City of Santa Barbara

Urban Water Management Plan

Updated December 2005

Prepared by the City of Santa Barbara Public Works Department
pursuant to California Water Code, Section 10631

Adopted by the Santa Barbara City Council on December 20, 2005
as Agenda Item No. 18

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City of Santa Barbara

Urban Water Management Plan

December 2005

Introduction

This Urban Water Management Plan (UWMP) has been prepared pursuant to the requirements of the California Water Code, Section 10631. Preparation was by staff of the Public Works Department in consultation with the City's Board of Water Commissioners and staff of the Community Development Department. The UWMP updates the previous plan prepared by the City in December 2000. The methodology used was to prepare a concise summary of the City's existing water supply system, updated to reflect changes since 2000, and to conform to the reporting requirements of State law. As with the previous UWMP, much of the updated plan is based on the analysis contained in the 1991 Long-Term Water Supply Alternatives Analysis (LTWSAA), which resulted in the City's current Long-Term Water Supply Program (LTWSP) adopted in 1994. The analysis in the LTWSAA continues to be valid and has been updated as necessary in this document to reflect a new twenty-year planning period through the year 2025. The City's next UWMP update will reflect decisions made as a part of a General Plan Update that has recently been initiated.

The plan was reviewed by the Board of Water Commissioners on November 14, 2005, at which time the Commission voted to recommend adoption of the UWMP with additions and corrections that have been incorporated into the final version. A public hearing, with public notice pursuant to California Government Code Section 6066, was held before the City Council as Agenda Item No. 18 on December 20, 2005 at which time the Council voted to adopt the updated UWMP. Documentation of public noticing and City Council action is included as Appendix A.

The following table provides conversion factors for use in evaluating various water supply quantities used in this plan:

Water Supply Conversion Factors
1 hundred cubic feet (hcf) = 748 gallons 1 acre-foot = 325,850 gallons = 435.6 hcf

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Background

The City of Santa Barbara operates the water supply system that serves properties within the City limits (except for the City airport, which is served by the Goleta Water District), and selected areas located outside the City limits. The following information gives a general description of the service area and water system:

Service Area Population:

	Current	Projected[3]			
	2005	***2010***	***2015***	***2020***	***2025***
In-City[1]:	90,500	92,700	94,900	97,200	99,400
Out-of-City[2]:	3,800	3,900	4,000	4,100	4,200
Total Service Area:	94,300	96,600	98,900	101,300	103,600

[1] In-City data from "Regional Growth Forecast 2000-2030", Santa Barbara County Association of Governments

[2] Assumed out-of-City growth rate of .5% for 2005 through 2025, consistent with projected rate for in-City population

[3] Projections rounded to nearest hundred

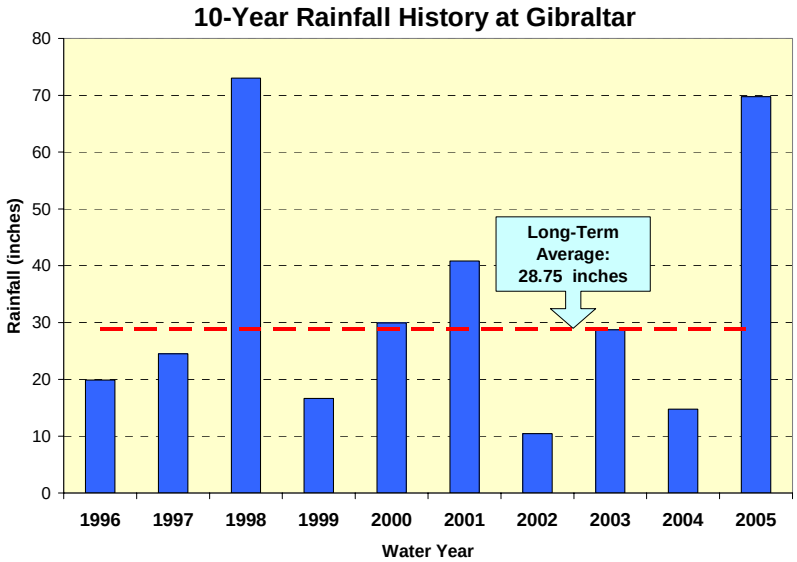
Number of Water Service Accounts: 25,802

2004 Gross Per Capita Consumption: 127 gpd (per DWR definition, calendar year 2004)

Elevation of Service Area: 0' - 1,400'

Average Annual Rainfall (see Figure 1 for data for past 10 years):
Santa Barbara (1960-2000): 19.0"
Gibraltar Reservoir (1960-2000): 28.8"

Figure 1

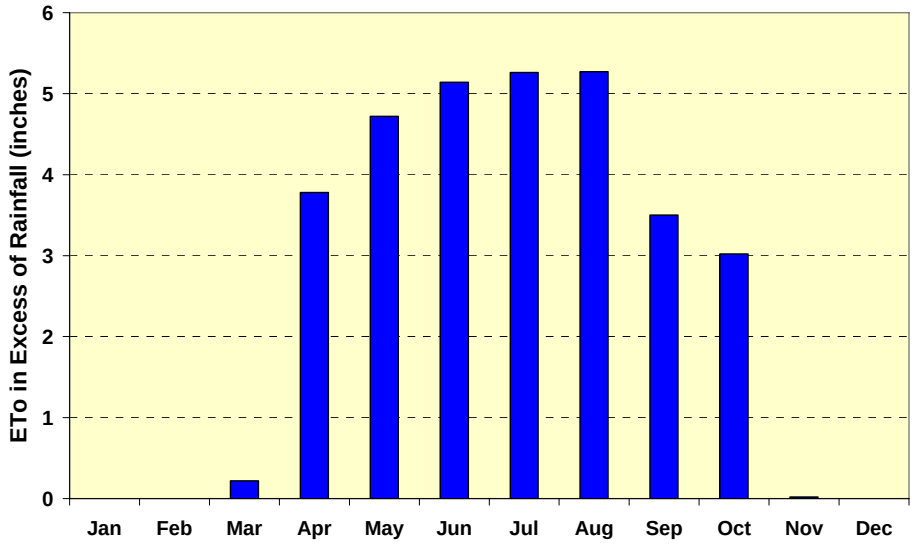


Average Annual Evapo-transpiration Rate: 44.6"
Average Annual ETo in Excess of Rainfall: 30.9" (See Figure 2 for monthly breakdown.)

Figure 2

ETo in Excess of Rainfall - Santa Barbara, CA

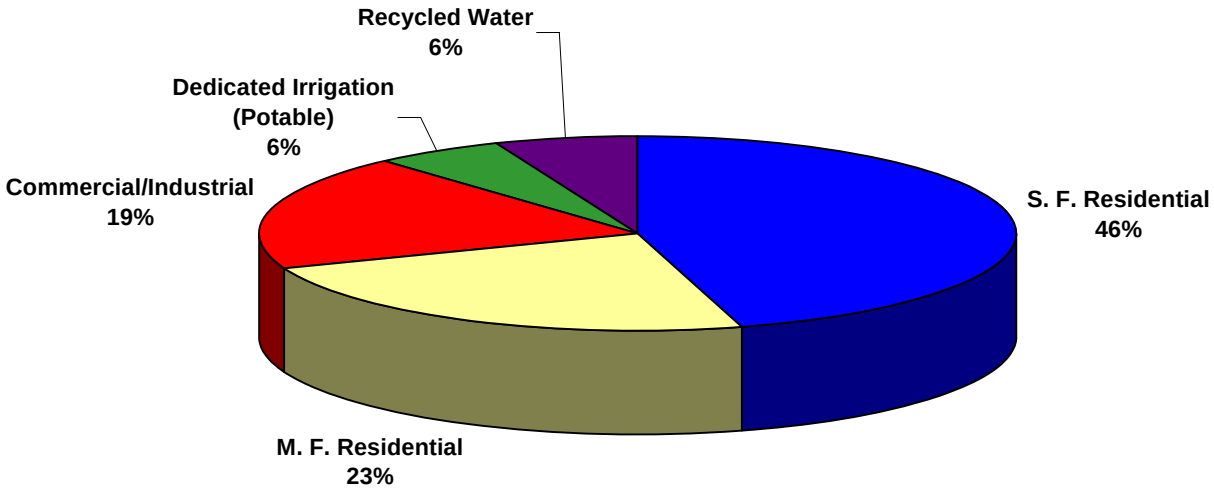
(Average Monthly ETo minus Average Monthly Rainfall)



Demographic Characterization: Figure 3 uses 2004 water sales by sector to give an overview of the demographic makeup of the City's water service area. Residential use is predominant. The City is largely built-out, though it should be assumed that infill and redevelopment will continue at roughly the same rate as in the recent past, resulting in a small amount of new demand in the residential and commercial sectors. The relative distribution of demand by sector is expected to remain very similar to current conditions. The City has initiated a General Plan Update process that will result in an update of the City's Long-Term Water Supply Program to reflect planning decisions made as a part of that process.

Figure 3

City of Santa Barbara - Calendar Year 2004 Water Sales By Sector



Water System Facilities:

	Potable Water System	Recycled Water System
Miles of Distribution Main:	309	13.4
Balancing Reservoirs:	13	2
Pumping Stations:	12	2
Production Wells:	9	NA
Water System Employees:	58	

Wastewater System Description:

Collection system: 248 miles of sewer pipe
13 lift stations

Wastewater Treatment Plant:

Design Capacity:	11 MGD
Average 2005 Flow:	8.8 MGD
Treatment Level:	Secondary, with tertiary treatment of recycled water
Disposal Method:	Recycled to landscape irrigation, with balance discharged to Pacific Ocean (see Recycled Water section for more details on use of recycled water)

Wastewater System Employees: 53

The water and wastewater systems are administered by the Water Resources Division of the City's Public Works Department. The water demand projection was coordinated with the City's Community Development Department.

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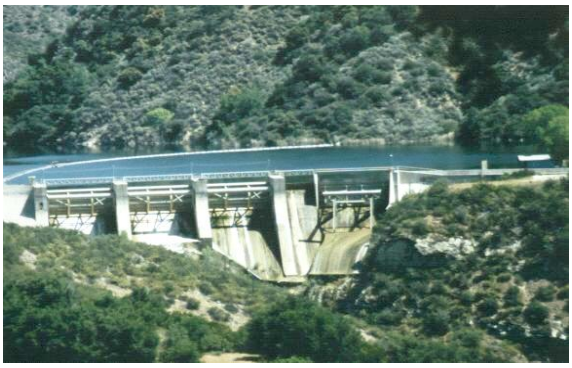
Description of City Water Supply Sources

The City's water supply is diverse, probably as diverse as any municipal water supply in California, and perhaps in the nation. The various sources of supply are described below. The following descriptions are intended as a brief summary and shall not be construed as exhaustive or as a waiver of any right or interest in water.

Gibraltar Reservoir

Description: Constant radius, concrete arch dam located on the Santa Ynez River, 8 miles north of Santa Barbara; owned by City of Santa Barbara; constructed 1913-22, with an original capacity of 14,500 AF; raised to current elevation in 1949; strengthened in 1990-91; water delivered through the Santa Ynez Mountains to Santa Barbara via Mission Tunnel



Current Capacity: 7,087 Acre Feet (per 2004 Bathymetric Study)

Drainage Area: 216 square miles

Max. Normal Pool: El. 1,400

Annual Yield: Average of approximately 4,600 AFY, as modeled for LTWSAA

Operating Criteria: Diversions are limited by the 1930 *Gin Chow* judgment and the 1989 Upper Santa Ynez River Operations Agreement (USYROA, aka the "Pass Through Agreement") which incorporates a compromise regarding the interpretation of *Gin Chow*. The agreement requires the City to track the difference between spills under actual operating conditions and under a "Base" scenario (a hypothetical reservoir equal to the 1986 area/capacity profile). A basic goal of the agreement is to allow the City to maximize yield from Gibraltar while keeping the Cachuma Project and other downstream interests whole.

Two modes of operation ("mitigation" and "pass through") are defined in the agreement. "Mitigation" mode requires the City to declare a maximum annual Gibraltar diversion level of up to 8,000 AFY and mitigate the reduction in the average long-term annual yield of the downstream Cachuma Project (if any) that is estimated to result from that level of diversion. Diversions must conform to a monthly schedule. The City is currently in the mitigation mode with a declared diversion level of 5,000 AFY requiring mitigation of 67 AFY.

The "pass through" mode allows the City to pass Gibraltar yield through to Cachuma. The amount of pass through is equal to the amount by which actual spills exceed spills under the “Base” condition, adjusted for conveyance losses between Gibraltar and Cachuma. The "pass through" mode is intended to be useful as the capacity of Gibraltar is reduced by siltation.

Cost Information: Costs for this source of supply are primarily "sunk" costs, including the original cost of construction, plus a cost of $9 million for strengthening in 1990-91, plus the cost of Mission Tunnel. Variable costs for Gibraltar water consist of the marginal cost of treatment at Cater Treatment Plant, which is approximately $50/AF.

Devil's Canyon Creek

Description: The City maintains a small diversion works on Devil's Canyon Creek below Gibraltar Dam which diverts water from Devil's Canyon Creek into Mission Tunnel.

