Water Shortage Contingency Plan

Prepared by:

City of Santa Cruz Water Department

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City of Santa Cruz Water Department

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Executive Summary

This report constitutes the first comprehensive review and update of the City's Water Shortage Contingency Plan since the early 1990's. The project is an outgrowth of the City's 2005 Urban Water Management Plan, which recognized the many changes in regional conditions and local water supply planning that had taken place over the previous decade, and identified the need to better prepare for the possibility of future water shortages in advance of the next major drought.

Introduction

This section provides background information about the City water system and the City's Integrated Water Plan, explains the purposes and goals of this plan, summarizes state regulations that pertain to water shortage contingency planning, and describes the process and principles that were used to guide the preparation of this document.

The last time the Santa Cruz area was confronted with a serious water shortage was during a statewide drought that lasted from 1987 through 1992. The exceptional drought of 1976-77, however, remains the most severe event on record. In 2003, the City adopted a long range planning document known as the "Integrated Water Plan", the goal of which was to reduce near term drought shortages and provide a more reliable public water supply through the year 2030. One component of this plan deliberately involves cutting back or "curtailing" system water demand by 15 percent in dry years when water is in short supply.

This plan was developed to fulfill two fundamental purposes:

1. To establish the procedures and actions necessary to achieve the up to 15 percent cutback in system-wide demand established in the City's Integrated Water Plan, and

2. To describe how the City would respond if faced with much larger shortages in water supply ranging as high as 50 percent (not only because, as a public water supplier, the City is required to do so by state law, but also because the City remains vulnerable in the near term to a critical water shortage of this magnitude until it secures a new source of supply for drought protection).

Whatever magnitude of shortfall the City may experience, the overarching goals of this plan are as follows:

1. To conserve the water supply of the City for the greatest public benefit,

2. To mitigate the effects of a water supply shortage on public health and safety, economic activity, and customer lifestyle, and

3. To budget water use so that supply will be available for the most essential purposes for the entire duration of the water shortage.

Development of this plan was a collaborative effort among the City Water Department staff, the City's Water Commission, City Council, and the public. The process included reviewing the City's existing ordinance and water shortage plans from many other water agencies, addressing various planning and policy issues, and taking into account state regulations. The Water Commission provided its input and recommendations throughout the entire process. The final step will be to prepare an ordinance that incorporates the structure and policy recommendations embodied in this plan. This ordinance would then be adopted and go into effect only if necessary in an actual water shortage following appropriate public notification and public hearing before City Council.

Assessing Water Supply and Demand

This section describes the key hydrologic factors affecting the City's water supply and discusses the process staff uses to determine whether a water shortage is expected in the year ahead.

The City of Santa Cruz relies on surface flows in coastal streams and the San Lorenzo River for most of its annual water supply needs. The yield of these sources in any given year is directly related to the amount of rainfall received and runoff generated during the winter season.

After an unusually dry winter or period of consecutive dry years, when a lack of supply appears possible, the Water Department undertakes an analysis to determine whether water supplies will be deficient relative to estimated water needs for the coming dry season. This analysis involves first comparing projected water supply and demand on a monthly basis, assuming no restriction on water

use, to forecast the end of season water level and storage volume in Loch Lomond Reservoir. The Department then evaluates whether the amount of carryover storage in Loch Lomond at the end of the year will be sufficient to meet essential health and safety needs in case the dry weather pattern continues into the following year. If this analysis shows that Loch Lomond Reservoir would be depleted to a dangerously low level, then a decision is made regarding how much reservoir water is available to use in the current year and how much should be banked as a safeguard against the possibility of another dry year. The amount of cutback in demand needed to reduce the rate of reservoir depletion and end the year at a safer level of storage is then determined. If necessary, cutbacks would go into effect in late April or early May and span the entire dry season through the end of October.

The degree of shortage is normally defined as the supply deficiency in relation to normal water use over a given period of time, and expressed as a percentage. For example, a 25 percent shortage means the City has one-quarter less water supply available than what is normally used during the seven month long dry season.

Demand Reduction Program

This section describes the five-stage approach and overall strategy for dealing with water shortages, explains how available water would be allocated among various customer categories according to priority of use, and presents the recommended menu of actions for cutting back water demand during a declared water shortage. This section also covers policies and recommendations regarding enforcement methods, exceptions, and appeals.

Table ES-1. Five Stage Structure to Water Shortage Contingency Plan

Stage	Magnitude of Water Shortage	Stage Title
1	0-5%	Water Shortage Alert
2	5-15%	Water Shortage Warning
3	15-25%	Water Shortage Emergency
4	25-35%	Severe Water Shortage Emergency
5	35-50%	Critical Water Shortage Emergency

The updated Water Shortage Contingency Plan uses a staged approach that classifies a shortage event into one of five levels spanning a range from less than 5 percent up to 50 percent. The overall concept is that water shortages of different magnitudes require different measures to overcome the deficiency. Because there is so little the City can do in the short run to increase the supply of water, the focus of this plan is primarily on measures that reduce demand. Each stage includes a set of demand reduction measures that become progressively more stringent as the shortage condition escalates. Normally, only one of these five stages would be put into effect early in the year at the recommendation of the Water Director and remain in force for the entire dry season.

There is an important distinction between Stages 1 and 2, designated above in shades of yellow, and the upper three stages. The lower two stages represent a level of curtailment that is envisioned as being necessary to balance water supply and demand from time to time under the City's Integrated Water Plan. Shortages of 15 percent or less, while inconvenient, do not directly threaten public safety or pose undue economic impact. The upper three stages (3-5) are characterized as emergency water shortages since they result in more widespread hardships being felt throughout the community, may threaten public health and welfare, and cause more economic harm. The intent of the City's Integrated Water Plan, however, is to limit future water shortages to no more than more than 15 percent.

Customer reduction goals for all but the first stage were derived by evaluating the composition of demand for each major group and dividing it into three usage priorities. These priorities are, from highest to lowest, 1) health/safety, i.e., all domestic and sanitary uses, 2) business and industrial uses and, 3) irrigation and other outdoor uses). Normal demands were then scaled back in accordance with the schedule below. The recommended allocation is presented in Table ES-3.

Table ES-2. Reduction in Water Delivery by Usage Priority
(percent of normal deliveries)

Stage	Magnitude of Water Shortage:	Health/Safety	Business	Irrigation
2	15%	95	95	64
3	25%	95	90	34
4	35%	90	85	12
5	50%	75	67	0

Table ES-3. Water Supply Allocation and Customer Reduction Goals

Normal Peak Season Demand = 2,473 mil gal	No Deficiency		Stage 2 15% Deficiency		Stage 3 25% Deficiency		Stage 4 35% Deficiency		Stage 5 50% Deficiency	
	Delivery		Delivery		Delivery		Delivery		Delivery	
	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)
Single Family Residential	100	1,031	84%	864	73%	753	62%	639	48%	495
Multiple Residential	100	524	87%	454	78%	411	69%	361	55%	287
Business	100	438	95%	416	92%	402	87%	381	70%	307
UC Santa Cruz	100	132	85%	113	76%	100	66%	87	52%	68
Other Industrial	100	23	95%	22	90%	21	85%	20	67%	15
Municipal	100	48	76%	36	57%	27	41%	20	28%	14
Irrigation	100	110	64%	70	34%	37	12%	13	0%	0
Golf Course Irrigation	100	106	73%	78	51%	54	34%	36	20%	21
Coast Agriculture	100	59	95%	56	90%	53	85%	50	67%	40
Other	100	2	95%	2	90%	2	50%	1	50%	1
Total	**100**	**2,473**	**85%**	**2,111**	**75%**	**1,861**	**65%**	**1,607**	**50%**	**1,247**
Demand Reduction %, Million gallons	**0**	**0**	**15%**	**-362**	**25%**	**-612**	**35%**	**-866**	**50%**	**-1,226**

In essence, this allocation system strives to balance available supplies in times of drought as much as possible through cutbacks in outdoor water use. At each level of shortfall, public health and sanitation usage is afforded the highest priority by cutting back on interior usage the least. The importance of water in protecting the City's employment base is also acknowledged through proportionately modest cutbacks to the commercial sector as compared to the overall system shortfall. Irrigation and other outdoor uses in all cases is cut back the most. The larger the water shortage, the greater the cutbacks, but this system of priorities is maintained throughout the range of potential shortages. The heavy reliance on outdoor use reductions makes sense, both from a water system perspective because it reduces peak demands, which is important to preserving storage in Loch Lomond Reservoir, and from a public health and welfare perspective, because irrigation and other outdoor uses are the most discretionary of all uses when drinking water is in short supply.

The remainder of this section discusses the demand reduction measures, communications, publicity, and operational activities that apply to each stage.

The primary demand reduction measures used in **Stage 1** are to restrict all landscape irrigation to certain hours of the day and to prohibit various uses deemed to be non-essential.

The recommended approach to reducing water use **Stage 2** involves expanding mandatory water restrictions and limiting landscape irrigation to specified days and times. Large landscape users would be required to adhere to water budgets.

A **Stage 3** water shortage constitutes an emergency situation. The three primary measures being recommended to meet this emergency reduction goal are 1) residential water rationing, 2) mandatory water shortage signage in all commercial buildings, and 3) reduced water budgets for large landscapes.

A **Stage 4** water shortage requires expanding water rationing to cover all water customers, including business, and reducing residential allocations. At this severe level of shortage, only minimal water is available for outdoor purposes.

Stage 5 represents an extraordinary crisis threatening health, safety, and security of the community. It would involve reduced rationing levels for all customers and a ban on outdoor uses to cut back normal water use by half.

Table ES-4. Summary of Demand Reduction Actions and Measures

Water Shortage Condition	Key Water Department Communication and Operating Actions	Customer Demand Reduction Measures
Stage 1: Water Shortage Alert (0-5%)	• Initiate public information and advertising campaign • Publicize suggestions and requirements to reduce water use • Adopt water shortage ordinance prohibiting nonessential uses • Step up enforcement of water waste • Coordinate conservation actions with other City Departments, green industry	• Voluntary water conservation requested of all customers • Adhere to water waste ordinance • Landscape irrigation restricted to early morning and evening • Non-essential water uses banned • Shutoff nozzles on all hoses used for any purpose • Encourage conversion to drip, low volume irrigation
Stage 2: Water Shortage Warning (5-15%)	• Intensify public information campaign • Send direct notices to all customers • Establish conservation hotline • Conduct workshops on large landscape requirements • Optimize existing water sources; intensify system leak detection and repair; suspend flushing • Increase water waste patrol • Convene and staff appeals board	• Continue all Stage 1 measures • Landscape irrigation restricted to designated watering days and times • Require large landscapes to adhere to water budgets • Prohibit exterior washing of structures • Require large users to audit premises and repair leaks • Encourage regular household meter reading and leak detection
Stage 3: Emergency Water Shortage (15-25%)	• Expand, intensify public information campaign • Provide regular media briefings; publish weekly consumption reports • Modify utility billing system and bill format to accommodate residential rationing, add penalty rates • Convert outside-City customers to monthly billing • Hire additional temporary staff in customer service, conservation, and water distribution • Give advance notice of possible moratorium on new connections if shortage continues	• Institute water rationing for residential customers • Reduce water budgets for large landscapes • Require all commercial customers to prominently display “save water” signage and develop conservation plans • Maintain restrictions on exterior washing • Continue to promote regular household meter reading and leak detection
Stage 4: Severe Water Shortage Emergency (25-35%)	• Contract with advertising agency to carry out major publicity campaign • Continue to provide regular media briefings • Open centralized drought information center • Promote gray water use to save landscaping • Scale up appeals staff and frequency of hearings • Expand water waste enforcement to 24/7 • Develop strategy to mitigate revenue losses and plan for continuing/escalating shortage	• Reduce residential water allocations • Institute water rationing for commercial customers • Minimal water budgets for large landscape customers • Prohibit turf irrigation, installation in new development • Prohibition on on-site vehicle washing • Rescind hydrant and bulk water permits
Stage 5: Critical Water Shortage Emergency (35-50%)	• Continue all previous actions • Implement crisis communications plan and campaign • Activate emergency notification lists • Coordinate with CA Department of Public Health regarding water quality, public health issues and with law enforcement and other emergency response agencies to address enforcement challenges • Continue water waster enforcement 24/7	• Further reduce residential water allocations • Reduce commercial water allocations • Prohibit outdoor irrigation • No water for recreational purposes, close pools • Continue all measures initiated in prior stages as appropriate

The City's existing water shortage emergency ordinance contains several provisions for enforcing water use rules and regulations, and a process for issuing exceptions and hearing appeals. These provisions were reviewed by staff and the Water Commission, which put forth several recommendations to be incorporated into the updated water shortage ordinance. Recommendations include revised penalty fees and excess use fees, adding specified findings for authorizing exceptions, and adding an alternative enforcement approach to reduce the likely caseload of appeals.

Implementation

This section describes the essential elements of implementing the updated Water Shortage Contingency Plan, discusses the approximate lead time needed to prepare for and activate a demand reduction program, outlines the process for declaring a water shortage, and identifies areas where additional ongoing efforts are necessary to address critical gaps.

Although the Water Department closely monitors rainfall, runoff and reservoir storage all winter, it is not usually until the end of March that the water supply outlook for the year ahead becomes certain. This leaves very little lead time to prepare for implementing the water shortage contingency plan.

Formal action declaring a water shortage is taken by City Council. The legal requirements for such action are covered in Section 350 et.seq. of the California Water Code. The code requires the following process be followed:

- That City Council hold a public hearing on the matter;
- That the public hearing be properly noticed (minimum of publishing once in newspaper at least seven days prior to the date of the hearing);
- Upon determining and declaring the existence of a water shortage, City Council may then adopt regulations and restrictions governing the use and delivery of water.

By municipal code, rules adopted by the City Council establishing water use regulations become effective immediately after their publication in the newspaper.

Effective communication is essential to the success of any water shortage contingency plan in achieving the desired water use reductions. All customers need to be adequately informed about water supply conditions, understand the need to conserve, and know what actions they are being requested or required to take to mitigate the shortage. Even before formal declaration of a water shortage, a public information/media program should be activated to provide customers with as much advance notice as possible. Following Council action, all residents and businesses, not just customers of record, would need to be provided notice of water shortage rules and regulations via a variety of media and communications methods, including print and television media, internet, utility newsletter, and other methods. Public notification and communication will be provided in Spanish language for non-English speakers.

The additional staff needed to carry out this contingency plan and personnel costs are estimated according to stage. These may consist of existing staff reassigned from regular duties in the Water or other City departments, new part-time temporary employees, interns, or some combination of the above. Additional office space and equipment needs are also addressed.

The financial impact of short-term demand reduction was estimated to range from just under $0.6 million in a Stage 1 water shortage alert situation to almost $5.8 million in a Stage 5 critical water shortage emergency. Compared to 2007 revenues of just over $22 million, the Department's net revenue would be reduced to approximately $21.5 million in Stage 1 to less than $16.4 million in Stage 5. Options to lessen or overcome the revenue shortfall include the following:

- Tapping into the Department's Rate Stabilization Fund (currently $2.2 million)
- Deferring planned capital improvements
- Considering possible rate adjustments or surcharges

Implementing this Water Shortage Contingency Plan will require utility billing system software that provides the necessary capabilities and flexibility to quickly shift from normal billing practices to water rationing mode. The newly installed EDEN utility billing module appears to be able to handle the type of computations needed to implement the recommended method for rationing residential customers. It does not, however, have the capability or flexibility to handle large landscape water budgets, or commercial water rationing which is based on some

percentage of past use. This capability will have to be custom developed over time.

Another key challenge involves implementing large landscape water budgets. This is the next major work priority scheduled for the City's Water Conservation Office. These programs have a long development time (1-2 years) due to the need to measure landscape areas, differentiate among plant materials, and integrate water budget data into the billing system. This latter task requires changing the bill design and layout to show water budget information and tying performance relative to the water budget to water pricing. If the City were confronted with a water shortage before large landscape water budgets and budget-based pricing could be implemented, alternative methods to curtail water in the large landscape sector would have to be considered.

The final tasks in updating the City's Water Shortage Contingency Plan include the following steps:

- Involving the community and soliciting public review and input on this document;
- Finalizing and presenting the plan to City Council for adoption;
- Preparing an updated water shortage ordinance;
- Preparing and mailing a Proposition 218 notice about proposed changes to penalty and excess use fees.

As far as critical gaps that require ongoing work, the most important recommendations are to:

1. Continue to work on the new utility billing system so that the database is able to meet the City's requirements for use in water rationing if it becomes necessary, and

2. Focus on developing the large landscape program so that water budgets described above can be used to professionally manage large irrigation accounts the next time a water shortage arises.

3. As much as possible, prepare water shortage notices, announcements, materials, and mailing lists in advance, including bilingual materials for non-English speakers.

Section 1 INTRODUCTION

This report constitutes the first comprehensive review and update of the City's Water Shortage Contingency Plan since the early 1990's. The project is an outgrowth of the City's 2005 Urban Water Management Plan, which recognized the many changes in regional conditions and local water supply planning that had taken place over the previous decade, and identified the need to better prepare for the possibility of future water shortages in advance of the next major drought.

1.1 Background

The City of Santa Cruz water system serves a geographic area that includes the entire City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands north of the City. The water service area includes about 90,000 people, some 35,000 households, and an employment base of 45,000 jobs.

The City water system draws almost exclusively on local surface water sources, whose yield varies from year to year depending on the amount of rainfall received and runoff generated during the winter season. In normal and wet years, when rainfall and runoff are abundant, the water system is capable of meeting the community's current total annual water requirements. The system is highly vulnerable to shortage, however, in extended dry periods or critically dry years, when the flow in local streams and river sources runs low. Moreover, like other communities on California's central coast, the Santa Cruz water system is physically and geographically isolated. There are no interconnections with other water suppliers in place to transfer water among adjacent water districts or import emergency supplies from outside the region.

The last time the Santa Cruz area was confronted with a serious water shortage was during a statewide drought that lasted from 1987 through 1992. While this event was notable for its extended duration, the most severe event on record was the critical drought of 1976-77. Both situations were considered to be emergencies whose magnitude or duration had been unanticipated prior to their occurrence and for which little preparation had been made. Operations modeling shows **if an event similar to one in 1976-77 were to recur now, the system would barely be able to meet half the community's normal water requirements in the second year of that drought.**

In 2003, the City adopted a long range document known as the “Integrated Water Plan”, the goal of which was to reduce near term drought shortages and provide a more reliable public water supply through the year 2030. The preferred water supply strategy that evolved from that process consists of 3 components:

1. Reduce water demand in all years through water conservation measures,

2. Increase the water supply through seawater desalination, and

3. Cut back water demand temporarily in drought years

This approach, of cutting back on demand in dry years when water is in short supply, is becoming more commonplace in virtually every region of the country that is faced at times with emergency shortages of deliverable water. Rather than strive to meet 100 percent of customer water demand during periods of extreme drought, more and more urban water utilities are beginning to anticipate and plan for a certain degree of water shortage from time to time, and respond with programs that temporarily reduce water use. Whether for financial, political, or environmental reasons, or simply the recognition that public water systems can never be totally drought-proof, water agencies are deliberately incorporating short-term demand management or “use curtailment” as part of their overall water management strategy.

The City’s Integrated Water Plan envisions satisfying 85 percent of normal water needs during a worst-case scenario like the 1976-77 event, thereby reducing the potential shortfall from the current almost 50 percent to no more than 15 percent. This reliability goal was considered to be the best overall balance between ensuring public health and safety, cost, and impact on the environment, given the many public policy tradeoffs involved. Now, instead of treating any shortage as a water supply emergency situation and responding reactively, the City has effectively accepted the risk of incurring relatively modest shortages every so often, which drives the need for having a fully developed contingency plan and well-defined, measured responses in place.

1.2 Purpose and Goals

This Water Shortage Contingency Plan describes the conditions which constitute a water shortage and provides guidelines, actions, and procedures for managing

water supply and demands during a declared water shortage. The primary focus of the plan is on measures that reduce customer demand for water, but it also covers actions that can be implemented to stretch or increase the water supply.

This plan was developed to fulfill two fundamental purposes:

1. To establish the procedures and actions necessary to achieve the up to 15 percent cutback in system-wide demand established in the City's Integrated Water Plan, and

2. To describe how the City would respond if faced with much larger shortages in water supply ranging as high as 50 percent.

There are several reasons why it is necessary to consider and plan for shortfalls larger than 15 percent. First, the City remains vulnerable in the near term to a critical water shortage of that scale until it secures an additional source of supply for drought protection. The City is currently implementing a broad set of water conservation programs and is testing the feasibility of seawater desalination before proceeding with the design, permitting, and construction of a full scale plant. Commissioning of a new water source, though, remains years away and is by no means a certainty. Much planning remains to be done and project approvals have yet to be secured. In the meantime, the City is potentially at risk of experiencing a major water shortage, as demonstrated by the exceptionally dry conditions experienced during the 2007 water year and by the Governor's declaration of a statewide drought in 2008. Second, state law requires all public water suppliers to develop contingency plans for situations of up to a 50 percent shortage in water supply. Finally, the City's long range water supply planning is predicated on past hydrologic records which focused on the two year, 1976-77 event as a worst case scenario. No one can predict how the future will unfold, especially in light of the emerging science of global climate change, which some predict could bring more frequent, longer, or more intense water shortages across the state, and which compounds the uncertainty and risk going forward at the local government level.

Whatever magnitude of shortfall the City may experience, the overarching goals of this plan are as follows:

1. to conserve the water supply of the City for the greatest public benefit,

2. to mitigate the effects of a water supply shortage on public health and safety, economic activity, and customer lifestyle, and

3. to budget water use so that supply will be available for the most essential purposes for the entire duration of the water shortage.

1.3 State Regulations and Planning Requirements

For California water agencies, there are two main provisions of the California Water Code that pertain to water shortage contingency planning.

Sections 350-359 provide the authority for the governing body of a water agency to declare a water shortage emergency. Once having done so, the local agency is provided with broad powers to implement and enforce regulations and restrictions for managing a water shortage. Water needed for domestic, sanitation and fire protection purposes is given priority and discrimination between consumers using water for the same purpose or purposes is not allowed.

Section 10632 requires water agencies to provide a water shortage contingency analysis as part of their Urban Water Management Plans. The code requires agencies plan for shortages up to a 50 percent reduction in water supply, and to describe the actions and consumption reduction methods that apply to each stage of the plan.

The full text of these two code sections is included in Appendix A.

1.4 Planning Process and Water Shortage Management Principles

Development of this plan was a collaborative effort among the City Water Department staff, the City's Water Commission, City Council, and the public.

