CITY OF SANTA CRUZ
City Hall
809 Center Street
Santa Cruz, California 95060

WATER COMMISSION

Regular Meeting

June 6, 2022

7:00 P.M. GENERAL BUSINESS AND MATTERS OF PUBLIC INTEREST, COUNCIL CHAMBERS/ZOOM

COVID-19 ANNOUNCEMENT: This meeting will be held via teleconference ONLY.

In order to minimize exposure to COVID-19 and to comply with the social distancing suggestion, the Council Chambers will not be open to the public. The meeting may be viewed remotely, using the following sources:

- **Online:**https://ecm.cityofsantacruz.com/OnBaseAgendaOnline/Meetings/Search?dropid=4&mtids=124
- **Zoom Live (no time delay):** https://us06web.zoom.us/j/89283021297
- **Facebook:** https://www.facebook.com/SantaCruzWaterDepartment/?epa=SEARCH_BOX

PUBLIC COMMENT:
If you wish to comment during on items 1-6 during the meeting, please see information below:

- **Call any of the numbers below. If one number is busy, try the next one. Keep trying until connected.**
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- Enter the meeting ID number: **892 8302 1297**
- When prompted for a Participant ID, press #.
- Press *9 on your phone to "raise your hand" when the Chair calls for public comment.
  - It will be your turn to speak when the Chair unmutes you. You will hear an announcement that you have been unmuted. The timer will then be set to three minutes.
  - You may hang up once you have commented on your item of interest.
  - If you wish to speak on another item, two things may occur:
    1) If the number of callers waiting exceeds capacity, you will be disconnected and you will need to call back closer to when the item you wish to comment on will be heard, or
    2) You will be placed back in the queue and you should press *9 to "raise your hand" when you wish to comment on a new item.

NOTE: If you wish to view or listen to the meeting and don't wish to comment on an item, you can do so at any time via the Facebook link or over the phone or online via Zoom.

*Denotes written materials included in packet.

The City of Santa Cruz does not discriminate against persons with disabilities. Out of consideration for people with chemical sensitivities, please attend the meeting fragrance free. Upon request, the agenda can be provided in a format to accommodate special needs. Additionally, if you wish to attend this public meeting and will require assistance such as an interpreter for American Sign Language, Spanish, or other special equipment, please call Water Administration at 831-420-5200 at least five days in advance so that arrangements can be made. The Cal-Relay system number: 1-800-735-2922.

APPEALS: Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action and the basis upon which the action is considered to be in error, and addressed to the City Council in care of the City Clerk.

Other - Appeals must be received by the City Clerk within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar ($50) filing fee.

Call to Order

Roll Call

Statements of Disqualification - Section 607 of the City Charter states that...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made. The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

Oral Communications

Announcements

Public Hearing

1. 2022 Public Health Goals Report (Pages 1.1 – 1.48)

   Accept the triennial 2019, 2020, 2021 Public Health Goals Report and direct the Water Department to submit the report to the State Water Resources Control Board Division of Drinking Water.

Consent Agenda (Pages 2.1 – 4.6) Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are City Council Items Affecting Water, Water Commission Minutes, Information Items, Documents for Future Meetings, and Items initiated by members for Future Agendas. If one of these categories is not listed on the Consent Agenda then those items are not available for action.

2. City Council Actions Affecting the Water Department (Pages 2.1 – 2.2)

Accept the City Council actions affecting the Water Department.

3. Water Commission Minutes from May 2, 2022 (Pages 3.1 – 3.5)

Approve the May 2, 2022 Water Commission Minutes.

4. FY 2022 3rd Quarter Unaudited Financial Report (Pages 4.1 – 4.6)

Accept the FY 2022 3rd Quarter Unaudited Financial Report.

Items Removed from the Consent Agenda

General Business (Pages 5.1 – 6.41) Any document related to an agenda item for the General Business of this meeting distributed to the Water Commission less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the Water Commission meeting with the display copy at the rear of the Council Chambers.

5. Water Department's Proposed Fiscal Year 2023 Operating and FY 2023-27 Capital Investment Program (CIP) Budgets – Final Review (Pages 5.1 – 5.30)

That the Water Commission authorize the Chair to send a letter to the City Council related to the Department's FY 2023 Budgets and financial position recommending the Water Department's Budgets to the City Council.