Annual Yield: Average: 115 AFY
Range: 24 AFY - 557 AFY

Operating Criteria: Water is diverted as available to help improve the quality of water going into Mission Tunnel. Diverted water is counted as a part of allowable diversions under the Pass Through Agreement.

Cost Information: Variable costs are the same as Gibraltar water or approximately $50/AF.

Cachuma Project

Description: Earth filled dam (Bradbury Dam) located on the Santa Ynez River 25 miles northwest of Santa Barbara; owned and operated by U.S. Bureau of Reclamation; constructed early 1950's; interim seismic retrofit completed 1996, permanent repairs were deemed substantially complete in 2001; water is delivered through the Santa Ynez Mountains to the South Coast via 6.4 mile Tecolote Tunnel, 24.3 mile South Coast Conduit, and four regulating reservoirs, completed in 1956;

Drainage Area: 417 square miles (including Gibraltar drainage area)

Current Capacity: 188,030 AF (197,302 AF with modifications to allow fish account surcharge)

Max. Normal Pool: El. 750 (El. 753 with modifications to allow fish account surcharge)

Annual Yield: The current total project operational yield equals 25,714 AFY, based on acceptable shortage of up to 20% during dry years. The City's share is 32.19% or 8,277 AFY.

Operating Criteria: The project operates under a permit granted by the State Water Resources Control Board (SWRCB). The current Water Right Order 94-5 continued earlier requirements for releases to protect downstream interests (e.g. the City of Lompoc, Improvement District No. 1 of the Santa Ynez River Water Conservation District and riparian groundwater pumpers along the Santa Ynez River) and required hearings in 2002 and 2003 to address outstanding issues related to potential project impacts on vegetation, fish, and downstream users. The hearings have been completed and a decision by the SWRCB is awaiting completion of an EIR. Project water is accumulated to the extent that inflow is not needed to satisfy the release requirements. It is delivered to the member units in accordance with a Master Contract between U.S. Bureau of Reclamation, and the Santa Barbara County Water Agency and the Cachuma Project member units. The contract was renewed in 1996 for a twenty five-year term. Siltation rate at Cachuma has been projected to be approximately 3% of current volume between now and 2030. This is not a substantial reduction in water supply, but it is a factor that should and will be accounted for in the City's update of the LTWSP.

Cost Information: The water supply contract with the U.S. Bureau of Reclamation sets the unit cost of the City's share of project yield at about $120/AF, or approximately $1,000,000 annually. Since this is treated as a payback of capital cost, it is not considered a variable cost. Additional annual fixed costs include about $1,400,000 for the City's share of the Cachuma Operation and Maintenance Board (COMB) budget for administration, operation, maintenance, and capital improvement of the project, and about $400,000 for the City's share of Cachuma Conservation Release Board (CCRB) expenses associated with managing the members' water rights at Cachuma and implementing the Lower Santa Ynez River Fish Management Plan. Variable costs are the same as for Gibraltar ($50/AF) since the water is treated at Cater Treatment Plant. Seismic reinforcement of the dam and rehabilitation of the dam's gates have been completed. Upcoming capital costs focus on upgrade and rehabilitation of the South Coast Conduit portion of the project.

Mission Tunnel

Description: A 3.7 mile tunnel through the Santa Ynez Mountains running from the North Portal, located approximately 1,700 feet downstream of Gibraltar

Dam to the South Portal, located on Mission Creek approximately 3 miles north of downtown Santa Barbara; constructed 1904-1911; rehabilitation work completed December 1994.

Annual Infiltration: For the period of 1976 through 2005, infiltration ranged from 520 AFY to 2,172 AFY, with an average of 1,353 AFY.

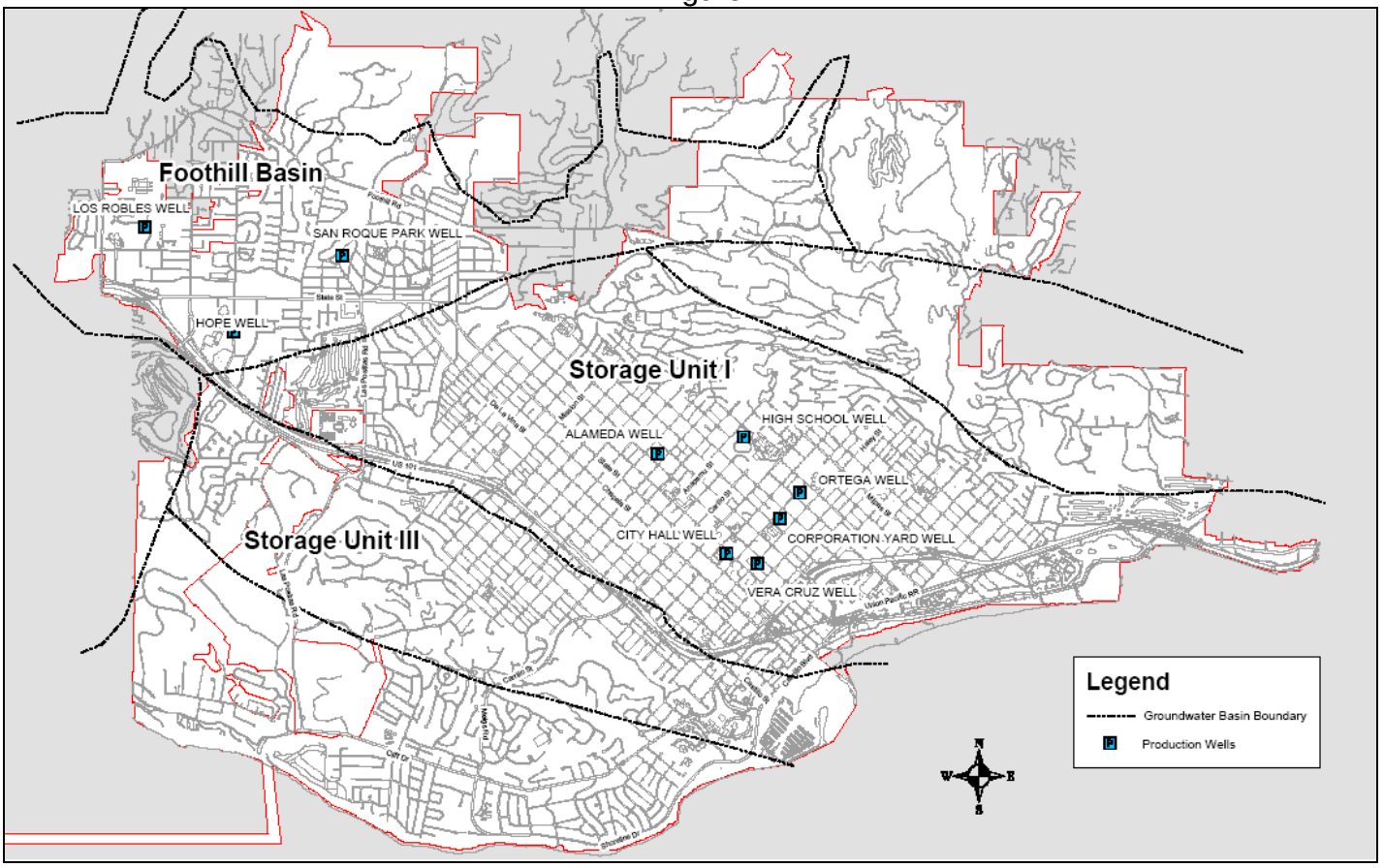
Operating Criteria: Tunnel infiltration augments water conveyed from Gibraltar Reservoir, normally flowing to Cater Treatment Plant via the penstock, hydroelectric facility, and Lauro Reservoir; a portion of this combined flow is sometimes diverted to Mission Creek for groundwater recharge purposes.

Cost Information: Variable costs are the same as Gibraltar water or approximately $50/AF.

Groundwater

Description: Groundwater is produced primarily from two hydrogeologic units: Storage Unit 1 (in the vicinity of downtown) and the Foothill Basin (upper State Street area). A third unit, Storage Unit 3 (located generally in the Westside area), is available for City use, but is generally of poor quality and limited quantities. Figure 4 shows boundaries of storage units and well locations.

Figure 4



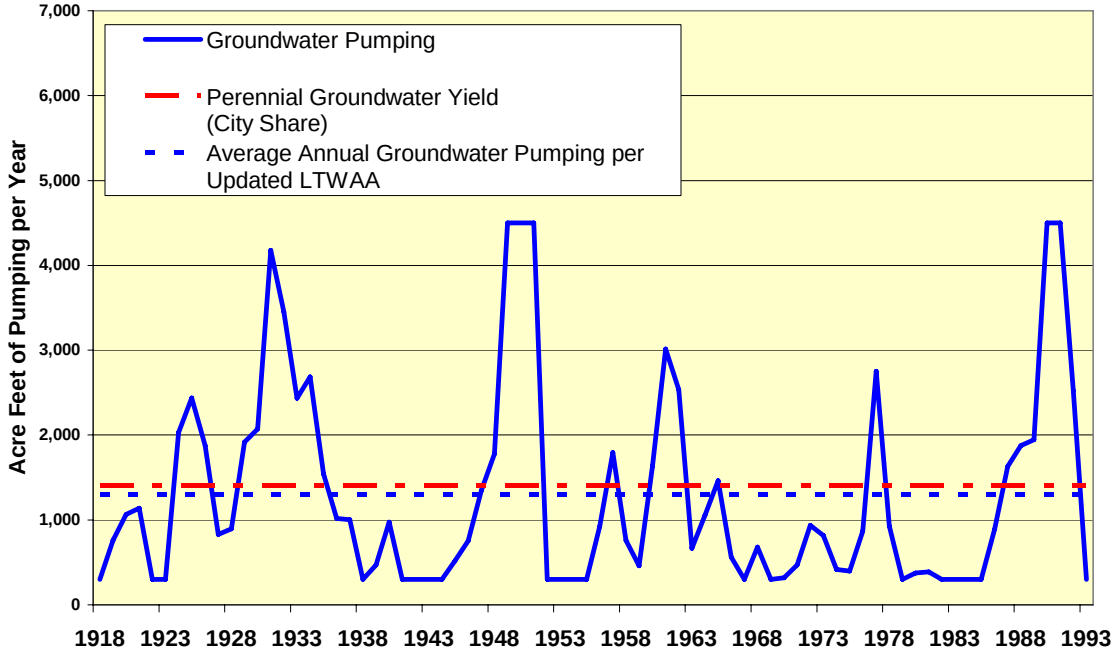
The current rough estimate of usable storage volume is approximately 16,000 AF. Groundwater recharge is augmented through release to Mission Creek and through injection capability at three production wells. Groundwater modeling capabilities have been substantially improved as a part of the Multiple Objective Optimization Model (MOOM) developed by USGS. MOOM is a computer model that evaluates the City's water supply system for optimal operating scenarios, including control of seawater intrusion.

Perennial Yield: The portion of the perennial yield available to the City is approximately 1,400 AFY. As shown in Figure 5, long-term average annual City pumping has been estimated at 1,299 AFY under the updated LTWSAA.

Figure 5

Conjunctive Groundwater Use Under the Long-Term Water Supply Program

Modeled Pumping and Perennial Yield



Operating Criteria: Groundwater is pumped to replace surface supplies lost to drought. During periods of ample surface supplies, groundwater is allowed to recharge naturally and by means of artificial recharge when space is available in the basins. Production capacity is approximately 4,500 AFY, though poor water quality and threat of seawater intrusion are constraints. Water quality constraints are being addressed through an upgrade of the Ortega Groundwater Treatment Plant. Seawater intrusion has been addressed in part by adding wells further inland, at Alameda Park and Santa Barbara High School. A production capacity of 4,500 AFY is the target for meeting long-term supply requirements, but is only used on a limited basis to avoid exceeding the long term perennial yield.

Cost Information: Variable costs for groundwater production are approximately $150/AF.

Two new municipal production wells have been drilled and above-ground facilities are being designed with completion expected in 2006. The anticipated cost of approximately $1.4 million each is budgeted in the current Water Fund Capital Program.

