Four 2"	HH & SVWTP	'A' Street	0.60
Geneva Ave. & Allan Street	60-inch Crystal Springs No. 2	Two 8"	HH & SVWTP	Bayshore	2.50
Geneva Ave./ Midway Village	60-inch Crystal Springs No. 2	Two 6"	HH & SVWTP	Bayshore	2.80
Guttenberg Street	Crocker-Amazon Station	Four 2"	HH & SVWTP (via Sunset)	Bellevue	0.49
Hickey Blvd.	54-inch San Andreas No. 2	Two 8" & 6"	HTWTP	Hickey	5.19
87th & Sullivan (North and South)	54-inch San Andreas No. 2	Four 8" & 4" Two Each	HTWTP	Citrus & Westlake	5.93
				Total	20.07

[a] HH = Hetch Hetchy. HTWTP = Harry Tracy Water Treatment Plant.
SVWTP = Sunol Valley Water Treatment Plant.

[b] Maximum quantity that can be drawn. Actual quantity drawn is less than this, partially to minimize the amount of purchased water and partially due to pump station limitations.

Table 2. SFPUC Supply Connections

Well	Pump Station Supplied	Zone Served	Quantity* (MGD)
Westlake 1	Westlake	4	0.65
Citrus 4	Citrus	1 and 4	0.51
Citrus 10	Citrus	1 and 4	0.72
Jefferson	Citrus	1 and 4	0.78
Vale	Citrus	1 and 4	1.08
'A' Street	'A' Street	4 and 5/5B	0.72
		Total	4.46

* This quantity is used to supplement the flow from the SFPUC connections.

System Description

SFPUC pipeline connections and wells supply water to various pump stations which in turn feed water to 11 storage reservoirs in 8 pressure zones, four on the east side of the City and four on the west side. These reservoirs have varying capacities and are used to meet different levels of demand. The 11 reservoirs have a total capacity of 22.8 MG,

which, in an emergency could supply the daily demand (8.01 MGD) for approximately 3 days. The actual emergency supply available is highly dependent on the individual reservoir size and area served. Nonetheless, the storage capacity in the smallest reservoir in the system is equal to approximately 1.5 times the daily demand for its service area when full. Figure 3 provides a schematic of the system under normal operations. Table 4 lists the characteristics of each of the reservoirs.

Table 4. Existing Reservoir Characteristics

Reservoir/Zone Served	Volume (MG)	Overflow Elevation (feet)	Base Elevation (feet)
East Side			
1	0.70	637	624
2	1.04	779	754
2B	0.49	779	754
3	0.98	474	454
8	0.63	436	410
Subtotal	3.84		
West Side			
4	1.37	405	384
5	1.48	555	533
5B	10.30	550	530
6	1.50	685	655
6B	1.45	684	655
7	1.487	768	723
Subtotal	17.55		
TOTAL	21.39		

The system also contains 18 pumping stations, 5 regulating control valves, 27 pressure-reducing valves, 11 pressure relief valves, 205 miles of main, and 1,303 fire hydrants. Table 5 shows the pump station capacities. Note that the east side of the City is primarily supplied from the Citrus Pump Station and the west side from the Westlake Pump Station.

Table 6 identifies the relationship between the various components of the Daly City water system (supply connections, wells, and booster pump stations) and the various reservoirs within the system.

Table 5. Booster Pump Station Capacity

Pumping Station	Zone(s) Served	Capacity (gpm)	
		Total[a]	Firm[b]
'A' Street (for Zone 3)	3	900	0
'A' Street (for Zone 5)	5/5B	750	750
Alta Vista	-	1,131	565
Bayshore	8	1,098	537
Bellevue	2/2B	230	197
Citrus (for Zone 1)	1	2,343	750
Citrus (for Zone 3)	3	2,329	750
Franciscan	-	700	550
Gellert (Not Operational)	Not Operational	605	276
Hickey	5B	3,626	1,925
Higate	-	560	280
Pointe Pacific	-	1,743	1,294
Reservoir 1	2/2B	726	274
Reservoir 4	5	2,705	1,377
Reservoir 5B	6B	2,132	1,027
Reservoir 6B	7	2,215	1,066
Skyline	-	280	144
South Hill (Pump 3)	-	1,500	0
South Hill (Pumps 1 &2)	-	400	200
Westlake	4	3,010	1,500

Total[a]: All pumps operational
Firm[b]: Capacity with largest pump out of service

Table 6. Daly City Water System Supply Matrix

Sources	Reservoir (Distribution Zone)										
	1	2	2B	3	4	5	5B	6	6B	7	8
SFPUC Source											
Park Plaza Drive					X	i	i	i	i	i	
D & Hill St				X		X	X	i	i	i	
Geneva & Allan											X
Geneva Ave/Midway Village											X
Guttenberg		X	X								
Hickey Blvd.							X	i	i	i	
88th & Sullivan (North & South)	X	i	i	X	X	i	i	i	i	i	
Well Source											
Citrus 4	X	i	i	X							
Citrus 10	X	i	i	X							
'A' Street				X		X	X	i	i	i	
Jefferson	X	i	i	X							
Vale	X	i	i	X							
Westlake 1					X	i	i	i	i	i	
Booster Pump											
'A' Street				X		X	X	i	i	i	
Alta Vista											
Bayshore											X
Bellevue		X	X								
Citrus Station (Zone 1)	X	i	i								
Citrus (Zone 3)				X							
Gellert	NOT Operational										
Hickey							X				
Higate											
Pointe Pacific											
Reservoir No. 1		X	X								
Reservoir No. 4						X	i	i	i	i	
Reservoir No. 5								X	i	i	
Reservoir No. 5B									X	X	
Reservoir No. 6B										X	
Skyline											
South Hill Estates											
Westlake Station					X	i	i	i	i	i	

X = System component **directly** feeds to identified reservoir.
i = System component **indirectly** feeds to identified reservoir.

3.0 Daly City Water Supply

Foreseeable Emergency Events

Emergency events that may impact supply from SFPUC to Daly City include earthquakes, dam failures, fires, hazardous spills, aqueduct or reservoir failures, and process/plant failures.

For each emergency, the impact may be a reduction or change in the supply available to Daly City through one or more SFPUC connections. Water quality problems are treated as a loss of supply for the purposes of this evaluation. If HTWTP fails to provide water meeting water quality standards, the SFPUC will shut down the treatment plant until the problem can be corrected. In the event of a water quality problem with the Hetch Hetchy supply, the supply may also be shut down or diverted by the SFPUC.

Emergency Planning Scenarios

The Daly City water system is dependent on eight SFPUC pipeline connections. The eight SFPUC connections are from four different SFPUC pipelines (see Table 2):

- Sunset Supply - Two Connections
- Crystal Springs No. 2 - Two Connections
- Guttenberg connection from Crocker-Amazon Hydro-Pneumatic Station
- San Andreas No. 2 - Three Connections

Eight emergency scenarios have been identified for determination of the appropriate response action. These eight scenarios are based on various combinations of loss of supply (independent of cause) from these four pipelines. The response to loss of supply from one or both of the Crystal Springs connections would be the same and therefore, response actions are given for loss of both Crystal Springs No. 2 connections. Because the necessary response for loss of one of the pipeline connections for each of the San Andreas No. 2 and Sunset Supply connections is different from the loss of the entire pipeline, three different scenarios are evaluated for each of 'these two pipelines. These include loss of each of the two connections separately and the loss of the entire pipeline. Table 7 lists the emergency planning scenarios for which contingency operations have been documented.

It is important to note that all four pipelines are connected to one or two of the three basic SFPUC sources (see Table 2):

- Harry Tracy Water Treatment Plant
- Sunol Valley Water Treatment Plant
- Hetch Hetchy Supply

Problems with any of these three basic sources could impact flow to various pipelines at the same time. It is assumed that the SFPUC would operate its facilities to minimize or balance the impacts in the event of supply disruptions from any of the main sources.

Table 7. Emergency Planning Scenarios

Scenario	Description of Supply Loss
A	Sunset Supply Connection at Park Plaza Drive
B	Sunset Supply Connection at D & Hill Streets
C	Both Sunset Supply connections (Scenario A & B together)
D	One or both of the Crystal Springs No. 2 Connections:
E	Crocker-Amazon Hydro-Pneumatic Connection at Guttenberg Street
F	San Andreas No. 2 Supply Connection at Hickey Boulevard
G	San Andreas No. 2 Supply at 87th & Sullivan – North & South Connections
H	All three San Andreas No. 2 Supply Connections (Scenario D & E together)

Emergency Duration

The response actions by the DWWR for each scenario will depend on the severity of the event, the pipeline connection(s) impacted, system demand, available storage, and the potential impact to the Daly City water system.

DWWR's response to the emergency event is based upon the anticipated duration of the event: short or long term.

- A short-term contingency operation will be activated if the loss of supply occurs during periods of low demand and is not expected to exceed 2 days in duration.
- A long-term contingency will be activated if the loss of supply is expected to last more than three days.

The type of contingency operation to be activated for emergencies that occur during periods of high demand but are not expected to exceed 2 days or for emergencies that occur for durations between 2 to 3 days will be made by the DWWR operations staff as the situations are assessed.

4.0 Contingency Procedures

SFPUC Response

An emergency can be identified by either the SFPUC or the City of Daly City. Once the emergency has been identified, the SFPUC must verify whether the emergency is localized, occurring only at a specific location, or whether it has affected the entire pipeline. Figure 4 shows the general SFPUC response to a water supply emergency.