The project was initiated in 2006 with a work plan that organized the job into 12 individual tasks covering specific topics or issues (Table 1-1). For each task, staff prepared a written report for review and input by the Water Commission at its regularly scheduled meetings. These reports reviewed one or more aspects of the City's existing water shortage emergency ordinance, described alternative methods or approaches used by other water agencies, analyzed the different

Table 1-1. Water Shortage Contingency Plan Update Work Plan

Task	Description
Task 1	Identify Laws, Goals, and Principles
Task 2	Determining Water Supply Availability
Task 3	Declaration of Water Shortage Emergency
Task 4	Review Stages and Associated Terms
Task 5	Allocation of Water
Task 6	Review Allotment Methods
Task 7	Consumption Reduction Methods
Task 8	Water Department Actions
Task 9	Enforcement and Appeals Procedures
Task 10	Draft New Water Shortage Contingency Plan
Task 11	Present Recommended Plan to Water Commission and City Council
Task 12	Draft, Review New Ordinance

options, and presented a recommendation on the topic for inclusion in this plan. The Water Commission provided its input and recommendations throughout the process. Helpful guidance was obtained from the California Department of Water Resources' recently updated Urban Drought Guidebook. In addition, research involved reviewing the water shortage plans of 21 other urban water utilities from throughout California, and from selected cities in the western United States and across the country (Appendix B).

The subject that generated the most public interest, input, and debate was how to allocate the available water when supplies run short. The issue was discussed before City Council and negotiated with several large customers before reaching a final recommendation.

This document synthesizes the results of that process into a single report. It was presented to the Water Commission for review in January 2009, revised, distributed throughout the community, presented again at a public hearing before City Council, and adopted on March 10, 2009. The final plan was then redrafted in the form of an ordinance that was adopted in May 2009 and revised in June 2010. The final, approved water shortage contingency ordinance would then

become effective only as necessary in an actual water shortage following appropriate public notification and public hearing before City Council.

The plan is based on lessons learned here and from other water agencies during past droughts. Nevertheless, it is important to note that every drought will evolve differently and that it is not practical to develop a set of hard and fast rules that apply to all situations. The plan should be thought of as a general framework that will need to be adjusted and refined based on actual conditions.

Early in the planning process, staff and the Water Commission developed a set of principles to guide this planning process. These principles are as follows:

- **Shared contribution.** All customers will be asked to save their share in order to meet necessary reduction goals during water shortages.

- **Reduce non-essential uses first.** The plan concentrates on the elimination of non-essential water uses and on outdoor reductions, and gives the highest priority to essential health and safety uses.

- **Preserve jobs and protect the local economy.** The plan minimizes actions that would have substantial impact on the community's economy and provides large users the flexibility to determine their own reduction strategies within a water budget.

- **Existing conservation measures recognized.** Customers that have already implemented water conservation measures are acknowledged to have less potential for reduction and should not be penalized for conserving.

- **Communication at every stage.** A public information campaign at every level of shortage is essential for customer preparation and will encourage confidence in the City's ability to respond to water shortages.

- **Public participation.** Public participation in the development and implementation of the plan will help to ensure fairness, encourage cooperation, and facilitate implementation and with demand reduction measures in times of shortage.

1.5 Relationship Between This Document and Other Plans

This Water Shortage Contingency Plan, as described above, represents one of the three components in the City's Integrated Water Plan. It also constitutes one of several elements in the City's Urban Water Management Plan, as required by State law.

Water supply interruptions and shortages may result from a variety of causes, including facility failure, such as a major pipeline break, earthquake, flood, or other natural disaster. This plan specifically addresses longer-term water shortages that occur as a result of drought conditions that may extend several months or span several years in duration. For shorter term emergency incidents or disasters, the Water Department maintains a separate General Emergency Plan, which is subordinate to and complements the Citywide Emergency Operations Plan, to guide emergency operations response and recovery for shorter term water supply interruptions and outages.

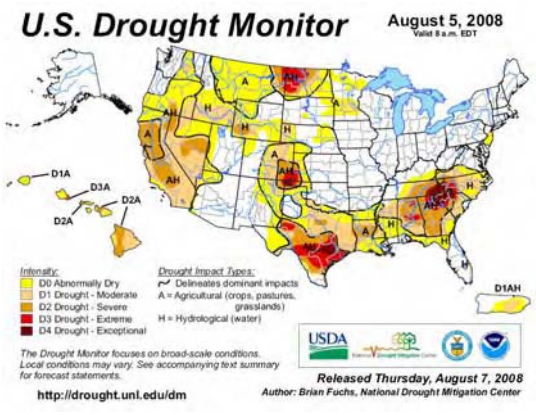
Section 2 ASSESSING WATER SUPPLY AND DEMAND

Rainfall, runoff, and reservoir storage are the key hydrologic indicators used by the City to evaluate water conditions. This section describes these factors affecting the City's water supply and discusses the forecasting process and management considerations used in dry years to determine whether a water shortage is expected for the year ahead and how much water use must be cut back systemwide in response. As a preface, this section includes a brief discussion on the distinction between the terms drought and water shortage.

2.1 Drought vs. Water Shortage

Drought is a normal, naturally occurring but unpredictable climatic phenomenon of varying frequency, duration and severity. Droughts differ from other natural hazards in that they are not distinct weather events, like floods, hurricanes, or tornados. They may have a slow onset, persist and evolve over a period of years, affect a large spatial region, but cause little structural damage. The most difficult aspect of a drought is that no one can tell how long it will last.

Figure 2-1. National Drought Map



Five degrees of drought intensity are recognized nationally, including abnormally dry, moderate, severe, extreme, and exceptional.

The California Department of Water Resources describes drought as:

> *"A deficiency of precipitation over an extended period of time resulting in a water shortage for some activity, group, or environmental sector."*

A water shortage, on the other hand, occurs when a particular utility's water supply is insufficient to meet its customers' ordinary drinking water needs.

Besides weather conditions, there are a number of factors that affect water supply availability, including:

- Source yield and reliability
- Infrastructure capacity and operating constraints
- Access to alternative sources
- System demand characteristics

In Santa Cruz, a water shortage occurs when the combination of low surface flows in the coast and river sources and depleted surface water storage in Loch Lomond Reservoir reduces the available supply to a level that cannot support existing demand.

Ordinarily, one abnormally dry year does not create a water shortage in Santa Cruz. Usually there is sufficient storage in Loch Lomond Reservoir, even after one dry winter, to carry the system though the following summer. Based on past experience, however, a shortage is likely to occur when the central coast region experiences **two or more** dry winter seasons in a row.

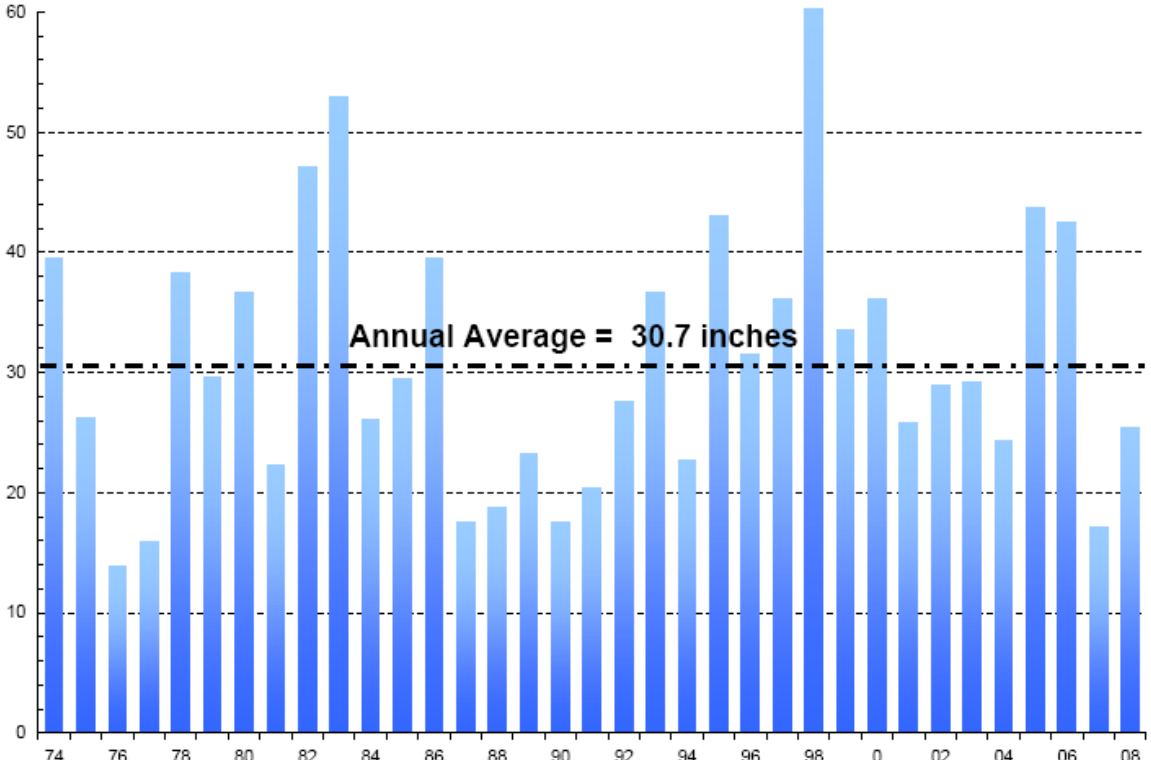
2.2 Precipitation

The water supply of the City of Santa Cruz all originates from precipitation that falls in the form of rain on the Pacific Ocean side of the Santa Cruz Mountains during the fall, winter, and early spring. The majority of rainfall normally occurs in a five-month period between November and March. The amount of precipitation that falls is one basic indicator of whether the city is experiencing a wet or dry year. Rainfall amounts on the central coast vary widely from year to year.

Daily rainfall data is collected for water supply purposes at various sites in the Newell Creek watershed, at Ben Lomond, and in the City of Santa Cruz. The Ben Lomond and Santa Cruz sites are both official National Oceanographic and Atmospheric Administration (NOAA) weather observation stations with extended rainfall records.

Annual variation in rainfall at Santa Cruz is illustrated below in Figure 2-2. Long-term average rainfall in the Santa Cruz area is about 30 inches. In the 1987-92 drought, annual rainfall ranged from 17 to 23 inches, and in the 1976-77 drought, annual rainfall amounts in the City measured 14 to 16 inches.

Figure 2-2. Annual Rainfall at Santa Cruz, 1974-2008 (inches)



In Ben Lomond, rainfall averages about 49 inches per year. In the 1987-92 drought, annual rainfall ranged from 25 to 32 inches, and in the 1976-77 drought, annual rainfall amounts measured 19 to 21 inches.

The pattern in both timing and distribution of rainfall can be as important in determining water supply availability as the total amount of rainfall received. Years in which the majority of rainfall occurs early in the rainy season or is concentrated in a short time frame tend to produce lower river and stream flows during the peak summer season. Conditions where storms are spread out through the winter season or occur late into spring help sustain higher base flows in the coastal streams and the San Lorenzo River later into the year.

2.3 Runoff

Under normal operating conditions, the north coast and San Lorenzo River flows provide about 80 percent of the City's total annual water supply. Accordingly, runoff is a key parameter used to assess the City's water supply condition.

Stream flow in the San Lorenzo River is monitored at two locations using the U.S. Geological Survey (USGS) gauges located at Henry Cowell Redwoods State Park near Felton and downstream next to the Tait Street intake. The gauge in Felton is particularly important for assessing water supply conditions because the river is the City's single largest source and because of the long historic record that exists for the site. Real time flow records are available on the USGS website, http://waterdata.usgs.gov/ca/nwis/uv?11160500. The USGS also prepares printed reports that provide a record of average daily and monthly flows, in cubic feet per second (cfs), and stream discharge, expressed in acre-feet (ac-ft). Monthly flows are charted by the Water Department and compared with the long-term averages and the previous year's flow to assess trends.

On the north coast sources, there were no stream gauges until a few years ago. Flow records are now being gathered for these sources, which will become valuable in future years for assessing water conditions on the north coast.

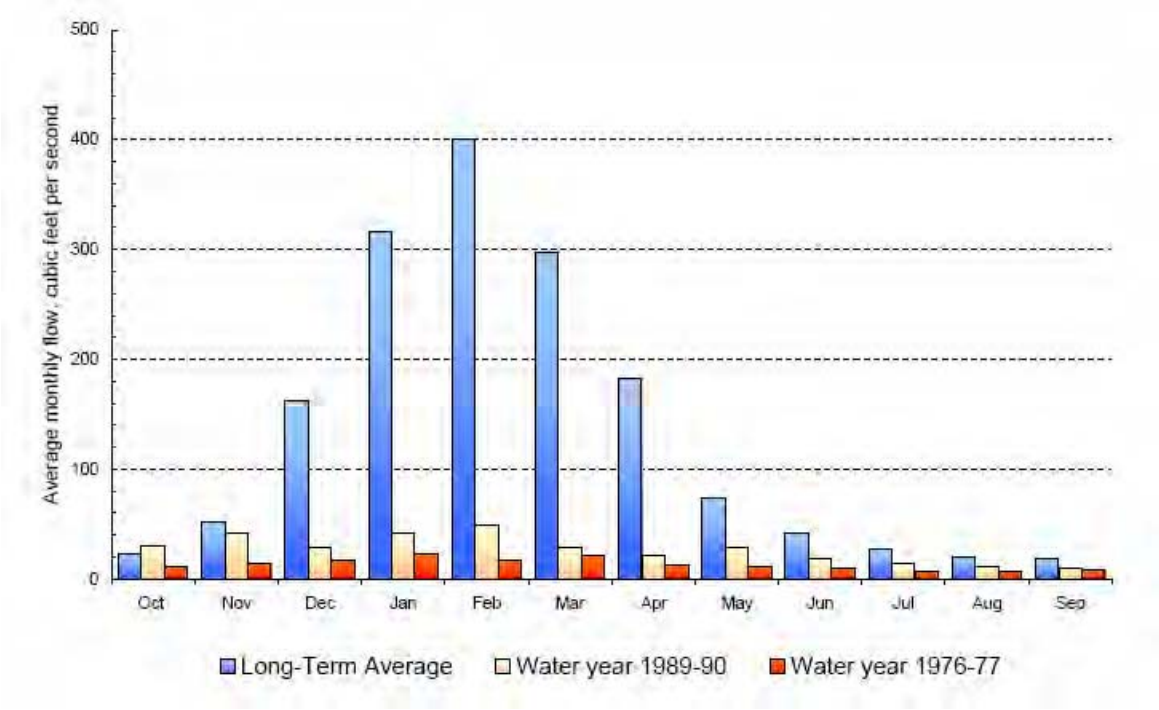
In the San Lorenzo River, runoff fluctuates annually and seasonally, depending on the amount and timing of rainfall. The majority of runoff typically occurs over a three month period from January through March, once the watershed becomes saturated. After the rainy season ends, stream flow in the San Lorenzo River gradually declines over the course of the summer dry season.

In normal years, average monthly runoff ranges from 300 to 400 cfs in winter, and then drops from 70 cfs to 18 cfs over the course of the dry season. As long as the flow in the channel continuously exceeds 12 - 14 cfs, which it typically does in normal years, the water system is capable of making full production within its water rights from the San Lorenzo River all season long.

In dry years, runoff is substantially lower. Figure 2-3 below illustrates the difference between average monthly flow and the flow in the San Lorenzo River during two drought years. Under these conditions, when stream flow in summer declines below 12-14 cfs, production from the river must be scaled back to avoid damaging pumps. In the 1977 drought, the flow in the river dropped to a historic low of about 6 cfs, significantly reducing water production.

The same is true, even more so, for the north coast sources. The stream flow in Laguna and Majors creeks dwindles to extremely low levels in dry years. Liddell Spring is a steadier, more reliable source in dry years than either Laguna or

Figure 2-3. Monthly Stream Flow in the San Lorenzo River at Felton



Majors Creek, but does exhibit some decline in flow during dry periods. As such, the spring is a crucial component of the City's water supply in drought years.

2.4 Water Year Type

The City uses a water year classification system as a primary index of its water supply conditions. Under this classification system, the water year, which runs from October 1 to September 30, is designated as one of four types, depending on the total annual stream discharge of the San Lorenzo River, measured at Felton, and expressed in acre-feet[1].

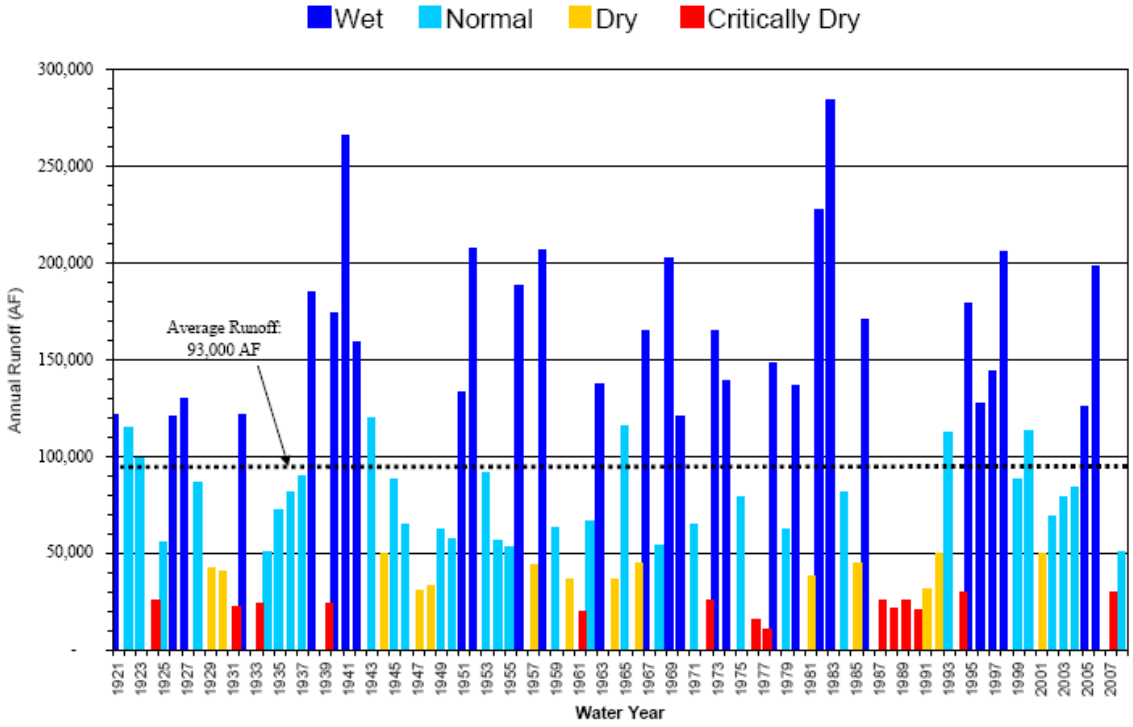
Table 2-1. Water Year Classification System

Classification	Total annual discharge (ac-ft)
Wet	> 119,000
Normal	49,000 - 119,000
Dry	29,000 – 49,000
Critically Dry	< 29,000

[1] An acre-foot of water is equal to 325,851 gallons. One million gallons equals 3.07 acre-feet.

Figure 2-4 below shows the total annual discharge for the San Lorenzo River over the 87 year period from 1921 to 2008, and the classification for each water year. The graph illustrates the dramatic variation in discharge from year to year. Long-term average annual discharge for the San Lorenzo River at Felton is 93,000 acre-feet or almost 30 billion gallons per year. In the long 1987-92 drought, total annual discharge measured between 20,000 and 30,000 acre-feet, and in the 1976-77 drought - the most critical on record - the total annual discharge in the San Lorenzo River dropped to between 10,000 and 14,000 acre-feet.

Figure 2-4. Total Annual Stream Discharge from San Lorenzo River



While the current water year type is of primary consideration in assessing water conditions, the previous water year type also has some influence on summer water supply availability. An antecedent year that is classified as wet will help sustain river base flows longer into the year, whereas a previous dry year can cause river flows to decline sooner and lower than would otherwise be expected.

2.5 Reservoir Storage

Loch Lomond Reservoir is the City's only source of stored water and has a total storage capacity of 2.8 billion gallons. In normal and wet years, reservoir storage

Figure 2-5. Loch Lomond Reservoir

refills naturally to full capacity with runoff from the Newell Creek watershed, usually by February or March. Storage can also be supplemented in dry years with water pumped up to the reservoir from the San Lorenzo River via the Felton booster station when natural runoff is low.

In a normal year, the reservoir will start the dry season full with 2.8 billion gallons in storage. In the 1987-92 drought, reservoir storage at the beginning of April ranged from 1.5 to 1.7 billion gallons (53 to 61 percent of capacity). In the 1976-77 drought, reservoir storage at the beginning of April 1976 measured 1.6 billion gallons or 57 percent of capacity. In April 1977, beginning season storage was only 1.0 billion gallons or 36 percent of capacity.

2.6 Determining If a Water Shortage is Imminent

In normal or wet years when the water supply outlook is favorable, there is generally a surplus of water available from the various sources to meet existing demand. A general rule of thumb is that if Loch Lomond Reservoir is at full capacity by spring, it is not necessary for the City to institute any short-term demand reduction measures the following summer.

After an unusually dry winter or period of consecutive dry years, though, when a lack of supply appears possible, the Water Department undertakes an analysis to forecast whether water supplies will be deficient relative to estimated water needs for the coming dry season. This calculation must be made before the end of rainy season in time to decide on appropriate actions and to provide adequate notice to the public. There is always the chance that late winter rains will change the water supply outlook. Thus, the situation remains dynamic through the end of April.

The peak season from roughly May 1 through October 31 is considered the critical period for the purpose of defining the degree of water supply shortfall, and for selecting the appropriate demand reduction goal. This is the period when water availability in the City's flowing sources is generally lowest and water demand normally would be at its highest, creating a summer water supply "crunch".

Past experience indicates that, even in water short years, there is generally adequate water in the City's flowing sources to meet system demands during the off-peak months between November and April, and that there is little if any need to reduce water demand this time of year when consumption is low.

There is no one single criterion, trigger, or definition that is used to determine if a water shortage exists. The determination of a shortfall involves consideration of all the parameters mentioned previously, as well as expected system demand. To determine the degree of shortfall, the Department follows a three-step process, described below:

1. Develop a monthly forecast of supply available from flowing sources and wells.

2. Compare the supply available from flowing sources and wells to the expected water demand and estimate production needed from Loch Lomond. Calculate the monthly and seasonal drawdown on Loch Lomond Reservoir.

3. Evaluate whether the amount of water in Loch Lomond Reservoir is adequate to meet expected demand for the coming dry season and for the following year in case the dry weather pattern continues through the next winter.

2.6.1 Forecasting Water Production from Flowing Sources and Wells

Of primary importance to the system operation is the ability to know at the end of a winter season how the San Lorenzo River, the City's most important source, will flow through the coming summer and into the dry fall season. In wet and normal years, the river flows at the Tait Street diversion are sustained consistently above the 12.2 cfs level that the City is authorized to divert under the City's water rights. The three river pumps normally make a steady 7.5 million

gallons per day from this source, or between 225 and 232 million gallons per month, all season long.

In dry and critically dry years, natural flows can drop below the 12 cfs level at the intake during summer, requiring pumping from the San Lorenzo River to be scaled back. Once the water year type has been established, statistical tables are used to forecast the mean monthly flow in the San Lorenzo River through the remainder of the dry season (Appendix C). This technique helps to identify at what point in the year river production will be reduced and by how much.

Forecasting supplies available from coastal sources involves less certainty due to the lack of historic stream flow information. The technique used to forecast supplies on the north coast is to find historic water years with a similar pattern in rainfall amount and timing. The production records from those years are examined to assess the likely yield of those sources for the coming season, while taking into account any operational rules, capacity constraints, or in-stream flow releases that may have changed from those previous years. Water production from the City's Live Oak well field is projected as a function of the production capacity for any wells in operation and duration that the wells will be operated.

