DATE ISSUED: January 10, 2001 REPORT NO. 01-007

ATTENTION: Natural Resource and Culture Committee
Agenda of January 17, 2001

SUBJECT: 2000 Urban Water Management Plan

REFERENCES: Draft 2000 Urban Water Management Plan, drafted November 2000
1995 Urban Water Management Plan

SUMMARY

Issue: Should the City Council adopt the Draft 2000 Urban Water Management Plan and authorize the City Manager to submit the approved Plan to the California Department of Water Resources?

Manager's Recommendation: Adopt the Draft 2000 Urban Water Management Plan and authorize the City Manager to submit the approved Plan to the California Department of Water Resources.

Other Recommendations: None.

Fiscal Impact None. The Draft 2000 Urban Water Management Plan contains historical and forecast information on water demand and supply, and on programs that are intended to manage water demand. Individual programs will require a separate approval from the City Council prior to implementation.

BACKGROUND

San Diego relies mostly upon imported water from Northern California and the Colorado River. Its pleasant Mediterranean climate attracts large numbers of potential residents, businesses, and tourists every year. It is important that the City of San Diego practice careful water resource planning to ensure adequate water supply to sustain its economy and lifestyle. The City is committed to maximizing its current systems and facilities through an aggressive capital improvements project, and implementing water conservation programs and investigating new alternative sources of water (i.e. desalting, water transfers, groundwater storage management) that help diversify San Diego's sources of water and consequently improve water supply reliability.

The City of San Diego has prepared a 2000 Urban Water Management Plan (Plan) in response to the Urban Water Management Planning Act (Act), Water Code sections 10610 through 10656. The Act 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 prepare and adopt . . . an urban water management plan." The California Department of Water Resources (DWR) is tasked with collecting and reviewing all 2000 Plans received from water agencies and reporting to the Legislature compliance to the Act. All 2000 Plans were due to DWR on December 31, 2000. City staff has notified DWR of the City's intent to submit the 2000 Plan as soon as the new Council has reviewed it.

To help agencies in preparing their Urban Water Management Plans, DWR issued a list of topics that each Plan should include. The City's 2000 Plan covers all these topics and it includes all the required attachments. The City's 2000 Plan describes historic and projected water supply and demand scenarios, water supply reliability, water usage trends, current and planned facilities to support demand, current and planned demand management programs, drought response measures, water recycling efforts, groundwater use, and alternative sources of water that the City is considering.

The Plan is updated every five years. The previous Plans (1995, 1990, 1985) have served as key reference documents for employees and citizens to learn about the City's water resource management efforts. Although the Plan describes planned programs, each of these proposed programs is carefully studied and approved separately by the City Council. Plan updates show progress on previously reported programs and the introduction of new programs.

The 2000 Plan was presented to the Water Department Citizen's Advisory Board last September for their review and comment, and those comments have been incorporated into the attached Plan.

DISCUSSION

Demographic Factors

Water use within the City of San Diego is associated with demographic, economic, and climatic factors. San Diego is the sixth largest City in the United States, with a population of 1.3 million. Between 1990 and 1999, the City's population grew by more than 143,732 people, representing an increase of 12.9 percent. San Diego Association of Governments (SANDAG) projects that the City's population will increase to nearly 1.7 million by 2020. SANDAG is also forecasting more than 630,000 housing units by 2020. Multi-family units represent the fastest growing segment of the housing market, with an expected increase of 76 percent by 2020.

Water Use

Water usage in 2000 reflected a four percent increase from 1995 usage levels and a ten percent increase in the number of connections. Residential per capita water usage increased slightly to 87.7 gallons per day, but remained significantly below pre-drought usage levels (100 gallons per person per day.) It is evident that San Diegans have developed a strong conservation ethic.