Recycled Water

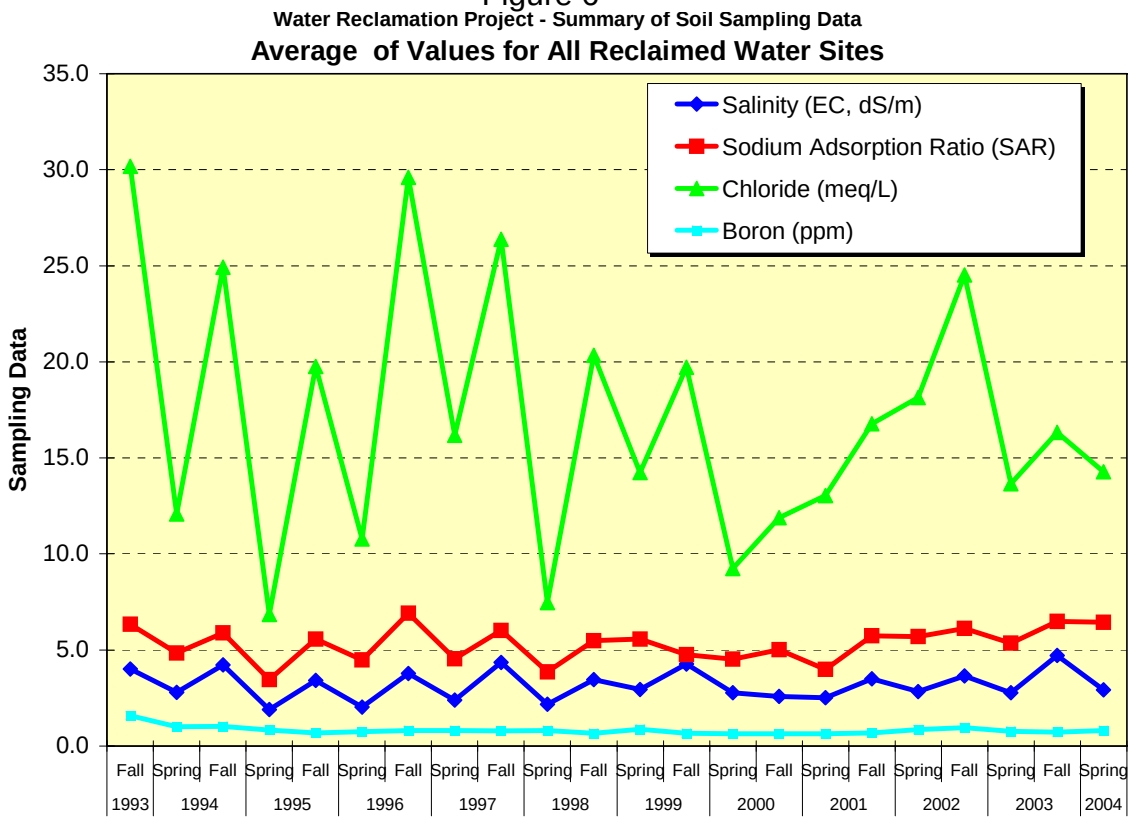
Description: The City initiated planning for a water reclamation project in the early 1980's. Phase I was completed in 1989. It included addition of tertiary treatment with carbon filtration and disinfection at El Estero Wastewater Treatment Plant, a 600,000 gallon distribution reservoir and pumping station, and 5.1 miles of distribution main. Phase II was completed in 1992, adding an additional pumping station, a 1.5 million gallon reservoir and 8.3 miles of distribution main. The system now provides recycled water to 78 accounts that serve 440 acres of landscaped area at parks, schools, golf courses, and other large landscaped areas. Several park restrooms have been retrofitted to use recycled water for toilet flushing. Water is provided at 80% of the potable water irrigation rate as an incentive for using recycled water and to compensate for additional irrigation requirements associated with salt leaching. Monitoring of salt levels in the soil was conducted twice per year from 1993 through 2003, as illustrated in Figure 6. No long-term build-up of soil salt was indicated.

Annual Capacity: The system has the capacity to treat and deliver 1,200 AFY; current demand is approximately 800 AFY.

Future Uses: Optimization of the use of recycled water has been mostly accomplished with the completion of Phase II. Distribution pipelines have been constructed to all cost effective use areas, and most existing potential user sites are now connected. Use of recycled water for toilet flushing has been

implemented in selected public restrooms and others are being added. New development in proximity to the recycled water main is required to utilize recycled water for landscape irrigation. Known projects include a major waterfront hotel project, new residential/institutional development in the Hidden Valley area, and expansion of a major regional recreational facility at Elings Park. Projects such as these are expected to allow the City to make use of most of the 1,200 AFY capacity by the end of the planning period.

Figure 6



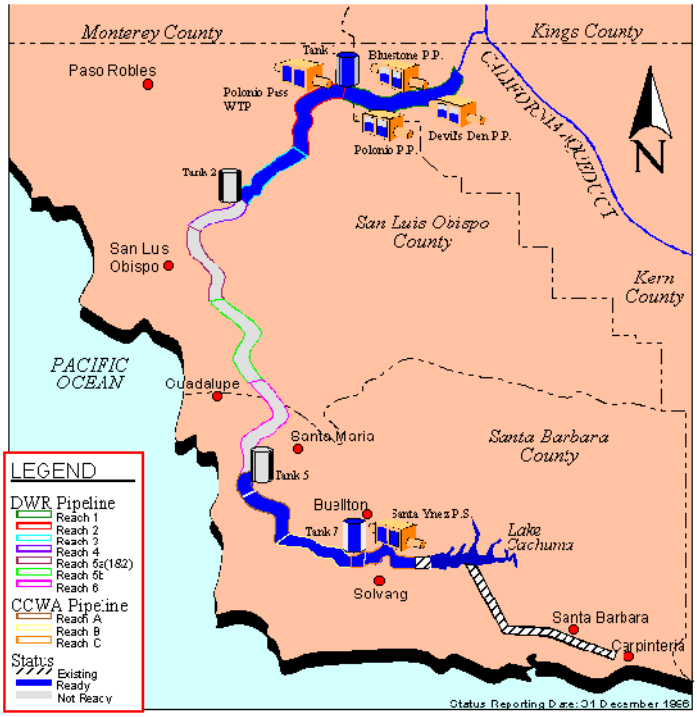
Operating Criteria: Recycled water is a non-variable supply in that it can only be supplied to those customers that are connected to the recycled water system. Usage is relatively constant regardless of drought conditions. Some potable water is blended with recycled water as a means of maintaining acceptable recycled water quality.

Cost Information: While the process for treatment is comparable to potable water treatment, the higher variable cost of about $300/AF reflects the lower volume of water treated. Distribution pumping costs add approximately $40/AF. The capital cost for the construction of Phases I and II was approximately $15.2 million. The annualized unit cost, including amortized capital costs and variable costs, is approximately $1,450/AF.

State Water Project

Description: The City is a participant in the State Water Project and is eligible to receive State Project water via the 102 mile Coastal Branch of the State Aqueduct and the 42-mile Santa Ynez Extension ending at Lake Cachuma. Construction was completed in 1997. When ordered by project participants, water is delivered from Cachuma through Tecolote Tunnel along with Cachuma Project water. The City first took delivery of State Water in 2002.

Annual Yield: The City's entitlement is 3,000 AFY, subject to availability. Average long-term deliveries were estimated at 2,566 AFY in the LTWSAA, assuming requests for full deliveries each year. Annual deliveries were projected in the LTWSAA to range from 870 AFY to 3,000 AFY.



The City's "critical drought year" approach to water supply planning insures that supply targets can be met in the worst case, not just the average case. For conservatism, the modeling assumptions made no use of the 10% of additional "drought buffer" entitlement available to all Santa Barbara County participants and assumed no purchase of non-project water (e.g. from the State's Dry Weather Purchase Program) to make up for deficiencies in State Water Project deliveries. Also, the LTWSP as a whole includes a safety margin of 10% to account for unplanned shortages in supply or increases in demand. More recent State Water Project reliability data is addressed later in this document under "Reliability of Supply."

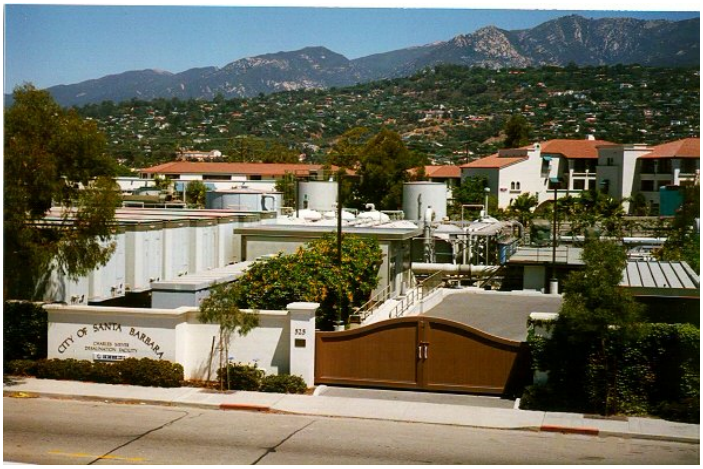
Operating Criteria: State Project water orders range from a minimum of about 600 AF during normal supply conditions, up to the full 3,000 AF project share plus 300 AF of "drought buffer" when dry weather reduces Cachuma storage below 100,000 AF. Besides delivering project water, the pipeline can be utilized to take advantage of available non-project water on a year-to-year basis to firm up deliveries during drought.

Cost Information: The variable costs for State Water are approximately $200/AF, plus the treatment cost of $50/AF at Cater Treatment Plant. For deliveries of supplemental non-project water, an additional acquisition cost of

approximately $150 is expected. The total project capital costs include costs for the State portion and the local (CCWA) portion of the project. The State portion capital cost is approximately $461 million. The City's share is 7%, or approximately $32.3 million. The local portion has a capital cost of approximately $119 million, with a City share of 13%, or approximately $16 million. The unit cost, including amortized capital costs and variable costs, is approximately $1,500/AF.

Desalination

Description: The City constructed a reverse osmosis seawater desalination facility as an emergency water supply during the drought of 1990. The facility has since been incorporated into the City's long-term supply plan as a way of reducing shortages due to depleted surface supplies during drought.



Two neighboring water purveyors participated in the temporary project, but have since dropped out of the project. A portion of the reverse osmosis filtration capacity was subsequently sold, leaving current capacity of 3,125 AFY. This capacity is entirely dedicated to City use, though it is currently in a long-term storage mode to reduce maintenance costs and would require approximately one year to recommission. This time frame is consistent with the anticipated use of the facility during drought, a water shortage condition that develops rather slowly.

Annual Capacity: With the departure of the co-participants and sale of a portion of the capacity, the desalination facility now has a production capacity of up to 3,125 AFY, subject to time and costs to recommission as noted above.

Operating Criteria: Relatively high variable costs for desalination make this supply the last to be utilized during periods of shortage. The facility is normally in long-term storage mode and is expected to be recommissioned when the demand (less a maximum acceptable shortage of 10%) cannot be met using all of the other available supplies. As an alternative operating mode, desalted water could be produced during non-drought periods for exchange with other water purveyors throughout the State via the State Water Project or other conveyance facilities. Such operation would be subject to comprehensive policy review by the City Water Commission and the City Council.

Cost Information: Variable costs for desalination are estimated at $1,100/AF based on the

water supply contract between the City and Ionics, Inc. The capital cost for construction of the facility was $34 million. The unit cost at full production, including capital costs (amortized over a 20-year period) and variable costs, is approximately $1,500/AF. Savings of variable costs accrue during periods that desalination is not needed. Recommissioning costs have been roughly estimated in the range of $5 million to $10 million. Approximately $3 million is set aside as a reserve for this purpose. The balance would be budgeted as a part of the Water Fund Capital Program.

Demand

The City's water demand history is shown in Figure 7. With construction of the 1989 Water Reclamation Project, the City began tracking water demand for potable water and recycled water. The combined total is referred to as "system" demand. Demand is measured in terms of produced water, since water is produced to meet the demand. Figure 8 shows the metered water sales by sector since 1987. Both figures illustrate the demand response to severe drought and partial recovery of demand after drastic measures were no longer needed.