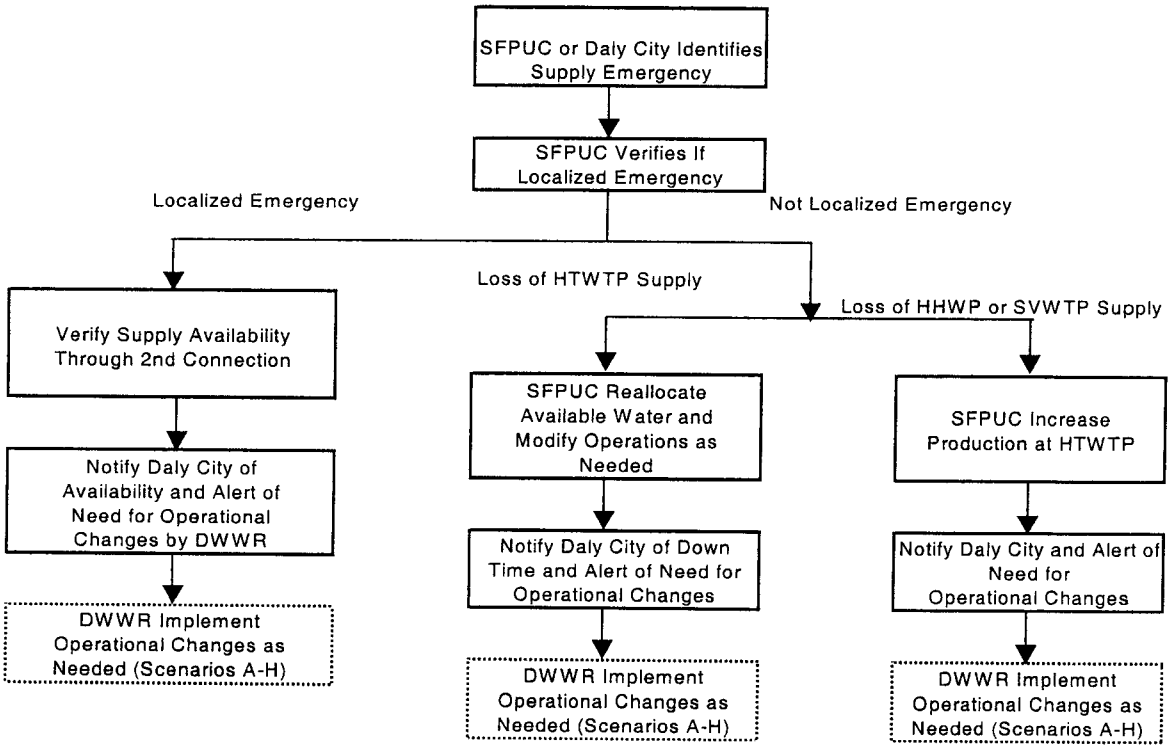

Figure 4: SFPUC Emergency Response

Figure 4 shows that the Daly City DWWR may be required to implement contingency operations to mitigate the impacts of the loss of supply. The dashed boxes in Figure 4 show where the Daly City DWWR would begin its operations depending on the emergency scenarios. The following sections document short and long term contingency operations for each of the scenarios identified. Each section contains a brief description of the impact of the loss of supply and a schematic of the operational changes for each of these scenarios. For the purposes of this assessment it is assumed that the supply from the interties with other agencies is not available.

It is important in the event of an emergency that the SFPUC and Daly City maintain communications (see 'SFPUC - Suburban Customer Water Supply Emergency Operations and Notification Plan' for protocols of communication).

Scenario A - Loss of Sunset Supply Line Connection at Park Plaza Drive

As can be seen from Figure 3 and Table 6, the Park Plaza Drive pipeline connection directly feeds Reservoir 4 through the Westlake Pump Station. A loss of supply from this connection would impact flow to not only Reservoir 4, but also all subsequent zones which rely on water from Reservoir 4 (specifically, zones 5 and 6).

The short and long term contingency plans for the loss of this connection are the same as it appears to be a localized problem. Additional flow will be drawn into the Daly City water system from the Sullivan Avenue pipeline connection (San Andreas No. 2) to compensate for the loss of supply (approximately 2.56 MGD, Table 2) to the Westlake Pump Station. This additional flow is also necessary to provide proper blending with the Westlake well groundwater. Flow from the Hickey Boulevard pipeline connection (San Andreas No. 2) can also be used to supply Reservoir 5 from Reservoir 5B, if necessary.

The pressure differential caused by the loss of supply from the Park Plaza connections at Westlake Pump Station and Reservoirs 4 and 5 will automatically cause additional flows to be drawn from the two San Andreas No. 2 pipeline connections. Thus, physical operational changes, such as valve modifications, are not a required part of the contingency procedures.

The following steps are the contingency procedures for both short and long term emergencies for Scenario A. These steps need to be followed in the order listed:

1. Notify SFPUC, if deemed necessary. Verify availability of supply from San Andreas No. 2.
2. Increased flow from Sullivan Avenue supply (San Andreas No. 2) will be used to fill Reservoir 4 through Westlake Pump Station.
3. Increased flow from Hickey Boulevard supply (San Andreas No. 2) will be used to fill Reservoir 5B and subsequently Reservoir 5.
4. Monitor levels in Reservoirs 3, 4, and 5.

Figure 5 provides a schematic of the operational changes required for a Scenario A emergency. Specific procedures for short and long term emergencies are also listed in Figure 5.

Scenario B - Loss of Sunset Supply Line Connection at D & Hill Streets

The Hill Street pipeline connection feeds the 'A' Street Pump Station. The flow from 'A' Street Pump Station is mixed with flow from Citrus Pump Station prior to being used to fill Reservoir 3. A loss of supply from this connection would impact flow to not only Reservoir 3, but also to the Franciscan Bay Park zone which relies on water from Reservoir 3.

As 'A' Street pumps cannot be operated solely on flow from Well 'A', and as no dilution will be provided for the groundwater, both 'A' Street Pump Station and Well 'A' would most likely be shut down.

The short and long term contingency plans for the loss of this connection are the same. Additional flow will be drawn into Citrus Pump Station from the Sullivan Avenue pipeline connection (San Andreas No. 2) to compensate for the loss of supply to 'A' Street Pump Station. Flow that can directly be drawn from the Sullivan Avenue pipeline connection to Citrus Pump Station is limited by a 6-inch pipe connection between the Sullivan Avenue connection pipeline and Citrus Pump Station. If the flow through this pipe is not sufficient to maintain desired levels in Reservoir 3, then Valve XX, Grid XX should be opened to allow greater flow from Sullivan Avenue supply pipeline to Citrus Pump Station. This alternate connection pipe is 12 inches in diameter.

Flow from the Hickey Boulevard pipeline connection (San Andreas No. 2) will be used to supply Reservoir 5 from Reservoir 5B to compensate for lower flow from Sullivan Avenue supply to the west side.

The following steps are the contingency procedures for both short and long term emergencies for Scenario B. These steps should be conducted in the order listed:

1. Shut down 'A' Street Pump Station and well.
2. Notify SFPUC. Verify availability of supply from San Andreas No. 2.
3. Increased flow from Sullivan Avenue supply (San Andreas No. 2) will be used to fill Reservoir 3 through Citrus Pump Station. If additional flow to Citrus Pump Station is required, open valve XX, Grid X-X.
4. Increased flow from Hickey Boulevard supply (San Andreas No. 2) will be used to fill Reservoir 5B and allow flow to Reservoir 5.
5. Monitor levels in Reservoirs 3, 4, and 5.

Figure 6 provides a schematic of the operational changes required for a Scenario B emergency.

Scenario C - Loss of Both Sunset Supply Line Connections

This scenario represents a combination of Scenarios A and B. Loss of the Sunset Supply Pipeline would impact flow to Reservoir 3 through the 'A' Street Pump Station and flow to Reservoir 4 through Westlake Pump Station and all dependent reservoirs as identified above and in Table 6.

The short and long ten-n contingency plans for this scenario are similar to those for Scenario B. As the Park Plaza Drive connection will also be not available under Scenario C, greater amount of flows will have to be drawn from both San Andreas No. 2 pipeline connections. Figure 7 shows a schematic of this scenario.

Scenario D - Loss of Both Crystal Springs Pipeline Connections

Both Crystal Spring No. 2 pipeline connections, Geneva & Allan and Geneva/Midway Village, feed Reservoir 8 and three supply zones simultaneously. These two connections are interrelated and thus, loss of one is equivalent to the loss of the other or both connections.

The short and long term contingency operations for Scenario D are the same. Flow from Reservoirs 2 and 2B will be used to compensate for the loss of supply from Crystal Springs. Flow from the Guttenberg Street connection to Reservoirs 2 and 2B will be increased to compensate for the additional draw from these reservoirs. If water levels in Reservoir 2 and 2B cannot be maintained at normal levels, then additional flow from Reservoir 1 will be used to fill these reservoirs through the Reservoir 1 Pump Station.

The following steps are the contingency procedures for both short and long term emergencies for Scenario D. These steps should be conducted in the order listed:

1. Open Valve 11, Grid H-3. Located on Mira Vista Court.
2. Open Valve 96, Grid H-3A. Located on Mira Vista Court.
3. Backfeed to Crystal Springs service area (zone 8) from Reservoirs 2 and 2B.
4. Monitor water level in Reservoirs 2 and 2B.
5. If additional flow to Reservoir 2 and 2B is required, pump additional water from Reservoir 1 to Reservoir 2 and 2B through Reservoir 1 pump station.

Figure 8 provides a schematic of the operational changes required for a Scenario D emergency.

Scenario E - Loss of Connection to SFPUC System at Guttenberg Street (Crocker-Amazon Station)

The Guttenberg Street pipeline connection supplies Reservoirs 2 and 2B in zone 2. Loss of this supply would severely disrupt flow to this zone and also, to the Pointe Pacific, South Hill, and Alta Vista tanks.

The only other flow to this zone is from Reservoir 1, which receives water from the Sullivan Avenue Supply (San Andreas No. 2) through the Citrus Pump Station. Additional flow from this source will have to be drawn to meet the water demand in zone 2.

The short and long ten-n contingency plans for this scenario are the same. A part of the flow from the Citrus Pump Station/Reservoir 1 line will be directed to the Bellevue Pump Station. This flow will then be pumped through the Bellevue Pump Station to Reservoir 2 and subsequently, 2B. As in Scenarios B and C, flow that can directly be drawn from the Sullivan Avenue pipeline connection to Citrus Pump Station is limited by a 6-inch pipe connection between the Sullivan Avenue connection pipeline and Citrus Pump Station. If the flow through this pipe is not sufficient to maintain desired levels in Reservoir 3, then Valve XX, Grid XX should be opened to allow greater flow from Sullivan Avenue supply pipeline to Citrus Pump Station. This alternate connection pipe is 12 inches in diameter.

The following steps are the contingency procedures for both short and long term emergencies for Scenario E. These steps should be conducted in the order listed:

1. Open Valve XX, Grid X-X. Located. on XXXX. Feed Bellevue Pump Station through Citrus Pump Station/Reservoir 1 line.
2. Monitor water level in Reservoirs 2 and 2B.
3. If additional flow to Citrus Pump Station is required, open valve XX, Grid X-X.

Figure 9 provides a schematic of the operational changes required for a Scenario E emergency.

Scenario F - Loss of San Andreas No. 2 Pipeline Connection at Hickey Boulevard

The Hickey Boulevard pipeline connection feeds Reservoir 5B through the Hickey Pump Station. A loss of supply from this connection would impact flow to not only Reservoir 5B, but also Reservoirs 6B and 7, which rely on water from Reservoir 5B.