The Department necessarily uses a conservative estimate of yield to ensure the supply forecast for flowing sources and groundwater production is reliable.

2.6.2 Calculating Drawdown on Loch Lomond Reservoir

Once the forecast of supply available from surface diversions and wells is made, supplies are compared with expected water demand to determine how much lake water would be needed to meet unrestricted system demand. The amount of water lost from the reservoir to evaporation and released for downstream fisheries preservation is then factored in. From this analysis, a projection can be made about:

- the expected rate of drawdown of the reservoir over the dry season;
- the lake level at the end of October; and
- the expected carryover storage for the following year.

Table 2-2 below presents an example with the City's current sources of supply to illustrate the forecast technique. This situation represents a hypothetical year in

which the lake does not refill over winter and begins the season on April 1 with 2.1 billion gallons in storage, or 73 percent of capacity. Flow in the San Lorenzo River is projected to drop below 12 cfs during the month of July, reducing river production. Without any constraint on water demand, a total of 680 million gallons of water would be needed from the lake to meet normal system demand over the dry season, which, along with other losses and outfows, would result in an end of season reservoir volume of about 1.2 billion gallons, or just under 42 percent of capacity.

Table 2-2. Example of Water Storage Forecast with Unrestricted Water Demand

SCWD Production Forecast (million gallons)	April	May	June	July	Aug	Sep	Oct	Total
North Coast (gross production) [2]	82	74	64	50	50	49	35	404
North Coast (net production)	61	55	48	38	38	37	26	303
San Lorenzo River	207	232	225	212	200	175	160	1,411
Live Oak Wells	24	24	24	24	24	24	24	168
Total Production without Lake	293	311	297	274	262	236	210	1,882
Projected System Demand	295	344	388	410	415	365	345	2,562
Lake Production Needed to Meet Demand	**2**	**33**	**91**	**136**	**153**	**129**	**135**	**680**
Evaporation (feet)	0.2	0.3	0.3	0.4	0.4	0.3	0.2	2.1
Evaporation (mil gal)	11	14	14	18	16	11	6	90
Fish Release (mil gal)	21	21	21	21	21	21	21	147
Beginning Lake Volume	**2,100**	**2,066**	**1,998**	**1,872**	**1,696**	**1,506**	**1,345**	
End of Month Lake Volume	**2,066**	**1,998**	**1,872**	**1,696**	**1,506**	**1,345**	**1,183**	
End of Month Lake Elevation (ft above msl)	**562.8**	**561.2**	**558.5**	**554.3**	**549.3**	**544.6**	**539.6**	
Monthly change in elevation	-0.8	-1.6	-2.7	-4.2	-5.0	-4.7	-5.0	
Cumulative change in elevation	-0.8	-2.4	-5.1	-9.3	-14.3	-19.0	-24.0	
Percent of capacity of Loch Lomond (%)	73.0	70.6	66.1	59.9	53.2	47.5	**41.8**	

2.6.3 Evaluating Adequacy of Supply

The determination of whether a shortage exists essentially boils down to a risk assessment regarding the predicted end of season lake level and carryover storage needed in Loch Lomond Reservoir. The Water Department's main considerations in undertaking this assessment include the following:

- Would allowing unrestricted water use in the current year leave insufficient reserves if drought conditions continue into next year?

[2] Gross production refers to the amount of water entering the system at the source, while net production is the amount reaching the City's water treatment plant. The difference is due to coast irrigation sales, leakage, and maintenance.

- Knowing that another dry year could mean the City's flowing sources would drop even lower, how much water should be withheld in the reservoir for the following year to be prudent?

The key decision thus revolves around how much Loch Lomond water to allocate in spring for the current year, whose tradeoffs are summarized in Table 2.3 below.

Table 2.3 Tradeoffs of Alternative Allocations from Loch Lomond Reservoir

Allocation	Frequency	Revenue Impact	Consequence
Large	Shortages occur less frequently	Less impact on water sales and revenue	Would require a smaller cutback in the current year, but would draw down the reservoir faster and potentially would require much more draconian cutbacks if the drought persisted into the following year
Small	Shortages occur more frequently	Lower sales and reduced revenue	Would mean customers would be required to cut back more in the current year, but would preserve storage enabling the City to withstand more prolonged drought before running out of stored water

There is no set formula to determine the optimal allocation. Rule curves were developed for operations modeling purposes as part of the City's Integrated Water Plan to mimic how lake resources theoretically would be allocated under various water conditions. Under these rule curves, no shortage is indicated if lake storage is above 2.4 billion gallons (85 percent of capacity) on April 1 and as long as the lake is forecast to remain above 1.8 billion gallons (64 percent of capacity) though the end of September. Below these levels, a shortage is assumed to occur. The lower the lake level, the greater the shortage. One important rule regarding utilization of lake storage established during the development of the Integrated Water Plan was to always regard the bottom 1.0 billion gallons (35 percent of capacity) in the reservoir as unusable, so there is always some limited amount of supply preserved in storage for the following year.

In the real world, though, with imperfect information about both supply and demand, and no ability to tell when the drought will end, prudent management dictates that the long-term welfare of the City and its residents outweighs the short-term benefit to the community and higher revenues that would be realized by setting a higher allocation. This means generally favoring a smaller allocation and

calling for larger cutbacks than may actually be necessary in retrospect to avoid the possibility of experiencing more critical water shortages if drought conditions continue to worsen. **Ideally, the carryover storage amount will be enough, along with other sources, to meet essential health and safety needs if the subsequent winter is as dry as the driest year on record.** According to the literature, the main lesson from other utilities that have been through droughts is that they would have acted earlier to save more water, in retrospect, in order lessen the impact of implementing more severe cutbacks later on.

Going back to the example in Table 2-2, it is logical to assume that a season-end level of less than 1.2 billion gallons (42 percent of capacity) would be regarded as unsafe and leaving the system vulnerable in case of another dry year. In this example, it is not unreasonable to assume that a decision would be made to curtail water use with the goal of retaining somewhere between 1.5 and 1.6 billion gallons of water in storage (55 percent of capacity) at the end of the season as a hedge against a subsequent dry year. To achieve that target storage, lake withdrawals would need to be reduced from 680 to less than 300 million gallons and customers would be required to cut back by 15 percent or 387 million gallons compared to the normal demand of 2,562 million gallons. Table 2-4 shows the effect a 15 percent cutback would have in terms of increasing carryover storage and lake level at the end of the dry season.

Table 2-4. Example of Water Storage Forecast with 15 Percent Demand Reduction

SCWD Production Forecast (million gallons)	April	May	June	July	Aug	Sep	Oct	Total
North Coast (gross production)	82	74	64	50	50	49	35	404
North Coast (net production)	61	55	48	38	38	37	26	303
San Lorenzo River	207	232	225	212	200	175	160	1,411
Live Oak Wells	24	24	24	24	24	24	24	168
Total Production without Lake	293	311	297	274	262	236	210	1,882
Reduced System Demand	295	315	320	330	320	300	295	2,175
Allowable Lake Production	**2**	**4**	**23**	**56**	**58**	**64**	**85**	**293**
Evaporation (feet)	0.2	0.3	0.3	0.4	0.4	0.3	0.2	2.1
Evaporation (mil gal)	11	14	14	18	16	11	6	90
Fish Release (mil gal)	21	21	21	21	21	21	21	147
Beginning Lake Volume	**2,100**	**2,066**	**2,027**	**1,969**	**1,873**	**1,778**	**1,682**	
End of Month Lake Volume Goal	**2,066**	**2,027**	**1,969**	**1,873**	**1,778**	**1,682**	**1,570**	
End of Month Lake Elevation (ft above msl)	**562.8**	**561.9**	**560.6**	**558.5**	**556.3**	**553.9**	**551.1**	
Monthly change in elevation	-0.8	-0.9	-1.3	-2.1	-2.2	-2.4	-2.8	
Cumulative change in elevation	-0.8	-1.7	-3.0	-5.1	-7.3	-9.7	-12.5	
Percent of capacity of Loch Lomond (%)	73.0	71.6	69.6	66.2	62.8	59.4	**55.5**	

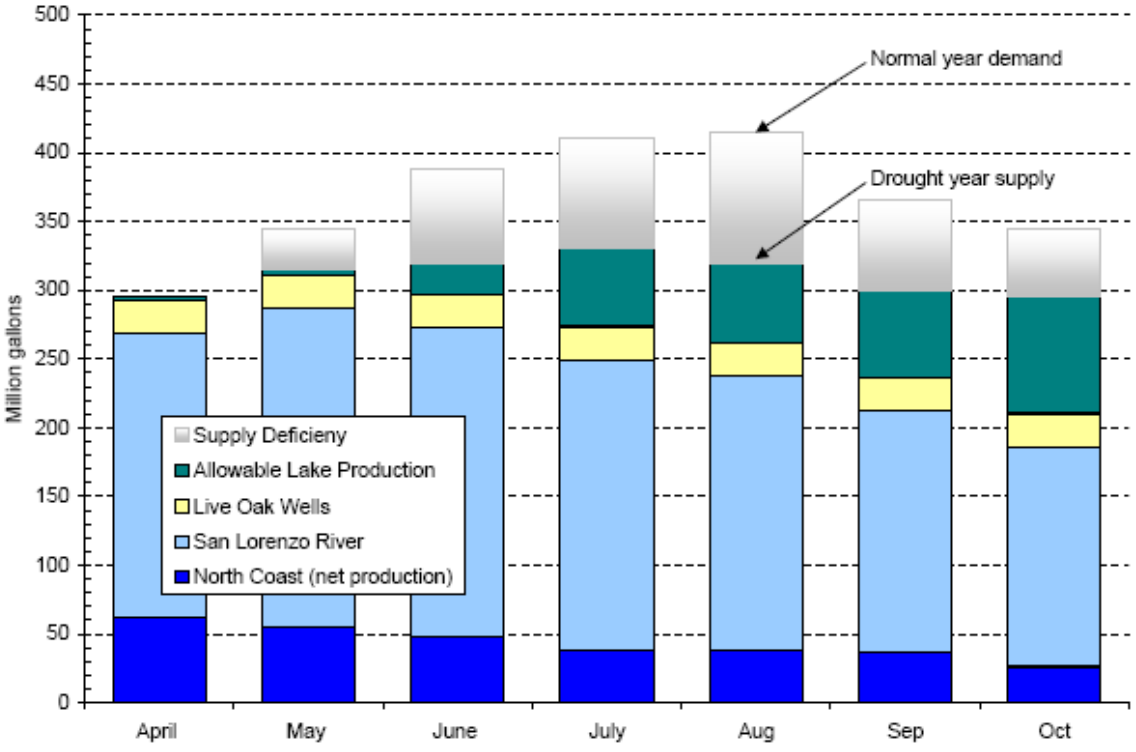
In this case, the reservoir at the end of the dry season stays over half full and 13 feet higher than it would have without any reduction in demand.

The overall water shortage is calculated simply by dividing the supply deficiency for the seven month period from April to October (387 million gallons), by the total unrestricted demand during the same period, expressed as a percentage:

Supply deficiency (mg):	387
Unrestricted demand (mg):	÷ 2,562
Water shortage:	= 0.15 or **15%**

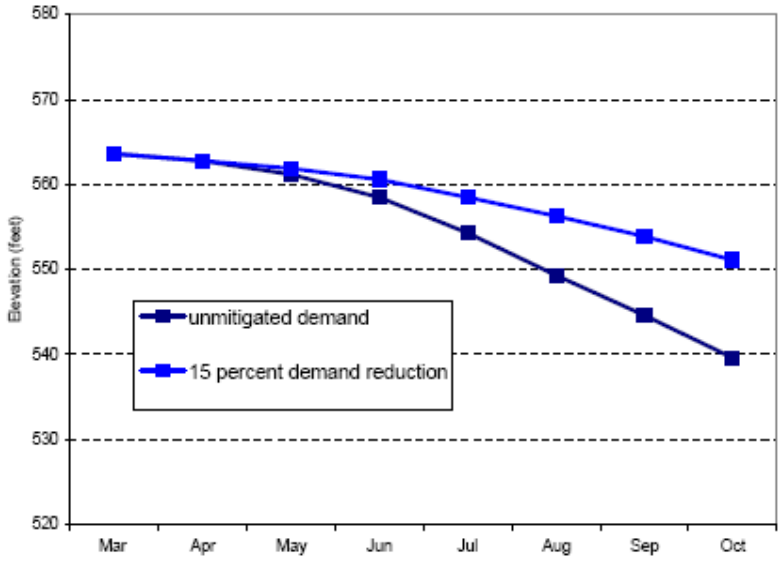
Figure 2-6 below illustrates the 15 percent supply deficiency relative to available supplies on a month to month basis.

Figure 2-6. Example of a 15 Percent Water Shortage



The difference in the drawdown rate between the two scenarios is illustrated in Figure 2-7. This chart shows the effect reducing water demand has on slowing the depletion rate of the City's stored water supply.

Figure 2- 7. Reservoir Drawdown



The ultimate decision about whether supplies are adequate in Santa Cruz for a given dry year are thus dependent not just how much water is available in that year from the City's sources of supply, but also on the level of demand exerted by customers over the coming season and management's comfort level with predicted carry over storage. In the last few years, systemwide water demands have experienced a noticeable downturn which means the City can better withstand dry conditions like the current 2008 water year and have a lower seasonal impact on lake levels than in the past. The one caveat, though, is that because at present use is so conservative, there is a declining ability for "belt tightening" when the next shortage arises.

2.7 New Water Sources and Potential Changes to Existing Supplies

There are several major projects currently under way that are intended to improve the City water system reliability in drought years.

The City and Soquel Creek Water District are jointly pursuing seawater desalination as a supplemental water source, which is expected to become available sometime around 2015. As currently envisioned, this facility would add 2.5 mgd capacity to the City water system, which could provide upwards of 500 million gallons over the dry season as a backup supply in times of drought. The operation of such a facility between the two agencies is yet to be determined, but

the process of evaluating the City's dry year supply and demonstration of need by the City for use of the plant would be similar to the example shown above.

The other major capital improvement project affecting the City's water supply is the renovation of the Live Oak well system, which includes upgrades to wells, treatment plant, and the distribution system to restore production capacity back to its full 2 mgd level that it was in operation during the 1987-92 drought. This assumes the entire groundwater basin is not compromised by continued regional over-pumping of the Purisima aquifer.

Another possible long-term project currently being pursued that may have some minor beneficial effect on City water supplies by reducing summertime peak demand is an exchange of water with the Scotts Valley Water District. The District is exploring ways to provide recycled water from the City of Scotts Valley to the Pasatiempo golf course, which now uses water obtained from the City of from Santa Cruz. The District would receive in exchange surplus water from the City during winter to reduce its groundwater pumping and restore groundwater levels in the Scotts Valley area. While net water production by the City would remain unchanged, the project would shift demands from the peak to off-peak season and shift production away from the lake toward the City's flowing supplies.

In addition to these projects, there are also several uncertainties facing the City's existing sources, particularly along the north coast, that have the very real potential to reduce water supply in dry years.

The City is pursuing an Endangered Species Act Section 10 permit and habitat conservation plan. Long-term requirements for in-stream flow releases affecting the City's surface water diversions have yet to be determined and are pending the outcome of further data collection, analysis, and negotiations with federal and state regulatory authorities. However, preliminary voluntary releases are now being made an all three North Coast sources (Laguna and Majors Creeks, and Liddell Spring) and expectation is that the City will lose more water as a result of regulatory actions at the state or federal level for the protection of listed species. The City is also involved in two water rights matters pending before the State Water Resources Control Board that could affect future operations of the Felton diversion and Loch Lomond Reservoir.

The net effect of all these projects and issues is unclear at this time, but the likelihood is that the City stands to lose some portion of its existing supply before it gains any new source. Those changes will have to be factored into the assessment of supply and demand the next time the City is confronted with a potential water shortage.

Section 3 DEMAND REDUCTION PROGRAM

This section describes how the City will respond to future water shortages and discusses the various actions it would take to reduce water demand under different shortage scenarios.

3.1 Staged Demand Reduction Approach

The recommended Water Shortage Contingency Plan uses a staged approach that classifies a shortage event into one of five levels spanning a range from less than 5 percent up to 50 percent. Each stage has been ascribed a specific title to describe and convey the severity of the water shortage to the public.

Table 3-1. Five Stage Structure to Water Shortage Contingency Plan

Stage	Magnitude of Water Shortage	Stage Title
1	0-5%	Water Shortage Alert
2	5-15%	Water Shortage Warning
3	15-25%	Water Shortage Emergency
4	25-35%	Severe Water Shortage Emergency
5	35-50%	Critical Water Shortage Emergency

To put these different levels into context, the City water system normally produces a total of about 2.5 to 2.6 billion gallons of water from April through October. This is the time period when water production is typically the most constrained by shortages and when consumption would need to be reduced. Normal daily usage during this period varies seasonally from 10 to 14 mgd and averages about 12 mgd. Table 3-2 below shows the amount of reduction in demand that would need to be achieved system-wide, on both a seasonal and a daily basis, which corresponds with the upper end of each stage.

The overall concept of this approach is that water shortages of different magnitudes require different measures to overcome the deficiency. As explained in further detail below, each stage includes a set of demand reduction actions and measures which become progressively more stringent as the shortage condition escalates.

Table 3-2. System-wide Demand Reduction Volumes

Stage	Magnitude of Water Shortage	Seasonal Demand Reduction (million gallons)	Average Daily Demand Reduction (mgd)
1	5%	125	0.6
2	15%	375	1.8
3	25%	625	3.0
4	35%	875	4.2
5	50%	1,250	6.0

Normally, only one of these five stages would be put into effect early in the year at the recommendation of the Water Director and remain in force for the entire dry season. Which one would depend on the water supply outlook at the beginning of the dry season. However, conditions and circumstances will vary with each shortage event. Although it would not be desirable to do so for sake of consistency, the City might be forced to transition to the next higher stage mid-season if the reduction efforts at the initial stage do not achieve the needed result.

There is an important distinction between the lower two stages (1 and 2), designated above in shades of yellow, and the upper three stages (3, 4, and 5) designated in shades of red, with the break point occurring at the 15 percent shortage level. The lower two stages (1 and 2) represent the **anticipated curtailment** that is envisioned as being necessary to balance water supply and demand from time to time under the City's Integrated Water Plan. Shortages of 15 percent or less, while inconvenient, do not directly threaten public safety or pose undue economic impact.

The upper three stages (3, 4 and 5), conversely, are all characterized as **emergency water shortages** since they result in more widespread hardships being felt throughout the community, may threaten public health and welfare, and cause considerably more economic harm. For these reasons, the City is making considerable effort and investing substantial capital to avoid shortages of this magnitude in the future. Nevertheless, as a public water supplier, the City must still prepare and plan for the possibility of experiencing such large deficits under state law.

3.2 Overview of Demand Reduction Strategy

The City's strategy for dealing with water shortages of all levels involves the following four interrelated components:

- An allocation system to establish reduction goals for different customer groups
- Demand reduction measures
- Publicity and communications
- Operating actions

These four components are summarized below.

3.2.1 Allocation System

A fundamental issue any water supplier faces in managing a water shortage involves the allocation of water and how to distribute the available supply among customer categories when supplies fall short. In the process of updating this plan, staff and the City Water Commission examined various options and alternatives and selected a priority-based system. This allocation system produces specific demand reduction goals for each major customer category at various levels of shortfall based on the unique usage characteristics of each customer category. It is one of the key mechanisms to ensure that the overarching goals of: 1) conserving the water supply of the City for the greatest public benefit and 2) mitigating the effects of a water shortage on public health, safety, and economic activity, are achieved. It also provides the means for determining whether demand reduction goals are being met or, if not, making needed adjustments. The allocation system is described in more detail below.

3.2.2 Demand Reduction Measures

There are a variety of demand reduction techniques that can be used to curtail customer water use during a supply shortfall. These techniques fall into the following general categories:

Voluntary Water Use Reductions This approach would include issuing guidelines and suggestions to conserve water, encouraging installation or active distribution of conservation devices, stepping up financial incentives for fixtures and

appliances that reduce per capita water use, discouraging installation of new landscape, or encouraging replanting with low water materials. Offering technical assistance in the form of water audits for various types of customers would fall into this category.

Prohibitions on Certain Uses This technique includes banning nonessential uses not required for protection of public health and safety that are not normally prohibited by definition under the city's water waste ordinance. Examples include prohibition on the use of potable water for washing sidewalks and paved surfaces, dust control, or the draining and refilling of private swimming pools. Included in this category would be serving of water in restaurants or other places where food is served unless expressly requested by the customer.

Limits on Certain Uses This approach involves placing mandatory restrictions such as watering only between certain hours or on specific days, watering of landscape only by certain methods (sprinkler ban), or restricting the manner in which vehicles or buildings may be washed.

Mandatory Requirements This technique includes adopting regulations mandating that certain measures be taken by selected customers ranging from the posting of signage in various establishments to save water to requiring the preparation and filing of site-specific conservation plan or requiring an audit of company water use demonstrating conservation efforts.

Rationing This approach involves establishing a fixed volume or allocation for individual customers or for groups of customers that is intended to reduce water use to a certain level commensurate with the seriousness of the situation. Possible methods that can be used to assign customer allotments include setting a uniform or flat amount, applying a percentage reduction from past use (or other benchmark), establishing a ration on a unit basis (per capita, per dwelling unit, per connection) or using a hybrid approach that is based on a combination of factors.

In updating this plan, staff and the City's Water Commission identified and reviewed available options for application to various customer groups and inclusion at different stages, and took into consideration the following factors:

- Water savings
- Seasonality
- Time frame and procedural requirements to implement the measure
- Administrative burden
- Applicable sector (residential, commercial, irrigation)
- Measures used by other water agencies

3.2.3 Publicity and Communications

Effective communication is essential to the success of any water shortage contingency plan in achieving the desired water use reductions. All customers need to be adequately informed about water supply conditions, understand the need to conserve, and know what actions they are being requested or required to take to mitigate the shortage. The Water Department naturally assumes a central role in publicizing the extent of the water shortage problem and in advising and assisting customers to conserve. The more severe the shortage, the more vigorous the public information campaign will need to be. No matter what the situation though, any public communications strategy undertaken in connection with water shortage ideally should contain the following fundamental attributes:

Timely – information should be disseminated well in advance of voluntary and mandatory actions that are to take effect, repeated often, and updated at regular intervals.

Credible – public information efforts should strive to be clear, professional, consistent, straightforward, reasoned, and honest to build trust and community support.

Multimodal – information should be made available to the public using a variety of methods, including the internet, newsletters and newspapers, radio, television, special events, visual displays, public meetings, speaking engagements, and other techniques to maximize reach.

Open – the Department will actively listen to, engage, and involve its customers, solicit feedback, address identified concerns, and respond to public input in a manner that is respectful, appreciative, welcome to creative solutions, and acknowledges each individual's sacrifice, inconvenience, and contribution to the situation.

Coordinated – the Department should collaborate with other City departments, affected public agencies and organizations, its own employees, interest groups, and the news media to ensure that everyone is on the same page and working together.