Figure 7

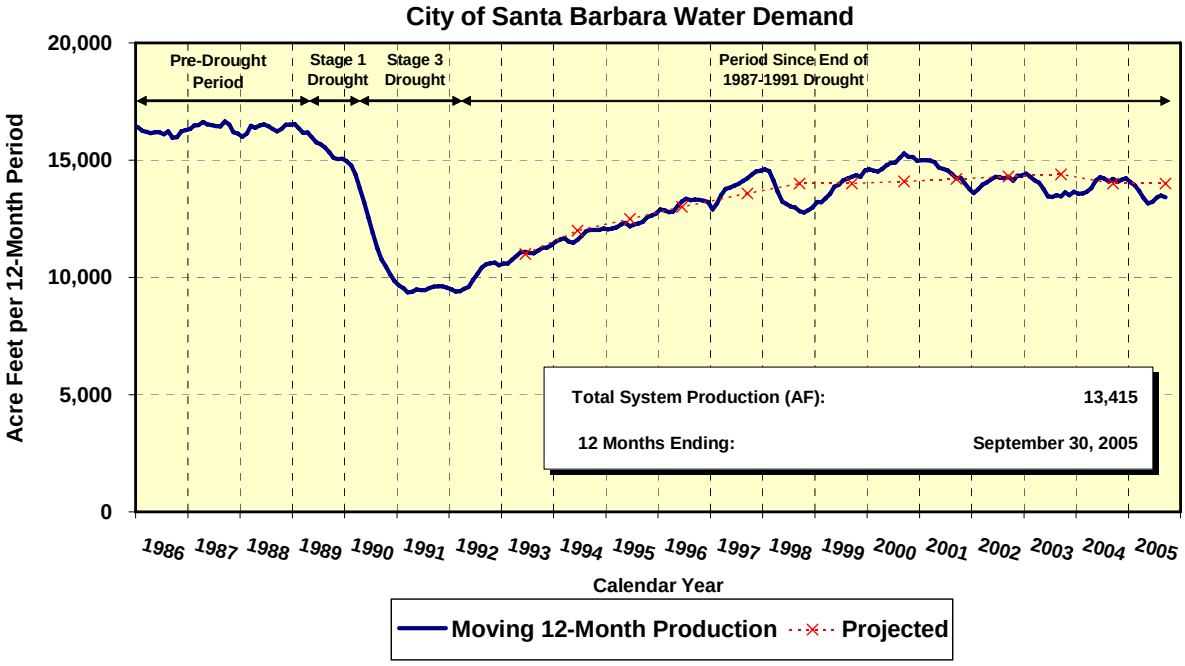
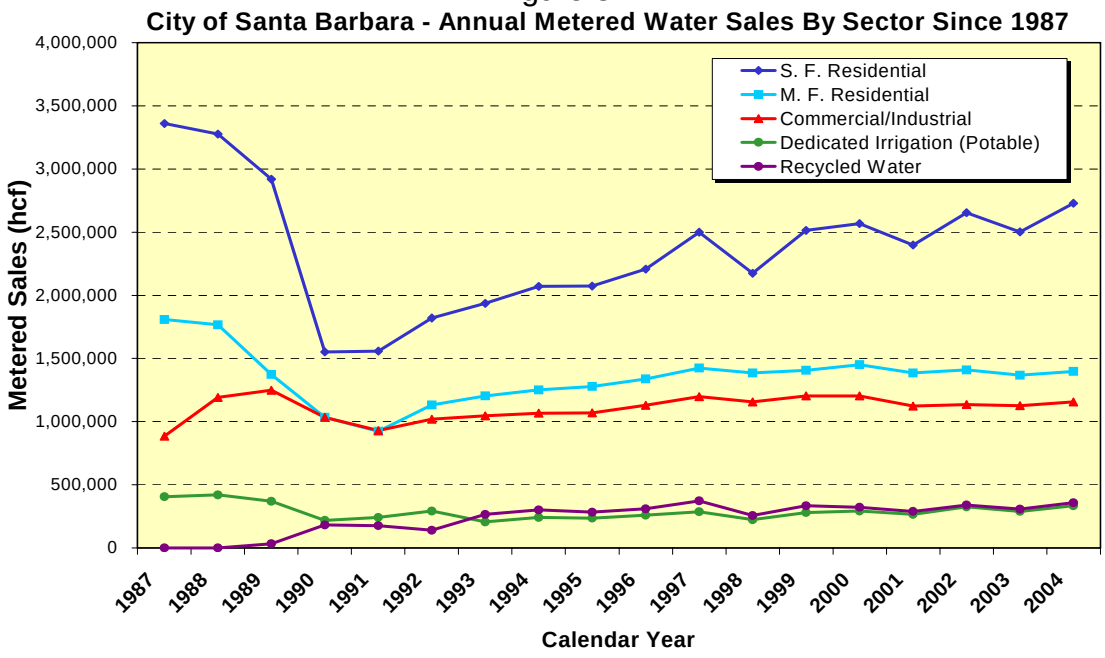


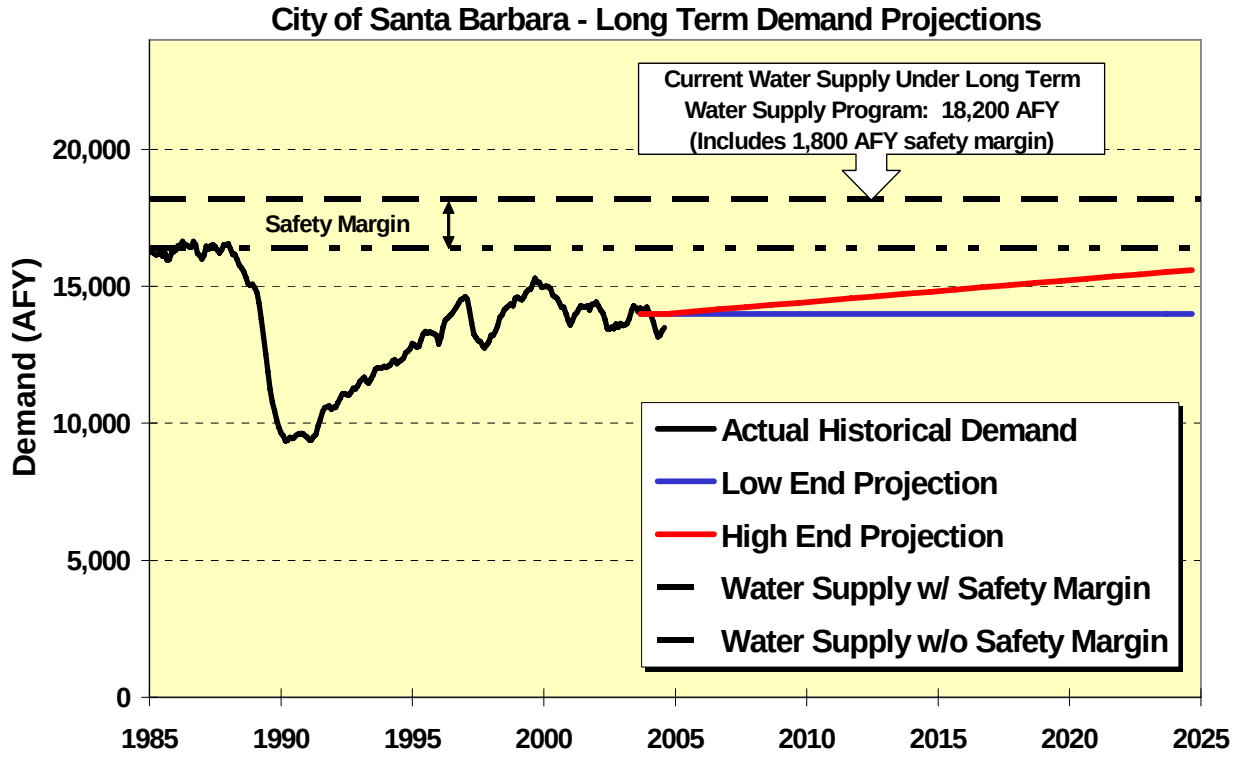
Figure 8



The 1991 LTWSAA included a comprehensive analysis of demand and supply issues. In summary, that analysis projected a 2009 demand of 17,900 AFY, minus projected conservation savings of 1,500 AFY for a net projected demand of 16,400. A safety margin equal to 1,800 AFY (10% of the 17,900 AFY) was added to account for unexpected increases in demand or unexpected shortfalls in deliveries. The result was a projected production requirement of 18,200 AFY in the year 2009. The LTWSP includes water supplies adequate to meet this projected demand, less an acceptable shortage of 10% during a critical drought period.

To update the demand analysis to the year 2025, "high" and "low" projections were made. The two projections reflect different assumptions about how future conservation efforts will offset added demand from new development. Both projections begin from the 14,000 AFY level now assumed to be the current "normal" year demand. The "high end " projection assumes that future conservation efforts will only be sufficient to maintain demand from existing development at 2005 levels, rather than achieving further reductions. Demand is therefore assumed to increase as a result of new development at a rate of about 7 AFY per month, equal to the projected growth rate used in the LTWSAA. This assumed rate of growth is actually about double the average rate of demand increase associated with building permits issued since 1991, but provides a conservative boundary for the "high end" projection. The result is a projected 2025 "high end" demand of 15,600 AFY. The "low end" projection" assumes that future conservation efforts (e.g. increased irrigation efficiency, further promotion of low water use landscaping, irrigation scheduling improvements, and increased appliance efficiency) will generate enough savings to offset the demand associated with new development, yielding flat demand for the duration of the planning period. This results in a 2025 "low end" demand of 14,000 AFY.

Figure 9



The two demand projections are shown Figure 9. The City's 2000 UWMP projected a 2005 demand ranging from 14,550 AFY to 16,560, compared to the current "normal year" demand of about 14,000 AFY. The reduced amount can be attributed to a combination of relatively high marginal water rates and a comprehensive water conservation program serving City water customers. The figure demonstrates that the City's water supply is adequate for the foreseeable future. It should also be noted that a comprehensive update of the City's water supply program is planned next year, concurrent with the City's General Plan Update.

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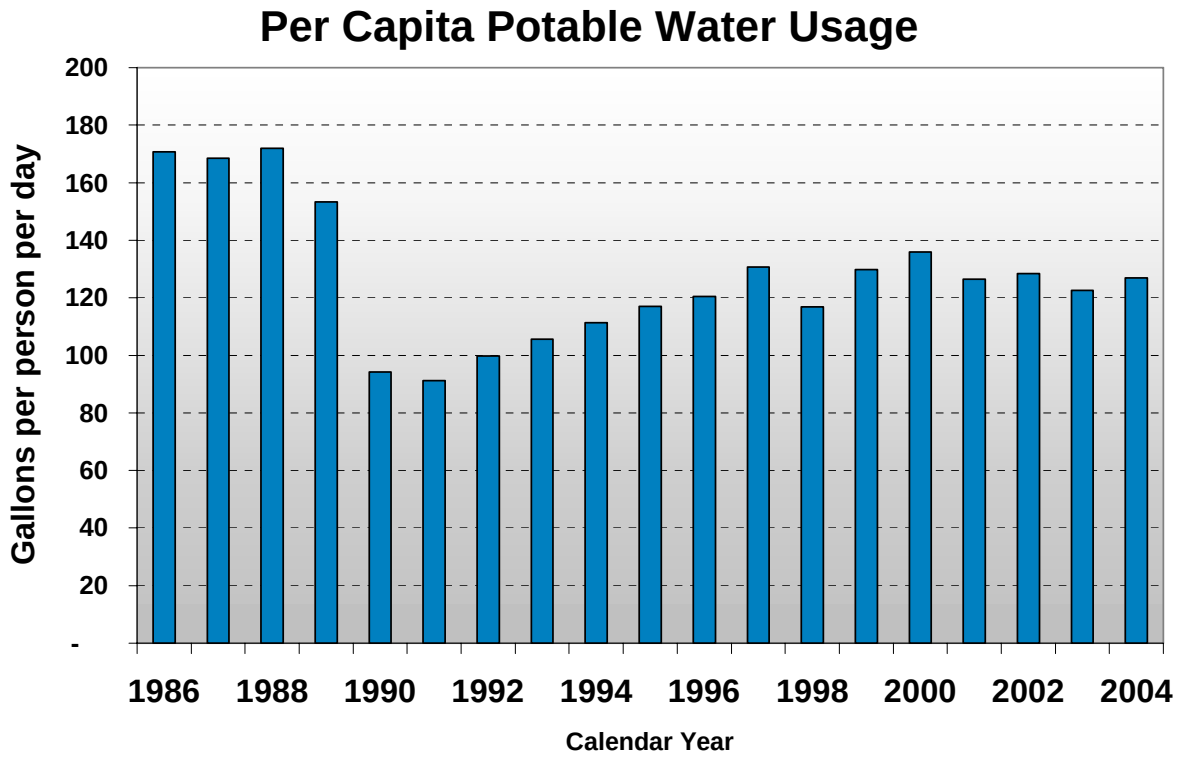
Water Conservation

The City continues to maintain an active and progressive water conservation program, including implementation of the fourteen Best Management Practices under the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The City became a signatory to the MOU in 1992 and has been an active participant in the organization. The conservation program activities are detailed in the City's "Best Management Practices Report - 2004" attached as Appendix B.

In 1991, a comprehensive supply and demand analysis (the LTWSAA) determined the need for additional supply in the amount of 5,300 AFY in order to meet the maximum acceptable shortage standard of 10%. Analysis of available conservation measures led the City to commit to providing 1,500 AFY of this new demand through efficiency improvements as described in the LTWSAA. This commitment remains in place as a part of the Long-Term Water Supply Program. Progress toward the goal was accelerated during the drought as customers took a number of permanent as well as temporary steps to reduce water demand. As water usage rebounded from the period of severe drought restrictions, the conservation program has aimed to steer this usage in the direction of increased efficiency. Relatively high marginal water rates and an effective water conservation program have combined to yield results in excess of the LTWSP goal. Based on 13 years of experience since the end of the drought, it is apparent that normal year demand has now leveled off at approximately 14,000 AFY, fluctuating somewhat above or below that level in response to significantly wet or dry years. When compared to the original 2009 demand projection of 16,400 AFY, this suggests a demand reduction of about 2,400 AFY rather than the 1,500 AFY targeted. The water savings are illustrated in terms of per capita usage in Figure 10.

Figure 10
City of Santa Barbara



The City intends to continue existing programs and is investigating further efforts to achieve conservation savings. Following are highlights of the City's water conservation program, some of which are administered jointly with other local water agencies to enhance program efficiency and leverage available funding.