Reservoir 5B is the largest reservoir in the Daly City water system with a capacity of 10.3 MG when full. The storage capacity of this reservoir is significantly greater than the 1.5 times the average daily flow storage in the smaller reservoirs in the Daily City water system. Thus, depending on the time and length of the emergency, it might not be necessary to follow any contingency operations. Reservoir 5B can alternatively be fed through Reservoir 5.

The following short and long term contingencies have been developed for Scenario F:

Short Term Contingency Plan
These steps should be followed in the order listed:

1. Shut-off Hickey Pump Station.
2. Check level in Reservoir 5B.
3. If the amount of available storage is greater than three times the average daily demand for this zone, then do nothing.
4. Monitor Reservoir 5B, 6B, and 7.
5. If the amount of available storage is less than three times the average daily demand for this zone, then follow long term emergency procedures.

Long Term Contingency Plan
These steps should be followed in the order listed:

1. Shut-off Hickey Pump Station.
2. Notify SFPUC. Verify availability of additional flow from Sullivan Avenue (San Andreas No.2) and Park Plaza and Hill Street (Sunset Supply) pipeline connections.
3. Close Valve 90, Grid C-7. Located on Eastmoor Court.
4. Increased flows from Sullivan Avenue (San Andreas No. 2) and Park Plaza (Sunset Supply) pipeline connections will be used to feed Reservoir 4 and in turn Reservoir 5.
5. Increased flows from Hill Street pipeline connection (Sunset Supply) will be used to feed Reservoir 5B.
6. Fill Reservoir 5 from 5B.
7. Monitor Reservoirs 5, 5B, 6, 6B, and 7.

Figure 10 provides a schematic of the operational changes required for a Scenario F emergency.

Scenario G - Loss of San Andreas No. 2 Pipeline Connection at Sullivan Avenue

The Sullivan Avenue pipeline connection feeds both east and west sides of Daly City. Flow to Citrus Pump Station (east side) from this connection is blended with groundwater from Wells 4, Vale, Jefferson, and 10. This blended supply is then used to feed Reservoirs 3 and 1. Flow to Westlake Pump Station (west side) from this connection is blended with water from the Westlake well before being pumped to Reservoir 4. As stated in Section 2, this blending is necessary to lower the levels of nitrates in the groundwater. Figure 4 and Table 6 show that the water from Reservoir 1 is used to feed Reservoirs 2 and 2B and their dependent supplies. Water from Reservoir 3 feeds the Franciscan Bay Park Reservoir and related supply area. Water from Reservoir 4 is used to feed Reservoirs 5'and 6. Additionally, the Sullivan Avenue pipeline connections directly feed the City Hall area of Daly City. A loss of supply from this connection would have a severe impact on the entire Daly City water system.

The following short and long ten-n contingency plans have been developed for Scenario G. Both contingency plans for this scenario rely heavily on the availability of water from the Sunset Supply connections. Also, note that the contingency plans are dependent on the levels of the nitrates in the groundwater during the emergency. High levels of nitrates would limit the use of groundwater to fire protection only.

Short Term Contingency Plan
These steps should be followed in the order listed:

1. Notify SFPUC. Verify availability of flow from Sunset Supply. Request that SFPUC, if feasible, deter from filling Sunset Reservoir until the emergency has subsided.
2. Open valve 1 and close valve 2, at Westlake Pump Station Vault. (This is necessary to allow flow to the City Hall area).
3. If Reservoir 3 is at full capacity, shut down Citrus Pump Station. If Reservoir 3 is below full capacity, follow long term contingency plan.

Long Term Contingency Plan
These steps should be followed in the order listed:

1. Follow Short Term Contingency Plan.
2. Shut down pump #1, 2, 5, and 6 at Citrus Pump Station. Well feed only at Citrus Pump Station. Monitor nitrate levels at pump station.
3. If nitrate levels at Citrus Pump Station exceed the MCL, take Well 10 out of service. (Historically, Well 10 has the highest nitrate concentration).
4. If nitrate levels at Citrus Pump Station remain high, send out an advisory to zones 1 and 3 warning that the water in these zones is limited to fire protection only. Well 10 can then be brought back into service after issuing advisory.

5. Open valve XX, Grid X-X. (This allows flow from zone 2 to Reservoir 1 with increased feed from Guttenberg Street connection. Allows for blending with well water prior to entering Reservoir 1).
6. Monitor flow from 'A' Street Pump Station to Reservoir 3. (This flow will be blended with groundwater flow from Citrus Pump Station, pump no. 4, before entering the reservoir).
7. Increased flow from Park Plaza Drive connection (Sunset Supply) will be used to feed Reservoir 4 and backfeed to the City Hall area.
8. Increased flow from the Hickey Boulevard pipeline connection and Hickey Pump Station will be used to feed Reservoir 5B. Fill Reservoir 5 from 5B.
9. Monitor entire system.

Figure 11 provides a schematic of the operational changes required for a Scenario G emergency.

Scenario H - Loss of Both San Andreas No. 2 Pipeline Connections

The San Andreas No. 2 pipeline connections feeds both east and west sides of Daly City. This pipeline accounts for more than half the available supply from SFPUC pipeline connections to Daly City. As described above, the Sullivan Avenue pipeline connections are also used to reduce the levels of nitrates in the groundwater. Loss of the San Andreas No. 2 pipeline would impact the entire system (see Table 6). Severe water shortages are anticipated under this scenario.

The following short and long term contingency plans have been developed for Scenario H. Both contingency plans for this scenario rely heavily on the availability of water from the Sunset Supply connections. Also, note that the contingency plans are dependent on low levels of the nitrates in the groundwater during the emergency. High levels of nitrates would limit the use of groundwater for fire protection only.

<u>Short Term Contingency Plan</u>
These steps should be followed in the order listed:

1. Verify availability of flow from Sunset Supply. Request that SFPUC, if feasible, deter from filling Sunset Reservoir until the emergency has subsided. (Note that loss of San Andreas No. 2 pipeline will increase SFPUC system-wide dependence on Sunset Supply and Crystal Springs No. 2 pipelines).
2. Open valve 1 and close valve 2, at Westlake Pump Station Vault. (This is necessary to allow flow to the City Hall area).
3. Check water level in Reservoirs 4, 5B, 1 and 3. If full, shut down Citrus Pump Station. If less than half full, follow long term contingency plan.

Long Term Contingency Plan
These steps should be followed in the order listed:

1. Follow Short Term Contingency Plan steps 1 and 2.
2. Shut down pump nos. 1, 2, 5, and 6 at Citrus Pump Station. Well feed only at Citrus Pump Station. Monitor nitrate levels at pump station.
3. If nitrate levels at Citrus Pump Station exceed the MCL, take Well 10 out of service. (Historically, Well 10 has the highest nitrate concentration).
4. If nitrate levels at Citrus Pump Station remain high, send out an advisory to zones 1 and 3 warning that the water in these zones is unsafe for drinking and use is limited to fire protection only. Well 10 can then be brought back into service after issuing the advisory.
5. Open valve XX, Grid X-X. (This allows flow from zone 2 to Reservoir 1 with increased feed from Guttenberg Street connection. Allows for blending with well water prior to entering Reservoir 1).
6. Monitor flow from 'A' Street Pump Station to Reservoir 3. (This flow will be blended with groundwater flow from Citrus Pump Station, pump no. 4, before entering the reservoir).
7. Increased flow from Park Plaza Drive connection will be used to feed Reservoir 4 and supply the City Hall area.
8. Flow from Reservoir 4 will be used to fill Reservoir 5.
9. Close Valve 90, Grid C-7. Located on Eastmoor Court.
10. Flow from Hill Street pipeline connection will be used to feed Reservoir 5B.
11. Monitor entire water system.

Figure 12 provides a schematic of the operational changes required for a Scenario H emergency.

Note that under this scenario, there might not be enough water to meet demand on a consistent basis. This will be evident from a constant drop in water levels at the reservoirs in the Daly City water system when evaluated over a span of a few days (i.e., not enough recovery within the water system during periods of low demand). If such a situation should occur, additional water from the Daly City's wells must be drawn to into the water system. An advisory warning that the water is unsafe for drinking must be distributed to all of Daly City's customers. Provisions for providing bottled water and alternate sanitary sites will have to be provided by the city.

5.0 System Improvements

The following two modifications to the Daly City water system were identified during this contingency planning process to improve the flexibility of the water system in moving water between pressure zones or different parts of Daly City.

Meter Size Modifications

The existing meters at the Hill Street (Sunset Supply) and at Guttenberg Street pipeline connections are small in size, four 2-inch meters at each of the two connections. Increasing the meter size at these two pipeline connections would allow greater flow into the system from these two connections during an emergency.

Valving Modifications

Figure 3 shows two valves in the system that are not operational, one connecting Bellevue Pump Station to Reservoir 1 feed (Valve XX, Grid X-X) and one in the balancing line between zone 3 and zone 1 at the Citrus Pump Station (Valve XX, Grid X-X). Repairing these valves would to allow additional flexibility in operation of the Daly City water system.

An operational Valve XX would allow flow from Bellevue Pump Station to be discharged directly to Reservoir 1 without having to be fed through Reservoir 2. An operational Valve XX at Citrus Pump Station would allow greater flexibility in operations of this pump station by allowing flow from Reservoir 1 to Reservoir 3 through the pump station in case of an emergency.

The existing valving at the 'A' Street Pump Station allows movement of water from zone 5 to zone 3. In an emergency, such as Scenarios B or C, it would be helpful to flow water from zone 3 to zone 5 through the 'A' Street Pump Station. It is recommended that the feasibility of installing a reverse mechanism at this pumping facility be investigated.

Piping Modifications

The feed to Citrus Pump Station from Sullivan Avenue pipeline connections is restricted by 6-inch pipe in some areas. As described in some of the contingency plans above, an alternate route through a 12-inch diameter pipe exists between Sullivan Avenue pipeline connections and the Citrus Pump Station. This additional step in the contingency plans could be avoided if the 6-inch connection was replaced with a larger size pipe. A larger connection pipe would also provide greater flexibility in operations of the Daly City water system.

APPENDIX F

CITY OF DALY CITY WATER SYSTEM
WATER QUALITY AND SUPPLIES
CORRECTIVE ACTION PLAN

CITY OF DALY CITY WATER SYSTEM
Water Quality and Supplies
Corrective Action Plan

Purpose

This Corrective Action Plan identifies the actions necessary in the event of the interruption or contamination of the City water supplies. It fulfills a mandate directed in a letter from the Department of Health Services (DOHS), regarding the San Francisco Water Department (SFWD) water supply operation.