Action Oriented – information should always contain positive action steps people can take to help foster a spirit of cooperation and create an overall atmosphere that encourages the public to save water for the common good.

There are a number of **key groups** to whom water shortage communications will need to be aimed. These include, but are not limited to the following:

City Council and other local elected officials The Council authorizes the use of emergency powers and funds, adopts water shortage regulations, and makes appointments to a special appeals board. As the City's governing body, it will have to deal with frequent inquiries from the media and constituents. It will need to know about possible impacts on citizens and the City's own municipal water use. The City Council will be provided in-depth information for its decision-making. The Water Commission, which advises City Council, is a primary forum where policy issues are discussed and the public is able to make its voice heard. The County Board of Supervisors, Capitola City Council, and governing bodies of adjoining water districts also will need to be kept informed.

City Departments and other governmental bodies All City departments, including Parks, Fire, Public Works, as well as other public institutions will be asked to provide leadership and present a good example to the community by reducing their own water demand. The Water Department will need to work closely to promote and ensure such interdepartmental and government cooperation.

News media The media has a key role to play in helping communicate timely and accurate information to the public, especially when water restrictions or regulations are initially announced. The Water Director or Water Conservation Manager (as alternate) serve as official spokespersons to television and print media, answering questions and explaining reasons for certain actions. Because the news media is such a powerful force, care always must be given to deliver accurate and consistent messages and to maintain good relationships with the media. Feature reporters and editors can also be instrumental in writing about personal interest stories and alternative approaches to help people deal with water shortage in a positive way.

Large water users and groups most affected by water shortage The local landscaping and hospitality industries, along with other high water using businesses, University, and special needs customers (hospitals, nursing care facilities, etc) will need additional information about water shortage restrictions or regulations that affect their business or clients more than average.

City water customers/general public All 90,000 City water users, regardless of whether they are the customer of record, will need to be properly notified so that everyone understands the reasons for voluntary or mandatory cutbacks, what is expected in terms of usage restrictions, and the consequences of failing to abide by any adopted regulations. The Department will need to step up distribution of conservation tips and water saving ideas and respond to an increasing number of individual customer contacts. Special efforts also will need to be made to translate copies of all public notices, regulations, and outreach materials into Spanish and other appropriate languages for non-English speakers.

There are various methods the Department could employ to carry out added communications and public outreach responsibilities that become necessary in a water shortage situation. The menu of possible techniques is listed in Table 3-3.

Table 3.3 Communications and Public Outreach Methods

- Press releases
- Press conferences
- Opinion page coverage
- Paid advertising (print, radio, television)
- Community television
- Radio interviews
- Public service announcements
- Internet
- Bill inserts
- Utility bill messages
- Revisions to utility bill layout
- Direct mail
- Printed material (posters, banners, signage)
- E-mail
- Utility newsletter
- Public meetings, forums
- Publish figures and charts of actual water supply and demand on graph, comparing system use against daily, weekly, or monthly water budgets
- Presentations at neighborhood, homeowner's associations, service, and community meetings
- Telephone hotline
- Fliers at schools, churches, libraries, grocery markets, and other social gathering places
- Outdoor signs for visitors
- Conservation events, contests, booths
- Lead or participate in regional drought awareness media campaigns

In reviewing other agency's contingency plans, one feature that was considered valuable to have prepared in advance was a concise public message for each

stage of the Water Shortage Contingency Plan. These statements, set forth below, are intended to help communications stay on message and set the tone for subsequent communications through the duration of the incident.

A working list of contacts for major public agencies, media contacts, business organizations, landscape interests, and large customers is provided in Appendix D for reference.

3.2.4 Operating Actions

The Water Department must be flexible in the use of its own workforce and adaptable in realigning its priorities when a water shortage arises. The added responsibilities change what must be done in both field and office operations on a daily basis compared to usual duties under normal water supply conditions. These actions begin early in the water year with monitoring and forecasting water supply conditions and quickly ramp up in spring as the likelihood of a shortage increases. Many will represent increased costs to the Department for additional personnel, services, and supplies.

An important initial step is to designate a working group consisting of the Water Director and senior staff to lead and manage the Department's internal and external water shortage response. The size and composition of the group and frequency of meetings (monthly, weekly, daily) would vary depending on the severity of the shortage.

The Water Department must then mobilize the necessary personnel, resources, and equipment to undertake the various activities that are critical to implementing an effective response. These initial actions may include, among other things:

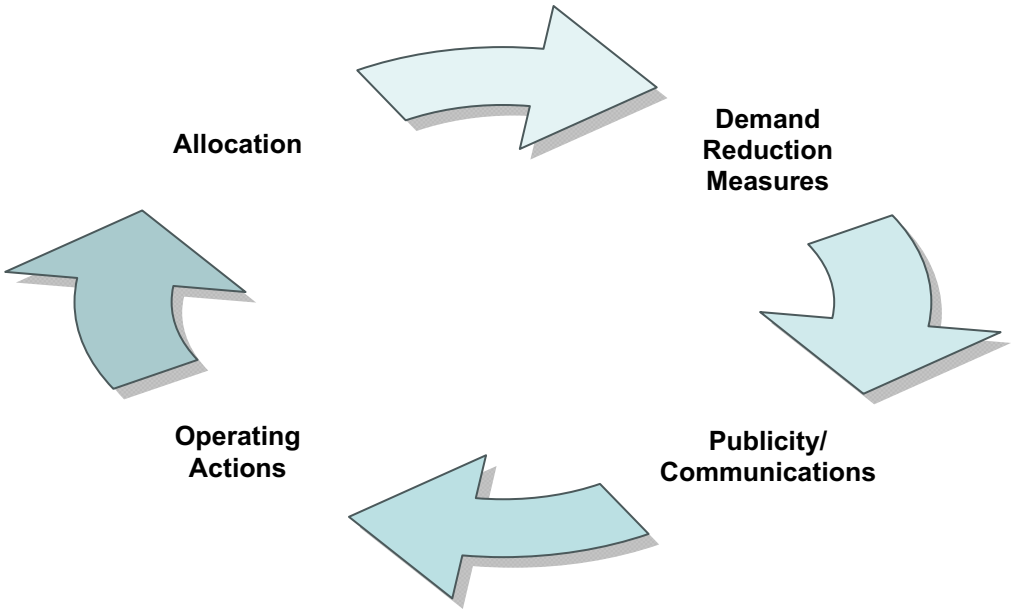
- Establishing water production budgets
- Coordinating with other city departments and affected public agencies
- Establishing a public communications program to publicize use restrictions and to engage and involve the community and key water-using sectors in curtailing their demand
- Ensuring adequate staff and training to effectively respond to customer inquiries and enforce water shortage regulations
- Adapting utility billing format and database capabilities
- Expanding water conservation assistance, outreach, and education

- Instituting a system for processing exception requests and appeals
- Addressing policy issues and updating status with decision makers
- Implementing monitoring mechanisms to track actual usage and measure performance

These and other operating actions are described further below and in Section 4 covering plan implementation.

Together, these four demand reduction strategy components can be thought of as a system whose parts function together to accomplish change; change in customer understanding and awareness, change in their behavior and actions, and fundamentally change in how much water residents, businesses, and visitors use in times of water shortage. As illustrated in Figure 3-1, these interrelated components provide the standards and feedback mechanism to ensure that water consumption is reduced to the level that the system can safely support.

Figure 3-1. Demand Reduction Strategy



3.3 Priority-Based Water Shortage Allocation

The recommended allocation system is based on the premise that, when water is in short supply, certain end uses should have a higher priority than others. Using a priority-based approach, the normal water demands of each major customer category are first classified into three basic priorities, as follows:

1. **Health and safety.** This is the highest priority use, which includes residential and non-residential interior domestic and sanitary uses.

2. **Business.** This category is the second highest priority and includes all non-sanitary usage related to commercial and industrial activity.

3. **Irrigation.** This is the lowest priority and includes all irrigation and outdoor usage in the single family, multiple residential, UC and irrigation categories.

Table 3-4 shows the normal water use for each of the City's major customer groups during the April to October peak season and the composition of that demand according to usage priority. These figures are based on an analysis of actual consumption records for the three-year period from 2002 through 2004, which was selected as being representative of typical water consumption patterns in a stable period marked by normal weather and water conditions.

Table 3-4. Composition of Peak Season Water Use, by Usage Priority
(Million gallons)

Customer Class:	Usage Priority: 1 Health/ Safety	2 Business	3 Irrigation	Total	Percent of Total
Single Family Residential	660		371	1,031	42%
Multiple Residential	382		142	524	21%
Business	165	273		438	18%
University of California	91		41	132	5%
Other Industrial		23		23	1%
Municipal	18		30	48	2%
Irrigation			110	110	4%
Golf Course Irrigation		32	74	106	4%
Coast Agriculture		59		59	2%
Other		2		2	0%
SUBTOTAL	1,316	389	768	2,473	100%
Percent of Total	**53%**	**16%**	**31%**	**100%**	
System uses/losses				168	
TOTAL SYSTEM PRODUCTION (million gallons)				2,641	

Metered water use by all customers during this 7-month period averages 2,473 million gallons, or roughly 2.5 billion gallons. In terms of the breakdown by usage priority, water used for health and safety purposes amounts to 1.3 billion gallons or just over half (53%) of the total demand during the peak season. Water used for business-related purposes amounts to less than 400 million gallons (16%) and the volume of water used for irrigation and associated outdoor purposes totals 768 million gallons (31%). Expressed on a daily basis, this breakdown equates to an average of 6.3 mgd for to satisfy heath and safety needs, 1.9 mgd for business activities, and 3.7 mgd for irrigation/outdoor purposes.

To arrive at demand reduction goals for each customer group, the normal year demands shown in Table 3-4 are scaled back by usage priority in accordance with the schedule shown in Table 3-5.

Table 3-5. Reduction in Water Delivery by Usage Priority
(percent of normal deliveries)

Stage	Overall System Shortfall:	Health/Safety	Business	Irrigation
2	15%	95	95	64
3	25%	95	90	34
4	35%	90	85	12
5	50%	75	67	0

In essence, this allocation system strives to balance available supplies in times of drought as much as possible through cutbacks in outdoor water use. At each level of shortfall, public health and sanitation usage is afforded the highest priority by cutting back on interior usage the least[1]. The importance of water in protecting the City's employment base is also acknowledged through proportionately modest cutbacks to the commercial sector as compared to the overall system shortfall. Irrigation and other outdoor uses in all cases is cutback the most. The larger the water shortage, the greater the cutbacks, but this system of priorities is maintained throughout the range of potential shortages. The heavy reliance on outdoor use reductions makes sense, both from a water system perspective because it reduces peak demands, which is important to preserving storage in Loch Lomond Reservoir, and from a public health and

[1] No separate allocation was developed for Stage 1 shortfall due to the minimal level of demand reduction needed, voluntary nature of conservation measures requested, and regulations that affect all customer groups equally.

welfare perspective, because irrigation and other outdoor use are the most discretionary of all uses when drinking water is in short supply.

Under this system, a systemwide water shortage of 15 percent - the maximum unserved demand envisioned in the Integrated Water Plan - can be addressed through modest cutbacks (5%) in both indoor and business water uses, combined with an approximately one-third reduction in outdoor water use. Emergency water shortages would involve far deeper cutbacks. A 25 percent systemwide shortage requires slightly greater reduction in business water use combined with a harsher two-thirds reduction in outdoor watering. A 35 percent systemwide shortage requires reducing health/safety and business uses somewhat more, combined with drastic reductions, amounting to almost 90 percent, in outdoor water use. To achieve a 50 percent reduction would take nothing less than a significant reduction in both health/safety and business usage, combined with the elimination of all outdoor water use.

The resulting water supply allocation is shown in Table 3-6. The figures are expressed as a percent of normal delivery and by volume in million gallons for each sector. For example, an allocation of 80 percent means a 20 percent cutback from normal use. Single family residential customers are cut back in all stages slightly more than the overall system shortfall and more than the multifamily customers due to their relatively higher proportion of outdoor to indoor use. Business and industrial customers are also cut back, but by less than the system deficit. The University's cutback would be equal or close to system shortfall, while municipal facilities would be cut back substantially greater due to the high percentage of water use that goes to outdoor purposes. Dedicated landscape/irrigation customers suffer the deepest cutbacks of any single group.

The contribution of each customer category to the overall demand reduction goal is shown in Table 3-7. Approximately two-thirds of the total cutback would be realized through reductions at single and multifamily residential accounts, which is roughly proportional to their overall percentage of normal system demand.

This allocation system is the one recommended by the City's Water Commission after considering several options, and is based on current patterns and composition of water consumption. As demand level changes over time, it should be reviewed and possibly revised. In addition, alternative allocations may always be considered at the time a given stage is implemented.

Table 3-6. Water Supply Allocation and Customer Reduction Goals

	No Deficiency		Stage 2 15% Deficiency		Stage 3 25% Deficiency		Stage 4 35% Deficiency		Stage 5 50% Deficiency	
	Delivery		Delivery		Delivery		Delivery		Delivery	
Normal Peak Season Demand = 2,473 mg	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)
Single Family Residential	100	1,031	84%	864	73%	753	62%	639	48%	495
Multiple Residential	100	524	87%	454	78%	411	69%	361	55%	287
Business	100	438	95%	416	92%	402	87%	381	70%	307
UC Santa Cruz	100	132	85%	113	76%	100	66%	87	52%	68
Other Industrial	100	23	95%	22	90%	21	85%	20	67%	15
Municipal	100	48	76%	36	57%	27	41%	20	28%	14
Irrigation	100	110	64%	70	34%	37	12%	13	0%	0
Golf Course Irrigation	100	106	73%	78	51%	54	34%	36	20%	21
Coast Irrigation	100	59	95%	56	90%	53	85%	50	67%	40
Other	100	2	95%	2	90%	2	50%	1	50%	1
Total	**100**	**2,473**	**85%**	**2,111**	**75%**	**1,861**	**65%**	**1,607**	**50%**	**1,247**
Demand Reduction %, Million gallons	**0**	**0**	**15%**	**-362**	**25%**	**-612**	**35%**	**-866**	**50%**	**-1,226**

Table 3-7. Contribution of Each Customer Category to Toward Overall Cutback Goal

	Stage 2 15% Deficiency		Stage 3 25% Deficiency		Stage 4 35% Deficiency		Stage 5 50% Deficiency	
Demand Reduction:	Million gallons	Percent of total	Million gallons	Percent of total	Million gallons	Percent of total	Million gallons	Percent of total
Single Family Residential	167	46%	278	45%	392	45%	536	44%
Multiple Residential	70	19%	113	18%	163	19%	238	19%
Business	22	6%	36	6%	57	7%	131	11%
UC Santa Cruz	19	5%	32	5%	45	5%	64	5%
Other Industrial	1	0%	2	0%	3	0%	8	1%
Municipal	12	3%	21	3%	28	3%	35	3%
Irrigation	40	11%	73	12%	97	11%	110	9%
Golf Course Irrigation	28	8%	52	9%	70	8%	85	7%
Coast Irrigation	3	1%	6	1%	9	1%	19	2%
Other	0	0%	0	0%	1	0%	1	0%
Total Demand Reduction	**362**	**100%**	**612**	**100%**	**866**	**100%**	**1,226**	**100%**

A prime concern of any water shortage contingency plan is maintaining sufficient water for public health and sanitation. Table 3-8 below presents the health and safety allocation for residential customers in terms of gallons per person per day under the four deficit conditions. Current indoor water use averages 58 gallons per person per day for single residential accounts and about 50 gallons per person per day for multifamily accounts. In all but the most extreme case, there is enough water to meet essential health and safety needs, which is considered to be between 45 and 50 gallons per person per day for single family homes, assuming they have been fitted with water conserving fixtures and leakage is minimized. At a 50 percent deficiency, even highly water-efficient households would have to take additional actions to get their usage down to the upper 30 or low 40 gallons per person per day.

Table 3-8. Health & Safety Indoor Residential Use

Deficiency condition	Health / Safety Allocation	Single Residential (gal/person/day)	Multiple Residential (gal/person/day)
No deficiency	100%	58	50
15%, 25%	95%	55	47
35%	90%	52	45
50%	75%	43	37

3.4 Water Shortage Response Actions

The allocation system described above serves to establish demand reduction goals for each of the City's major customer groups. The challenge in crafting this contingency plan is to select the most appropriate set of measures that logically correlate with these targets for each sector and stage of shortfall, acknowledging the inherent uncertainties involved and difficulty in predicting their effectiveness in advance.

The recommended menu of actions to cut water use is presented below. It is meant primarily to help inform the public and decision-makers about the types of measures the Water Department would take under various water shortage scenarios and to aid in structuring an updated water shortage ordinance, but should not be construed as limiting other possible options. Specific circumstances will vary with each shortage and decisions about the most appropriate response should be based on the water supply and demand

conditions at the time, and the collective judgment of staff, Water Commission, and City Council, with ample public input. These actions are thus intended as a list of probable measures for advance preparation purposes rather than a set script to be strictly followed, recognizing that as supply and demand change over time, or as a shortage evolves, the ultimate choice of options and actions to best address the shortage also may change.

It is also important to recognize that flexibility in selecting the most appropriate stage may be needed. In the case of a borderline situation, for instance, where there is reasonable likelihood that system demand could be curtailed sufficiently with the lesser restrictions, it may be advantageous to initially choose the lower stage, conditioned with a well publicized caveat that, if water use exceeds targets, the more restrictive regulations would kick in.

Each section that follows includes:

- an overview of the response,
- a discussion of any key issues involved in that stage,
- the prepared public message, and
- a list of the recommended demand reduction measures, communications actions, and operating actions applicable to that stage

3.4.1 Stage 1 – Water Shortage Alert

Stage 1 applies to relatively minor water shortages that can be accommodated with a combination of voluntary conservation measures and minimal usage restrictions, combined with enhanced enforcement of the City's ongoing ordinance prohibiting water waste. Except for a few instances, all demand reduction measures apply uniformly to nearly all customers, therefore no specific allocation is proposed during this stage.

A Stage 1 response may also be appropriate in other situations. It may be prudent as a precautionary measure during an unusually dry year in advance of a declared water shortage to help preserve reservoir storage, or during the winter season following an actual shortage event if needed to maintain a continuing level of awareness among customers until normal water conditions are restored.

The Stage 1 public message is as follows:

"Due to abnormally dry conditions this winter, we're asking all customers to voluntarily cut back water use this summer by 5 percent to stretch the available water supply. City water users should stop using water for non-essential purposes and conserve where possible in case the dry period experienced this past winter continues into next year. If everyone cooperates, we may avoid imposing more stringent watering restrictions. As always, wasting water is prohibited by law"

Table 3-9. Stage 1 Water Shortage Alert Response Measures

System-wide Reduction Goal: 0-5% 0.6 mgd or less

Demand Reduction Measures:
• Request voluntary water conservation by all customers
• Step up enforcement of water waste
• Restrict the time of landscape irrigation to early morning and evening
• Prohibit non-essential water use:
  – serving drinking water by restaurant or food service establishments except upon request
  – use of potable water for washing driveways, patios, parking lots or other paved surfaces
  – require hotel, motel, and other commercial lodging establishments to offer option of not laundering towels and linen daily
  – draining and refilling of swimming pools
• Require hoses used for any purpose to have shut off nozzles
• Encourage use of drip and other low volume irrigation systems
 	
Publicity/Communications
• Conduct press conference to announce water conditions, request cooperation
• Initiate public information campaign through media, utility newsletter, website
• Develop regular advertising campaign to remind consumers of the need to conserve water
• Prepare and disseminate suggestions/requirements to reduce water use
• Inform large landscape/property managers/green industry of irrigation restrictions
• Implement customer meter reading program
 	
Operating Actions
• Coordinate water conservation actions with other City Departments and public agencies
• Adopt water shortage ordinance prohibiting non-essential water use
• Eliminate system water uses deemed non-essential
• Delegate water waste patrol duties to all field personnel
• Institute regular monitoring and reporting of water production and consumption
• Undertake contingency planning for continuing/escalating shortage

3.4.2 Stage 2 – Water Shortage Warning

Stage 2 applies to moderate water shortages. This condition requires more vigorous public information and outreach and an expansion of mandatory water restrictions and prohibitions, particularly on outdoor water uses. The primary methods to meet target consumption levels are to limit irrigation to specified days of the week and to institute water budgets for large landscapes and parks.

The recommended approach to reducing outdoor water use in this stage would be to restrict watering of all lawns and established landscapes to twice weekly during specified hours and to disallow any watering with automatic sprinkler systems on certain days to maximize reduction. Exact schedules would be developed with public input.

Large landscape users, including parks, residential and commercial landscapes, and golf courses with separate irrigation accounts would be required to complete on-site water audits, adhere to monthly water budgets based on their irrigated area and plant materials, and modify their irrigation schedules to achieve the equivalent of a one-third reduction in site water use. The lead time to develop landscape water budgets is long due to the need to collect site specific information, implement billing system changes, and to educate people and transform standard irrigation practices. However, development of water budgets for large users is the next major priority for the City's long-term conservation program, and once they become implemented as an ongoing program, they may be quickly adapted as a shortage management tool. Professional water budgets for dedicated irrigation accounts are typically tied to real-time weather data and tiered pricing systems or surcharges to be effective.

Other measures that would be imposed under Stage 2 would include mandatory leak inspection and repair for large customers and to expand restrictions on exterior washing to dwellings, buildings, and structures.

The Stage 2 public message is as follows:

"It is necessary to impose mandatory restrictions on water use to ensure that throughout the duration of this water shortage an adequate supply of water is maintained for public health and safety purposes. Our overall goal is to reduce water use by 15 percent, which can be achieved if everyone cuts back their

outdoor watering by one-third the normal amount. We are relying on cooperation and support of all water users to abide by all restrictions and to reach this goal. Otherwise, the shortage could deteriorate into a more serious emergency that requires rationing household water use to avoid depleting the available water supply."

Table 3-10. Stage 2 Water Shortage Warning Response Measures

System-wide Reduction Goal: 5-15% 0.6 to 1.8 mgd
Demand Reduction Measures: • Continue all measures initiated at Stage 1 • Restrict landscape irrigation to designated watering days and times • Require large landscapes to adhere to water budgets • Prohibit exterior washing of dwellings, buildings, or structures (with exceptions for window washing or in preparation for painting) • Reduce time allowed to resolve water waste • Require large users audit premises and repair leaks • Continue to promote meter reading and regular leak detection by all customers **Publicity/Communications** • Intensify public information campaign with regular media updates, direct notices to all customers, paid advertising, billing inserts. • Generate publicity about individuals and businesses demonstrating leadership to save water • Consult with major customers to develop conservation plans • Publish weekly consumption graph in daily newspaper • Inform large landscape/property managers/green industry of additional irrigation restrictions • Conduct workshops on large landscape requirements for property owners, contractors, maintenance personnel **Operating Actions** • Coordinate with all City Departments and public agencies to reduce water use • Optimize existing sources (increase groundwater production, reduce transmission losses) • Suspend main flushing except as required for emergency and essential operations • Intensify distribution system leak detection and repair • Hire, train, dispatch water waste patrol • Establish water conservation "hot line" to respond to questions and reports of waste • Expand home water survey program and offer large landscape water audits • If necessary, use City Water Commission to process requests for exceptions • Continue regular monitoring and reporting of water production and consumption • Undertake contingency planning for continuing/escalating shortage • Develop strategy to mitigate revenue losses

3.4.3 Stage 3 – Water Shortage Emergency

This level of water shortage constitutes an emergency situation requiring significant actions by the public to achieve up to a 25 percent reduction in normal water use to avoid depleting limited water storage. It requires the equivalent of 5 to 10 percent reduction in all indoor use and a drastic two-thirds reduction in outdoor use systemwide. The three primary measures being recommended to meet this emergency reduction goal are:

1. Residential water rationing
2. Required water shortage signage in all nonresidential establishments
3. Reduced landscape water budgets for large landscapes

The basic concept of water rationing is that each utility customer is given a certain allocation of water, expressed in billing units, to use in a billing period[2]. If they use the amount they are allocated or less, charges for water are calculated at the normal rate. If they exceed their allocation, the portion in excess of their allocation is charged a penalty rate. The penalty rate may be broken into multiple tiers so the more the excess usage, the higher the penalty price per CCF used. The purpose is not to generate revenue but rather to use water pricing as a way to motivate the customer to modify their usage to stay within their allocation and avoid being penalized, which most customers do. Those that don't reduce are charged for their overuse at the penalty rates.