- Free water check-ups for City water customers (394 check-ups during the past water year). A customer survey program demonstrates a continuing high level of customer satisfaction.
- Joint sponsorship of regional water efficiency programs, including Water Awareness Month, the "Be Water Wise" media campaign, the Rinse and Save Restaurant Program, and the Commercial Rebate Program; $134,000 additional regional grant funding awarded recently.
- Administering the award-winning Green Gardener Certification Program, providing bilingual training for landscape maintenance professionals in resource-efficient and pollution-preventing landscape maintenance practices (over 750 participants since 2000).
- Continued implementation of the grant-funded Santa Barbara County ET Irrigation Controller Distribution and Installation Program to provide state-of-the-art "smart" irrigation controllers to the City's highest residential water users, at minimal cost to participants. This technology provides automatic irrigation scheduling using a built-in radio receiver to create weekly irrigation schedules based on real time data from local weather stations. The result has been an average 25% reduction in annual landscape water use. Since May 2002, a total of 145 ET controllers have been installed in the City.
- Launched the "Watering Index," an irrigation coefficient published weekly and used by customers to adjust watering schedules for current weather conditions by entry of a single value into the irrigation controller.
- Public information for City water customers, including websites, videos, advertising, and over 20 different brochures on water efficient practices and low-water using landscapes available free to City water customers.
- Water education program reaching approximately 2,000 K-12th grade students per year through classroom presentations, teacher training workshops, curriculum distribution, and the Water Awareness High School Video Contest.

Extensive additional water conservation information is available on line at:

http://www.santabarbaraca.gov/Government/Departments/PW/WCHome.htm

Water Shortage Contingency Plan

Background

On November 1, 1988 the City Council adopted a Drought Contingency Plan in anticipation of the worsening of the then current drought. While the plan provided useful guidance during the drought, the City's experience during the drought has suggested that a revised plan should have more flexibility. This is especially important with the increased diversity of the City's current water supply. Accordingly, the original Drought Contingency Plan has been updated as included herein. The revised title reflects the fact that water shortage may be induced by factors other than climatic drought.

The plan is intended to provide guidance, rather than absolute direction, for City action in response to water shortage. The stages are defined in relation to maximum acceptable shortage of 10% as approved in the Long-Term Water Supply Program. A moving 12-month total of production is used to monitor water usage during periods of normal supply and during water shortages, with actual consumption compared to the target on a monthly basis.

Potential Water Use Restrictions

Chapter 14.20 of the Santa Barbara Municipal Code (applicable portions attached as Appendix C) defines specific water use restrictions that apply during water shortage conditions, subject to Council direction. These include the following:

1. Prohibition on water waste (prohibited at all times regardless of stage);
2. Prohibition on hosing of hard surfaces;
3. Restaurant notices required; no water service without request;
4. Operation of ornamental fountains prohibited;
5. Water shortage notices required in hotel/motel rooms;
6. Runoff prohibited;
7. Use of potable water prohibited when recycled water is available and deemed feasible;
8. Restrictions on irrigation (degree of restriction may vary from night-time irrigation only to complete prohibition on irrigation, except by hand-held bucket);
9. Shut-off nozzle required for boat and vehicle washing;
10. Introduction of water to swimming pools restricted;
11. Potential interruption of service to irrigation meters.

Action under each shortage stage includes a determination as to which, if any, of the above measures are necessary.

Rates and Revenue Issues

Since 1989 the City has used an inverted block rate billing system providing standardized allotments for residential customers based on the type of building and number of dwelling units. Current rates are shown in Appendix D. Historical usage has not been used as the basis for allotments since it tends to penalize customers who practice efficient water use. Commercial and industrial allotments are based on historical off-peak usage since

standardized allotments are infeasible for such customers. The system worked well during the last drought when allotments and block prices were modified as necessary to shape demand and insure adequate revenue. The system proved to be workable even for the 50% shortages experienced. The City's experience has been that block prices and allotments are best determined based on actual circumstances rather than trying to determine appropriate values in advance based on hypothetical situations. In addition to revenue stability and demand management provided by the block rate billing system, a rate stabilization fund is maintained as a part of the Water Fund to dampen the impact that reduced sales would otherwise have on water rates.

Normal Supply Stage

Definition: Supplies are considered normal as long as the projected water supply availability is sufficient to equal or exceed the projected normal demand for the next three years.

Actions:

- ⇨ Continue efforts to preserve water supply sources, such as management of watersheds to minimize siltation, banking of water as feasible to firm up deliveries through the State Water Project, and development of optimal groundwater pumping capacity;
- ⇨ Continue promotion of long-term water conservation practices designed to improve efficiency without impacting lifestyles, including high efficiency plumbing retrofits, low water using landscaping, efficient irrigation practices, public information regarding water awareness, and inverted block rate pricing;
- ⇨ Extend the use of recycled water where feasible and cost effective;
- ⇨ Monitor demand in terms of actual consumption and cumulative commitments to serve;
- ⇨ Water use restrictions are limited to prohibition of water waste.

Stage I Water Shortage Condition -- "Water Shortage Watch"

Definition: A short-term water shortage condition declared by Resolution of the City Council upon being advised that projected supply availability during the next three years may be approximately 10% less than projected normal demand.

Actions:

- ⇨ Staff prepares a report to the Water Commission and City Council addressing:
  - Status of surface water supplies;
  - Status of City's groundwater resources and pumping capability;
  - Availability of desalination facility and related cost issues;
  - Projected deliveries of State Water Project entitlement;
  - Anticipated availability of surplus water through the State Water Bank or other temporary transfers of water;
  - Possible reduction in Cachuma deliveries to City in excess of reductions agreed to by member units to allow build-up of City carryover at Cachuma.
  - A range of water supply scenarios based on various levels of assumed rainfall;

- ⇨ Water Commission and City Council consider Staff recommendation regarding adoption of a resolution declaring a Stage I Water Shortage Condition.
- ⇨ Cachuma Project deliveries reduced by up to 20% as agreed by member units when Project storage drops below 100,000 AF;
- ⇨ Public advised of the City's water supply situation; reductions in water use are not anticipated to be necessary at this stage.
- ⇨ Water use restrictions are limited to prohibition of water waste.

Stage II Water Shortage Condition -- "Water Shortage Alert"

Definition: A short-term water shortage condition declared by Resolution of Council upon being advised that projected supply availability during the current or impending water year is anticipated to be approximately 10% less than projected normal demand.

Actions:

- ⇨ Staff prepares a report to the Water Commission and City Council addressing:
  - Updated water supply scenarios based on various levels of assumed rainfall;
  - Need for:
    - ✓ Demand reduction by the public;
    - ✓ Water use restrictions;
    - ✓ Design and permitting work associated with temporary water supply augmentations;
    - ✓ Activation of the desalination facility;
  - Revenue projections and appropriate changes in water rates;
- ⇨ City Council considers staff and Water Commission recommendation regarding adoption of a resolution declaring a Stage II Water Shortage Condition.
- ⇨ Public advised of need for 10% demand reduction.
- ⇨ City Council gives direction regarding activation of the desalination facility.
- ⇨ Suspension of development approvals is considered.
- ⇨ Determine the need for water use restrictions pursuant to SBMC Section 14.20.215 and incorporate appropriate exemptions into the water shortage resolution.
- ⇨ Public information effort is aimed at advising the public regarding:
  - The City's water supply situation;
  - Efforts being made by the City to minimize impacts of the water shortage; and
  - The public's role in achieving demand reductions, if necessary.
  - Staff enforces water use restrictions, if any, pursuant to Council direction.
  - Staff implements rate changes, if any, pursuant to Council direction.

Stage III Water Shortage Condition -- "Water Shortage Emergency"

Definition: A short-term water shortage condition declared by Resolution of Council upon being advised that there is a projected supply shortage of substantially greater than 10% as compared to the projected normal demand.

Actions:

- ⇨ Staff prepares a report to the Water Commission and City Council addressing:
  - Updated water supply scenarios based on various levels of assumed rainfall;
  - Need for:
    - ✓ Further demand reduction by the public;
    - ✓ Increased water use restrictions, including potential prohibition on all uses other than drinking water and sanitation;
    - ✓ Accelerated design, permitting, and construction work associated with temporary water supply augmentations;
  - Review of revenue projections and appropriate changes in water rates;
  - Maximizing supply availability from desalination facility:
- ⇨ City Council considers staff and Water Commission recommendation regarding adoption of a resolution declaring a Stage III Water Shortage Emergency Condition pursuant to California Water Code, Chapter 3.
- ⇨ Revised demand reduction target is announced to public, accompanied by information about how to achieve required reductions and efforts being made by the City to resolve the water shortage condition.
- ⇨ Water use restrictions adjusted as necessary pursuant to Santa Barbara Municipal Code Section 14.20.215.B.
- ⇨ Consider need for expanding production capacity from desalination facility.
- ⇨ Evaluate revenues and the need for further rate changes; staff implements changes pursuant to Council direction.
- ⇨ Consider further action regarding suspension of development approvals.
- ⇨ Water use restrictions enforced by staff pursuant to Council direction.

While the City's long-term supply planning is based on a maximum acceptable shortage of 10%, unforeseen circumstances may dictate a need to respond to drought shortages of up to 50%. Based on the City's experience with the 1988-1992 drought, the measures identified above are expected to be sufficient to allow short-term demand reductions of up to 50%. Flexible application of block rates and allotments, water use restrictions, and public information will be used to meet the required demand reduction target.

Mechanism for Measuring Actual Reductions

Water is produced into the distribution system to meet the demand. Therefore measurement of water production is a simple mechanism for monthly, weekly, or even daily monitoring of water demand to determine the effectiveness of demand reduction measures. Such monitoring proved feasible and useful during previous severe drought.

Minimum Supply Estimate Three Year Dry Spell

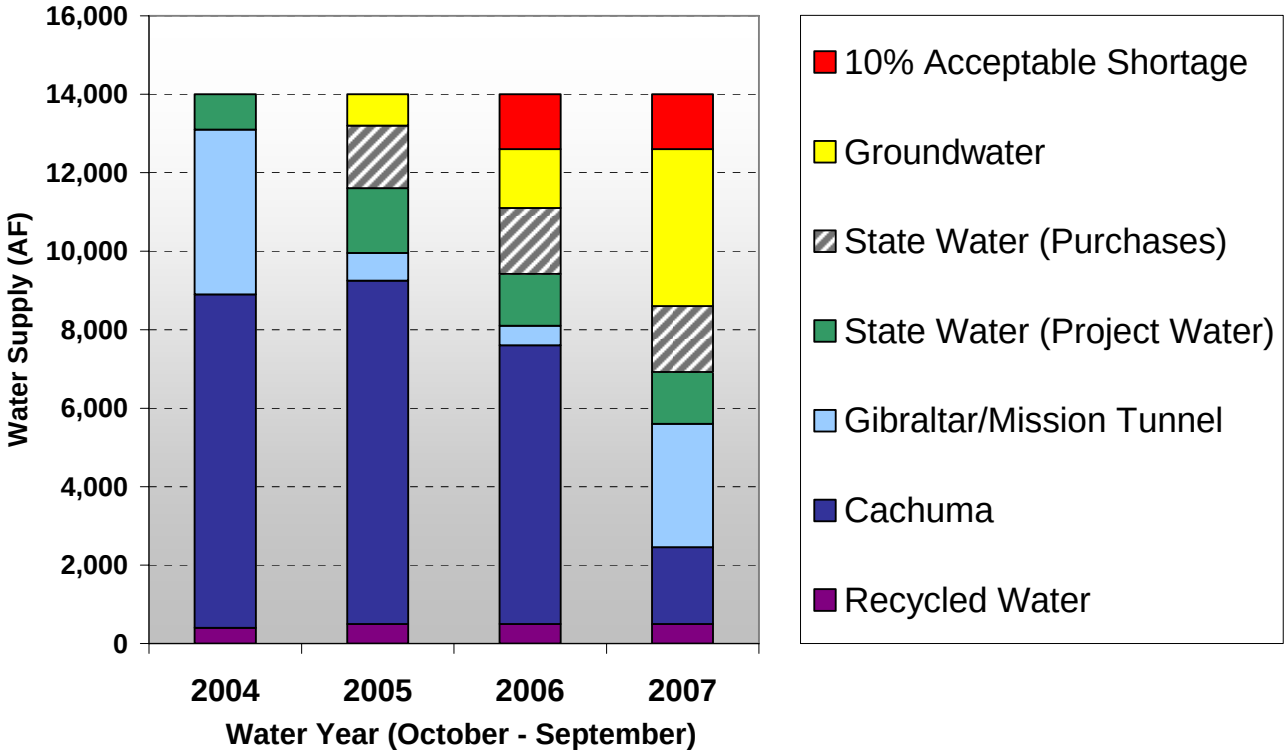
A large regional reservoir at Lake Cachuma provides more than three years of storage and has recently filled as a result of record rainfall during the past winter. Therefore, a look at 2006 through 2008 is not instructive for a three-year drought response. Instead, a projection used

during actual drought response planning in response to the most recent dry spell is used to illustrate a three year supply plan under conditions worse than any on record. In this plan, 2004 was the base year and the three years of projected minimum supply were 2005, 2006, and 2007. Figure 11 illustrates the declining availability of water from the primary reservoir at Lake Cachuma, holding water at Gibraltar Reservoir in reserve for use in year three, activation of groundwater wells to replace depleted surface water supplies, ordering of non-project water for delivery through State Water Project facilities under the Dry Year Water Purchase Program, and demand reduction of 10%, consistent with the adopted LTWSP.