A. SFWD's Rapid Notification Communications Plan

As required by DOHS, SFWD submitted a Rapid Notification Communications Plan, dated June 1, 1995. SFWD has initiated a message pager system to notify and provide water quality, water supply and system operation information to retail customers on a real time basis. SFWD staff may send three types of alpha-numeric messages as follows:

- Action customers will be requested to reduce demand or to go to alternate supply, etc.
- Alerts to alert customers of water quality or supply problems
- Advisory to provide general system operation information

Key personnel within the City who will have pagers are listed below.

Name	Title	Pager Number
Patrick Sweetland	Water and Wastewater Resources Director	(650) 997-6869
Mark Baker	Chief of Operations	(415) 998-9585
Water Operations	Duty Operator	(415) 998-2577

SFWD also follows all pages with a fax transmittal. Retail customers can, in return send numeric or alpha-numeric messages (depending on their individual capability) to SFWD staff as follows

Name	Title	Pager Number
Water Supply		
Raymond Mah	Water Supply Coordinator	(650) 997-6794
Water Quality		
Phil Caskey	Water Quality	(415) 377-9555
Andrew DeGraca	Water Quality Manager	(650) 997-8279

Emergency Contacts - the following City personnel shall be notified in the following order is an imminent danger to the health of water users exists.

Name and Title	Day Phone	After Hours
Mark Baker, Chief of Operations	(650) 991-8204	(650) 888-4223
Duty Water Operator	(650) 991-8200	(650) 991-8200
Jim Anders, W/WW Operator II	(650) 991-8200	(650) 349-3127
Kevin Brown, W/WW Operator II	(650) 991-8200	(707) 422-4946
Ed Burns, W/WW Operator II	(650) 991-8200	(707) 864-8340
Dave Donatelli, W/WW Operator I	(650) 991-8200	(650) 755-4119
Tony Gerace, W/WW Operator II	(650) 991-8200	(707) 747-1443
Paul Perez, W/WW Operator II	(650) 991-8200	(650) 692-3038
Bahman Rahimian, W/WW Operator II	(650) 991-8200	(415) 883-3824
Dean Vittori, W/WW Operator II	(650) 991-8200	(650) 341-2697
John Wong, W/WW Operator II	(650) 991-8200	(650) 994-3392
Patrick Sweetland, Director, DWWR	(650) 991-8201	(415) 924-0201
Michael Huculak, P&E Supervisor	(650) 991-8206	(925) 777-1490
Tom Piccolotti, C&D Supervisor	(650) 991-8207	(650) 359-8228
Jane Chambers, Assistant City Manager	(650) 991-8127	(650) 991-8092
Patricia Martel, City Manager	(650) 991-8127	(650) 991-8092

B. Available Potable Water Supplies

- **Normal Water Supplies** - (See Attachment A for the water facilities map and Attachment B for the water system schematic.)

  Daly City has two separate potable water sources:

  - San Francisco Water Department (SFWD) - treated surface water. There are nine turnouts with a total capacity of 11 mgd or 7,638 gpm. SFWD supplies 50 to 60% of the requirements of the system.

  - Daly City Groundwater Wells - treated groundwater. As of September 30, 2005, there are six wells actively supplying the system. These wells supply 40 to 50% of the total requirement for the system.

  The two sources are mixed in most of the distribution system. Mixing takes place in three of the pump stations. The two sources are treated with additional chloramination and fluoride at these locations before being distributed to the customers. Due to elevated nitrates in some of the wells and low nitrate concentrations in SFWD and two of the larger wells, these locations are also used for blending to maintain nitrates below the MCL of 45 mg/L.

- **Alternate Water Supplies** (See Attachment A for the water facilities map and Attachment B for the water system schematic.)

  - **Storage Tanks** - The City has eleven storage tanks having a combined maximum capacity of 21 million gallons. Normal capacity is between 70 and 80% of capacity. There are 16 associated pump and booster stations throughout the City which deliver water to the distribution system. All of the storage tanks contain a mixture of SFWD and groundwater with the exception of Reservoir #8 in the Bayshore zone in northeastern Daly City. Reservoir #8 is filled from the Allan/Geneva and Midway Village and MacDonald connections to the SFWD via the Bayshore Booster Station (BBS).

  - **Interties** - There are three emergency interties with the North Coast County Water District, Brisbane, and two with the California Water Service Company, South San Francisco Division. All of these connections rely solely on the availability of SFWD water to the responding agency. These connections are only utilized after consultation with the respective owners.

  - **Bottled Water Supply** - In some instances it is necessary to supply bottled water to customers during long periods of shutdown or special needs. During a period of severe need, it is possible for the City to request assistance from bottled water companies in the area to maintain an increased supply for our customers.

  In addition to the above, City staff can request operational support through the Mutual Aid Agreements with other participants of the Region II Water Agency Response Network (II-WARN). (See Attachment C.)

C. Contamination Event

- **Contamination of Water Supplies or Distribution System**

  When the City receives notification of an upcoming supply contamination and the contaminated water has not yet reached the City's turnouts (and monitoring shows no contamination within the City's distribution system), the City staff may implement the steps outlined in Section C. Under normal, average flow conditions, a plug flow from the SFWD Harry Tracy Treatment Plant or the Crystal Springs system require four (4) hours and twelve to eighteen (12 to 18) hours respectively to reach Daly City.

  When monitoring shows contamination at the City's turnouts and/or contamination within the City's distribution system, a Boil Water Order may be issued after approval by the City Manager or her designated alternate.

- **Boil Water Order**

  If appropriate personnel conclude that the water supply is or may be biologically unsafe, a Boil Water Order and/or Do Not Drink Order may be issued. (See Attachment D for the Boil Water Order and Attachment E for the Do Not Drink Order as posted.) Examples of these situations include:

  - Prolonged water outages in areas with ruptured sewer and/or water mains;
  - Ruptured storage and/or distribution facilities in areas of known sewage spills and other biological contaminations;
  - Cross connection contamination;
  - Illness attributed to the water supply;
  - Elevated turbidity in the system;
  - Failure of the bacteriological testing system (i.e., known bacteriological contamination or positive fecal coliform results);
  - Unusual system characteristics, including:
    - Prolonged loss of pressure
    - Sudden loss of chlorine residual
    - Severe discoloration and/or odor
    - Inability to implement emergency chlorination

  Any one or a combination of the following agencies and personnel can direct issuance a Boil Water Order. The City Manager must be notified before the Order is enacted.

  - Department of Health Services, Office of Drinking Water (510) 620-3474
  - San Mateo County Environmental Health (650) 363-4305
  - City of Daly City, City Manager or alternate (650) 991-8127

- **Implementation of Procedures**

  - Notification to personnel listed in Section A will result in the notification of appropriate management and supervisory staff to enable the proper, directed response to any abnormal situation.

  - The Water and Wastewater Resources Director and staff can decide on the method of response to water quality, water supply and system operations information received. (i.e., interrupt normal City supplies, issue Boil Water Order or initiate public notification and participation). Their decision will be reviewed as necessary by the office of the City Manager for approval and initiation of procedures other than technical response.

- **Interruption of City's Water Supplies or Water Distribution System**

When there is an interruption of the City's water supplies from SFWD, staff may implement the following actions:

- Close turnouts on appropriate pipeline(s). The City has nine turnouts connected to the SFWD on three different pipelines.

Location of Turnout	Connected To
Allan at Geneva	Crystal Springs #2
Midway Village	Crystal Springs #2
Guttenberg Avenue	Crocker/Amazon Hydropneumatic Zone
Sullivan Avenue/87th Street	San Andreas #2
Hickey Boulevard	San Andreas #2
Hill Street	Sunset Reservoir
Park Plaza Avenue	Sunset Reservoir
MacDonald Avenue	Crystal Springs #2
B Street	San Andreas #2

- Open such zone connections as necessary to direct water to areas of outage.

When the length of the interruption extends beyond the period deemed acceptable for the specific area of the interruption, more intensive control of distributed water may be deemed necessary. Some of the actions are:

Initiation of water conservation measures in the area up to and including direct notification to customers to reduce use to a specific maximum level;

- Movement of water across multiple zones in order to increase affected area supplies.
- Introduction of untreated well water to the system with an accompanying Boil Water Order and Notice of Contamination. This would include increased monitoring activity for bacteriological contamination to a short interval as determined by DOHS and the City.

- **Special Considerations**

There are several customers requiring special consideration in the event of a loss of service. They are the Seton Medical Complex, which includes the Seton Medical Center (hospital) and adjacent medical facilities, including doctors' offices, clinics, medical laboratories and other water dependent facilities. There are also two dialysis clinics which must have water to provide their treatment. Loss of water supply in a dialysis center is life-threatening to patients relying on this procedure on a regular

basis. These users are notified directly, immediately upon the decision to curtail or modify service in their area.

- **Public Notification**

  Any determination to implement public notification shall pass through and be approved by the City Manager for the City of Daly City or the designated alternate. In no circumstances shall any manager below the level of Department Head make the final decision to implement notification of the public of a health and safety issue concerning drinking water. This includes directives from the DOHS.

Actions that may be taken after approval and direction by the City Manager include:

- Notification of the San Mateo County Communications System at (650) 363-4921. County Communications shall then activate the Emergency Broadcast System (EBS). The EBS will notify several radio stations and the local emergency services office.

- City staff may notify the following television stations:

KTVU	Channel 2	(510) 834-1212
KRON	Channel 4	(415) 561-8000
KPIX	Channel 5	(415) 765-8610
KGO	Channel 7	(415) 954-7926
KQED	Channel 9	(415) 553-2215
KBHK	Channel 44	(415) 249-4444
City	Channel 8	(650) 991-8166

- Bay City News Wire Services (415) 522-8900
  (For San Francisco, Oakland and San Jose)

- Staff may notify the following radio stations:

AM Stations	KCBS	(415) 765-4112
	KGO	(415) 954-8142
	KNBR	(415) 974-6800
FM Stations	K101	(415) 956-5101
	KBRG	(408) 274-1170 (Spanish)
	KQED	(415) 553-2361 (PBS)
	KCSM	(415) 564-6586 (PBS)

- Staff may coordinate with the water wholesaler to avoid duplicate and possible conflicting notices and to advise the wholesaler of notification actions.

- Staff may be directed to give a press release to the San Francisco Examiner, the San Francisco Chronicle and/or the San Mateo Times.

- In addition to general notification methods above, staff may be directed to use sound trucks and direct notification by door-hanger tags in effected areas.

In the event of sustained bacteriological failure from SFWD, the following shall be notified:

SFWD

- Andrew DeGraca, Water Quality Division Manager (650) 997-8279 (24-hours)
- Raymond Mah, Water Supply Engineer (650) 997-6794 (Pager)

D. Water Quality Monitoring

It is essential for the City to promptly investigate and take immediate steps to correct any problems concerning water quality or distribution system operation. Monitoring will determine the degree and extent of contamination (if any) and provide assurance that any uncontaminated water remains potable.