The method to allocate water when rationing is instituted varies according to customer type. It may be based on the number of people in a home, the number of dwelling units in a multifamily complex, or set as a percentage of past use during some prior year. Staff and the Water Commission reviewed the water shortage contingency plans of many other water agencies to identify the methods used elsewhere to ration water and considered the advantages and disadvantages of various methods.

For single family residential customers, the **per capita approach** is probably the fairest practical method, easiest to communicate, would be best understood and accepted by the general public, and is effective in achieving cutbacks where they are needed most, in outdoor water use. In addition, past experience

[2] One billing unit equals one hundred cubic feet (CCF) or 748 gallons.

demonstrates that this method was very successful in reducing outdoor water demand for the single residential category when rationing was last instituted in 1990 and in 1977.

One of the key challenges to implementing water rationing using a pure per capita approach is the need to perform a census of household size at over 18,000 single family accounts and to maintain information on household size as number of residents changes over time. In lieu of performing a census, Staff and the Water Commission recommend using a modified per capita rationing system developed by the Goleta Water District. Under this system, all households are given a default allocation sufficient for a family of 4 persons. Households that have more than four persons would be required to contact the Water Department and verify household size in order to be granted an increased allocation, which would depend on the actual number of persons living at the residence.

Recent census data for the City of Santa Cruz indicate that only 17 percent of all occupied households within the City have four or more persons per household. Assuming this figure is similar for the unincorporated part of the City's water service area, establishing a default allocation for a family of four would more than satisfy the 83 percent majority of households that have three or fewer persons per household. This method is similar to that last used by the City to ration water in 1990, which provided a baseline allocation for households of three or less, except that a census was undertaken then to survey the actual number of persons living at each household.

The Goleta rationing model is considered to be preferable because it eliminates the significant work associated with carrying out an occupancy census and alleviates concerns about potential for inaccurate responses. The principle drawback is the problem of equity, since there will be less "cushion" in the allocation for households with four residents than there is for homes with fewer number of residents, and an increased possibility of exceeding their allocation. Whatever method is selected, allocation disagreements are to be expected and procedures need to be put in place to handle valid appeals and exceptions.

Table 3-11 below shows a typical rationing calculation for a single family residence in Stage 3.

Table 3-11. Water Rationing Schedule: Single Family Residential Account

	Ccf/month	Gallons per day:
Up to four persons:	11	265
Each additional person:	2	50
Example monthly allocation for a 6-person household:		
Base allocation:	11 ccf	
2 additional persons x 2 ccf per person	+ 4 ccf	
Monthly Allocation	= 15 ccf	= 374 or 62 gpcd [3]

What makes multifamily customers more challenging for developing a water rationing system are the large differences in housing types, the presence or absence of irrigation meters at a complex, and the fact that many larger accounts are handled by an independent property management firm on behalf of the homeowner's association. These companies typically do not track how many people reside in each unit or in the complex as a whole.

It is recommended that multiple-residential accounts be rationed based on the **number of dwelling units** associated with the water service account. The number of dwelling units is the best starting point since that data is available on the utility billing system and, in the absence of information about the number of people living on the property, it is the next best driver for indoor water demand. It is further recommended that multiple-residential accounts be allowed alternative rationing options that reflect the heterogeneous nature of building types on multifamily properties and the fact that some of these properties have separate irrigation accounts while others don't. These wide differences in user characteristics cause inequities in allocation based solely on the number of dwelling units. Offering alternatives allows the customer choose for themselves the option that works best in their particular case. These options include:

- an allocation based on the number of persons residing at the property
- an allocation based partly on the number of persons residing at the property and partly on landscape water needs at the property that reflect the same cutback to irrigation that other customers would experience (for properties without irrigation accounts)

[3] gpcd = gallons per capita per day

- the same allocation per dwelling unit as single family accounts would receive for certain properties that resemble single family lots in terms of lot coverage

Recommended rationing allotments for single and multiple residential accounts are presented in Appendix E.

If water rationing becomes necessary, it is also recommended that all outside city customers be converted from bimonthly to monthly billing. This change will enhance the customer's ability to monitor their water usage, enable them to detect and repair leaks quicker, and help them stay within their allocation.

The main obstacle in implementing water rationing at this time is the uncertainly about the capability of the new EDEN utility billing system. The system has been in use only since September 2008 and its ability to calculate rationing allocations and excess use charges is unknown. In the event rationing becomes necessary before the billing system can be adequately programmed and tested, other options could be considered to achieve substantial outdoor use reductions in the residential sector in lieu of water rationing. Although not ideal, these include:

- Restricting watering to once weekly, or
- Banning sprinkler irrigation

This problem is discussed further in Section 4.

It should be reiterated that **water rationing is a situation that the City is seeking to avoid** through long-term conservation efforts and the development of an additional water supply. It is, however, necessary to have a contingency plan in place should the need arise.

Commercial customers would be exempted from individual water rationing in Stage 3. Instead they would be expected to meet their collective 8 percent reduction goal by adhering to continuing water restrictions, and by being required to prominently post **"SAVE WATER – REPORT LEAKS AND WATER WASTE"** signs at the entrance and in every bathroom of commercial, industrial and institutional buildings, including:

- Hotels, motels, lodging
- Restaurants, cafeterias, cafes, and all food service establishments

- Offices and government buildings
- Hospitals and health care centers
- Schools

Large landscape customers would be held to water budgets as described in Stage 2, reduced in accordance with the allocation for irrigation customers in Stage 3.

One charged policy issue that often arises in connection with a water shortage emergency is the question of whether or not to continue allowing new connections on the system. In the past, it has been the City's policy to continue allowing new connections mainly because the demand they add in any one year is so negligible. The water that would be made available to existing customers by banning new water connections, therefore, would not make any real difference in terms of increasing the existing customers' allocation. This issue is typically driven by customers who are called on to make sacrifices and feel that water agencies should concentrate on fulfilling present obligations rather than accepting new customers. A number of agencies, however, do have provision for a temporary ban or place a low priority on new connections in later stages of their drought plans.

The Water Commission considered this issue carefully and recommended giving the public a one-year advance notice, beginning in Stage 3, stating that a temporary water service connection ban would be strongly considered if the shortage emergency continues or escalates into the following year. This notice would allow those people with plans and projects already underway time to complete work or make arrangements, and those considering future construction projects to make timely decisions about proceeding with the knowledge that they risk not being able to secure a water service connection until the shortage is over.

The Stage 3 public message is as follows:

"The City faces a serious water shortage emergency due to prolonged drought. To conserve the available water supply for the greatest public benefit while minimizing impacts on our local economy, it has become necessary to institute a water rationing program for all residential customers. Our goal is to reduce system water demand by ___%. While rationing amounts are adequate for

normal domestic needs, significant cuts to outdoor water use may be necessary to remain within set allocations. All customers are urgently asked to make every effort to conserve water and abide by watering restrictions or face further reductions in water allotments."

Table 3-12. Stage 3 Water Shortage Emergency Response Measures

System-wide Reduction Goal: 15-25% 1.8 to 3.0 mgd
Demand Reduction Measures: • Institute water rationing for residential customers • Continue landscape irrigation restrictions to designated watering days and times • Require large landscapes to adhere to reduced water budgets • Require all commercial customers to prominently display "save water" signage with specified language at specified locations • Maintain restrictions on exterior washing of surfaces and structures • Continue to promote meter reading and regular leak detection by all customers **Publicity/Communications** • Expand, intensify public information campaign focused on 2/3 reduction in outdoor use • Provide regular media briefings, manage media coverage • Provide regular information reports to Water Commission, City Council and other agencies • Consult with major customers to develop conservation plans • Publish weekly consumption graph in daily newspaper • Enlist support of business groups: chamber, CVC, lodging association, etc. • Inform large landscape/property managers/green industry of reduced allocations • Conduct workshops on large landscape requirements for property owners, contractors, maintenance personnel • Prepare public notice regarding possible future service connection moratorium **Operating Actions** • Modify utility billing system and bill format to compare actual use with customer allocation • Adopt penalty rates • Increase customer service training to address high bills, irate customers • Convene and staff appeals board to process requests for exceptions and appeals of penalties • Expand size and coverage of water waste patrol • Expand, strengthen water conservation education, activities, and program • Continue all operating actions listed under Stage 2 • Increase frequency of monitoring and reporting of water production and consumption • Convert outside City customers from bimonthly to monthly billing • Undertake contingency planning for continuing/escalating shortage • Develop strategy to mitigate revenue losses

3.4.4 Stage 4 – Severe Water Shortage Emergency

The water supply conditions that would trigger Stage 4 parallel the difficult situation the City experienced in the drought of late 1970s. Under this scenario, virtually all available water must be reserved either for health and safety purposes or to sustain local business.

Achieving a 35 percent systemwide reduction would require expanding water rationing to cover all water customers, including business. Residential customers would continue to be rationed as described in Stage 3, but with reduced monthly allotments.

Unfortunately, there is no practical way to assign a commercial water budget based on variables like the number of employees, square footage, etc. given the variety of usage characteristics in this sector. Every business (or group of businesses sharing a single water account, as is often the case in shopping centers) is unique. They include laundries, restaurants, health care facilities, retail outlets, hotels, car washes, and office buildings. We see no choice other than to ration business customers individually based on a **percent of prior use in a normal year** that is consistent with the overall allocation for Stage 4. Where essential water use at a business establishment involves a public health service, including hospitals, doctor's offices, medical laboratories, and skilled nursing facilities, or where a business can demonstrate it has already achieved maximum practical water conservation, provision for additional water could be made on a case by case basis through an exceptions process.

Other actions/restrictions that likely would be necessary in a severe water shortage emergency, in addition to those previously described, include the following:

- Prohibition on lawn/turf irrigation and on installation of new landscaping in new development
- Prohibition on potable water in fountains and ornamental water features
- Prohibition on on-site vehicle washing, including dealer lots, company fleets
- Rescinding hydrant and bulk water permits
- Suspending water main replacement program

Gray water use can be allowed and should be promoted for saving valuable landscape trees and shrubs. It includes drain water from showers, bathtubs,

bathroom sinks, and clothes washers. It does not include water that has come in contact with toilet waste, water from kitchen sinks and dishwashers, or laundry water used for washing diapers. There are no restrictions on the use of gray water if it is carried in a bucket. Plumbed gray water systems can also be built to convey drain water and provide subsurface irrigation to trees and shrubs.

The Stage 4 public message is as follows:

"Due to continuing deterioration in storage and overall scarcity of available supply, all customers, residential and business alike, are now unavoidably subject to water rationing. The current water shortage is among the most severe ever faced in modern times. We must all continue to conserve water to the maximum extent possible and strive to maintain water use within our established rationing limits as long as the drought endures in order to avert a water crisis."

Table 3-13. Stage 4 Severe Water Shortage Emergency Response Measures

System-wide Reduction Goal: 25-35% 3.0 to 4.2 mgd
Demand Reduction Measures: • Reduce residential water allocations • Institute water rationing for commercial customers • Minimize water use by large landscape customers – only for most valuable plant and tree survival • Prohibition on lawn/turf irrigation and on installation of new landscaping in new development • Prohibition on on-site vehicle washing, including dealer lots, company fleets • Rescind hydrant and bulk water permits, prohibit use except by special permission **Publicity/Communications** • Contract with outside advertising agency to carry out major publicity campaign • Continue to provide regular media briefings, manage media coverage • Provide regular information reports to Water Commission, City Council and other agencies • Publish daily consumption graph in all local newspapers • Prepare public notice regarding possible service connection moratorium • Publish information on ways to minimize most valuable landscape damage and loss, including promote appropriate use of gray water **Operating Actions** • Scale up administrative appeals staff and increase frequency of hearings • Expand water waste enforcement to 24/7

- Delegate field staff to assist in enforcement (shut offs, flow restrictors)
- Open separate, centralized drought information center
- Hire temporary staff to conduct conservation training
- Continue all applicable operating actions listed under Stage 3
- Increase frequency of monitoring and reporting of water production and consumption
- Undertake contingency planning for continuing/escalating shortage
- Revise Department operating budget to address revenue shortfall
- Defer portions of capital improvement program
- Consider surcharges, rate changes

3.4.5 Stage 5 – Critical Water Shortage Emergency

Stage 5 represents an imminent and extraordinary crisis threatening health, safety, and security of the entire community. Under this dire situation, extreme measures are necessary to cut back water use by up to half the normal amount. Not enough water would exist even to meet the community's full health and safety needs, the top priority. All water should be reserved for human consumption, sanitation, and fire protection purposes and any remaining amount allocated to minimize economic harm. A shortage of this severity could be expected to generate stress, confusion, and chaos much the same as any major emergency and at some point could transform into a full blown natural disaster that can no longer be governed by local ordinance and may need to be managed by the same basic principles and command structure under the state Standardized Emergency Management System that other natural disasters are. The City has experienced water shortages in the past but never one of such large proportion.

This fifth stage would involve nothing less than rationing all customer groups and instituting a prohibition on residential outdoor use for any reason (e.g., garden, car-washing, cleaning, maintenance, etc.) It may also require shutting down or severely restricting use at certain public facilities, like local parks and school play fields. Some businesses may be forced or required to either partially or completely close.

The planned response for a shortage of this magnitude would involve reducing rationing allocations for residential customers to minimal levels and reducing commercial rationing amounts in accordance with their overall allocation. All

outdoor irrigation would be prohibited (other than by hand-held container and what has been captured or collected from another non-prohibited use). No water would be available for public showers or private, community, or public pools and hot tubs. These facilities likely would be forced to close.

A shortage of this magnitude could affect other local water suppliers as people substitute normal activities, such as laundry, showers, etc. from their home to other locations not so affected. The City's response would therefore involve greater coordination at a regional and perhaps even statewide level.

The Stage 5 public message is as follows:

"The City of Santa Cruz is confronted with a critical water shortage emergency of unprecedented proportions. At this time, there exists barely enough drinking water for the most essential human health, sanitation, and safety needs. As a result, all outdoor watering is now prohibited. We understand the hardship this extraordinary condition poses to every resident and business in the City and appreciate the sacrifices people are making to ensure that water system does not run dry. Everyone is urgently requested to do whatever necessary to maintain water use within or below their allotted amount."

Table 3-14. Stage 5 Critical Water Shortage Emergency Response Measures

System-wide Reduction Goal: 35-50% 4.2 to 6.0 mgd
Demand Reduction Measures: • Further reduce residential water allocations • Reduce commercial water allocation • Prohibit all outdoor irrigation • No water for outdoor washing or recreational purposes; close pools, public showers • Continue all measures initiated in prior stages as appropriate **Publicity/Communications** • Contract with crisis/emergency communications consultant to develop crisis communications plan and major publicity campaign • Assign Public Information Officer to communicate with media • Set up emergency notification lists for medical/dental facilities, public facilities, large users, food and beverage facilities, and critical businesses • Promote appropriate use of gray water for reuse

Operating Actions

- Consider shifting to EOC model of command management for overall policy guidance and coordination
- Coordinate with CA Dept of Public Health, District Engineer and other emergency response agencies regarding water quality, public health issues
- Coordinate with law enforcement agencies to address enforcement challenges
- Continue water waste enforcement 24/7
- Delegate field staff to assist in enforcement (shut offs, flow restrictors)
- Continue all applicable operating actions listed under Stage 4
- Coordinate with local sanitation agencies regarding sewer line maintenance
- Continue close monitoring and reporting of water production and consumption
- Investigate potential for reduced in-stream release
- Procure resources to utilize dead storage, if needed
- Undertake emergency planning for continuing/escalating shortage

3.5 Enforcement, Exceptions, and Appeals

An important part of a water shortage plan is to have the appropriate authority and a combination of methods to enforce mandatory measures such as water restrictions or rationing in order to protect public health and safety. General authority and powers of the City to enforce ordinances is contained in Chapter 4 of the Santa Cruz Municipal Code. In addition, the City's water shortage ordinance contains specific language regarding enforcement of water use rules and regulations and includes provisions for issuing exceptions and hearing appeals. These provisions were reviewed by staff and the Water Commission, which put forth several recommendations to be incorporated into the updated water shortage ordinance.

3.5.1 Enforcement Methods

Enforcement is carried out in a number of ways during a water shortage. In cases such as a report of water waste, the first step is to communicate with the customer by telephone, letter, door tag, or by making personal contact in the field to educate them about regulations. Many times this contact is all that is required to get the problem resolved. If not, enforcement progresses to a written notice of violation. Beyond this, there are several methods in the City's existing water conservation and water shortage ordinances that can be used to enforce water restrictions and rationing regulations. These methods are described below.

Penalty fees This method would apply in situations involving violation of water restrictions, if, after multiple warnings had been given, a violation continued to occur at an account. The fee would be added to a customer's utility bill along with a written notice sent to the customer in advance. The penalty fee would increase with subsequent violations, as follows:

1st Violation $100
2nd Violation $250
3rd Violation $500
4th Violation $1,000

The Water Commission recommended that additional, higher penalty fees also be established and applied to large users that willfully violate water restrictions.

Excess use fees Excess use fees are the primary method for enforcing water rationing and are imposed on customers whose water use exceeds their allocation when rationing is in effect. The purpose of the excess use fee is to make the consequences of exceeding one's rationing allocation so severe that the customer is induced to keep their water use within their allocation and avoid being fined. Like water rates, there are two components to setting excess use fees: 1) the way they are structured, and 2) the dollar amount.

Staff and the Water Commission looked at several models from other agencies and recommend maintaining the same excess use fee structure as in the existing water shortage ordinance, for billing reasons and for clarity in communicating penalties to the public. It is, however, recommended that the penalty amount be increased to bring it more in line with current rates, as shown below:

Table 3-15. Proposed Excess Use Fees

Excess Use Range	Percent of water used in Excess of Allotment	Excess Use Charge per 100 Cubic Feet for all Water Used in Excess of Allotment (in addition to ordinary water consumption charges)
A	0% to 10% over allotment	$25.00
B	More than 10% over allotment	$50.00

For example, in Table 3-11 above, a 4-person household is provided an allocation of 11 CCF per month in Stage 3. At 2008 rates, the normal water charges for an inside city customer using 11 CCF would total $51.37, including the $16.58 readiness-to-serve charge for a 5/8" meter. Under water rationing, if that same customer used 18 CCF, their normal water charges would amount to $92.88, and excess use fees would cost $325 (1 ccf @$25 and 6 ccf @ $50), for a total of $417.88.

The purpose of a two-tier excess use structure is to avoid very large penalties for households that make a good faith effort to stay within their allocation but wind up going over a little. If a customer's water use exceeds one's allocation by a large amount, though, the penalty should be very steep.

Flow restriction Some customers will continue to exceed their allotment regardless of the amount of their water bill. In such instances, the Water Department is authorized to install a flow restricting device to provide minimal water flow, just enough for health and safety purposes. In these cases the customer is charged a fee to cover the staff time needed to install the flow restrictor and another fee for its removal. The Water Department would not use this method where fire suppression sprinklers are on the same supply line as domestic water.

Disconnection/reconnection fees Water suppliers have the legal authority to enforce water shortage regulations by terminating service for egregious violations. In such cases, the customer would be charged for both disconnection and reconnection.

Citation Finally, the City's water shortage ordinance authorizes staff to issue citations that would have to be paid or challenged in court. This method could be used in cases like a multifamily property where terminating service or restricting flow to all households may not be an option.

3.5.2 Exceptions

No water shortage plan can account for all situations. The exception procedure allows the Water Department to provide for special or exceptional circumstances that otherwise would create undue hardship for an individual customer or class of customers.

An exception allows a customer to be relieved of a particular regulation or receive an increased allocation for the duration of the shortage. Therefore, it should be granted only when justified on specific grounds that warrant allocating more water than other similarly situated customers and when consistent with the intent of the water shortage regulations, while providing equal treatment of all customers.

The City's existing ordinance includes an exception process. Some of its features are as follows:

- Under water restrictions, an exception application is not accepted unless the customer alleges unfair treatment.
- Under water rationing, an exception application is not accepted unless an excess use fee has been assessed.
- Leaks do not qualify for an exception.
- It allows a resident who is not an account holder to force the customer of record to appeal.
- The process is administered by the Water Director.

This policy is to make the customer first demonstrate the demand reduction efforts taken to meet the restriction or allocation, and places responsibility for managing and monitoring water use on the customer, where it belongs. It also serves to minimize the number of exception applications from those merely seeking more water without having gone to the effort to try to live within their given allocation.

Recommendations Regarding Exceptions

It is recommended that the updated water shortage contingency ordinance be amended to include a process that requires the Director make a formal finding to authorize an exception. This change is proposed to better articulate the standard that must be met in order to receive relief. The suggested language for such findings is as follows:

- Failure to do so would cause a condition affecting the health, sanitation, fire protection, or safety of the applicant or the public;

- Strict application of the allotment provisions imposes a severe or undue hardship on a particular business, or render it infeasible for a business or class of business to remain in operation;

- Alternative restrictions which achieve the same level of demand reduction as the restrictions from which an exception is being sought are available and are binding and enforceable;

- The customer has demonstrated to the Director's satisfaction that circumstances have changed warranting a change in the customer's allocation.

- Hospitals and health care facilities using industry best management practices are eligible for an exception.

- Demonstration by a business of actions already taken to increase environmental sustainability that have reduced water consumption to the maximum extent feasible, as determined by the Water Director.

Additional recommendations regarding the exception process are as follows:

- That the denial of an exception may be appealed to an Appeals Board;

- The Department adopt administrative procedures similar to those used by the City of Tampa Bay for including appropriate information on an exception application, including the requirement that the applicant must demonstrate maximum practical reduction in water consumption;

- That a policy be added allowing the Director to impose conditions requiring long-term water efficiency changes from customers as part of the exception process.

3.5.3 Appeals

The City's existing ordinance allows any water service customer who considers an enforcement action to have been erroneously undertaken to appeal their case before a City Council appointed ad hoc Drought Appeals Board. The Appeals

Board considers the evidence presented by the customer and decides whether to uphold the enforcement action or to provide relief.