Figure 11

2004 Sample Water Supply Projection: "Worst Case Scenario"

Assumes very dry weather for 2005-2007; negligible runoff to Cachuma; drought more severe than any on record.



Catastrophic Supply Interruption

Besides drought, the City may experience a catastrophic interruption of the water supply as a result of natural disasters such as earthquake or tsunami, a regional power outage, terrorism, or sabotage. Emergency administrative procedures are detailed and kept updated in the City's Emergency Operations Center Manual. Noted below are planning and response measures particularly associated with the City's water supply.

Preparations for responding to catastrophic events:

- A diverse portfolio of supplies provides redundancy that increases the likelihood of being able to meet emergency needs even under catastrophic conditions.

- Primary water supply sources and the main treatment plant have been planned to flow to the City by gravity to reduce normal operating costs and minimize disruption during disasters.
- A groundwater production system has been developed and maintained to augment supplies to the distribution system or provide direct emergency drinking water supplies should the distribution system be put out of service. In the event of prolonged power outage, power would be provided by portable generators.
- Back-up power supplies with automatic transfer switching and SCADA control capability have been installed at the primary water treatment plant and critical distribution pump stations.
- The potentially unstable and uncovered Sheffield Reservoir has been demolished and replaced with underground tanks designed and built to current seismic standards.
- Computerized telemetry system (SCADA) is being provided throughout the distribution system to monitor system problems, whether minor day-to-day problems or major disruptions.
- An ongoing program of water main replacement targets sections of the distribution system with highest history of breaks, which are vulnerable during earthquakes.
- Upgraded security, including more secure fencing, video monitoring, and alarms, is being provided at all water supply facilities.
- Public access to water supply facilities has been limited for security reasons.
- City distribution system crews are trained in pipe repair and replacement as a part of their normal duties and are continually ready to perform such work on an emergency basis as needed.
- All City employees are designated as emergency service workers and would be activated to do damage assessment and repairs, and to fill gaps left by staff that live out of town and may be unable to get to Santa Barbara due to disaster.
- The City's emergency response program includes emergency communications procedures that would be used for notifying the public about emergency water use restrictions, potential need to boil tap water prior to drinking, and locations where drinking water is available in the event of widespread distribution system failure.

<u>Actions to be implemented during catastrophic conditions</u>:

- Mobilization:
  - Supervisors assemble at Public Works Yard, 630 Garden Street
  - Determine which staff are present and which need to be contacted
  - Contact absent staff and direct them to report once families are safe
  - Check status of all equipment, refuel, and restock supplies on vehicles
  - Water Resources Laboratory staff mobilize at City lab and prepare for anticipated water quality test requests
- Dispatch crews to inspect, patrol, and report on condition of facilities and distribution piping in designated areas of the system:

  <u>Group A</u>:

  Vic Trace Reservoir & La Coronilla Pump Station
  La Mesa Reservoir
  Escondido Reservoir & Pump Station
  Hope (Calle Las Caleras) Pump Station,

Hope Reservoir
Campanil Hills Pump Station

Group B:
Reservoir No. 1
East Reservoir & Bothin Pump Station
El Cielito Reservoir and Skofield Pump Station
Skofield Reservoir
La Vista Reservoir
Northridge Pump Station

Group C:
Reservoir No. 2
Sheffield Reservoirs No. 1 and No. 2 and El Cielito Pump Station
South Portal of Mission Tunnel
Rocky Nook Pump Station
Sheffield Pump Station
Tunnel Road Reservoir & Pump Station
Cater Cross-Tie Pump Station

Group D:
Wastewater Lift Stations at:
Campanil
Braemar
Cliff Drive
Linda Lane
El Camino De la Luz

Group E:
Wastewater Lift Stations at:
Skofield
La Colina
Via Lucero
Tallant Road
Miradero Lane
Andante
Vista Elevada

- Assign qualified staff to use SCADA telemetry system, to the extent it is still functional, to determine the extent of system damage and the most critical isolation points on the distribution system.
- Conduct a complete inspection of the Cater Water Treatment Plant and Ortega Groundwater Treatment Plant to determine status and extent of damage.
- Contact Cachuma Project operators (USBR and COMB) to determine condition of Bradbury Dam and related facilities.
- Contact the City's dam caretaker at Gibraltar Reservoir to determine condition of Gibraltar Dam and related facilities.
- Assess condition of City groundwater wells by measuring water levels and well depth, and taking water samples for analysis of water quality.
- Assess the condition of two tunnels (Tecolote Tunnel from Lake Cachuma and Mission Tunnel from Gibraltar Reservoir) by measuring flow from the tunnels. While earthquake may result in tunnel collapse, it is likely that some residual flow from tunnel infiltration will be available and will flow to the City's treatment plant by gravity.

- Assign qualified staff to utilize the City's hydraulic computer model to simulate identified field deficiencies and run scenarios to identify the most efficient repair, isolation, or reconstruction recommendations.
- Prioritize distribution system repairs to best meet critical needs, including fire fighting, drinking water, and sanitation.
- Develop materials list for treatment plant and distribution system repairs and communicate with potential suppliers.
- Allocate available portable generators and pumps according to highest need for groundwater wells, flood remediation, sanitation, firefighting, or powering emergency facilities.
- Develop a clear message for dissemination to the public regarding:
    - Status of distribution system
    - Water use prohibitions
    - Allowable water uses
    - Potential need to boil drinking water prior to consumption
    - Location and availability of emergency drinking water in the event of distribution system failure.

Potential Catastrophic Interruption Scenarios:

Given the diversity of the City's water supply, there is a range of catastrophic supply interruption scenarios that may occur. The following table summarizes some foreseeable interruptions. In an actual event, more detailed analysis would be conducted to assess the extent and duration of interruption and the alternatives for short term replacement of lost supplies.

Catastrophic Interruption Scenarios

Description	Projected Water Supply Reduction	Anticipated Duration	Response
Damage limited to distribution system: Main breaks in various parts of the City	No reduction in supply; delivery capability interrupted to portions of the City	Ranging from days to months depending on extent of damage	• Valve off damaged sections • Inventory customers without service & provide for access to emergency drinking water as necessary • Prioritize repair efforts based on health, safety, and sanitation
Collapse of Mission Tunnel: Supplies from Gibraltar Reservoir and Mission Tunnel infiltration interrupted	Initial loss of 35% to 50% of potable supplies; reduced to 12% to 27% by increasing Cachuma deliveries and groundwater pumping	Ranging from months to a year or more	• Assess extent of remaining tunnel flow • Restrict irrigation uses • Water usage restrictions, pricing, and public notification to reduce water use to targeted level based on actual circumstances • Consider increases in State Water Project delivery requests • Initiate emergency design and construction process for repair of tunnel

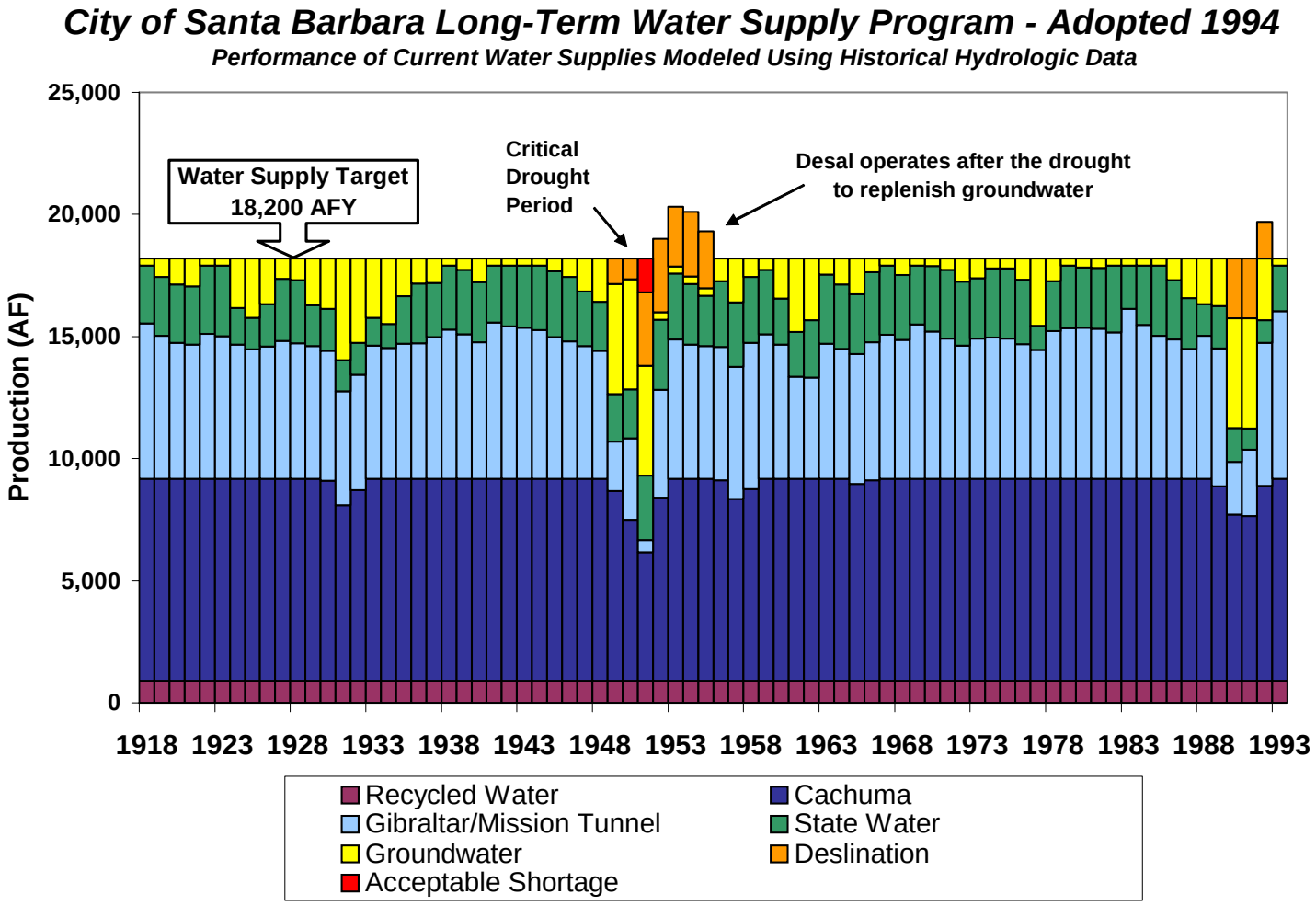
Catastrophic Interruption Scenarios
(Continued)

Description	Projected Water Supply Reduction	Anticipated Duration	Response
Collapse of Tecolote Tunnel: Supplies from Lake Cachuma, tunnel infiltration, and State Water Project interrupted	Initial loss of 50% to 65% of potable supplies; reduced to 15% to 30% by increasing Gibraltar deliveries and groundwater pumping	Ranging from months to a year or more	• Assess extent of remaining tunnel flow • Curtail most or all irrigation uses • Water usage restrictions, pricing, and public notification to reduce water use to targeted level based on actual circumstances • Consider extent to which supplies are available to assist neighboring agencies affected by loss of Cachuma deliveries • Participate with COMB & USBR in emergency design and construction process for repair of tunnel
Collapse of Tecolote and Mission Tunnels: Supplies from Cachuma, Tecolote Tunnel infiltration, State Water Project, Gibraltar Reservoir and Mission Tunnel infiltration interrupted	Initial loss of up to 100% of normal potable supplies; reduced to 66% by initiating groundwater pumping	Ranging from months to a year or more	• Assess extent of remaining tunnel flow • Activate all available groundwater wells at maximum production levels • Consider public notification to accumulate emergency personal drinking water supplies while distribution system remains functional • Curtail all customer use other than water used for drinking – priority will be to maintain all available supplies and distribution capability for drinking water, sanitation, and firefighting • Initiate selected shut-down of portions of the distribution system to maintain functional pressure and flow in the remaining system; priority areas will be identified based first on firefighting needs, then on feeding emergency drinking water distribution stations • Consider shutting off customer service connections to assist in maintaining distribution system functionality • Initiate emergency design and construction process for repair of tunnels • Initiate emergency design and construction process for reactivation of desalination facility for mid-range contribution to water supplies

Reliability of Supply: Historical and Projected Supply Deficiencies

In developing the LTWSAA, the City paid particular attention to the effects of water shortage caused by drought. A comprehensive model of the Santa Ynez River (developed by the Santa Barbara County Water Agency) was used to predict water availability using current water supply facilities and assuming a repeat of hydrologic conditions during the 62-year period of 1918 through 1979. (The analysis has since been updated to include the 76-year period of 1918 through 1993.) It is assumed that the past, adjusted for the effect of current facilities, is the best prediction of system yield during future droughts. The model was the basis for determining additional water supply requirements as a part of the LTWSP, which judges the performance of the water supply on the basis of how well it meets the City's needs during the critical drought period. In the Santa Barbara area, the critical drought period was the drought of 1948-1952. Results of the 76-year period are shown in Figure 12, which shows the contribution of various water supplies in each year of the model run. Also shown is the maximum acceptable shortage of 10%, which was deemed an acceptable sacrifice to request of customers in lieu of incurring additional expenses necessary to provide 100% deliveries in every year.