- **Routine Sampling** - the City routinely takes samples for bacteriological and general physical analysis at various locations. For routine sampling procedures, refer to the City of Daly Water System Operations Manual. All routine sampling is in compliance with Federal, State and County Health regulations.

- **Index Point Sampling** - if contamination of City water supplies is suspected, the City can take special bacteriological, chlorine residual, and other (as required) samples. These samples should be taken at appropriate locations. Selected index points listed on the weekly bacteriological sampling list and may be selected by Zone to determine the extent and intensity of contamination (if any) in the system.

  Once results are analyzed, the Director of Water and Wastewater Resources or designated alternate can determine if additional sampling is required, including compliance with applicable regulations, and if immediate actions need to be taken.

E. Notification of Regulatory Personnel

In all instances of contamination or loss of service to customers where there is danger of a health threat, the DOHS shall be notified as soon as possible. For retail customers within the Santa Clara District (San Mateo and Alameda Counties), designated DHS contacts are:

Contact Person	Work Phone
Eric Lacy	(510) 620-3453
Eugene Leung	(510) 620-3460

The fax number for the Santa Clara District is (510) 620-3455

APPENDIX G

LETTERS DATED MAY 27 AND REVISED JUNE 1 FROM SFPUC SUPPLY CUTBACKS DURING SINGLE AND MULTIPLE YEAR DROUGHTS

SAN FRANCISCO PUBLIC UTILITIES COMMISSION
PLANNING BUREAU
1145 Market Street, Suite 401 San Francisco, CA 94103 • Tel. (415) 934-5700• Fax (415) 934-5751

WATER
HETCH HETCHY
WATER & POWER
CLEAN WATER

GAVIN NEWSOM
MAYOR

RICHARD SKLAR
PRESIDENT

ANN MOLLER CAEN
VICE PRESIDENT

E. DENNIS NORMANDY
ADAM WERBACH
RYAN L. BROOKS

SUSAN LEAL
GENERAL MANAGER

June 1, 2005

City of Daly City
Patrick Sweetland
153 Lake Merced Blvd.
Daly City, CA 94015

JUN - 2 2005

cc: CJR

Dear Mr. Sweetland:

On May 27, 2005, the San Francisco Public Utilities Commission (SFPUC) sent you a letter with information pertaining to the SFPUC's water supply reliability to assist you with the development of your Urban Water Management Plan.

Upon review of the 2005 wholesale purchase projections used in the analysis, it was determined that there was a miscommunication on the figures used for the 2005 water purchase projections. The SFPUC used the average purchase estimate rather than the FY 03-04 purchase estimate shown in BAWSCA's *Attachment A-3 Sample Calculation.* Enclosed is the revised projection of FY 03-04 and is reflected in Table 1.

We apologize for any inconvenience this may have caused. Please do not hesitate to contact me if you have any questions or comments. I can be reached at (415) 554-0792.

Sincerely,

Paula Kehoe

Paula Kehoe TYC
Manager of Water Resources Planning

cc: Nicole Sandkulla

SFPUC

WATER
HETCH HETCHY
WATER & POWER
CLEAN WATER

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GENERAL MANAGER

SAN FRANCISCO PUBLIC UTILITIES COMMISSION
PLANNING BUREAU
1145 Market Street, Suite 401 San Francisco, CA 94103 • Tel. (415) 934-5700• Fax (415) 934-5751

May 27, 2005

City of Daly City
Patrick Sweetland
153 Lake Merced Blvd.
Daly City, CA 94015

MAY 3 1 2005

cc: CJR

Dear Mr. Sweetland:

Thank you for providing us with your agency purchase estimate from the San Francisco Public Utilities Commission (SFPUC) for the years 2010, 2015, 2020 2025 and 2030. With the information you provided, the SFPUC has assessed the water supply reliability under the following planning scenarios:

- Projected Single dry-year supply for 2005;
- Projected Multiple dry-year supply beginning 2005; and
- Projected supply reliability for years 2010, 2015, 2020, 2025 and 2030.

Table 1 summarizes your agency's deliveries for projected single dry-year supply for 2005 and projected multiple dry-year supply beginning 2005.

With regards to future demands, the SFPUC will expand their water supply portfolio by increasing the types of water supply resources. Table 2 summarizes the water supply resources assumed to be available by year through 2030. This expanded supply portfolio is consistent with the SFPUC's adopted Water Supply Master Plan (2000), adopted Capital Improvement Program (2002) and Water Supply Improvement Program.

Concerning allocation of supply during dry years, the Interim Water Shortage Allocation Plan (IWSAP) was utilized to allocate shortages (1) between the SFPUC and BAWSCA agencies as a whole and (2) among BAWSCA agencies. The IWSAP was adopted in 2000 after a multi-year process of development involving a steering committee representative of all wholesale agencies. While the IWSAP is scheduled to expire in 2009, along with the Master Contract, it represents the most reasonable basis for estimating the impacts of a 20% system-wide shortage.

Finally, the SFPUC estimated the frequency and severity of anticipated shortages given projected demands and system configurations for the period 2010 through 2030. For this analysis, we assumed that the historical hydrologic period is indicative of future events and evaluated the supply reliability assuming a repeat of the actual historic hydrological period 1920 through 2002. Again, this hydrological analysis is consistent with the planning efforts that have been adopted to date by the Commission and that are currently ongoing with the development of the Water System Improvement Program. The results of that analysis are summarized in Table 3 for years 2010, 2015, 2020, 2025 and 2030.

If you have any questions or need additional information, please do not hesitate to contact me at (415) 554-0792.

Sincerely,

Paula Kehoe
Manager of Water Resources Planning

cc: Nicole Sandkulla

APPENDIX H

ECONOMIC ANALYSIS OF WATER CONSERVATION DEMAND MANAGEMENT MEASURES FROM DSS MODEL

REVISED Attachment 1
Conservation Measures Evaluated in DSS Model

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
1	1	RSF, RMF	Residential Water Surveys	Offer indoor and outdoor water surveys to existing single-family and multifamily residential customers with high water use; provide customized report to homeowner.
2	2	RSF, RMF	Residential Retrofit	Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install low flow showerheads, faucet aerators, and toilet tank retrofit devices.
3	5	CII	Large Landscape Conservation Audits	All public and private irrigators of landscapes larger than one acre and separate irrigation accounts would be eligible for free landscape water audits upon request.
4	5	CII	Water Budgets	All irrigators of landscapes larger than one acre and separate irrigation accounts would receive a monthly irrigation water use budget as information on the water bill
5	6	RSF	Clothes Washer Rebate	Homeowners would be eligible to receive a rebate on a new water efficient clothes washer.
6	7	RSF	Public Information Program	Public education would be used to raise awareness of other conservation measures available to customers. Programs could include poster contests, speakers to community groups, radio and television time, and printed educational material such as bill inserts, etc.
7	9	CII	Commercial Water Audits	High water use accounts would be offered a free water audit that would evaluate ways for the business to save water and money
8	9	CII	ULF Toilet and Urinal Rebates	Pre-1994 businesses with high use fixtures, rebates would be offered rebates to for: Commercial ULF Toilets (1.6 gal/flush) Commercial ULF Urinals (1.0 gal/flush)
9	14	RSF, RMF	Residential ULF Toilet Rebate	Homeowners would be eligible to receive a rebate to replace an existing high volume toilet with a new water efficient toilet.
10	14	RSF, RMF	Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	Work with the real estate industry to require that a certificate of compliance be submitted to the water utility that verifies that a plumber has inspected the RSF or RMF property and efficient fixtures were either present or were installed at the time of sale, before close of escrow.
11	New	RSF	Home Leak Detection and Repair	Use Leak detection equipment to determine whether and where leaks are occurring on the premises. The Water Utility would then provide a plumber to the customer to repair leaks for free.

REVISED Attachment 1
Conservation Measures Evaluated in DSS Model

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
12	New	RSF	Rebates for 6/3 dual flush or 4 liter toilets	Provide a rebate or voucher for the retrofit of a 6/3 dual flush, 4-liter or equivalent very low water use toilet. Rebate amounts would reflect the incremental purchase cost and would be in the range of $50 to $100 per toilet replaced.
13	New	RSF, RMF, CII, PUB	ET Controller Rebates	Use the latest state of the art irrigation controllers. These controllers have on-site temperature sensors or rely on a signal from a central weather station that modifies irrigation times at least weekly (preferably daily) as the weather changes. Water Utility could provide a rebate for the controller.
14	New	RSF	Xeriscape education and staff training at retail garden/irrigation supply houses	Water Utility would sponsor training for staff of stores where plants and irrigation equipment is sold. The purpose would be to educate sales people about the benefits of native (low water use) plants, efficiently irrigated.
15	New	RSF	Homeowner irrigation classes	Water Utility would sponsor classes at stores where irrigation equipment is sold or other suitable venues. Instruction would be on selection and installation of efficient equipment (drip irrigation, smart controllers, low volume sprinklers, etc.). Proper plant selection would be covered.
16	New	RSF	Promote water efficient plantings at new homes	Provide information for planting water-efficient landscaping, including avoiding strip turf sections that are difficult to water-efficiently and using native plants that do not require supplemental watering. Information would be provided in brochures with the water bill, or mailed. Informational displays at Provider offices and nurseries could also be provided.
17	New	RMF, CII	Offer incentives for replacement of clothes washers in coin-operated laundries	Apartment and coin-op laundry managers would be offered incentives to retrofit or use efficient clothes washers. The rebate would either go to the manager or the washing machine leasing company.
18	New	RMF	Incentives for retrofitting sub-metering	Rescind any regulations that prohibit sub-metering of multi-family buildings. Sub-metering would be encouraged through water audits and direct mail promotions, and possibly incentives to building owners.
19	New	RMF	Require sub-metering multifamily units	Require all new multi-family units to provide sub-meters on individual units. To help reduce financial impacts on tenant's regulations would be adopted that specify acceptable methods of metering and billing.