The difference between an exception and an appeal is that an appeal gives an individual the opportunity to challenge an official decision about an enforcement action. It is not the primary means to secure a larger allocation or get an exception to a water use regulation. However, as mentioned above, customers should be able to appeal a denial by the Water Director of such an exception request to the Appeals Board.

From past experience, the most common reason for filing an appeal was to contest large excess use fees that were levied while under water rationing, often due to a leak in the customers' plumbing fixture or system. This resulted in a large and difficult backlog of cases for the Appeals Board. The Water Department would continue to follow its existing water leak rebate policy that provides administrative relief, including forgiveness of excess use fees, for certain types of leaks that are considered to be beyond the customer's control, such as a leak that develops in an underground pipeline serving a property. Common maintenance items, such as a leaking toilet or failing automatic irrigation valve, that are considered to be customer's responsibility to control, are not eligible for such forgiveness.

One feature of the existing ordinance was to allow a resident who is not a customer of record to force the account customer to appeal the excess water use fee. The ordinance also allowed a customer to request to use a portion of the excess use fee, on a one-time only basis, toward the installation of water conservation equipment in lieu of paying it to the Water Department.

Recommendations Regarding Appeals

It is recommended that the provisions included in the existing ordinance regarding appeals be continued. The Water Commission felt that a formal Appeals Board would not need to be convened until Stage 3, and felt it could serve in that capacity instead during the early stages (1 and 2), if necessary. Furthermore, as an alternative enforcement approach, we recommend adding a new process that would provide one-time forgiveness of excess use charges while under water rationing. To be considered for such forgiveness, the customer would be required to sign up and complete a short weekend or evening course

covering basic meter reading, leak detection, and other topics relevant to the water restrictions in place at the time. This approach (like traffic school) would help reduce the number cases heard by the Appeals Board, provide financial relief to customer receiving the high bill, and most importantly, would give them the opportunity, education, and tools they need to achieve ongoing compliance with water use rules and regulations for the remainder of the shortage.

3.6 Water Shortage Recovery and Plan Termination

A water shortage ends when local rainfall, runoff, and reservoir storage levels improve to the point where the water system is once again capable of supporting unrestricted water demand. Any water use rules and regulations in effect at the time are officially rescinded by City Council and public notice is given that the water shortage is over. The Water Director would then oversee any remaining termination and plan review activities. These activities could include:

- Publicize gratitude for the community's cooperation
- Restore water utility operations, organization, and services to pre-event levels
- Document the event and response and compile applicable records for future reference
- Continue to maintain liaison as needed with external agencies
- Collect cost accounting information, assess revenue losses and financial impact, and review deferred projects or programs
- Debrief staff to review effectiveness of actions, to identify the lessons learned, and to enhance response and recovery efforts in the future
- Complete a detailed evaluation of affected facilities and services to prepare an "after action" report
- Update the water shortage contingency plan as needed.

Section 4 IMPLEMENTATION

This section describes the essential elements of implementing the updated Water Shortage Contingency Plan and discusses the approximate lead time needed to prepare for and activate a demand reduction program. The elements discussed below differ in the amount of staff time, effort, priority, and funding that is required for implementation; some steps can be taken relatively quickly and inexpensively while others will require substantial ongoing work and expense before they are able to be set up and applied as shortage management tools. The primary purpose of this section is to map out the major tasks and timelines required to implement the demand reduction program described in Section 3 and to identify where additional ongoing efforts are necessary to address critical gaps.

4.1 Timeline for Declaring Water Shortage

The table below indicates the approximate times of the year when the City evaluates water supply conditions and, if necessary, declares a water shortage. Planning for a water shortage may begin earlier in winter, and should commence early if conditions that winter are unusually dry or are preceded by a dry year, but it is not usually until the end of March that the water supply outlook for the year ahead becomes certain. This leaves very little lead time to prepare for implementing the water shortage contingency plan.

Table 4-1. Calendar for Declaring Water Shortage

Target Date	Action
Months of Oct -Dec	Monitor rainfall, reservoir level, and runoff amounts
Late January	Prepare written status report on water supply conditions
Early February	Present initial estimate of water supply availability for year ahead
Early March	Present revised estimate of water supply availability for year ahead
Mid-March	SCWD announces existence of water shortage (if applicable)
Mid to late March	SCWD determines monthly water production budget and need for voluntary or mandatory response.
Early April	Present shortage response recommendation to Water Commission; notice of public hearing published
Mid-April	City Council formally declares water supply shortage, adopts emergency ordinance
Mid to late April	Water shortage regulations become effective

Long-range weather forecasting has not yet advanced to the point where it is possible to know in advance with certainty whether the City will experience a water shortage. Therefore, it is not practical to plan more than one season at a time, other than to prepare possible scenarios using multiple dry years for modeling purposes.

4.2 Process for Declaring Water Shortage

Once the water shortage condition has been defined (as soon as reasonably certain), recommendations regarding water shortage rules and regulations consistent with this contingency plan are discussed with the City Water Commission. Monthly Water Commission meetings serve as a public forum for discussing water conditions and for hearing issues associated with implementation of the water shortage ordinance throughout the entire duration of the water shortage event.

Following consideration by the Water Commission, formal action declaring a water shortage is taken by City Council. The legal requirements for such action are covered in Section 350 et.seq. of the California Water Code. The code requires the following process be followed:

- That City Council hold a public hearing on the matter;
- That the public hearing be properly noticed (minimum of publishing once in newspaper at least seven days prior to the date of the hearing);
- Upon determining and declaring the existence of a water shortage, City Council may then adopt regulations and restrictions governing the use and delivery of water.

In accordance with Municipal Code section 16.04.480, rules adopted by the City Council establishing water use regulations become effective immediately after their publication in a newspaper of general circulation published in the City of Santa Cruz.

4.3 Public Notification and Coordination

Even before formal declaration of a water shortage, a public information/media program should be activated to provide customers with as much advance notice as possible. Following Council action, all residents and businesses, not just

customers of record, would need to be provided notice of water shortage rules and regulations via a variety of media and communications methods, including print and television media, internet, and other methods. The timeline for getting information out to the public on television, radio, and through newspaper articles is very short. Additional notification would occur though the City's utility newsletter, which requires a longer lead time of six to eight weeks to produce and mail. It is also recommended that a separate website be designed in advance if rationing becomes necessary to provide basic information about the program, conservation information, forms related to the program, contact information, etc., which then can be modified and expanded as necessary. Large water users and those businesses that are most likely to be seriously affected should be contacted directly in writing. Public notification will be provided in Spanish language for non-English speakers.

Coordination with other City departments and other public agencies can begin prior to formal declaration of a water shortage and can be accomplished through regular meetings, e-mail group updates, and presentations.

Getting the public involved and keeping them informed will require a significant expansion of existing water conservation public information and outreach efforts. Contracting with an advertising agency to assist with a communications campaign and mass media advertising is one way to expand outreach efforts quickly. A substantial amount of printed information on how to conserve water during a water shortage has already been developed and tailored to various types of water customers and is available for immediate use.

4.4 Personnel, Office Space, and Equipment

The estimated additional staff needed to carry out this contingency plan is shown below in Table 4-2. Program staff may consist of existing staff reassigned from regular duties in the Water or other City departments, new limited-term employees, interns, or some combination of the above.

The role of the administrative and office assistants would be to help with the processing of customer appeal and exception requests, administration of the appeals board meetings, and related correspondence. The field utility representatives would be responsible for patrolling the service area for violations of watering rules and restrictions and public contact, while the office utility

representatives would deal with the greatly increased customer contact (in person and by telephone) and would help with utility billing issues. The meter technician's role would be to support the additional customer service workload related to verifying meter reads, data-logging, and other field activities. The water conservation representative's role would be to assist customers with on-site water audits, provide conservation education, and publicity. Distribution personnel (or possible contractor) would provide leak detection and repair services as well as functions related to meters and flow restriction. The programmer analyst position would provide utility billing system software services when water rationing is in effect.

Table 4-2. Potential Additional Staff Positions

Section/Position	Water Shortage Stage:			
	2	3	4	5
Water Administration:				
105 Administrative Assistant I		1	1	2
Customer Services:				
199 Utility Service Representative (field)	1	2	4	6
199 Utility Service Representative (office)	1	2	3	4
212 Water Meter Technician		1	1	1
333 Utility Supervisor				1
Water Conservation:				
208 Water Conservation Representative	1	2	2	3
Water Distribution:				
209 Water Distribution Worker	1	2	2	2
Other Temporary:				
229 Programmer Analyst II		1	1	1
914 Office Assistant			1	2
Total Positions	4	11	15	22
Estimated personnel costs* ($000)	$113	$324	$425	$622

**assuming seven months, including overhead*

The timeline associated with recruiting and hiring new or additional staff varies from several weeks to several months depending on the type of employment

opportunity, whether there is an existing recruitment list to draw from, or whether a new job announcement would need to be advertised.

Any newly hired staff would need to be quickly integrated into the organization with basic training in the following areas:

- Water Department functions, organization, facilities, and service area boundary,
- Customer service standards, City policies, and safety responsibilities,
- Computer equipment and the utility billing system,
- Water rates and charges and meter reading,
- Water shortage regulations and enforcement processes.

In addition, all existing Water Department personnel would need to understand water shortage rules and regulations in effect at the time to be able to respond to customer questions wherever they may come into contact with the public on the job.

Additional staff, particularly during stages when rationing is in effect, means expanded office space and additional equipment also would be needed to carry out office and field functions. Even though the Water Department recently moved to a new, larger office, the Customer Service section of the office is currently unable to accommodate any additional office personnel. The Water Department office would need to be reconfigured or new temporary workspace acquired, or vacant storefront property rented. In addition, the Water Department would need to purchase or lease the following equipment:

Office personnel:

- Furniture
- Telephones
- Computers

Field personnel:

- Automobiles
- Cell phones
- Digital cameras

4.5 Effect of Water Shortages on Revenue

One of the negative consequences of using demand reduction to deal with water shortages is the corresponding reduction in revenue that occurs to the City's Water Fund as a result of reduced water sales. To better understand the magnitude of revenue losses that the Water Fund might experience, a

spreadsheet model was developed based on 2007 calendar year revenues, the most recent year for which complete revenue data is available. The model assumes the "ready-to-serve" or fixed monthly service charge that is based on meter size would remain unaffected while the volumetric portion of the Department's revenue derived from water sales would vary by customer class in accordance with the allocation presented in Table 3-6 over the seven month period in which water shortage regulations are likely to be in effect. Results are summarized in Table 4-3.

Table 4-3. Revenue Losses Associated with Various Water Shortages

	2007 Revenue ($000)			Revenue Losses due to Reduced Water Sales ($000):				
Customer Category:	From service charges	From water sales	Total	Stage 1 (5%)	Stage 2 (15%)	Stage 3 (25%)	Stage 4 (35%)	Stage 5 (50%)
Single Family Residential	3,770	6,027	9,797	-229	-687	-1,236	-1,740	-2,381
Multi-Family Residential	1,069	3,742	4,810	-126	-329	-556	-784	-1,137
Business	917	3,207	4,124	-111	-111	-177	-288	-665
UC Santa Cruz	99	1,022	1,121	-33	-99	-158	-224	-317
Other Industry	44	130	174	-4	-4	-8	-13	-28
Municipal	149	301	450	-13	-62	-112	-153	-187
Irrigation	234	682	916	-29	-207	-379	-505	-574
Golf	32	581	614	-27	-148	-268	-361	-437
Coast	34	36	70	-1	-1	-3	-4	-9
Other	19	43	62	-1	-1	-3	-13	-13
Total 2007 Revenue	**$6,366**	**$15,770**	**$22,137**					
Total Revenue Losses				-$575	-$1,649	-$2,900	-$4,085	-$5,749
Estimated Net Revenue				**$21,562**	**$20,488**	**$19,236**	**$18,051**	**$16,388**

Table 4-3 shows revenue losses ranging from just under $0.6 million in a 5 percent water shortage situation to almost $5.8 million in a critical 50 percent water shortage. Compared to 2007 revenues of just over $22 million, the Department's net revenue would be reduced to approximately $21.5 million in Stage 1 to less than $16.4 million in Stage 5. These estimates of losses are ballpark figures only and probably underestimate the problem. Actual losses would be different for the following reasons:

- The spreadsheet did not model the effect of tiered pricing in the single family residential category, which would exacerbate revenue losses from this group;

- It is unlikely that system water use would immediately recover to normal levels in the months following a period of curtailment as modeled, thereby further depressing income;

- The table above does not include added operating costs of staff, equipment, and materials related to the water shortage response.

On the other hand, the time of year in which regulations would take effect includes parts of two fiscal years, so the full effect of revenue losses would not impact the Department's annual budget to such a large degree. In addition, there would be relatively minor cost savings associated with reduced power and chemical usage at the Graham Hill water treatment plant, ranging from <$0.1 million in Stage 1 to about $0.4 million in Stage 5. Finally, some of the revenue loss would be offset by penalty and/or excess use fees.

Whatever the situation, one element of implementing this Water Shortage Contingency plan involves examining the Water Department's proposed budget for the coming year and recommending action(s) to lessen or overcome the revenue shortfall. Options include the following:

- Tapping into the Department's Rate Stabilization Fund (currently $2.2 million)
- Deferring planned capital improvements
- Considering possible rate adjustments or surcharges

As a matter of policy, since the City's Integrated Water Plan anticipates occasional water shortages of up to 15 percent, it is recommended that the Rate Stabilization Fund be maintained at least at a level that would fully mitigate expected revenue losses associated with that level of shortfall. The Rate Stabilization Fund would now fully cover the losses of a 15 percent shortfall lasting one year, but may need to be increased in the future, either to keep pace with expected revenue losses, or to mitigate revenue losses from water shortages lasting more than a single year.

Another implementation issue associated with pricing is the Proposition 218 procedure for increasing water rates, fees, and charges. It is assumed that the

proposed changes to both penalty fees and excess use fees discussed in Section 3 would require written notice to all customers, a public hearing, and consideration of written protests and comments before implementing the new fees. Given the minimum 45 day protest period, the entire Prop 218 process can take several months to complete.

4.6 Household Survey

To implement water rationing for single residential customers in Stages 3 through 5, it is recommended that the City of Santa Cruz use the system developed by Goleta Water District in lieu of performing a household census or survey. The advantages are that it is simpler, easy to understand, more likely to be feasible with the new utility billing system, avoids having to perform a household survey or census, allows adjustments for larger households, and achieves the fundamental goal of reducing peak season water use, particularly outdoor use . Goleta also required that, for households larger than four, certain efficiency steps be taken before authorizing a larger allocation.

For the majority of households that have fewer than four residents, little opposition to this approach is expected. However, the one downside to this approach is that it does afford somewhat unequal amounts of water on a per person basis to households of different sizes, and so some may object to the City adopting this system. If, based on public input, a true per capita rationing system becomes the preferred approach to ration water instead of the Goleta model, the following describes the work involved to update the number of people residing at each account on the billing system. In the past this survey has been done by mail and is based fundamentally on the honor system. There are currently over 18,700 accounts classified as single residential customers on the water system. This task would involve data processing personnel to prepare data files for mailing, a mailing service vendor to provide printing and mailing services and to provide return envelopes, and two additional temporary staff to handle data input. The task would also involve maintaining census data on a daily basis as household sizes change and new utility accounts are established. The estimated cost for postage and services related to performing such a survey is about $20,000, not counting data entry. The lead time necessary to conduct the survey and enter data is approximately 3 months.

The other major work item involved in a census-based approach to rationing involves configuring the utility billing system to calculate allotments based on household size, discussed below.

4.7 Utility Billing/Data Processing Capabilities

Implementing this Water Shortage Contingency Plan will require utility billing system software that provides the necessary capabilities and flexibility to quickly shift from normal billing practices to water rationing mode. To manage a water shortage as outlined in this plan, the billing system must eventually be able, at a minimum, to do the following:

- Integrate penalty fees into the utility bill,
- Change billing frequency, as needed, to monthly from bimonthly for outside City customers,
- Calculate rationing allocations, whether determined by per capita, per dwelling unit, or percentage of past use method,
- Maintain long-term water usage history,
- Calculate excess use fees,
- Address special needs customers (overwrite default allocation to handle rationing exceptions),
- Handle special cases, such as multiple meters serving a single property,
- Calculate seasonally varying landscape water budgets.

In addition, the utility bill format and the data files that are generated to create the utility bills must be modified to incorporate water restrictions, water budgets, and rationing requirements.

The newly installed EDEN utility billing module appears to be able to handle the type of computations needed to implement both the Goleta rationing model for single family residential customers and the per dwelling unit method for multi-family accounts. It currently does not have the capability or flexibility to handle a census-based approach to rationing, large landscape water budgets, or commercial water rationing which is based on some percentage of past use. Acquiring this capability is a top priority but it will have to be custom developed over time. The Customer Service Manager indicates that such programming would likely take in excess of one year to complete. The Department's FY 09 budget includes $25,000 for utility billing software development expenses.

4.8 Customer Exceptions and Appeals

One of the actions that is triggered when City Council adopts the water shortage ordinance is the establishment of an Appeals Board. Part of implementing this plan involves providing administrative support to the Appeals Board, including processing requests, preparing recommendations, posting agendas, attending meetings, preparing meeting minutes, and handling correspondence. After the Board's membership has been established and approved by City Council, the Appeals Board function can be implemented quickly, but depending on the stage of water shortage and number of appeals filed, may require substantial staff time over the course of the water shortage to address the resulting caseload.

4.9 Large Landscape Water Budgets

The next major work priority scheduled for the City's Water Conservation Office involves implementing a large landscape program. The program will consist of developing water budgets for over 400 large landscape sites served by dedicated irrigation meters, offering water audits, and supporting activities (financial incentives, education, and possible separation of large landscapes currently on mixed use meters). These programs have a long development time (1-2 years) due to the need to measure landscape areas, differentiate among plant materials, and integrate water budget data into the billing system. This latter task requires changing the bill design and layout to show water budget information and tying performance relative to the water budget to water pricing. The project will be designed so that water budgets can be quickly adapted for use as a water shortage management tool in Stages 2-5. If the City were confronted with a water shortage before large landscape water budgets and budget based pricing could be implemented, however, alternative methods to curtail water in the large landscape sector would have to considered.

4.10 Monitoring Water Supply and Demand

Under normal water supply conditions, water production and gross consumption are recorded daily and monthly by treatment plant operators and reported to the Production Superintendent. Metered water consumption is reported on a monthly basis through automated sales reports generated by the utility billing system.

During a water shortage, a monthly production forecast and budget are developed for each source of supply. Actual production and the lake level are closely monitored on a daily and weekly basis to verify that the budgeted goals are being met. Consumption by large users is monitored on a frequent basis. In severe stages of a water shortage, production and consumption data would be evaluated daily and the status reported to the Water Director's office. If the trend in consumption is such that the rate of drawdown at Loch Lomond is greater than anticipated, the City Manager and Council are notified so that corrective action (such as increased publicity and enforcement or consideration of declaring the next higher stage) can be taken.

An example of a monthly water supply and demand monitoring report is presented in Appendix F.

4.11 Ongoing Implementation Steps

The final tasks in updating the City's Water Shortage Contingency Plan include the following steps:

- Involving the community and soliciting public review and input on this document;
- Finalizing and presenting the plan to City Council for adoption;
- Preparing an updated water shortage ordinance;
- Preparing and mailing a Proposition 218 notice about proposed changes to penalty and excess use fees.

As far as critical gaps that require ongoing work, the most important recommendations are to:

1. Continue to work on the new utility billing system so that the database is able to meet the City's requirements for use in water rationing if it becomes necessary, and

2. Focus on developing the large landscape program so that water budgets described above can be used to professionally manage large irrigation accounts the next time a water shortage arises.

3. As much as possible, prepare water shortage notices, announcements, materials, and mailing lists in advance, including bilingual materials for non-English speakers.

Appendices

Appendices

Appendix A

California Water Code Sections 350-359 and 10632

Water Code Section 350-359

350. The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, may declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

351. Excepting in event of a breakage or failure of a dam, pump, pipe line or conduit causing an immediate emergency, the declaration shall be made only after a public hearing at which consumers of such water supply shall have an opportunity to be heard to protest against the declaration and to present their respective needs to said governing board.

352. Notice of the time and place of hearing shall be published pursuant to Section 6061 of the Government Code at least seven days prior to the date of hearing in a newspaper printed, published, and circulated within the area in which the water supply is distributed, or if there is no such newspaper, in any newspaper printed, published, and circulated in the county in which the area is located.

353. When the governing body has so determined and declared the existence of an emergency condition of water shortage within its service area, it shall thereupon adopt such regulations and restrictions on the delivery of water and the consumption within said area of water supplied for public use as will in the sound discretion of such governing body conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

354. After allocating and setting aside the amount of water which in the opinion of the governing body will be necessary to supply water needed for domestic use, sanitation, and fire protection, the regulations may establish priorities in the use of water for other purposes and provide for the allocation, distribution, and delivery of water for such other purposes, without discrimination between consumers using water for the same purpose or purposes.

355. The regulations and restrictions shall thereafter be and remain in full force and effect during the period of the emergency and until the supply of water available for distribution within such area has been replenished or augmented.

356. The regulations and restrictions may include the right to deny applications for new or additional service connections, and provision for their enforcement by discontinuing service to consumers willfully violating the regulations and restrictions.

357. If the regulations and restrictions on delivery and consumption of water adopted pursuant to this chapter conflict with any law establishing the rights of individual consumers to receive either specific or proportionate amounts of the water supply available for distribution within such service area, the regulations and restrictions adopted pursuant to this chapter shall prevail over the provisions of such laws relating to water rights for the duration of the period of emergency; provided, however, that any distributor of water which is subject to regulation by the State Public Utilities Commission shall before making such regulations and restrictions effective secure the approval thereof by the Public Utilities Commission.

358. Nothing in this chapter shall be construed to prohibit or prevent review by any court of competent jurisdiction of any finding or determination by a governing board of the existence of an emergency or of regulations or restrictions adopted by such board, pursuant to this chapter, on the ground that any such action is fraudulent, arbitrary, or capricious.

359. (a) Notwithstanding any other provision of law that requires an election for the purpose of authorizing a contract with the United States, or for incurring the obligation to repay loans from the United States, and except as otherwise limited or prohibited by the California Constitution, a public water agency, as an alternative procedure to submitting the proposal to an election, upon affirmative vote of four-fifths of the members of the governing body thereof, may apply for, accept, provide for the repayment together with interest thereon, and use funds made available by the federal government pursuant to Public Law 95-18, pursuant to any other federal act subsequently enacted during 1977 that specifically provides emergency drought relief financing, or pursuant to existing federal relief programs receiving budget augmentations in 1977 for drought assistance, and may enter into contracts that are required to obtain those federal funds pursuant to the provisions of those federal acts if the following conditions exist:

(1) The project is undertaken by a state, regional, or local governmental agency.
(2) As a result of the severe drought now existing in many parts of the state, the agency has insufficient water supply needed to meet necessary agricultural, domestic, industrial, recreational, and fish and wildlife needs within the service area or area of jurisdiction of the agency.

(3) The project will develop or conserve water before October 31, 1978, and will assist in mitigating the impacts of the drought.
(4) The agency affirms that it will comply, if applicable, with Sections 1602, 1603, and 1605 of the Fish and Game Code
(5) The project will be completed on or before the completion date, if any, required under the federal act providing the funding, but not later than March 1, 1978.