Demand Management Programs

Since 1990, the City of San Diego has been very active in developing and offering water conservation programs that promote permanent water savings. Programs like the Ultra-Low Flush Toilet (ULFT) Rebate Program and Residential Survey Program that started in the early 1990's continue to save water to this day. In 1991, the City signed a Memorandum of Understanding to implement proven water conservation measures recognized throughout California as Best Management Practices (BMP's). The City has adhered to this commitment by implementing these BMP's through its water conservation programs. Listed below are the current BMP's designed to improve urban water use efficiency in California.

BMP DESCRIPTION

1 Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers
2 Residential Plumbing Retrofit Program
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

The City of San Diego's Strategic Plan for Water Supply, which was approved by the Public Advisory Group on April 30, 1997, outlines a preferred alternative to meet existing and ongoing demand for water from 1997 through 2015. Water conservation is integrated into the Strategic Plan for supplying water to meet forecast needs. Water conservation programs often reduce water demand through promoting or providing incentives for the installation of hardware that provides permanent water savings. This savings makes water available to meet growing demands, and can be viewed as a source of local supply. The Strategic Plan calls for an increase in water conservation by 5%, or doubling water conservation over FY97 levels, which were 12,844 acre feet (AF) per year. It specifies the following new programs: turf management, targeting large landscaped commercial accounts; rain sensor rebates (irrigation incentives); a horizontal-axis (H-axis) clothes washer incentive program; facility (infrastructure) repair and replacement; and an enhanced public education program.

In achieving the additional 5% conservation goal by 2005, the Water Department has followed the following schedule:

FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	**Total**
+ %	+ %	+ 1%	+1%	+1%	+ 1%	+ 5%
1,300 AF	1,300 AF	2,600 AF	2,600 AF	2,600 AF	2,600 AF	**13,000 AF**

The implementation plan requires the integration of existing programs with new programs. Some programs, like the ULFT Rebate Program, provide direct, measurable water savings and are currently in existence. Other programs, like conservation demonstration gardens, provide information to the public, but do not provide a measurable amount of water savings. Further, some programs, such as an update to the Water Conservation Database, provide essential data for the development of effective water conservation programs. Described below are the existing and planned programs that will help achieve the conservation goal.

Residential Programs

Many of the initial water conservation programs implemented by the City focused on reducing residential interior water usage. Residential customers were targeted because they account for approximately 60 percent of annual water consumption in the City. In 1991-92 the majority of single-family households, multi-family units, and mobile homes in the City received retrofit kits. The City also promotes the installation of ulft's for permanent water savings, as well as water- efficient landscape and irrigation design to new homeowners.

Residential Water Survey Program - offers customers an in-home survey that consists of a complete water usage analysis of indoor and outdoor water use and identification of water conservation measures. It includes checking for leaks, installing water-saving devices (low-flow showerheads and toilet displacement devices), and providing water efficient landscape and irrigation recommendations. A typical household participating in the Survey Program can reduce their daily water consumption by 13

percent.

ULFT Rebate Program - promotes the installation of ulft's, which use 1.6 gallons of water per flush, by providing customers with a financial incentive to conserve. City residents receive a rebate of up to $75 for each installed ulft. As of June 2000, more than 200,000 ulft's have been installed in the City of San Diego through this program.

Residential High Efficiency Clothes Washer (HEW) Voucher Program - provides $125 incentives for each residential HEW washing machine purchased. Clothes washers account for approximately 12 percent of overall residential water use, and 28 percent of indoor residential water use. Residential HEW can save approximately 5,100 gallons per year. Participants benefit from the water, sewer and energy savings achieved from installing a HEW.

Commercial, Industrial, and Institutional (CII) Programs

Commercial, industrial, and institutional water customers account for approximately 30 percent of total water usage in the City, thus providing a great potential for saving water. Aside from the toilet rebates offered to commercial and industrial customers through the Rebate Program, the City offers complimentary water audits to water users in this sector. Also, in an effort to make government buildings more water-efficient and show its commitment to water conservation, the City decided to retrofit City-owned and operated buildings with ulft's.