Figure 12



Single Dry Year: A single dry year is illustrated by the year 1977 in Figure 12 above. The supply from Lake Cachuma is managed to prevent shortages until approximately the fourth year following a spill. Therefore, a single dry year does not affect deliveries from Cachuma.

The primary effect is a reduction of State Water deliveries to 870 AF, or 29% of Table A project share, which is made up by an increase in pumping of local groundwater. Due to the stable development environment in Santa Barbara, a single dry year has the same effect at any point in the 20-year planning period.

5-Year Dry Period: A 5-year dry period is illustrated in Figure 12 by the years of 1947-1951. Cachuma deliveries are reduced toward the end of the period to stretch the supplies. Gibraltar deliveries are reduced to the point where the only contribution is the infiltration to Mission Tunnel. State Water deliveries are reduced to as little as 1,500 AFY, or 45% of the City's Table A amount. Maximum use of groundwater capacity, activation of the desalination facility, and imposition of the acceptable 10% demand reduction allow the supply target of 18,200 AFY to be met. This 5-year dry period will affect the City's water supply similarly regardless of when during the 20-year planning period it occurs. In fact, the 1987-1992 drought was quite similar to 1947-1952, though not quite as severe overall.

Updated State Water Project Reliability Analysis: The latest information on State Water Project reliability comes from a draft of the 2005 State Water Project Reliability Report being prepared by the California Department of Water Resources. Table 6-4 of the document indicates a single year worst case delivery of 4% of Table A amounts. Minimum deliveries for a 5-year dry spell can be conservatively estimated using the 32% average annual delivery value associated with the 4-year dry period of 1931-1934, which is lower than the 2-year drought period and both of the 6-year drought periods.

The single year worst case LTWSP supply is reduced by 858 AF as a result of the updated reliability analysis. The 5-year dry period LTWSP supply is reduced by an average of 1,242 AFY. Both amounts are within the 1,800 AFY safety margin that is a part of the LTWSP supply target, which was included for the specific purpose of allowing for unforeseen reductions in supply or increases in demand. Furthermore, the discounting of State Water deliveries in this manner does not include the potential to order non-project water for delivery through State Water Project facilities, as was provided for by DWR's Dry Year Water Purchase Program in 2004. The conclusion is that reduced reliability of State Water Project deliveries has an effect on City supplies, but the effect is within the safety margin built into the plan. The effect would be reduced to the extent that non-project water can be purchased. A more in-depth analysis of State Water Project reliability is planned as a part of the upcoming update of the LTWSP.

Water Quality Impacts on Reliability: Water quality has potential impacts on the City's water supply in three areas:

- Reaction of Dissolved Organic Material to Produce Disinfectant Byproducts: More stringent drinking water standards for disinfection byproducts have been implemented, causing the potential for violations due to relatively high levels of dissolved organics in water coming to Cater Treatment Plant from surface water supplies. The City has recently finished a complete rehabilitation of the plant and is in the pilot stage of a study to determine the best manner to insure the Cater water can continue to meet applicable standards for disinfection byproducts. Several feasible options have been identified and it is expected that facilities can be constructed to successfully address the problem.

- Groundwater Quality: Much of the City's groundwater supply exceeds secondary standards for taste and odor, as well as iron and manganese. In the Foothill Basin, the

levels are low enough that they can be successfully treated at the wellhead. In Storage Unit No. 1, water has traditionally been pumped to the Ortega Groundwater Treatment Plant before being put into the distribution system. A complete overall of the plant is planned. It has just completed the pilot phase and is being designed. The completed project will allow full use of the City's groundwater resources and may play a part in complying with new standards for disinfection byproducts mentioned above.

- Recycled Water: Due to extreme hardness of local water supplies, many customers use the ion exchange process to soften water at their homes and businesses. The result is added salt, particularly sodium chloride, in the City's recycled water. This has been addressed by monitoring salt levels in the soil over a ten-year period and by blending potable water with recycled supplies to meet water quality standards for irrigation.

Community Involvement in Water Management Planning

Community involvement is present at each step in the City's water management planning. The City Charter establishes a Board of Water Commissioners comprised of citizen appointees charged with overseeing the management of the water supply system and advising the City Council on water related issues. The Commission meets at least monthly in open session and encourages public comment on water issues. During the development of the LTWSAA, a series of public hearings were held to review the analysis and take public input. Water supply status reports are presented periodically to the City Council as a part of its public meetings. Finally, ballot initiatives led to the City's participation in the State Water Project and the use of desalination as a permanent part of the City's water supply. The City coordinates with neighboring water purveyors through a number of joint powers agencies that operate various facilities serving multiple water purveyors. These agencies conduct their business in public sessions. This plan was made available in draft form to local water purveyors, Santa Barbara County officials, and interested members of the public prior to adoption by the City Council.

Alternative Water Management Practices

This plan demonstrates that current water supply sources are expected to be adequate through the year 2025. Accordingly, new supply sources are not anticipated within the time frame of the plan. Still, alternative water management practices play a role in the City's water supply planning and management as noted below.

Recycled Water: As described above, facilities are now in place from one end of the City to the other, providing recycled water in place of potable water. Up to 1,200 AFY of potable water can be displaced with the current system.

Exchanges & Transfers: With the connection to the State Water Project, the City's potential use of water exchanges is greatly enhanced. It is possible that this exchange capability will be as important as the delivery of State Water Project water, particularly during droughts. The City's desalination facility provides an innovative variation on the exchange scenario since it could be used to produce water that is used by the City in exchange for State Project entitlement made available to other water purveyors throughout the State. At current capacity, this would provide for approximately 3,000 AFY of exchange water. While the current economics are not particularly attractive, this may change in the future, providing a net increase in the State's water supply. During drought, the economics may be secondary to the need for auxiliary water supplies. State Water Project facilities also enhance the potential for groundwater banking as a means of augmenting the effective yield of the City’s water supplies. Banking is possible on a local, regional, and statewide level and is being analyzed as a way of firming up reliability of deliveries through the State Water Project.

Management of Water System Pressures and Peak Demands: System pressure is not considered a significant issue related to water demand due to Uniform Plumbing Code requirement for a pressure regulator on each structure and due to significant variation in distribution system elevation. Peak demands are considered to be caused by "discretionary" usage, primarily associated with landscape irrigation. Peak demand is targeted through inclining block rates, including peak period surcharge for commercial and industrial accounts,

and promotion of water efficient landscaping.

Meter Retrofitting: Retail metering has been standard practice in the City for years and applies to all development. Each new dwelling unit is individually metered except where physically infeasible, such as where common water heating systems are used. In many cases property owners choose to install new meters on existing multifamily buildings to provide separate meters to each dwelling unit. The effect is increased conservation as tenants begin receiving a monthly bill for water usage.

Incentives, Pricing, and Rate Structures: The current cost of water is considered the most significant incentive for efficient water use. At an average cost of approximately $3.70 per hundred cubic foot, customers are expected to continue efforts to conserve water. In addition, as described above, the block rate billing system is easily modified as necessary to influence demand during periods of water shortage.

Public Information/Education: The position of Water Conservation Coordinator is dedicated to managing a program of public information and assistance about efficient water use. This occurs on an individual customer basis during water audits and on a community-wide basis through school education programs, seminars on low water using landscapes, production of educational brochures, and assistance with the use of recycled water.

Desalination: As noted above, the City has included desalination in its mix of water supplies. Since this is a water source that has relatively high operating costs and low capital costs (compared to other new supply sources), substantial cost savings are possible during periods of ample surface supplies. Since desalination is required in relatively few years, its annualized cost is reduced to a point that is comparable with other new supply sources.

Watershed Management: The City continues to cooperate with the U.S. Forest Service on watershed management programs which conduct controlled burns of the local watersheds as a way of minimizing silt accumulation in local reservoirs, thereby maintaining the yield from surface water reservoirs.

Lower Santa Ynez River Fish Management Plan: Since 1993, the City has worked as a member of the Cachuma Conservation Release Board (CCRB) to support a collaborative effort of research and restoration projects to improve habitat and migration corridors for endangered steelhead on the Lower Santa Ynez River below Bradbury Dam. This work led to the Lower Santa Ynez River Fish Management Plan adopted in 2000 and has provided a framework for addressing water supply and public trust issues on the river. The Fish Management Plan was accepted by NOAA Fisheries' National Marine Fisheries Service as the basis for a Biological Opinion on Cachuma Project operations to address the endangered listing for steelhead. CCRB, in partnership with the Santa Ynez River Water Conservation District, I.D. No. 1, has completed five projects for enhancing steelhead habitat, improving fish passage, and providing flow augmentations for steelhead. These projects include fish passage projects on Salsipuedes Creek at the Highway 1 and Jalama Road Bridges, streambed stabilization on El Jaro Creek, a permanent watering system to provide year-round flows in Hilton Creek, including a pump and intake system, and modifications at Lake Cachuma to allow a 3-foot surcharge in spill years to provide additional water for fish releases from the reservoir. To date, tributary enhancement projects and an extensive fisheries monitoring program on the

lower Santa Ynez River have totaled more than $5 million. Additional projects are planned or underway on EI Jaro Creek, Nojoqui Creek, Hilton Creek and Quiota Creek.

Critical Period Supply Planning: Some water supply plans are based on average yield analysis. This can lead to unplanned shortages since it does not acknowledge the combined effect of coincident shortages from a number of different sources. In contrast, the City uses critical period planning to insure that the water supply performs acceptably during the worst anticipated drought.

Consensus Based Water Management: The City strives to work cooperatively with other interested parties to maximize water resources. As an example, the City and downstream interests have worked out a compromise in the USYROA (Pass Through Agreement) that allows yield from the river to be maximized while keeping all parties whole and saving the cost of litigation. The City has also entered into a comprehensive consensus-based settlement agreement to resolve outstanding issues among numerous parties on the Santa Ynez River.

Implementation Schedule

The following table identifies implementation time frame for items related to the UWMP and provides notes on implementation of plan elements since adoption of the 2000 UWMP.

Description of Item	Implementation Schedule	Notes on Implementation Since 2000 UWMP Adoption
Water Conservation Program	Ongoing pursuant to MOU Regarding Urban Water Conservation and Long-Term Water Supply Program	The program has been ongoing since adoption of the LTWSP in 1994. Results suggest demand reduction in excess of the program goal of 1,500 AFY.
Maintenance of yield from surface reservoirs	USYROA (Pass Through Agreement) in place to preserve the effective yield of Gibraltar Reservoir	Pass Through Agreement continues to guide operation of Gibraltar Reservoir; modified operating criteria are under review.
Optimized water system management	Multiple Objective Optimization Model (MOOM) has been completed by USGS and is available for use in testing water supply scenarios.	MOOM continues to be available for use in water supply planning. Update to more user-friendly software being considered.
Promotion of recycled water use and management of recycled water quality issues	Ongoing requirements for use of recycled water where available. Developed an inventory of plants appropriate for use with recycled water.	Plant inventory has been created and is made available to recycled water users. Development applications subject to the City's recycled water use requirement, as applicable.
Implementation of the Lower Santa Ynez River Fish Management Plan	Ongoing in conjunction with local interested parties and State and Federal officials.	Research, data collection, and project implementation continue. $5 million in fish projects competed to date, including construction of several fish passage projects and installation of flashboards at Bradbury Dam to allow creation of a fish release surcharge account.

Description of Item	Implementation Schedule	Notes on Implementation Since 2000 UWMP Adoption
State Water Project connection	Completed in 1997; pipeline available for delivering State Water entitlement and purchased non-project water.	Pipeline continues to be available.
Enhancement of yield from State Water Project facilities	Firming of deliveries through groundwater banking and deliveries of non-project water being investigated by Central Coast Water Authority on behalf of member agencies	Drought response planning in 2004 included plans to use the pipeline to participate in the State's Dry Weather Purchase Program to offset anticipated loss of State Water Project water.
Permanent desalination facility	All permitting for permanent desalination is complete; the facility has been placed in long-term storage mode and will be recommissioned when needed.	Long-term storage mode continues.
Demand/Revenue Tracking	Ongoing with monthly water production reports and semi-annual revenue reports to Water Commission and City Council	Demand and revenue tracking are an integral part of the budget adoption process.
Groundwater development	Analysis using MOOM to determine optimal locations for wells to replace existing wells subject to seawater intrusion has been completed. Construction of two new extraction/injection wells underway.	Well construction complete; above ground facilities being designed. Groundwater being used to manage distribution water quality to insure compliance with drinking water standards.