(b) Any obligation to repay loans shall be expressly limited to revenues of the system improved by the proceeds of the contract.

(c) No application for federal funds pursuant to this section shall be made on or after March 1, 1978.

(d) Notwithstanding the provisions of this section, a public agency shall not be exempt from any provision of law that requires the submission of a proposal to an election if a petition requesting such an election signed by 10 percent of the registered voters within the public agency is presented to the governing board within 30 days following the submission of an application for federal funds.

(e) Notwithstanding the provisions of this section, a public water agency that applied for federal funds for a project before January 1, 1978, may make application to the Director of the Drought Emergency Task Force for extension of the required completion date specified in paragraph (5) of subdivision (b). Following receipt of an application for extension, the Director of the Drought Emergency Task Force may extend the required completion date specified in paragraph (5) of subdivision (b) to a date not later than September 30, 1978, if the director finds that the project has been delayed by factors not controllable by the public water agency. If the Drought Emergency Task Force is dissolved, the Director of Water Resources shall exercise the authority vested in the Director of the Drought Emergency Task Force pursuant to this section.

(f) For the purposes of this section, "public water agency" means a city, district, agency, authority, or any other political subdivision of the state, except the state, that distributes water to the inhabitants thereof, is otherwise authorized by law to enter into contracts or agreements with the federal government for a water supply or for financing facilities for a water supply, and is otherwise required by law to submit those agreements or contracts or any other project involving long-term debt to an election within that public water agency.

Water Code Section 10632

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

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

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

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

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

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

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

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

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

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

Appendix B

Cities and Agencies whose Water Shortage Contingency Plans or Ordinances were Reviewed

Alameda County Water District

Contra Costa Water District

Denver Water, Colorado

East Bay Municipal Utilities District (EBMUD)

El Paso Water Utilities, Texas

Marin Municipal Water District

Monterey Peninsula Water Management District

New York City, New York

Salt Lake City Department of Public Works, Utah

San Diego County Water Authority

San Francisco Public Utilities Commission (SFPUC)

San Luis Obispo, City of

Santa Barbara, City of

Santa Monica, City of

Santa Rosa, City of

Seattle Public Utilities, Washington

Sonoma County Water Agency

Southern Nevada Water Authority, Nevada

St. Helena, City of

Tampa, Florida, City of

Yuba City, City of

Appendix C

Exceedance Probabilities for San Lorenzo River at Felton

Month	Exceedence Probability	Wet	Normal	Dry	Critically Dry	Month	Exceedence Probability	Wet	Normal	Dry	Critically Dry
Jan.	100	120	34.2	13.8	20.5	Feb.	100	126	75.7	20.9	16.6
	90	244	56.4	28.6	22.4		90	218	102	34.9	21.6
	75	386	92.2	35.2	30.6		75	337	123	63.2	25.3
	50	656	181	57.3	35.9		50	637	301	141	47.3
	25	831	271	108	43.3		25	1177	466	220	77.5
	10	1153	600	139	57.5		10	1318	573	256	124.0
Mar.	100	113	70.1	54.9	21.4	April	100	67.9	58.0	36.7	12.3
	90	237	87.7	58.5	22.3		90	106	63.3	42.7	20.6
	75	308	99.9	71.1	28.3		75	140	77.6	43.3	25.5
	50	462	219	126	37.1		50	246	112	60.3	28.9
	25	705	303	197	75.9		25	459	149	70.0	32.8
	10	842	494	229	93.1		10	849	170	75.4	35.5
May	100	43.9	34.5	21.9	11.6	June	100	33.6	23.1	15.4	9.4
	90	65.9	40.2	27.2	15.7		90	42.5	26.1	17.3	11.6
	75	82.1	45.1	27.9	19.9		75	49.0	29.7	19.4	13.3
	50	105	58.5	31.7	21.3		50	60.5	36.1	22.7	14.7
	25	154	72.0	44.3	22.7		25	77.2	44.8	28.5	17.2
	10	185	87.2	77.5	29.4		10	93.0	51.6	34.8	17.8
July	100	24.1	16.5	10.6	6.7	Aug.	100	18.5	12.7	8.4	6.5
	90	25.9	18.2	12.9	8.7		90	21.3	15.4	10.1	8.3
	75	33.2	20.1	13.4	9.8		75	23.0	16.2	11.0	9.2
	50	40.1	24.1	15.5	10.5		50	27.4	18.7	12.0	10.1
	25	46.6	28.8	20.6	12.1		25	34.2	22.3	15.6	10.8
	10	56.7	33.2	23.9	13.2		10	40.2	25.3	18.7	11.5
Sept.	100	16.9	13.6	8.3	8.3	Oct.	100	8.3	9.8	10.1	9.3
	90	19.1	14.1	8.9	8.8		90	12.0	14.4	15.3	11.3
	75	21.1	14.6	10.8	9.3		75	15.7	16.1	17.5	12.7
	50	23.3	16.1	12.5	10.2		50	21.1	21.0	25.4	15.8
	25	26.1	20.0	14.9	10.9		25	28.0	24.6	27.3	23.2
	10	32.9	22.7	16.8	11.5		10	32.1	29.0	28.4	30.0
Nov.	100	12.8	11.8	11.4	14.5	Dec.	100	15.3	24.4	14.7	16.4
	90	22.6	15.2	15.0	18.2		90	52.4	26.7	21.8	22.4
	75	27.0	24.1	20.3	20.9		75	77.3	31.0	28.3	25.4
	50	32.9	36.4	28.1	23.7		50	168	65.1	36.3	33.7
	25	65.7	53.0	67.6	25.3		25	272	238	43.1	53.3
	10	173	73.5	110	34.5		10	501	376	85.5	82.4

Table 1: Exceedence probabilities for San Lorenzo River at Big Trees from 1936-2002 (USGS Gage ID #11160500). Wet, average, dry and drought years are classified by the total flow for the water year (Method A)

Appendix D

Public Agency and Major Customer Contact List

FACILITY	CONTACT NAME(S)	TELEPHONE	Email
Water Districts:			
CA Dept of Public Health	Jan Sweigert	831-655-6939	After hours/emergency 831-236-4311
Soquel Creek Water District	Laura Brown	831-475-8500	
Scotts Valley Water District	Charlie McNeish	831-438-2363	contact@svwd.org
San Lorenzo Valley Water District	Jim Mueller	831-338-2153	jmueller@slvwd.com
County of Santa Cruz/City of Capitola:			
County CAO	Dinah Phillips	831-454-2100	dinah.phillips@co.santa-cruz.ca.us
County Public Health Officer	Poki Namkung	831-454-4000	poki.namkung@co.santa-cruz.ca.us
County Director of Environmental Health	Bob Kennedy	831-454-2022	bob.kennedy@co.santa-cruz.ca.us
County OES	Paul Horvat	831-458-7109	oes014@co.santa-cruz.ca.us
Santa Cruz County Public Works	John Presleigh	831-454-2160	dpwweb@co.santa-cruz.ca.us
Emergency/General Services	Nancy Carr-Gordon	831-454-2714	nancy.gordon@co.santa-cruz.ca.us
NETCOMM	Scotty Douglas	831-471-1000	scotty@sccecc.org
County Safety Officer	Josh Riley	831-454-4820	josh.reilly@co.santa-cruz.ca.us
County Parks	Gretchen Iliff Maintenance Supt.	831-454-7908 Office 831-247-2615 Cell	prc043@scparks.com
County Redevelopment Agency	Anita Kane	831 454-2776	red017@co.santa-cruz.ca.us
City of Capitola	Richard Hill	831-475-7300	rhill@ci.capitola.ca.us
Capitola Public Works	Steve Jesberg	831-475-7300 x217	sjesberg@ci.capitola.ca.us

Appendix D

Public Agency and Major Customer Contact List

FACILITY	CONTACT NAME(S)	TELEPHONE	Email
Medical Facilities:			
Dominican Hospital Main phone: 462-7700	Tom Bruce	831-462-7550	tbruce@chw.edu
Sutter Main phone: 477-2200	Facilities Office	831-477-2299	
Santa Cruz Medical Clinic Main phone: 423-4111	Brian Crispell Facilities Director	831-227-7110	
University of California, Santa Cruz:			
Campus Dispatch		831-459-4856	
Physical Plant (Non-Emergency)	Jim Dunne	831-459-4444	jfdunne@ucsc.edu
Physical Planning and Construction	Dean Fitch	831-459-4936	drfitch@ucsc.edu
University Relations	Donna Blitzer	831-459-3938	dblitzer@ucsc.edu
School Districts:			
City Schools Main phone: 429-3837	John Bramlett	831-429-3968 Office 831-251-6803 Cell	bram@sccs.santacruz.k12.ca.us
Live Oak School Dist. Main phone: 475-6333	Keith Houchen Director of Maint.	831-475-6095 Office 831-212-4862 Cell	khoutchen@santacruz.k12.ca.us
Other:			
PG&E	Phil Furnas	831-479-5892 831-915-8168	24 Hour emergency service: 1(800) PGE-5000
Pasatiempo Golf Course Corporate Office: 459-9169	Paul Chojnacky	831-459-9713 Office 415-336-5099 Cell	paul@pasatiempo.com
DeLaveaga Golf Course	Miles Hicks Alt. Contact: Steve Pacheco 831-236-0700	831-420-6121 Office 831-212-8699 Cell	mhicks@cityofsantacruz.com

Appendix D

Public Agency and Major Customer Contact List

FACILITY	CONTACT NAME(S)	TELEPHONE	Email
Santa Cruz Memorial, Oakwood Cemeteries	Randy Krassow	831-426-1601	rkrassow@scmemorial.com
Chaminade Main phone: 831-475-5600	Al Hittle Facilities Director	831-465-3451 Office 831-212-1616 Cell	
SC Beach Boardwalk Main phone: 423-5590	Security Head of Maint.	831-345-5590 Supv. 831-818-3336 Cell	Also: Ted Whiting: 460-1610 Carl Henn, Facility Manager 460-3364
City Parks	Steve Hammack	831-420-5366 Office 831-212-5687 Cell	shammack@cityofsantacruz.com
Port District	Rick Smith	831-475-6161	scpd@santacruzharbor.org
IT Main phone: 420-5555 Operators for SCADA systems: 420-5457, 24 hrs	Carlos Silva Network Administrator	831-420-5093 Office 831-227-0635 Cell	csilva@cityofsantacruz.com
Capitola Mall	Steve Bettencourt	831-901-8618	SMS1257@smsclean.com

Appendix E

Residential Water Rationing Allotments

(Monthly allotment, in ccf or billing units)

<table>
<tr><th></th><th colspan="2">Stage 3
15–25% Deficiency</th><th>Stage 4
25-35% Deficiency</th><th>Stage 5
35-50% Deficiency</th></tr>
<tr><td>Single Residential Accounts
Up to 4 persons:
Each Additional person:</td><td colspan="2">11
2</td><td>9
2</td><td>7
2</td></tr>
<tr><td rowspan="2">Multiple Residential Accounts
Allotment is <u>per dwelling unit</u>
based on number of dwelling units on account:
2-4:
5-20:
Over 20:</td><td colspan="2">Separate irrigation meter serving property?</td><td colspan="2" rowspan="2">All multiple residential accounts, regardless of whether there is a separate irrigation meter serving the property or not:</td></tr>
<tr><td>No
7
6
5</td><td>Yes
6
5
4</td></tr>
<tr><td>Multiple Residential Accounts Alternative A
Allotment is in gallons per person per day (gpcd) based on the number of permanent residents at the account:</td><td colspan="2">47 gpcd</td><td>45 gpcd</td><td>37 gpcd</td></tr>
<tr><td>Multiple Residential Accounts Alternative B
(not applicable to 2-unit accounts)

Where lot coverage, by dwelling units is <35% of entire property</td><td colspan="4">Same allotment as single residential accounts</td></tr>
</table>

Appendix F

Example of Monthly Water Supply and Demand Monitoring Report

SCWD Production Forecast	April			May				Sep			Oct			Total		
(million gallons)	Projected	Actual	Variance	Projected	Actual	Variance		Projected	Actual	Variance	Projected	Actual	Variance			
North Coast (gross production)																
North Coast (net production)																
San Lorenzo River																
Live Oak Wells																
Total Production without Lake																
Projected System Demand																
Lake Production Needed to Meet Demand																
Evaporation (feet)																
Evaporation (mil gal)																
Fish Release (mil gal)																
Beginning Lake Volume (mil gal)																
End of Month Lake Volume (mil gal)																
End of Month Lake Elevation (ft above msl)																
Monthly change in elevation (ft)																
Cumulative change in elevation (ft)																
Percent of capacity (%)																

Previous Year Water Consumption	
Current Year Water Consumption	
Difference	

Notes:

North Coast gross production based on …

North Coast net production assumed to be …

San Lorenzo River forecast assumes ___ year type, ___ percent exceedance probability

Projected system demand based on …

Assumptions for Loch Lomond Reservoir include: starting elev: ____ no additional pumping from Felton Diversion, & no natural inflow.

Appendix G

RESOLUTION NO. NS-28,024

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA CRUZ
ADOPTING THE 2009 WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the City Council of the City of Santa Cruz in 2003 adopted a long range planning document known as the Integrated Water Plan, which was intended to provide a flexible, phased approach for reducing near-term drought year shortages and to provide a reliable supply that meets long-term needs while ensuring protection of public health and safety; and

WHEREAS, in addition to implementing water conservation programs to reduce average daily water use and pursuing a cooperative desalination project to increase the supply of water, the Integrated Water Plan includes a curtailment component calling for temporary cutbacks of water use by up to 15 percent to help balance available water supply against demand in drought years; and

WHEREAS, the need to better prepare for the possibility of future water shortages in advance of the next major drought was identified as a top priority in the city's 2005 Urban Water Management Plan; and

WHEREAS, California Water Code section 10632 requires water agencies to plan for water shortages of up to 50 percent as part of their Urban Water Management Plan; and,

WHEREAS, development of the Water Shortage Contingency Plan was a collaborative, open, and public process among the City Water Department staff, the City's Water Commission, City Council and the public; and

WHEREAS, the Water Commission has reviewed the Water Shortage Contingency Plan and unanimously recommended that City Council adopt it to provide a framework for guiding the City's response to future droughts; and

WHEREAS, the State of California is now in its third consecutive year of drought and despite the recent rain, water conditions in Santa Cruz remain below normal; and

WHEREAS, because stream flows that constitute the City's primary drinking water source of supply are projected to run lower than usual this year, voluntary and mandatory actions to temporarily reduce water demand will likely be needed this summer to help preserve valuable reservoir storage in case dry conditions continue beyond 2009.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Santa Cruz that it hereby adopts the 2009 Water Shortage Contingency Plan, authorizes the Water Director to file a copy with the California Department of Water Resources as an amendment to the City's 2005 Urban Water Management Plan, and directs staff to develop a water shortage ordinance that is consistent with the recommendations outlined in the plan.

RESOLUTION NO. NS-28,024

PASSED AND ADOPTED this 10th day of March, 2009, by the following vote:

AYES: Councilmembers Coonerty, Robinson, Lane, Madrigal, Beiers, Vice Mayor Rotkin; Mayor Mathews.

NOES: None.

ABSENT: None.

DISQUALIFIED: None.

APPROVED: _____
Mayor

ATTEST: _____
City Clerk

Appendix H

ORDINANCE NO. 2010-12

AN ORDINANCE OF THE CITY OF SANTA CRUZ REPEALING ORDINANCE 2009-14 AND ADDING A NEW CHAPTER 16.01 OF THE MUNICIPAL CODE PROHIBITING AND REGULATING CERTAIN USES OF WATER FROM THE CITY WATER SUPPLY SYSTEM NOT ESSENTIAL TO THE PUBLIC HEALTH AND SAFETY FOR WATER CONSERVATION PURPOSES, PRESCRIBING PENALTIES FOR VIOLATIONS, AND ESTABLISHING A WATER SHORTAGE APPEAL BOARD

BE IT ORDAINED by the City Council of the City of Santa Cruz as follows:

SECTION 1: Ordinance 2009-14 is hereby repealed.

SECTION 2: Chapter 16.01 of the Santa Cruz Municipal Code is hereby enacted to read as follows:

"Chapter 16.01

Water Shortage Regulations and Restrictions

Sections:

16.01.010 FINDINGS.

WHEREAS, the City of Santa Cruz water system draws almost exclusively on local surface water sources, whose yield varies from year to year depending on the amount of rainfall received and runoff generated during the winter season; and

WHEREAS, the City water system is susceptible to water shortages in dry and critically dry years or in periods of prolonged regional drought when water conditions characterized by low surface flows in the north coast streams and San Lorenzo River sources, depleted storage in Newell Creek Reservoir, or both, reduce the available supply to a level that cannot support seasonal water demand; and

WHEREAS, on March 10, 2009, the City Council of the City of Santa Cruz adopted an updated Water Shortage Contingency Plan that describes how the City will respond to future water shortages and lists the various actions the City would take to reduce water demand under different water shortage scenarios ranging from 5 percent or less up to and including a 50 percent seasonal water supply deficiency; and

WHEREAS California Water Code sections 350 et seq. authorize water suppliers, after holding a properly noticed public hearing and after making certain findings, to declare a water shortage (emergency) and to adopt such regulations and restrictions to conserve the water supply for the greatest public benefit with particular regard for domestic use, sanitation, and fire protection; and

WHEREAS, the voluntary and mandatory water conservation measures and progressive restrictions on water use and method of use set forth herein provide an effective and immediately available means of conserving water which is essential during periods of water shortage to ensure a reliable and sustainable minimum supply of water for the public health, safety, and welfare and to preserve valuable limited reservoir storage, avoid depleting water storage to an unacceptably low level, and thereby lessen the possibility of experiencing more critical shortages if dry conditions continue or worsen; and

WHEREAS, the usage allotments hereinafter established will equitably spread the burden of restricted and prohibited usage in a manner prescribed by the City's Water Shortage Contingency Plan over all City Water Department customers and other consumers of City water; and

WHEREAS, the purposes of this chapter are to conserve the water supply of the City of Santa Cruz for the greatest public benefit, to mitigate the effects of a water supply shortage on public health and safety and economic activity, and to budget water use so that a reliable and sustainable minimum supply of water will be available for the most essential purposes for the entire duration of the water shortage.

16.01.020 DECLARATION OF WATER SHORTAGE.

The provisions of this chapter shall take effect whenever the Director, upon engineering analysis of City water supplies, finds and determines that a water shortage exists or is imminent within the City of Santa Cruz water service area and a declaration of a water shortage is made by a resolution of the City Council, and they shall remain in effect for the duration of the water shortage set forth in the resolution.

16.01.030 APPLICATION OF REGULATIONS.

The provisions of this chapter shall apply to all persons using or consuming water both inside and outside the City and within the City water service area, and regardless of whether any person using water shall have a contract for water service with the City.

16.01.040 PRECEDENCE OF REGULATIONS.

Where other provisions of the Municipal Code, whether enacted prior or subsequent to this chapter, are inconsistent with this the provisions of this chapter, the provisions of this chapter shall supersede and control for the duration of the water shortage set forth in the resolution of the City Council.

16.01.050 DEFINITIONS.

(a) "Director" refers to the Director of the City of Santa Cruz Water Department.

(b) "Water" refers to water produced and served by the City of Santa Cruz Water Department.

(c) "City" refers to the City of Santa Cruz.

(d) "Water Department" refers to the City of Santa Cruz Water Department.

(e) "Seasonal water demand" refers to the demand, measured in gallons, placed by customers on the City water supply between April 1 and October 31 each calendar year.

(f) "Issue"/"Declare". Whenever this chapter references the Director's issuance or declaration of an alert, warning, emergency, or regulation, said alert, warning, emergency or regulation shall be put into effect by the placement of a legal advertisement in a newspaper of general circulation, by a posting on the City's internet website and by a posting in the following public places: Santa Cruz City Hall, 809 Center Street, Santa Cruz; Santa Cruz Water Department Office, 212 Locust Street, Santa Cruz; Capitola City Hall, 420 Capitola Avenue, Capitola, and the Santa Cruz County Governmental Center, 701 Ocean Street, Santa Cruz. Any such alert, warning, emergency or regulation shall take effect upon the date of its publication in the Santa Cruz Sentinel.

(g) "Customer" shall refer to any account customer of the City of Santa Cruz Water Department as well as to any consumer of City water who may not be City of Santa Cruz Water Department account customer.

(h) "Dry Year" refers to the type of water year under the City's water year classification system, which begins October 1 and ends September 30, in which the total annual discharge of the San Lorenzo River at Felton measures between 29,000 and 49,000 acre-feet.

(i) "Critically Dry Year" refers to the type of water year under the City's water year classification system, which begins October 1 and ends September 30, in which the total annual discharge of the San Lorenzo River at Felton measures less than 29,000 acre-feet.

16.01.060 WATER WASTE PROHIBITIONS.

It shall be unlawful during any water shortage stage for any person, firm, partnership, association, corporation, political entity (including the City) or any other Water Department customer to use water for any of the following:

(a) Fire Hydrants. Use of water from any fire hydrant unless specifically authorized by permit from the City, except by regularly constituted fire protection agencies for fire suppression purposes, or for other authorized uses, including distribution system flushing, fire flow testing, and filling of approved vehicles for sewer system flushing, storm drain maintenance, and street sweeping purposes.

(b) Watering/Irrigation. The watering of grass, lawn, groundcover, shrubbery, open ground, crops and trees, including agricultural irrigation, in a manner or to an extent that causes

or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, gutter or ditch.

(c) Plumbing Leaks. The escape of water through leaks, breaks, or other malfunctions within the water user's plumbing or distribution system for any period of time after such break or leak should have reasonably been discovered and corrected. It shall be presumed that a period of twenty-four hours after the water user discovers such break, leak or malfunction, or receives notice from the City of such condition, whichever occurs first, is a reasonable time within which to correct such condition or to make arrangements for correction.

(d) Washing of Exterior Surfaces. The washing of sidewalks, walkways, driveways, parking lots, patios, or other exterior surfaces unless the hose is equipped with an automatic shutoff nozzle.

(e) Cleaning of Structures and Vehicles. The cleaning of building exteriors, mobile homes, cars, boats, and recreational vehicles unless the hose is equipped with an automatic shutoff nozzle.

(f) Fountains and Decorative Water Features. The operation of a water fountain or other decorative water feature that does not use re-circulated water.

(g) Commercial Car Washes. The washing of vehicles at a commercial car wash unless the facility utilizes water recycling equipment, or operates on a timer for a limited time period and shuts off automatically at the expiration of the time period.

(h) Construction. The use of potable water for dust control or soil compaction purposes in construction activities where there is a reasonably available source of reclaimed water appropriate for such use.

(i) The indiscriminate running of water or washing with water not otherwise prohibited in this section, which is wasteful, and without reasonable purpose.

16.01.070 STAGE 1: WATER SHORTAGE ALERT.

(a) The Director is empowered to issue a Water Shortage Alert and to enforce the water shortage restrictions in this Section upon finding that the magnitude of an anticipated water shortage, per the criteria delineated in the City's adopted Water Shortage Contingency Plan, will be five percent (5%) and a minimal consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water supply conditions. In a Stage 1 water shortage, the City will enforce the following water shortage restrictions with the objective of realizing a seasonal water demand reduction of 125 million gallons or an average daily water demand reduction of 600,000 gallons.