CII Water Conservation Survey Program - offers complimentary water use surveys to commercial and industrial customers, recommending cost-effective water conservation measures without affecting processes or production levels. These measures, when implemented, often yield water savings of up to 20 percent.

CII Voucher Program - offers point-of-purchase vouchers for cooling tower controllers, coin-operated H-axis washing machines, and faucet spray head replacements.

Landscape Conservation Programs

The City has actively promoted water efficient landscaping practices by sponsoring and designing demonstration gardens, funding the retrofit of public irrigation fixtures, offering irrigation audits and classes on efficient irrigation management, maintaining weather stations and encouraging customers with extensive landscaped areas to participate in programs in order to efficiently irrigate turf areas.

Water Conservation Demonstration Gardens - showcases water efficient landscaping practices and "ideal" landscape designs that make good use of mulching and effective irrigation.

California Irrigation Management Information System (CIMIS) - records and transmits accurate weather information that is used for creating irrigation schedules. Weather patterns (solar radiation, wind, rain, relative humidity) have a direct impact on the watering needs for turf, trees, shrubs and other plants.

Landscape Water Management Program - defined in the Strategic Plan as requiring separate meters for customers with large landscape areas, incentive pricing to promote efficient use and tiered rates and penalties for excessive use. The Landscape Water Management Program concentrates on providing customers with a specific water-use budget for their property. This will indicate exactly how much water to use and when to water, making for optimal irrigation.

Moreover, the City has an easy-to-use tool called the Landscape Watering Calculator, a device that helps estimate the right amount of water to sustain a particular landscape or garden. The calculator has been designed to give a weekly schedule for the maximum amount of water which plants may need each month of the year based on the type of soil, plant, location, and irrigation system used. For further information, refer to the following web site:

http://www.sannet.gov/water/conservation.

Pilot Graywater Program - will provide an incentive for installing graywater systems for

residential irrigation. This program includes a multi-year study to monitor the effectiveness and safe application of graywater in San Diego homes.

Funding of Irrigation Fixtures - funds the replacement and upgrade of irrigation fixtures in City parks. Proper maintenance and repair of irrigation fixtures reduces water consumption and waste. It also sets a good example for residents to see the City using water wisely.

On March 25, 1999, the Water and Park and Recreation departments won an award from the California Municipal Utilities Association for City park irrigation management, including tracking water consumption histories, Et-based (CIMIS) water use budgets, landscape surveys, follow-up visits, training for maintenance personnel, and financial support for the irrigation equipment upgrades.

Professional Assistance for Landscape Managers (PALM) Program - offers free irrigation audits to properties with two or more acres of turf. Program participants receive a thorough report documenting the condition of their landscape, suggested irrigation system improvements, and a recommended irrigation schedule.

Protector del Agua - offers a series of five half-day classes on the essentials of efficient irrigation management. The classes are taught in both English and Spanish by Cal Poly Irrigation and Research Training. The City helps promote the program and encourages its ground maintenance personnel and landscape contractors to attend.

New Technology on Irrigation Efficiency - The City is evaluating irrigation devices and the possibility of offering incentives for their use. These devices include, but are not limited to, clock timers for in-ground systems, moisture and rain sensors, central irrigation monitoring, and flow interruption devices/sensors.

Public Education and Outreach Activities

Public Information and Education Program - Central to the overall water conservation goal is an enhanced public information program. It is important to renew the conservation message to various media to achieve continued water savings. City staff also actively promote water conservation through community events, speakers bureau, and the City's web-site.

In October 1999, the Water Resources Management Program unveiled its interactive educational display at the Reuben H. Fleet Science Center in Balboa Park. The exhibit, entitled "San Diego's Water, from Source to Tap," details the long journey our water makes to reach our faucets and the technology involved in providing water to the City. The exhibit is part of the science center's TechnoVation collection, showcasing local technological achievements. The exhibit will be on display at the science center for three years and is expected to reach an audience of 2.1 million people. The project was created in partnership with the San Diego County Water Authority and made possible through a grant from the Hans and Margaret Doe Charitable Trust.