REVISED Attachment 1
Conservation Measures Evaluated in DSS Model

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
20	New	RMF	Rebate efficient clothes washers	New apartment complexes over a certain size would be eligible to receive a rebate to provide a common laundry room equipped with efficient washing machines.
21	New	RMF, CII	Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	Enforce existing requirements on use of low-water-using or native plants for landscaping purposes. Proof of compliance would be necessary to obtain a water connection on all new multi family residential and commercial projects.
22	New	CII	Restaurant low flow spray rinse nozzles	Provide free installation of 1.6 gpm spray nozzles for the rinse and clean operation in restaurants and other commercial kitchens that did not participate in 2002-3 CUWCC program.
23	New	CII	Focused water audits for hotels/motels	Proved free water audits to hotels and motels. Standardize on the types of services offered to reduce costs. Included would be bathrooms, kitchens, ice machines, cooling towers, and irrigation system schedules.
24	New	CII	WAVE Program (US EPA) for hotels	Provide hotels with information about the US EPA's WAVE program. This program encourages hotels to do their own water audit and then analyze their water use with the software provided. The software identifies water saving projects and computes paybacks. Hotels that agree to participate in the program also agree to install cost-effective water conserving equipment.
25	New	CII	Hotel retrofit (w/financial assistance)	Following a free water audit offer the hotel a rebate for equipment identified that would save water. Provide a rebate schedule for certain efficient equipment such as air-cooled ice machines so hotels could apply without an audit.
26	New	CII	Award program for water savings by businesses	Providers would sponsor an annual awards program for businesses that significantly reduce water use. They would receive a plaque, presented at a lunch with the mayor.
27	New	CII	Replace inefficient water using equipment	Provide a rebate for a standard list of water efficient equipment. Included would be icemakers, efficient dishwashers, cooling towers to replace once through cooling, irrigation controllers, and certain process equipment.
28	New	CII	Require 0.5 gal/flush urinals in new buildings	Require that new building be fitted with 0.5 gal/flush urinals rather than the current standard of 1.0-gal/flush models.

REVISED Attachment 1
Conservation Measures Evaluated in DSS Model

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
29	New	CII	Financial incentives for complying with water use budget	Link a landscape water budget to a rate schedule that penalizes the account holder for exceeding its water budget and rewards them for using less than the budget.
30	New	CII	Financial incentives for irrigation upgrades	Provide rebates for selected types of irrigation equipment upgrade. Model after EBMUD or Contra Costa Water District, California.
31	New	CII	Require dedicated irrigation meters for new accounts	Require that new accounts that plan a substantial amount of irrigated landscape have dedicated landscape meter and be charged on a separate rate schedule that recognizes the high peak demand placed on the system by irrigators.
32	New	PUB	Water Utility / City Department water reduction goals	Water Utility / City would provide water use reduction goals for metered City and County accounts. Assistance in the form of audits and employee education would be offered.

Notes:
RSF = Residential Single Family
RMF = Residential Multi Family
CII = Commercial/Industrial/Institutional
PUB = Public, buildings / grounds owned by the Water Utility or City

FINAL Attachment 2
Results of Conservation Measures Evaluation
City of Daly City
August 4, 2004

	Conservation Measure	Water Utility Benefit-Cost Ratio	Total Community Benefit-Cost Ratio	"30-year" Average Water Savings (MGD)	Cost of Savings per Unit Volume ($/MG)	Net Utility Benefit	First Five Years Utility Cost
1	Residential Water Surveys	1.1	1.6	0.035	$1,754	$93,751	$178,914
2	Residential Retrofit	3.5	9.6	0.003	$591	$48,828	$19,727
3	Large Landscape Conservation	1.1	0.9	0.007	$1,712	$15,415	$37,376
4	Water Budgets	14.5	14.5	0.016	$138	$337,265	$26,070
5	Clothes Washer Rebate	2.7	2.4	0.016	$774	$240,099	$149,271
6	Public Information Program	1.3	2.4	0.038	$1,567	$220,095	$191,781
7	Commercial Water Audits	1.4	1.3	0.018	$1,390	$113,546	$172,050
8	Commercial ULF Toilet and Urinal Rebates	18.6	10.3	0.004	$112	$79,931	$5,110
9	Residential ULF Toilet Rebate	1.5	0.7	0.131	$1,362	$979,069	$1,359,245
10	Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	11.6	0.9	0.146	$176	$3,077,912	$219,907
11	Home Leak Detection and Repair	0.6	0.6	0.009	$4,041	($157,220)	$239,123
12	Rebates for 6/3 dual flush or 4 liter toilets	2.0	1.4	0.124	$980	$1,399,713	$799,582
13	ET Controller Rebates	0.5	0.3	0.010	$3,639	($196,219)	$129,690
14	Xeriscape education and staff training at retail garden/irrigation supply houses	4.4	0.3	0.013	$413	$211,812	$16,500
15	Homeowner irrigation classes	2.0	0.1	0.006	$890	$64,685	$16,500
16	Promote water efficient plantings at new homes	0.4	0.0	0.000	$5,156	($8,804)	$5,640
17	Offer incentives for replacement of clothes washers in coin-operated laundries	3.8	8.2	0.006	$535	$104,956	$39,375
18	Incentives for retrofitting sub-metering	1.1	0.4	0.001	$1,835	$1,933	$16,357
19	Require sub-metering multifamily units	2.1	0.6	0.009	$899	$96,077	$35,366
20	Rebate efficient clothes washers	10.0	19.4	0.019	$210	$413,839	$48,988
21	Enforce landscape requirements for new landscaping systems (turf	8.7	1.2	0.007	$221	$135,393	$5,770

FINAL Attachment 2
Results of Conservation Measures Evaluation
City of Daly City
August 4, 2004

	Conservation Measure	Water Utility Benefit-Cost Ratio	Total Community Benefit-Cost Ratio	"30-year" Average Water Savings (MGD)	Cost of Savings per Unit Volume ($/MG)	Net Utility Benefit	First Five Years Utility Cost
	limitations / regulations)						
22	Restaurant low flow spray rinse nozzles	15.1	41.1	0.022	$134	$467,064	$36,218
23	Focused water audits for hotels/motels	3.8	4.5	0.004	$515	$71,177	$15,000
24	WAVE Program (US EPA) for hotels	20.6	1.6	0.000	$95	$6,137	$184
25	Hotel retrofit (w/financial assistance)	4.6	4.7	0.002	$421	$40,434	$6,550
26	Award program for water savings by businesses						
27	Replace inefficient water using equipment	0.5	0.1	0.002	$4,229	($48,292)	$51,307
28	Require 0.5 gal/flush urinals in new buildings	19.4	19.4	0.000	$99	$66	$1
29	Financial incentives for complying with water use budget	5.8	2.1	0.009	$339	$170,204	$23,472
30	Financial incentives for irrigation upgrades	3.9	2.2	0.001	$499	$16,634	$2,002
31	Require dedicated irrigation meters for new accounts						
32	Water Utility / City Department water reduction goals	6.1	1.4	0.008	$317	$146,075	$16,485

Notes:
Numbers in parentheses indicate a negative value
MG – Million Gallons
MGD – Million Gallons per Day

Revised Attachment 4
Summary of Options Package Programs
City of Daly City

Description of Conservation Activity	Corresponding Measure Number	Program A	Program B	Program C	Not Attractive
Residential Water Surveys	1			X	
Residential Retrofit	2	X	X	X	
Large Landscape Conservation Audits	3	X	X	X	
Water Budgets	4		X	X	
Clothes Washer Rebate	5	X	X	X	
Public Information Program	6	X	X	X	
Commercial Water Audits	7	X	X	X	
ULF Toilet and Urinal Rebates	8		X	X	
Residential ULF Toilet Rebate	9		X	X	
Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	10				X
Home Leak Detection and Repair	11				X
Rebates for 6/3 dual flush or 4 liter toilets	12		X	X	
ET Controller Rebates	13				X
Xeriscape education and staff training at retail garden/irrigation supply houses	14		X	X	

Revised Attachment 4
Summary of Options Package Programs
City of Daly City

Description of Conservation Activity	Corresponding Measure Number	Program A	Program B	Program C	Not Attractive
Homeowner irrigation classes	15			X	
Promote water efficient plantings at new homes	16				X
Offer incentives for replacement of clothes washers in coin-operated laundries	17				X
Incentives for retrofitting sub-metering	18				X
Require sub-metering multifamily units	19			X	
Rebate efficient clothes washers	20		X	X	
Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	21			X	
Restaurant low flow spray rinse nozzles	22		X	X	
Focused water audits for hotels/motels	23			X	
WAVE Program (US EPA) for hotels	24				X
Hotel retrofit (w/financial assistance)	25			X	
Award program for water savings by businesses	26				X
Replace inefficient water using equipment	27				X

Revised Attachment 4
Summary of Options Package Programs
City of Daly City

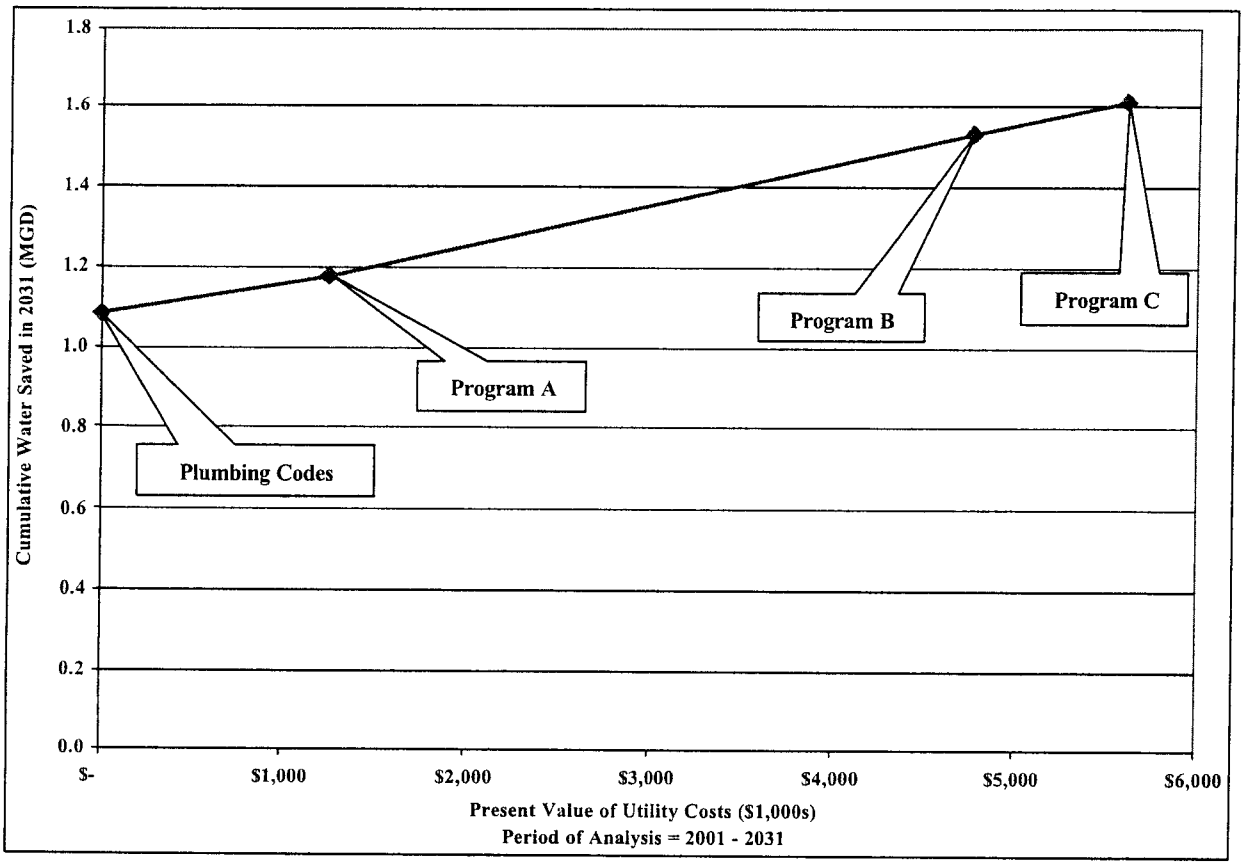
Description of Conservation Activity	Corresponding Measure Number	Program A	Program B	Program C	Not Attractive
Require 0.5 gal/flush urinals in new buildings	28				X
Financial incentives for complying with water use budget	29		X	X	
Financial incentives for irrigation upgrades	30				X
Require dedicated irrigation meters for new accounts	31				X
Water Utility / City Department water reduction goals	32				X
TOTAL NUMBER OF MEASURES		**5**	**13**	**19**	**13**