Appendix A:

Documentation of Public Noticing

and

City Council Action

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Summary of Public Noticing and Adoption Process

Date	Activity
October 30, 2005	Display and legal advertisements published in Santa Barbara News-Press regarding UWMP review process
October 31, 2005	Posting of final draft UWMP on City Internet web site
November 2, 2005	Final draft made available for public comment with notices to: ▪ City of Santa Barbara, Community Development Department ▪ County of Santa Barbara, Planning and Development Department ▪ Goleta Water District ▪ Montecito Water District ▪ Carpinteria Valley Water District ▪ Santa Ynez River Water Conservation District, Improvement District No. 1 ▪ Citizens Planning Association ▪ Santa Barbara County Water Agency ▪ Central Coast Water Authority ▪ United State Bureau of Reclamation
November 14, 2005	Public meeting of the City Water Commission to review the final draft UWMP
November 15, 2005	Response to comments submitted November 14, 2005 by Doreen Farr
December 3, 2005 & December 10, 2005	Notice of Public Hearing regarding UWMP adoption published in Santa Barbara News-Press
December 5, 2005	Updated draft and notice published on City Internet web site
December 20, 2005	Public Hearing and adoption of UWMP by City Council

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Appendix B:

California Urban Water Conservation Council

Best Management Practices Report

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Appendix C:

Excerpts from Santa Barbara Municipal Code, Chapter 14.20, Regarding Water Use Regulations During Drought Conditions

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Excerpts from Santa Barbara Municipal Code, Chapter 14.20, Regarding Water Use Regulations During Drought Conditions

14.20.215 Water Use Regulations During Drought Conditions.

A. STAGE TWO DROUGHT CONDITION. Upon adoption by the City Council of a resolution declaring a Stage Two Drought Condition and for as long as that condition exists, the following water use regulations, and such other regulations as may be adopted by resolution of the City Council, shall apply to all use of water, other than reclaimed wastewater, that is provided by the City water supply system.

1. The use of running water from a hose, pipe, or faucet for the purpose of cleaning buildings and paved, tile, wood, plastic or other surfaces shall be prohibited, except in the event the Director determines that such use is the only feasible means of correcting a potential threat to health and safety.

2. All restaurants that provide table service shall post, in a conspicuous place, a Notice of Drought Condition as approved by the Director and shall refrain from serving water except upon specific request by a customer.

3. The operation of and introduction of water into ornamental fountains and bodies of water shall be prohibited.

4. Operators of hotels, motels, and other commercial establishments offering lodgings shall post in each room a Notice of Drought Condition as approved by the Director.

5. Any use of water that causes runoff to occur beyond the immediate vicinity of use shall be prohibited.

6. The use of potable water for cleaning, irrigation and construction purposes, including but not limited to dust control, settling of backfill, flushing of plumbing lines, and washing of equipment, buildings and vehicles, shall be prohibited in all cases where the Director has determined that use of reclaimed wastewater is a feasible alternative.

7. Irrigation at any time from 8:00 a.m. to 6:00 p.m. of any yard, orchard, park, recreational area, or other area containing vegetation shall be prohibited.

8. Boats and vehicles shall be washed only at commercial car washing facilities equipped with water recycling equipment or by use of a bucket and hose equipped with a self-closing valve that requires operator pressure to activate the flow of water.

B. STAGE THREE DROUGHT CONDITION. Upon adoption by the City Council of a resolution declaring a Stage Three Drought Condition and for as long as that condition exists, the following water use regulations, and such other regulations as may be adopted by resolution of the City Council, shall apply to all use of water, other than reclaimed wastewater, that is provided by the City water supply system.

1. Each of the Stage Two water use regulations set forth in Subsections A.1 through A.6 of this Section shall be applicable.

2. The introduction of water into swimming pools and spas shall be prohibited.

3. The use of water through a meter that is restricted to irrigation uses shall be prohibited, and the City shall have the right to shut off water service to any such meter without notice to the account holder or any other person.

4. Irrigation of any yard, orchard, park, recreational area, or other area containing vegetation shall be prohibited, except by means of a hand-held bucket.

5. Boats and vehicles shall be washed only by use of a hand-held bucket or at commercial car washing facilities equipped with water recycling equipment.

C. EXEMPTIONS. Exemptions to the water use regulations set forth in this Section may be granted by the Director for specific uses of water, on the basis of hardship and in accordance with such guidelines for exemptions as the City Council may adopt. A denial of a request for an exemption may be appealed to a review committee consisting of the Director, the Parks Director or his designated representative, one member of the Board of Water Commissioners appointed by the Board, and such other persons, if any, as the City Council may appoint. The decision of the review committee shall be final.

D. Upon the declaration of and during a Stage Three Drought Condition, the failure of a mobilehome park owner to introduce water into a swimming pool or spa located in a mobilehome park, in accordance with the requirement of Paragraph B.7 of this Section, shall not be considered an increase in "rent" for purposes of Municipal Code Section 26.08.030.N. (Ord. 4558, 1989.)

14.20.225 Violations.

A. Any failure to comply with a provision of this Chapter shall constitute a violation, regardless of whether the failure to comply is caused by an account holder, a consumer or any other person or entity.

B. Where the failure to comply is continuing and intentional, each successive hour of such failure to

comply shall be a separate and distinct violation. (Ord. 4558, 1989.)

14.20.226 Penalties and Charges.

A. The following penalties shall apply to any violation of any provision of this Chapter:

1. For the first violation within the preceding twelve (12) calendar months, the Director shall issue a written notice of the fact of such violation.

2. For a second violation within the preceding twelve (12) calendar months, the Director shall impose a surcharge against the account holder for the property where the violation occurred or is occurring, in an amount not to exceed two-hundred and fifty dollars ($250.00).

3. For a third violation within the preceding twelve (12) calendar months, the Director:

a. Shall impose a surcharge against the account holder for the property where the violation occurred or is occurring, in an amount not to exceed two-hundred and fifty dollars ($250.00); and

b. May install a flow restricter on the service where the violation occurred or is occurring, for a period to be determined by the Director.

4. For a fourth and any subsequent violation within the preceding twelve (12) calendar months, the Director:

a. Shall impose a surcharge against the account holder for the property where the violation occurred or is occurring, in an amount not to exceed two-hundred and fifty dollars ($250.00); and

b. May install a flow restricter on or shut off water service to the property where the violation occurred or is occurring, for a period to be determined by the Director.

B. If a flow restricter is installed or water service shut off pursuant to Subsection A of this Section, prior to restoration of normal water service the account holder whose service is affected shall be required to reimburse the City for whatever cost it has incurred and will incur in installing and removing a flow restricter and in shutting off and turning on water service.

C. Any surcharge imposed pursuant to this Section shall be added to the account of the account holder for the property where the violation occurred or is occurring and shall be due and payable on the same terms and subject to the same conditions as any other charge for regular water service. The maximum amount of surcharges which an account holder may be required to pay during any twelve-month period shall be one thousand dollars ($1,000.00).

D. Nothing in this Chapter shall limit or be construed to limit the right of an account holder to seek reimbursement of a surcharge from a tenant or other consumer. (Ord. 4558, 1989.)

14.20.227 Notice of Violation - Hearing.

A. For each violation of this Chapter, the Director shall give notice as follows:

1. By sending written notice through the U.S. mail to the account holder for the property where the violation occurred or is occurring, at the current billing address shown in the City's water billing records; and

2. By personally giving written notice thereof to the person who committed the violation or by leaving written notice with some person of suitable age and discretion at the property where the violation occurred or is occurring; or

3. If neither the person who committed the violation nor a person of suitable age and discretion can be found, then by affixing written notice in a conspicuous place on the property where the violation occurred or is occurring.

B. Any written notice given under this Section shall contain a statement of:

1. The time, place and nature of the violation;

2. The person(s) committing the violation, if known;

3. The provision(s) of this Chapter violated;

4. The possible penalties for each violation;

5. The account holder's right to request a hearing on the violation and the time within which such a request must be made; and

6. The account holder's loss of the right to a hearing in the event the account holder fails to request a hearing within the time required.

C. Any account holder provided a notice of violation in accordance with the provisions of this Chapter shall have the right to request a hearing. The request must be made in writing and must be received by the Director within ten (10) calendar days of the date of the notice of violation. The Director shall conduct the hearing, at which both written and oral evidence may be presented, and shall decide whether a violation occurred and the appropriate penalty. In determining the appropriate penalty, the Director shall consider whether the account holder knew of the violation at the time it occurred and whether he or she took reasonable action to correct the violation upon notification of it. In addition, the Director shall exercise his discretion in accordance with such guidelines as the City Council may adopt by resolution.

1. For a first or second violation within a twelve (12) month period, the decision of the Director shall be final.

2. For a third or subsequent violation within a twelve (12) month period, the account holder shall have the right to appeal the decision of the Director by requesting a hearing before the Board of Water Commissioners ("Board"). The request for hearing before the Board shall be in writing and shall be delivered to the Director not later than seven (7) calendar days after the date of the decision of the Director. At the hearing, the Board may receive and hear both written and oral evidence and shall have the authority to affirm, reverse, or modify the decision of the Director. The decision of the Board shall be final.

D. If an account holder fails to request a hearing before the Director or the Board within the period(s) provided in this Section, the action of the Department shall be deemed final.

E. There shall be no installation of a flow restricter or shut off of water service until a notice of violation has become final or there is a final decision of the Director or the Board ordering installation of a flow restricter or shut-off of water service. (Ord. 4558, 1989.)

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Appendix D:

City of Santa Barbara

Water and Sewer Service Rates

Fiscal Year 2006

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City of Santa Barbara - Public Works Department

Monthly Rates for Water and Sewer Service

Resolution No. 05-060 (for Fiscal Year 2006)

1 hcf = 100 cubic feet = 748 gallons

Customer Class	Water Service Rates[1]	Sewer Service Rates
Single Family Residential	First 4 hcf @ $2.47 Next 16 hcf @ $4.14 All other @ $4.37	$9.89 per month; plus $1.71 per hcf, up to 10 hcf per month
Multi-Family Residential, 1-4 dwelling units	First 4 hcf per dwelling unit @ $2.47 Next 8 hcf per dwelling unit @ $4.14 All other @ $4.37	$9.89 per month per dwelling unit; plus $1.71 per hcf, up to 8 hcf per dwelling, per month
Multi-Family Residential, 5+ dwelling units	First 4 hcf per dwelling unit @ $2.47 Next 8 hcf per dwelling unit @ $4.14 All other @ $4.37	$9.89 per month per dwelling unit; plus $1.71 per hcf, up to 7 hcf per dwelling, per month
Commercial	100% of base allotment[2] @ $4.14 per hcf; All other @ $4.37	$1.95 per hcf; subject to minimum charge by meter size (see table below)
Industrial & High Strength Commercial	100% of base allotment[2] @ $4.14 per hcf; All other @ $4.37/hcf	$2.36 per hcf; subject to minimum charge by meter size (see table below)
Irrigation - Residential	Billed as if used through associated residential meter, OR annual allotment[3] of 654 hcf/acre @ $4.14; all other @ $4.37	Not applicable
Irrigation - Recreation/Parks/ Schools	Annual allotment[3] of 1,404 hcf/acre @ $1.95 Next 240 hcf/acre/year @ $4.14 All other @ $4.37	Not applicable
Irrigation - Commercial	100% of base allotment[2] @ $4.14 per hcf; All other @ $4.37/hcf	Not applicable
Irrigation - Agriculture	Annual allotment[3] of 870 hcf/acre @ $1.56 Next 240 hcf/acre/year @ $4.14 All other at $4.37/hcf	Not applicable
Recycled Water	All usage @ $1.56/hcf	Charges based on type of use. Not applicable for irrigation.
Outside City Limits	130% of corresponding in-City rates	Same as in-City rates, except that residential accounts not receiving City water are charged at maximum rate.

Monthly Water Meter Service Charges By Meter Size[1]

Meter Size	5/8"	3/4*	1"	1½"*	2"	3"	4"	6"	8"	10"
Monthly Service Charge:	$10.42	$15.64	$26.06	$52.11	$83.38	$166.76	$260.56	$521.12	$833.80	$1,198.58

Minimum Monthly Sewer Charges by Meter Size for Non-Residential Customers

Meter Size	5/8"	3/4" *	1"	1½" *	2"	3"	4"	6"	8"	10"
Commercial	$18.61	$27.90	$32.45	$55.71	$92.89	$185.71	$231.80	$464.27	$812.49	$1,276.78
Indus/HS Com.	$23.19	$34.78	$40.63	$69.80	$116.08	$232.11	$290.21	$580.33	$1,015.55	$1,595.96

* These meter sizes no longer available for new installations.

Typical City Water and Sewer Fees for Connection of a Single-Family Residence

Water: $1,771 (1" service connection, with 5/8" meter) + $2,039 (buy-in fee, per residence) = $3,810

Sewer: $537 (4" sewer line tap) + $270 (trench inspection) + $1,418 (buy-in fee, per single-family residence)[4] = $2,225

For more information, contact the City's Water Hotline at (805) 564-5460

[1] Utility users tax of 6% added to metered water charges and monthly water meter service charges.

[2] Base allotment = average monthly consumption during most recent January - June period.

[3] Annualized allotments run July to June; new allotments available for the July water bill; unused allotments do not carry forward.

[4] Through 6/30/07, the sewer buy-in fee is reduced by 50% for conversions from septic tank to City sewer.

[H:BFRATETBL.DOC] Revised: July 1, 2005