(b) During Stage 1, it shall be unlawful for any person, firm, partnership, association, corporation, political entity (including the City) or any other Water Department customer:

1. to water or irrigate lawn, landscape, or other vegetated area between the hours of 10:00 a.m. and 5:00 p.m., except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system;

2. to use a hose that is not equipped with a shut off nozzle;

3. to use potable water to wash down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking lots, tennis courts, patios, or other paved surfaces, except when it is necessary to alleviate safety or sanitation hazards or to prepare paved surfaces for sealing;

4. to initially fill or to drain and refill residential swimming pools;

5. to serve water in a restaurant or other commercial food service establishment except upon the request of a patron; and/or

6. to operate a hotel, motel or other commercial lodging establishment without offering patrons the option to forego the daily laundering of towels, sheets and linens.

16.01.080 STAGE 2: WATER SHORTAGE WARNING.

(a) The Director is empowered to issue a Water Shortage Warning and to enforce the water shortage restrictions in this Section upon finding that the magnitude of an anticipated water shortage, per the criteria delineated in the City's adopted Water Shortage Contingency Plan, will be between five percent (5%) and fifteen percent (15%) and a moderate consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water supply conditions. In a Stage 2 water shortage, the City will enforce the following water shortage restrictions with the objective of realizing a seasonal water demand reduction of up to 375 million gallons and an average daily water demand reduction of up to 1.8 million gallons.

(b) During Stage 2, it shall be unlawful for any person, firm, partnership, association, corporation, political body (including the City) or other Water Department customer:

1. to water or irrigate lawn, landscape, or other vegetated area between the hours of 10:00 a.m. and 5:00 p.m., except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system;

2. to use a hose that is not equipped with a shut off nozzle;

3. to use potable water to wash down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking lots, tennis courts, patios, or other paved surfaces, except when it is necessary to alleviate safety or sanitation hazards or to prepare paved surfaces for sealing;

4. to initially fill or to drain and refill residential swimming pools;

5. to serve water in a restaurant or other commercial food service establishment except upon the request of a patron;

6. to operate a hotel, motel or other commercial lodging establishment without offering patrons the option to forego the daily laundering of towels, sheets and linens;

7. to water or irrigate lawn, landscape, or other vegetated area on days of the week other than the two days of the week authorized and publicized by the Director, except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system. Hourly restrictions set forth in subsection (1) above continue to apply on authorized watering days. This provision shall not apply to commercial growers/nurseries or to residential vegetable gardens/edible plantings watered with a hose equipped with a shut off nozzle;

8. to water or irrigate lawn, landscape, or other vegetated area using an automatic irrigation system for more than fifteen minutes per watering station per assigned day. This provision shall not apply to automatic irrigation systems exclusively using low output sprinkler equipment, including rotors, stream rotors, or micro-spray systems;

9. to wash the exterior of dwellings, buildings or structures (with the exception of window washing and preparation of property for painting or for sale);

10. to irrigate or water landscapes in a manner that conflicts with a customer's landscape irrigation water budget when such a budget is required by the Director per the criteria delineated in the City's adopted Water Shortage Contingency Plan; and/or

11. to disobey Water Department direction to large commercial, industrial or irrigation customers using 1,337 or more billing units (one million gallons) per year to conduct water use audits, to prepare water conservation plans and to submit progress reports, or to immediately repair water system leaks, including leaks attributable to faulty pipes or fixtures.

16.01.090 STAGE 3: WATER SHORTAGE EMERGENCY.

(a) The Director is empowered to declare a Water Shortage Emergency and to enforce the water shortage restrictions in this Section upon finding that the magnitude of an anticipated water shortage, per the criteria delineated in the City's adopted Water Shortage Contingency Plan, will be between fifteen percent (15%) and twenty five percent (25%) and a significant consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water supply conditions. In a Stage 3 water shortage, the City will enforce the following water shortage restrictions with the objective of realizing a seasonal water demand reduction of up to 625 million gallons and an average daily water demand reduction of up to 3.0 million gallons.

(b) During Stage 3, it shall be unlawful for any person, firm, partnership, association, corporation, political body (including the City) or other Water Department customer:

1. to water or irrigate lawn, landscape, or other vegetated area between the hours of 10:00 a.m. and 5:00 p.m., except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system;

2. to use a hose that is not equipped with a shut off nozzle;

3. to use potable water to wash down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking lots, tennis courts, patios, or other paved surfaces, except when it is necessary to alleviate safety or sanitation hazards or to prepare paved surfaces for sealing;

4. to initially fill or to drain and refill any swimming pools, outdoor spas, wading pools, and ornamental water features;

5. to serve water in a restaurant or other commercial food service establishment except upon the request of a patron;

6. to operate a hotel, motel or other commercial lodging establishment without offering patrons the option to forego the daily laundering of towels, sheets and linens;

7. to water or irrigate lawn, landscape, or other vegetated area on days of the week other than the specified day(s) of the week authorized and publicized by the Director, except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system. Hourly restrictions set forth in subsection (1) above continue to apply on authorized watering days. This provision shall not apply to commercial growers/nurseries or to residential vegetable gardens/edible plantings watered with a hose equipped with a shut off nozzle;

8. to water or irrigate lawn, landscape, or other vegetated area using an automatic irrigation system for more than ten minutes per watering station per assigned day. This

provision shall not apply to automatic irrigation systems exclusively using low output sprinkler equipment, including rotors, stream rotors, or micro-spray systems;

9. to wash the exterior of dwellings, buildings or structures (with the exception of window washing and preparation of property for painting or for sale);

10. to irrigate or water landscapes in a manner that conflicts with a customer's landscape irrigation water budget when such a budget is required by the Director per the criteria delineated in the City's adopted Water Shortage Contingency Plan; and/or

11. to disobey Water Department direction to large commercial, industrial or irrigation customers using 1,337 or more billing units (one million gallons) per year to conduct water use audits, to prepare water conservation plans and to submit progress reports, or to immediately repair water system leaks, including leaks attributable to faulty pipes or fixtures;

12. to violate residential customer water rationing regulations, including regulations intended to preclude excessive water usage and specifying maximum water usage limitations, issued by the Director in accordance with guidelines set forth in the City's' adopted Water Shortage Contingency Plan; and/or

13. to disobey Water Department directives issued to commercial customers requiring the prominent placement of "Save Water" signage at specified locations at the customer's premises.

16.01.100 STAGE 4: SEVERE WATER SHORTAGE EMERGENCY.

(a) The Director is empowered to declare a Severe Water Shortage Emergency and to enforce the water shortage restrictions in this Section upon finding that the magnitude of an anticipated water shortage, per the criteria delineated in the City's adopted Water Shortage Contingency Plan, will be between twenty five percent (25%) and thirty five percent (35%) and an extraordinary consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water supply conditions. In a Stage 4 water shortage, the City will enforce the following water shortage restrictions with the objective of realizing a seasonal water demand reduction of up to 875 million gallons and an average daily water demand reduction of up to 4.2 million gallons.

(b) During Stage 4, it shall be unlawful for any person, firm, partnership, association, corporation, political body (including the City) or other Water Department customer:

1. to water or irrigate landscape or other vegetated area between the hours of 10:00 a.m. and 5:00 p.m., except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system;

2. to use a hose that is not equipped with a shut off nozzle;

3. to use potable water to wash down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking lots, tennis courts, patios, or other paved surfaces, except when it is necessary to alleviate safety or sanitation hazards or to prepare paved surfaces for sealing;

4. to fill or to top off any swimming pools, outdoor spas, wading pools, and ornamental water features;

5. to serve water in a restaurant or other commercial food service establishment except upon the request of a patron;

6. to operate a hotel, motel or other commercial lodging establishment without offering patrons the option to forego the daily laundering of towels, sheets and linens;

7. to water or irrigate landscape or other vegetated area on days of the week other than the specified day(s) of the week authorized and publicized by the Director, except when performed with a bucket or watering can, or by use of a drip irrigation system or similar low-volume, non-spray irrigation equipment, or for very short periods of time for the express purpose of allowing landscape contractors to adjust or repair an irrigation system. Hourly restrictions set forth in subsection (1) above continue to apply on authorized watering days. This provision shall not apply to commercial growers/nurseries or to residential vegetable gardens/edible plantings watered with a hose equipped with a shut off nozzle;

8. to water landscapes using automatic irrigation systems for more than ten minutes per watering station per assigned day. This provision does not apply to automatic irrigation systems using water efficient devices, including but not limited to weather-based controllers, drip/micro-irrigation systems and stream rotor sprinklers.

9. to wash the exterior of dwellings, buildings or structures (with the exception of window washing and preparation of property for painting or for sale);

10. to irrigate or water landscapes in a manner that conflicts with a customer's landscape irrigation water budget when such a budget is required by the Director per the criteria delineated in the City's adopted Water Shortage Contingency Plan; and/or

11. to disobey Water Department direction to large commercial, industrial or irrigation customers using 1,337 or more billing units (one million gallons) per year to conduct water use audits, to prepare water conservation plans and to submit progress reports, or to immediately repair water system leaks, including leaks attributable to faulty pipes or fixtures;

12. to violate residential customer water rationing regulations, including regulations intended to preclude excessive water usage and specifying maximum water usage limitations, issued by the Director in accordance with guidelines set forth in the City's' adopted Water Shortage Contingency Plan;

13. to disobey Water Department directives issued to commercial customers requiring the prominent placement of "Save Water" signage at specified locations at the customer's premises;

14. to violate commercial customer water rationing regulations, including regulations intended to preclude excessive water usage and specifying maximum water usage limitations, issued by the Director in accordance with guidelines set forth in the City's adopted Water Shortage Contingency Plan;

15. to disobey a Water Department order to customers identified as "dedicated irrigation accounts" directing those customers to further limit their landscape irrigation and watering activity so as to preserve only the customers' most valuable trees and plants;

16. to water lawns or turf, unless such watering is authorized by the Director in accordance with a landscape irrigation water budget and is consistent with the guidelines set forth in the City's adopted Water Shortage Contingency Plan;

17. to install new landscaping which requires any irrigation or watering;

18. to wash or clean vehicles, including but not limited to automobile, truck, van, bus, motorcycle, boat, or trailer including the washing of fleet vehicles and the washing of vehicles on dealer lots. This restriction will not apply to commercial car wash businesses which use recycled water; and/or

19. to exercise any rights conferred by hydrant and bulk water permits that were issued prior to the Severe Water Shortage Emergency declaration absent special permission

granted by the Director. Said special permission may be granted only for projects necessary to protect the public health, safety and welfare where no alternative to potable water exists and for emergency response purposes.

16.01.110 STAGE 5: CRITICAL WATER SHORTAGE EMERGENCY.

(a) The Director is empowered to declare a Critical Water Shortage Emergency and to enforce the water shortage restrictions in this Section upon finding that the magnitude of an anticipated water shortage, per the criteria delineated in the City's adopted Water Shortage Contingency Plan, shall be between thirty five percent (35%) and fifty percent (50%) and an extreme consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water supply conditions. In a Stage 5 water shortage, the City will enforce the following water shortage restrictions with the objective of realizing a seasonal water demand reduction of up to 1,250 million gallons and an average daily water demand reduction of up to 6.0 million gallons.

(b) During Stage 5, it is unlawful for any person, firm, partnership, association, corporation, political body (including the City) or other Water Department customer:

1. to water or irrigate any outdoor landscaping, unless such watering is authorized by the Director and is consistent with the guidelines set forth in the City's adopted Water Shortage Contingency Plan;
2. to use a hose that is not equipped with a shut off nozzle;
3. to use water for any outdoor washing purpose including commercial car washing, window washing, and paint preparation;
4. to fill or to top off any swimming pools, outdoor spas, wading pools, and ornamental water features;
5. to serve water in a restaurant or other commercial food service establishment except upon the request of a patron;
6. to operate a hotel, motel or other commercial lodging establishment without offering patrons the option to forego the daily laundering of towels, sheets and linens;
7. to use water for recreational purposes;
8. to operate public swimming pools;
9. to operate public showers;
10. to disobey Water Department direction to large commercial, industrial or irrigation customers using 1,337 or more billing units (one million gallons) per year to conduct water use audits, to prepare water conservation plans and to submit progress reports, or to immediately repair water system leaks, including leaks attributable to faulty pipes or fixtures;
11. to violate residential customer water rationing regulations, including regulations intended to preclude excessive water usage and specifying maximum water usage limitations, issued by the Director in accordance with guidelines set forth in the City's adopted Water Shortage Contingency Plan;
12. to violate commercial customer water rationing regulations, including regulations intended to preclude excessive water usage and specifying maximum water usage limitations, issued by the Director in accordance with guidelines set forth in the City's December 2008 Water Shortage Contingency Plan;
13. to disobey Water Department directives issued to commercial customers requiring the prominent placement of "Save Water" signage at specified locations at the customer's premises;

14. to install new landscaping which requires any irrigation or watering; and/or

15. to exercise any rights conferred by hydrant and bulk water permits that were issued prior to the Critical Water Shortage Emergency declaration absent special permission granted by the Director. Said special permission may be granted only for projects necessary to protect the public health, safety and welfare where no alternative to potable water exists and for emergency response purposes.

16.01.120 EXCEPTIONS.

(a) The Director, upon application made in writing by a customer on a form promulgated by the Water Department and accompanied by supporting documentation, shall be authorized to issue an exception from the strict application of any restriction, regulation or prohibition enforced pursuant to this chapter, upon the customer's production of substantial evidence demonstrating the existence of one or more of the following circumstances that are particular to that customer and which are not generally shared by other Water Department customers:

1. Failure to approve the requested exception would cause a condition having an adverse effect on the health, sanitation, fire protection, or safety of the customer or members of the public served by the customer;

2. Strict application of the subject restriction, regulation or prohibition would impose a severe or undue hardship on a particular business customer or render it infeasible for a particular business customer or class of business customers to remain in operation;

3. Alternative restrictions to which the customer is willing to adhere are available that would achieve the same level of demand reduction as the restriction for which an exception is being sought and such alternative restrictions are enforceable by the Water Department;

4. Circumstances concerning the customer's property or business have changed since the implementation of the subject restriction warranting a change in the customer's water usage allocation; or

5. A hospital or health care facility customer using industry best management practices is eligible for an exception upon demonstrating that the subject restriction, regulation or prohibition is interfering with or preventing it from providing health care service to its customers in accordance with industry hygiene, sanitation and health care standards.

6. A business customer has already implemented environmental sustainability measures that have reduced water consumption to the maximum extent feasible. As used in this subsection the term "environmental sustainability measures" refers to installation of high efficiency plumbing fixtures, devices, equipment, and appliances, recycled water systems, and landscaping consisting exclusively of low water using plant materials using drip or similar high efficiency, non-spray irrigation systems, or to buildings that are designed, built, and continuously operated according to Leadership in Energy and Environmental Design (LEED) certification standards.

(b) In order to qualify for an exception, a customer must first complete a self water audit pursuant to standards and procedures promulgated by the Water Department. This audit shall be made part of the customer's exception application and water conservation measures indicated by the audit may be incorporated as conditions of approval to an exception in addition

to any other conditions of approval imposed by the Director in connection with the Director's approval of the customer's exception application.

16.01.130 WATER SHORTAGE APPEAL BOARD.

(a) A Water Shortage Appeal Board is hereby established and shall be eligible to convene upon the Director's issuance of any water shortage declaration and the implementation of water shortage restrictions pursuant to Sections 16.010.070 though 16.01.110. Thereafter the Water Shortage Appeal Board will remain available to convene for as long as the water shortage remains in effect.

(b) Under water shortage Stages 1 and 2, the Water Shortage Appeal Board will be comprised of members of the City Water Commission. Under water shortage Stages 3, 4, and 5, the Water Shortage Appeal Board will be appointed by City Council and will be comprised of one member of the Water Commission, one business customer, one landscape industry customer, one residential customer, and two at-large members who reside within the City's water service area.

(c) Any customer who considers an action taken by the Director or an enforcement official under the provisions of this chapter, including actions on exception applications and the assessment of administrative penalties, to have been erroneously taken or issued, may appeal that action or penalty to the Water Shortage Appeal Board in the following manner:

1. The appeal shall be made in writing, shall state the nature of the appeal specifying the action or penalty that is being appealed and the basis upon which the action or penalty is alleged to be in error. Penalty appeals shall include a copy of the Notice of Violation;

2. An appeal, to be effective, must be received by the Director not later than ten (10) business days following the date of the Notice of Violation or the date that the Director took the action which is the subject to the appeal;

(A) A water service resident who is not an account customer may notify the Water Department of his or her intention to file a petition to force the resident's account customer to appeal an excess water use penalty within ten (10) business days following the penalty;

(B) If the Water Department has been given a notice of intention to file a petition per subsection 2(A) by a water service area resident who is not an account customer, the appeal from the account customer must be received within fifteen (15) business days after the account customer has been petitioned by the resident.

3. The Director shall schedule the appeal for consideration by the Water Shortage Appeal Board at a Water Shortage Appeal Board meeting. The Water Shortage Appeal Board shall hear the appeal within 90 days of the date of the appeal and issue its decision within 30 days of the date of the hearing.

4. The decision of the Water Shortage Appeal Board shall be final. In ruling on appeals, the Water Shortage Appeal Board shall strictly apply the provisions of this chapter, and shall not impose or grant terms and conditions not authorized by this chapter.

(d) The Chair of the Water Shortage Appeal Board shall have the discretion to divide the Board into two-three member hearing panels. Each hearing panel shall have the same authority to hear and rule upon appeals as the entire Water Shortage Appeal Board. A hearing panel shall have no more than one at-large appointee as a member. The decision of any hearing panel shall be final.

16.01.140 ADMINISTRATIVE ENFORCEMENT.

(a) Any person firm, partnership, association, corporation, political entity or other Water Department customer violating any provision of this chapter may be assessed an administrative penalty.

(b) Each and every day a violation of this chapter exists constitutes a separate and distinct offense for which an administrative penalty may be assessed.

(c) Penalties. The purpose of the administrative penalties assessed pursuant to this Section is to assure future chapter compliance by the cited customer through the imposition of increasingly significant penalties so as to create a meaningful disincentive to commit future chapter violations. In acknowledgment of the fact that the City's water is a scarce and irreplaceable commodity and that this chapter is intended to equitably distribute that commodity among Water Department customers and to assure that, to the extent feasible, City water is conserved and used only for purposes deemed necessary for public health and safety, the penalty schedule herein prescribed is not to be construed as creating a "water pricing" structure pursuant to which customers may elect to pay for additional water at significantly higher rates. To this end, a customer's repeated violation of the chapter shall result in either the installation of a flow restriction device or disconnection of the customer's property from the City's water service system at the customer's cost.

(d) Administrative penalties for failure to comply with water waste prohibitions requirements in Section 16.01.060 or mandatory water use restrictions and regulations commencing with Stage 1 in Section 6 are as follows:

1. First Offense: Written notice of violation and opportunity to correct violation.

2. Second Offense: A second violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed one hundred dollars ($100).

3. Third Offense: A third violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed two hundred fifty dollars ($250).

4. Fourth Offense: A fourth violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed five hundred dollars ($500). In addition to any fines, the Director may order a water flow restrictor device be installed.

5. Large customers. Administrative penalties for customers that use an average of 1,337 billing units (one million gallons) or more per calendar year shall be triple the amounts listed above.

6. Discontinuing Service. In addition to any fines and the installation of a water flow restrictor, the Director may disconnect a customer's water service for willful violations of mandatory restrictions and regulations in this chapter. Upon disconnection of water service, a written notice shall be served upon the customer which shall state the time, place, and general description of the prohibited or restricted activity and the method by which reconnection can be made.

(e) Excessive Water Use Penalties. An excessive use penalty shall be assessed where the customer, during any given billing cycle, uses more than the customer's water allotment per the Director's water rationing regulations issued pursuant to this chapter commencing with Stage 3 in Section 16.01.090. Excess use penalties shall be in addition to ordinary water consumption charges, as follows:

1. 1% to 10% over customer rationing allotment: $25.00/CCF
2. More than 10% over customer rationing allotment: $50.00/CCF

3. In addition to any excess use penalties, the Director may order a water flow restrictor device be installed and/or may disconnect a customer's water service for willful violations of the water rationing regulations in this chapter. Upon disconnection of water service, a written notice shall be served upon the customer which shall state the time, place, and general description the prohibited or restricted activity and the method by which reconnection can be made.

(f) Cost of Flow Restrictor and Disconnecting Service: A person or entity that violates this chapter is responsible for payment of charges for installing and/or removing any flow restricting device and for disconnecting and/or reconnecting service in accordance with the City's Miscellaneous Water Service Fee Resolution then in effect. The charge for installing and/or removing any flow restricting device must be paid before the device is removed. Nonpayment will be subject to the same remedies as nonpayment of basic water rates.

(g) Notice and Hearing. The Director will issue a Notice of Violation by mail or personal delivery at least ten (10) business days before taking any enforcement action described in subsection 13D. Such notice must describe the violation and the date by which corrective action must be taken. A customer may appeal the Notice of Violation by filing a written notice of appeal with the City no later than the close of business day before the date scheduled for enforcement action accompanied by a $25 appeal fee. Any Notice of Violation not timely appealed will be final. Upon receipt of a timely appeal, a hearing on the appeal will be scheduled, and the City will mail written notice of the hearing date to the customer at least ten (10) days before the date of the hearing. Pending receipt of a written appeal or pending a hearing pursuant to an appeal, the Director may take appropriate steps to prevent the unauthorized use of water as appropriate to the nature and extent of the violation and the current declared water shortage condition.

16.01.150 ADDITIONAL ENFORCEMENT AUTHORITY.

In addition to the remedies referenced above, the Director is empowered to pursue any additional remedies necessary, including criminal, civil and administrative remedies listed in Title 4 of the Santa Cruz Municipal Code, to correct a violation of this chapter.

16.01.160 SEVERABILITY.

If any portion of this chapter is held to be unconstitutional, it is the intent of the City Council that such portion of the chapter be severable from the remainder and that the remainder be given full force and effect."

SECTION 3: This ordinance shall take effect 30 days after final adoption.

PASSED FOR PUBLICATION this 25th day of May, 2010, by the following vote:

AYES: Councilmembers Lane, Beiers, Madrigal, Robinson; Mayor Rotkin.

NOES: None.

ABSENT: Councilmember Mathews, Vice Mayor Coonerty.

DISQUALIFIED: None.

APPROVED: _____
Mayor

ATTEST: _____
City Clerk

PASSED FOR FINAL ADOPTION on this 8th day of June, 2010, by the following vote:

AYES: Councilmembers Lane, Beiers, Robinson; Vice Mayor Coonerty; Mayor Rotkin.

NOES: None.

ABSENT: Councilmembers Mathews, Madrigal.

DISQUALIFIED: None.

APPROVED: _____
Mayor

ATTEST: _____
City Clerk

This is to certify that the above and foregoing document is the original of Ordinance No. 2010-12 and that it has been published or posted in accordance with the Charter of the City of Santa Cruz.

_____
City Clerk