FINAL Attachment 5
Results of Conservation Option Packages Evaluation
City of Daly City
August 4, 2004

Conservation Option Package	Water Utility Benefit-Cost Ratio	2031 Water Savings (MGD)	2031 Outdoor Water Savings (MGD)	Total Water Savings as a % of Total Production in 2031	Present Value of Water Utility Costs ($1,000)	First Five Year Total Utility Costs ($1,000)	Cost of Water Saved ($/AF)	% of New Water Needed by 2031
A	1.52	0.09	0.02	1.0%	$1,242	$470	$438	21%
B	1.91	0.44	0.08	4.9%	$4,759	$2,329	$342	101%
C	1.86	0.53	0.11	5.8%	$5,604	$2,535	$350	120%

Notes: Present Value is determined using an interest rate of 3%
Cost of water saved is present value of water utility cost divided by total 30-year water savings
Percentages of 2031 demand and percentage of new water includes recycled water, if applicable

FINAL Attachment 6
Present Value of Utility Costs Versus Water Saved
City of Daly City
August 4, 2004



	Plumbing Code	Program A	Program B	Program C
Present Value of Costs ($1,000s)	$0	$1,242	$4,759	$5,604
Cumulative Water Saved (MGD)	1.1	1.2	1.5	1.6

	Conservation Measure; Description	Water Utility Benefit - Cost Ratio	Total Community Benefit Cost Ratio	"30-year" Average Water Savings (MGD)	Cost of Savings per Unit Volume ($/MG)	Net Utility Benefit	First Five Years Utility Cost
I	rent program						
2	Residential Retrofit [1]	3.5	9.6	0.003	$591	$48,828	$19,727
3	Large Landscape Conservation [1]	1.1	0.9	0.007	$1,712	$15,415	$37,376
5	Clothes Washer Rebate [1]	2.7	2.4	0.0161	$774	$240,099	$149,271
6	Public Information Program [1]	1.3	2.4	0.0384	$1,567	$220,095	$191,781
7	Commercial Water Audits [1]	1.4	1.3	0.0177	$1,390	$113,546	$172,050
Proposed Conservation Measures for Programs B and C							
4	Water Budgets [2]	14.5	14.5	0.016	$138	$337,265	$26,070
8	Commercial ULF Toilet and Urinal Rebates [2]	18.6	10.3	0.0036	$112	$79,931	$5,110
9	Residential ULF Toilet Rebate [2]	1.5	0.7	0.1312	$1,362	$979,069	$1,359,245
12	Rebates for 6/3 dual flush or 4 liter toilets [2]	2	1.4	0.1243	$980	$1,399,713	$799,582
14	Xeriscape education and staff training at retail garden/irrigation supply houses [2]	4.4	0.3	0.0132	$413	$211,812	$16,500
20	Rebate efficient clothes washers [2]	10	19.4	0.0194	$210	$413,839	$48,988
22	Restaurant low flow spray rinse nozzles [2]	15.1	41.1	0.0219	$134	$467,064	$36,218
29	Financial incentives for complying with water use budget [2]	5.8	2.1	0.0083	$339	$170,204	$23,472
1	Residential Water Surveys [3]	1.1	1.6	0.035	$1,754	$93,751	$178,914
15	Homeowner irrigation classes [3]	2	0.1	0.0061	$890	$64,685	$16,500
1[illegible]	Require sub-metering multifamily units [3]	2.1	0.6	0.0085	$899	$96,077	$35,366
2[illegible]	Enforce landscape requirements for new landscaping systems (turf limitations / regulations) [3]	8.7	1.2	0.0071	$221	$135,939	$5,770
23	Focused water audits for hotels/motels [3]	3.8	4.5	0.0044	$515	$71,177	$15,000
25	Hotel retrofit (w/financial assistance) [3]	4.6	4.7	0.0023	$421	$40,434	$6,550
Removed by modelers as not cost effective/beneficial							
10	Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	11.6	0.9	0.1463	$176	$3,077,912	$219,907
11	Home Leak Detection and Repair	0.6	0.6	0.009	$4,041	($157,220)	$239,123
13	ET Controller Rebates	0.5	0.3	0.0096	$3,639	($196,219)	$129,690
16	Promote water efficient plantings at new homes	0.4	0	0.0002	$5,156	($8,804)	$5,640
17	Offer incentives for replacement of clothes washers in coin-operated laundries	3.8	8.2	0.0061	$535	$104,956	$39,375
18	Incentives for retrofitting sub-metering	1.1	0.4	0.0014	$1,835	$1,933	$16,357
24	WAVE Program (US EPA) for hotels	20.6	1.6	0.0003	$95	$6,137	$184
26	Award program for water savings by businesses						
27	Replace inefficient water using equipment	0.5	0.1	0.0019	$4,229	($48,292)	$51,307
28	Require 0.5 gal/flush urinals in new buildings	19.4	19.4	0	$99	$66	$1
30	Financial incentives for irrigation upgrades	3.9	2.2	0.001	$499	$16,634	$2,002
31	Require dedicated irrigation meters						
32	Water Utility / City Department water reduction goals	6.1	1.4	0.0079	$317	$146,075	$16,485

1 Program A
2 Program B
3 Program C

Revised 8-04-04

X	Quantify past water use by sector	Section 6.3, 6 Reference
X	Quantify current water use by sector	Section 6.3, 6 Reference
X	Project future water use by sector	Section 6.3, 6 Reference

TABLE 12 - Past, Current and Projected Water Deliveries

	2001- Base Year				2005				2010			
	metered		unmetered		metered		unmetered		metered		unmetered	
	18,683	4,918			19,028	4,926			19,524	4,932		
	2,840	2,730			2,892	2,733			2,968	2,733		
	664	666			682	663			681	646		
	3	12			3	12			3	12		
	80	222			83	230			86	239		
	112	212			114	216			117	222		
	123	148			125	151			129	155		
	4	115			5	138			27	763		

TABLE12 (continued) - Past, Current and Projected Water Deliveries

	2015				2020				2025				
	metered		unmetered		metered		unmetered		metered		unmetered		
	19,951	4,903			20,122	4,836			20,242	4,775			20,
	3,033	2,713			3,059	2,673			3,077	2,637			3,
	722	665			745	672			775	687			
	3	12			3	12			3	12			
	91	253			94	260			97	270			
	120	226			121	229			121	230			
	131	158			132	160			133	161			
	27	763			27	763			27	763			

SAN FRANCISCO PUC SELECTED CONSERVATION MEASURE UNIT COSTS AND END USE SAVINGS ESTIMA

For Use in Developing DSS Models

May 2004

Measure	Applicable Customer Classes	Market Penetration by End Of Program	Water Use Reductions For Targeted End Use(s)	Program Length, years	Measure Life, years	Utility Unit Cost (for contractor)	Custo
Customer Type Abbreviations: **RSF**: Residential Single Family; **RMF**: Residential Multi-Family; **COM**: Commercial; **IND**: Industrial; **INS**: Institutional; **ICI**: Industrial/Commercial/Institutional; **AI** System							
1. Residential Water Surveys	RSF, RMF	15%[1] at end of ten years	5% - Internal, 10% - Leaks & Exterior	indefinitely	7[2]	$80/RSF account, $130/RMF account	$15/RS $50/RM
2. Residential Retrofit	RSF, RMF	75% of existing non-low flow (varies by city)[1]	21% - Shower	5	permanent	$30/RSF, $15/RMF dwelling unit	
3. Large Landscape Conservation Audits	ICI	15% of sites on mixed use meters[1]	15% Irrigation from 1 acre site[1]	10	10[2]	$800/acre[3]	$2
4. Water Budgets	ICI	90% of sites with irrigation meters[1]	15% Irrigation[2]	5	permanent	$200/Irrigation account[3]	
5. Clothes Washer Rebate	RSF, RMF	As per new BMP 6 2005-2007 (4.8% of dwelling units by 2007)	35%-Laundry	3	permanent	$75/fixture	$20
6. Public Information Program	RSF	100%	1% all end uses	indefinitely	2	$2/RSF account/yr	
7. Commercial Water Audits	ICI	Top 10%	12% of site use (30% potential, 40% compliance)	10	permanent	$4000/account (top 10%)	$200
8. ICI ULF Toilet Rebates	ICI	3% of pre-1992 Toilets	variable% of COM Toilet use, varies with current toilet stock; see memo	3	permanent	$200 per fixture	$20
9. Residential ULF Toilet Rebate	RSF, RMF	Result of 10 years of replacement at resale rate less natural replacement rate	~60% of RSF, RMF Toilet use, varies with current toilet stock	10	permanent	$75/fixture	$50 p

SAN FRANCISCO PUC SELECTED CONSERVATION MEASURE UNIT COSTS AND END USE SAVINGS ESTIM
For Use in Developing DSS Models
May 2004