Water Conservation Hotline - responds to customer requests for information and materials, and to report water waste. The automated Hotline operates twenty-four hours a day, seven days a week. Water Conservation Program staff answer Hotline calls during week-day business hours.

City-wide Water Conservation Policies

San Diego Municipal Code Section 147.01 through 147.03 - requires the installation of ULFT's

in all new construction effective May 1, 1991. This Ordinance was later amended to include the installation of low-flow showerheads and faucets for all new construction effective December 1, 1991.

San Diego Municipal Code (SDMC) Section 147.04 (Water Conservation Plumbing Standards) - requires that all buildings changing ownership be equipped with the following water-conserving plumbing fixtures prior to the close of escrow/transfer of ownership.

Water Theft Prevention Program - identifies water loss due to theft or waste, and to properly document evidence for prosecution when circumstances warrant such action.

City-Wide Metering - requires that all new service connections to the City's water system include an appropriately sized water meter to accurately account for all water delivered through the connection. Improperly operating meters are promptly repaired in the City's meter repair shop or replaced. Older meters are also repaired and replaced on a regular maintenance schedule to ensure reliability.

Leak Detection Program - pinpoints leak locations in the City's water distribution system. This Unit is also capable of determining the magnitude of leaks. The Leak Detection Unit has served to minimize significant water losses and the potential for damage to public and private facilities. The City's Water Department field personnel are trained to watch for, and report, suspected water system leaks. All reported leaks are promptly investigated and repaired. This prompt repair of system leaks greatly minimizes the amount of water loss.

City Landscape Policies **-** implements the Landscape Technical Manual to establish landscape standards, guidelines, and criteria for both private and public land development projects. Water conservation is addressed in the Technical Manual primarily through specific standards and criteria for appropriate plant selection for site and soil conditions, and operations and maintenance requirements.

Water Demand and Supply Projections

The following table shows the average or normal year water supply projections for the whole CWA service region through the year 2020. If projected imported and local supplies are developed as indicated, no shortages are anticipated within the CWA's service area in an average year through 2020.

Average/Normal Water Year Supply and Demand Assessment

Unit of Measure: Acre-feet/Year

	2005	2010	2015	2020
Local Supplies				
Surface Water	85,600	85,600	85,600	85,600
Water Recycling	33,900	45,400	52,300	53,900
Groundwater	31,100	53,500	57,500	59,500
Seawater Desalination	0	0	0	25,000
Imported Supplies				
IID Water Transfer	80,000	180,000	200,000	200,000
Firm Supply from MWD[1]	303,630	303,630	303,630	303,630
Other Transfers/MWD	171,870	65,170	72,970	85,370

Total Projected Supplies	706,100	733,300	772,000	813,000
Total Projected Demand	706,100	733,300	772,000	813,000
Total Projected City Demand	259,273	284,100	308,312	330,724

[1]Firm supply from MWD is based on the Authority's existing preferential right at Metropolitan.

According to CWA's supply projections, we will have sufficient water through the year 2020. Supply projections, adjusted to show single and multiple dry water years, still show enough water supplies to meet future demand. The CWA will furnish the balance of the City's water needs with imported water. If projected imported and local supplies are developed as indicated, no shortages are anticipated within the CWA's service area in the dry-year scenarios analyzed. Efforts by the City to pursue alternative sources of water will help improve supply reliability within the City.

Water Supply Reliability

Since the last drought, measures have been taken to improve water supply reliability in San Diego. Most significantly, the CWA has successfully negotiated a deal to send up to 200,000 acre-feet per year of water from the Imperial Irrigation District to San Diego. Having another source of imported water other than MWD will improve San Diego's overall water supply reliability.