Measure	Applicable Customer Classes	Market Penetration by End Of Program	Water Use Reductions For Targeted End Use(s)	Program Length, years	Measure Life, years	Utility Unit Cost (for contractor)	Cus
Customer Type Abbreviations: **RSF**: Residential Single Family; **RMF**: Residential Multi-Family; **COM**: Commercial; **IND**: Industrial; **INS**: Institutional; **ICI**: Industrial/Commercial/Institutional; System							
10. Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	RSF, RMF	~100% (varies by city ~7%/yr)	~60% of RSF, RMF Toilet use, varies with current toilet stock	Varies with resale rate ~10 years	permanent	$10/account	$1
11. Home Leak Detection and Repair	RSF	Offer to top 20%, complete 10% total	90% of Int./Ext. Leakage use,	10	5	$200/account	
12. Rebates for 6/3 dual flush or 4 liter toilets	RSF, RMF	25%	~67% of Toilet use, varies with current toilet stock	10	permanent	$100/fixture	$
13. ET Controller Rebates	RSF, RMF, ICI, PUB	50% eligible, 20% accept	15% Irrigation	20	permanent	$150/rebate per account	$1
14. Xeriscape education and staff training at retail garden/irrigation supply houses	RSF	10 staff per site per year, classes for 300 homeowners per agency/year	5% Irrigation	indefinitely	permanent	$300/class; ten per year per agency	$2
15. Homeowner irrigation classes	RSF	200 homeowners per agency/year	10% Irrigation	indefinitely	permanent	$300/class; ten per year	$3
16. Promote water efficient plantings at new homes	RSF	10% of new homes	10% Irrigation	indefinitely	permanent	$100/account	$1,
17. Offer incentives for replacement of clothes washers in coin-operated laundries	ICI	50% by 2007	35%-Laundry	3	permanent	$300/washer	$1

SAN FRANCISCO PUC SELECTED CONSERVATION MEASURE UNIT COSTS AND END USE SAVINGS ESTIM
For Use in Developing DSS Models
May 2004

Measure	Applicable Customer Classes	Market Penetration by End Of Program	Water Use Reductions For Targeted End Use(s)	Program Length, years	Measure Life, years	Utility Unit Cost (for contractor)	Custo
Customer Type Abbreviations: **RSF**: Residential Single Family; **RMF**: Residential Multi-Family; **COM**: Commercial; **IND**: Industrial; **INS**: Institutional; **ICI**: Industrial/Commercial/Institutional; **Al** System							
18. Incentives for retrofitting sub-metering	RMF	25% of number units in MF buildings > 20 units/building, new and existing	10% of all indoor end uses	10	permanent	$1,000/account	$10 $5/mo m
19. Require sub-metering multifamily units	RMF	90% of new units	10% of all indoor end uses	indefinitely	permanent	$10/account	$5 $5/m m
20. Rebate efficient clothes washers	RMF	50% by 2007	35%-Laundry	3	permanent	$200/washer	$10
21. Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	RMF, ICI	70% of new installations	15% Irrigation	indefinitely	permanent	$50 per new non-residential account	$500 p
22. Restaurant low flow spray rinse nozzles	ICI	75% of restaurants + colleges + hospitals	50% of end use (150 gpd/site)	5	permanent	$200/site	
23. Focused water audits for hotels/motels	ICI	50% of hotel and motels	15% Hotel/Motel end uses	10	permanent	$3,000/site	$2,
24. WAVE Program (US EPA) for hotels	ICI	10% of hotels and motels	5% Hotel/Motel end uses	10	permanent	$200/site	$5,
25. Hotel retrofit (w/financial assistance)	ICI	20% of hotels and motels	20% Hotel/Motel end uses	10	permanent	$100/room	$1
26. Award program for water savings by businesses	ICI	3 accounts every other year per customer (large customers only)	25% of COM usse	indefinitely	permanent	$1000/account (top 5%) for publicity, judging	$5,00

SAN FRANCISCO PUC SELECTED CONSERVATION MEASURE UNIT COSTS AND END USE SAVINGS ESTIM
For Use in Developing DSS Models
May 2004

Measure	Applicable Customer Classes	Market Penetration by End Of Program	Water Use Reductions For Targeted End Use(s)	Program Length, years	Measure Life, years	Utility Unit Cost (for contractor)	Cus
Customer Type Abbreviations: **RSF**: Residential Single Family; **RMF**: Residential Multi-Family; **COM**: Commercial; **IND**: Industrial; **INS**: Institutional; **ICI**: Industrial/Commercial/Institutional; System							
27. Replace inefficient water using equipment	ICI	10%	15% of Process use	10	permanent	$1,000/account	$5,
28. Require 0.5 gal/flush urinals in new buildings	ICI	70% of new accounts	50% of Urinal use	indefinitely	permanent	$25/new ICI account w/urinals	
29. Financial incentives for complying with water use budget	ICI	75% of sites with irrigation meters	15% Irrigation on top of water budget savings	indefinitely	permanent	$500/account	$1
30. Financial incentives for irrigation upgrades	ICI	10% of sites with irrigation or mixed use meters	15% Irrigation	10	permanent	$500/account	$5
31. Require dedicated irrigation meters	ICI	50% of new ICI accounts (where no irrigation meters currently exist)	Apply water budget savings from measure 4 to all new targeted irrigation accounts	indefinitely	permanent	$10/account/year	$1
32. Water Utility / City Department water reduction goals	PUB	50% of city departments	10% indoor use, % 15of City, County Irrigation	10	permanent	$500/account	$2,

References

1. CUWCC MOU, December 2002
2. CUWA Urban Water Conservation Potential, August 2001.
3. CUWCC BMP 5 Handbook, April 1999.
4. CUWCC BMP 9 Handbook, June 2001.
5. CUWCC Costs and Savings Study, July 2000.

Table 1

Projected Daly City, City of Deliveries for Three Multiple Dry Years Given Year 2005 Purchase Request

	Purchase Request Year 2005 mgd	One Critical Dry Year	Current Deliveries during Multiple Dry Years in mgd		
			Year 1	Year 2	Year 3
System-Wide Shortage in Percent	0%	10%	10%	20%	20%
BAWSCA Allocation mgd	177.9	157.4	157.4	136.8	136.8
Daly City, City of	4.94	4.08	4.08	3.55	3.55

Table 2

UWMP Studies: Water Supply Reliability

Water Supply Options for Years 2010 through 2030

	2010	2015	2020	2025	2030
Crystal Springs Reservoir (22bg)	x	x	x	x	x
Westside Basin Groundwater afa	4,500	7,000	8,100	8,100	8,100
Calaveras Reservoir Recov. (31.5 bg)		x	x	x	x
Districts' Transfer afa	23,200	23,200	29,000	29,000	29,000

Table 3

Allocation	SFPUC Purchase: Daly City, City of mgd					SFPUC Purchase: All Wholesale Customers mgd				
Delivery for Year	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
beginning	Projected Delivery in mgd					Projected System-wide Delivery in mgd				
July 1	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
1920	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1921	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1922	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1923	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1924	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1925	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1926	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1927	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1928	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1929	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1930	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1931	5.17	5.24	5.41	5.58	5.00	167.3	169.7	175.0	180.5	161.9
1932	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1933	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1934	5.17	7.78	7.61	7.46	5.74	167.3	191.6	197.5	203.6	185.7
1935	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1936	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1937	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1938	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1939	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1940	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1941	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1942	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1943	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1944	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1945	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1946	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1947	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1948	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1949	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1950	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1951	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1952	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1953	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1954	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1955	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1956	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1957	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1958	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1959	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1960	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1961	5.17	5.24	5.41	4.86	5.00	167.3	169.7	175.0	157.4	161.9
1962	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1963	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1964	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1965	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1966	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1967	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1968	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1969	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1970	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1971	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1972	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1973	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1974	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1975	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1976	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1977	4.50	5.24	5.41	4.86	5.00	145.6	169.7	175.0	157.4	161.9
1978	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1979	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1980	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1981	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1982	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1983	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1984	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1985	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1986	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1987	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1988	5.17	5.24	5.41	5.58	5.00	167.3	169.7	175.0	180.5	161.9
1989	5.17	5.24	5.41	5.58	5.74	167.3	169.7	175.0	180.5	185.7
1990	4.50	5.24	4.71	4.86	5.00	145.6	169.7	152.5	157.4	161.9
1991	4.50	5.24	5.41	4.86	5.00	145.6	169.7	175.0	157.4	161.9
1992	4.50	4.57	4.71	4.86	5.00	145.6	147.8	152.5	157.4	161.9
1993	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1994	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1995	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1996	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1997	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4

Table 1

Projected Daly City, City of Deliveries for Three Multiple Dry Years Given Year 2005 Purchase Request

	Purchase Request Year 2005 mgd	One Critical Dry Year	Current Deliveries during Multiple Dry Years in mgd		
			Year 1	Year 2	Year 3
System-Wide Shortage in Percent	0%	10%	10%	20%	20%
BAWSCA Allocation mgd	178.3	157.7	157.7	137.1	137.1
Daly City, City of	4.57	4.09	4.09	3.56	3.56

Table 2

UWMP Studies: Water Supply Reliability
Water Supply Options for Years 2010 through 2030

	2010	2015	2020	2025	2030
Crystal Springs Reservoir (22bg)	x	x	x	x	x
Westside Basin Groundwater afa	4,500	7,000	8,100	8,100	8,100
Calaveras Reservoir Recov. (31.5 bg)		x	x	x	x
Districts' Transfer afa	23,200	23,200	29,000	29,000	29,000

Table 3

Allocation	SFPUC Purchase: Daly City, City of mgd					SFPUC Purchase: All Wholesale Customers mgd				
Delivery for Year	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
beginning	Projected Delivery in mgd					Projected System-wide Delivery in mgd				
July 1	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
1920	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1921	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1922	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1923	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1924	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1925	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1926	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1927	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1928	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1929	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1930	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1931	5.17	5.24	5.41	5.58	5.00	167.3	169.7	175.0	180.5	161.9
1932	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1933	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1934	5.17	7.78	7.61	7.46	5.74	167.3	191.6	197.5	203.6	185.7
1935	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1936	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1937	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1938	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1939	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1940	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1941	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1942	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1943	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1944	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1945	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1946	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1947	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1948	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1949	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1950	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1951	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1952	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1953	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1954	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1955	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1956	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1957	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1958	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1959	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1960	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1961	5.17	5.24	5.41	4.86	5.00	167.3	169.7	175.0	157.4	161.9
1962	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1963	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1964	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1965	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1966	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1967	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1968	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1969	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1970	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1971	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1972	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1973	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1974	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1975	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1976	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1977	4.50	5.24	5.41	4.86	5.00	145.6	169.7	175.0	157.4	161.9
1978	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1979	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1980	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1981	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1982	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1983	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1984	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1985	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1986	7.87	7.78	7.61	7.46	7.33	188.9	191.6	197.5	203.6	209.4
1987	7.87	7.78	7.61	7.46	5.74	188.9	191.6	197.5	203.6	185.7
1988	5.17	5.24	5.41	5.58	5.00	167.3	169.7	175.0	180.5	161.9
1989	5.17	5.24	5.41	5.58	5.74	167.3	169.7	175.0	180.5	185.7