Water conservation programs have generated a "new source" of water supply, having been responsible for 15.4 mgd of water savings derived from BMP programs. Recycled water creates another new supply of potable water available for other uses. The use of recycled water frees up a corresponding amount of potable water. Recycled water is produced locally from wastewater treated at three reclamation plants, and is readily available even during times of drought. This local, non-drought affected source is gaining interest from industrial companies who now consider reclaimed water for use in industrial settings, such as cooling towers and process water. Moreover, the "Guaranteed Water for Industry" Program will exempt qualifying industries from drought related cutbacks in potable water use if they participate in all applicable water conservation programs, implement water conservation measures and use reclaimed water to the fullest extent possible.

The City of San Diego continues to explore alternative sources of water, including seawater and brackish water desalination, water marketing and transfers, the use of ocean vessels to import water and the use of graywater. The cost of desalinating seawater has decreased significantly over the last several years, and City staff continue to monitor technological improvements that would make this alternative economically attractive. Likewise, the City has endorsed a pilot study on graywater to determine its cost effectiveness and savings potential when installed in local communities.

Groundwater

Nine groundwater basins lie within the jurisdictional boundaries of the City, its service territory or are otherwise accessible to the City: San Pasqual, Santa Maria, San Diego (aka "Santee/El Monte"), San Dieguito, Mission Valley, Middle Sweetwater River, Lower Sweetwater River, Lower Tijuana River Valley and the San Diego Formation. While some of the basins lie in relatively shallow alluvial formations and thus have limited storage capacity, the City intends that each of these resources will ultimately provide a portion of its local water supply.

The San Diego Formation has been estimated to have a potential upwards of one million acre

feet of water storage. The potential magnitude of the resource makes the San Diego Formation important both from a water supply and groundwater storage perspective. The City intends to responsibly and fully develop all the available groundwater within each of the basins under its existing legal rights and consistent with the respective safe annual yield of each basin. In addition, the City expects to employ aquifer storage and recovery to maximize the potential yields of these basins. Each of these basins could also be used for groundwater storage.

Reclaimed Water

Another source of water supply, be it non-potable, is Title 22 reclaimed water generated in the City's tertiary wastewater treatment plants. The three water reclamation plants are the North City Water Reclamation Plant (30 mgd capacity), the San Pasqual Water Reclamation Facility (1 mgd capacity) and the South Bay Water Reclamation Plant (15 mgd ultimate capacity). The South Bay Plant is expected to begin operation in 2001, with an initial 6 mgd capacity.

The availability of the reclaimed water as a non-potable source of water is a function of the distribution system in place to convey it to points of use. Primarily used for irrigation purposes, reclaimed water is now being studied for advanced industries applications such as circuit board washing and other industrial processes. Over 175 customers have signed up for reclaimed water use, including the Torrey Pines Golf Course, University of California at San Diego, CALTRANS, as well as City parks and landscape maintenance districts. By implementing water conservation measures and maximizing the use of reclaimed water on site, industrial customers can benefit from a program that exempts them from drought related mandatory cutbacks in potable water use. Moreover, reclaimed water is a local source of water not affected by droughts or other water shortages. The existing distribution system for this reliable source of local water is currently being expanded to reach more customers.

CONCLUSION

The 2000 Plan is an update of the Plan the City submitted in 1995. Significant differences between the two Plans are:

1. Strategic Plan for Water Supply (1997) - provides concrete direction on improving water supply through a capital improvements program and enhanced water conservation efforts.

2. Water Transfer from the Imperial Irrigation District - potential additional water from a source other than MWD, diversifying the region's sources of water supply.

3. Reclaimed Water Use (1997) - diverse applications other than for irrigation purposes, now include industrial use, construction and dust suppression. It does not include Water Repurification, a program that was discontinued in 1999.

4. Groundwater Management - currently being developed to augment local supplies.

San Diego's significantly increasing population over the next 20 years will create a new demand for water and a significant impact on our sewer system. Alternative sources of water are currently being evaluated to supplement existing water supply. The City is studying all options for feasibility and cost effectiveness.

Respectfully submitted,

Approved: GEORGE I. LOVELAND LARRY GARDNER
.....Senior Deputy City Manager Water Department Director

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