6. June Water Commission Discussion on Securing Our Water Future Initiative Topics (Pages 6.1 – 6.41)

receive information on the four water supply augmentation project concepts options being evaluated in the Securing Our Water as well as the initial evaluation of these options using the evaluation criteria identified in the May Commission meeting and provide feedback to staff.

Subcommittee/Advisory Body Oral Reports

7. Santa Cruz Mid-County Groundwater Agency

8. Santa Margarita Groundwater Agency

Director's Oral Report

Information Items

Adjournment

WATER COMMISSION
INFORMATION REPORT

DATE: 06/01/2022

AGENDA OF: 06/06/2022

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: PUBLIC HEARING: City of Santa Cruz Water Department's 2022 Public Health Goals Report

RECOMMENDATION: That the Water Commission accept the triennial 2019, 2020, 2021 Public Health Goals Report and direct the Water Department to submit the report to the State Water Resources Control Board Division of Drinking Water

BACKGROUND: Section 116470. (b) of the California Health and Safety Code requires the Santa Cruz Water Department (SCWD) to develop a triennial report on how local drinking water quality compares to existing Public Health Goals (PHGs) adopted by California Environmental Protecvtion Agency's Office of Environmental Health Hazard Assessment (OEHHA) and Maximum Contaminant Level Goals (MCLGs) adopted by the United States Environmental Protection Agency (USEPA). PHGs and MCLGs are non-enforceable standards that are based soley on public health considerations. A PHG or MCLG are very conservative goals that represent the level of a constituent in drinking water below which there is no known or expected risk to health. The law requires that a public hearing be held for the purpose of accepting and responding to public comment on the report.

DISCUSSION:
The Santa Cruz Water system complies with all state and federal regulated drinking water standards and Maximum Contaminant Levels (MCLs) required by the State Water Resources Control Board, Division of Drinking Water and the USEPA. In the 2022 Public Health Goal Report for the monitoring years 2019, 2020 and 2021, seven consistutents including arsenic, bromodichloromethane, bromoform, chloroform, dibromochloromethane, hexavalent chromium, and total coliform were detected at concentrations above their respective PHG or MCLG. The City of Santa Cruz drinking water is of very high quality, therefore this report does not recommend any actions to improve water quality at this time beyond those being already acted upon through existing projects.

PROPOSED MOTION: Motion to accept the triennial 2019, 2020, 2021 Public Health Goals Report and direct the Water Department to submit the report to the State Water Resources Control Board Division of Drinking Water

ATTACHMENTS:
1. 2022 Public Health Goals Report

City of Santa Cruz Water Department
Water System CA4410010

2022 Public Health Goals Report

Water Quality Relative to Public Health Goals 2019 – 2021

Table of Contents

List of Acronyms	
ACWA	Association of California Water Agencies
BAT	Best Available Technologies
CCR	Consumer Confidence Report
DBP	Disinfection Byproduct
DBPR	Disinfection Byproduct Rule
DDW	State Water Resources Control Board-Division of Drinking Water
DLR	Detection Limit for Reporting
EPA	United States Environmental Protection Agency
GAC	Granular Activated Carbon
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
OEHHA	California Environmental Protection Agency Office of Environmental Health Hazard Assessment
PHG	Public Health Goal
SCWD	City of Santa Cruz Water Department
THM	Trihalomethanes
TTHM	Total Trihalomethanes

List of Data Units	
mg/L	Milligrams per Liter
NA	Not Applicable
ND	Constituent Not Detected
µg/L	Micrograms per Liter

Introduction

Provisions of the California Health and Safety Code (Attachment 1) specify that the City of Santa Cruz Water Department (SCWD), and other water utilities serving more than 10,000 service connections, prepare a Public Health Goal (PHG) Report by July 1st every three years if their water quality measurements have exceeded an established state Public Health Goal (PHG) or federal Maximum Contaminant Level Goal (MCLG). PHGs are non-enforceable, health-based goals established by the California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA). For regulated contaminants that do not have a California PHG, water utilities use the Maximum Contaminant Level Goal (MCLG) adopted by the United States Environmental Protection Agency (EPA) in preparing these reports.

The goal of the Public Health Goal Report is to provide public water system customers in California access to information about levels of constituents in their drinking water that are identified but are below the Maximum Contaminant Levels (MCLs), which are the enforceable standards water suppliers must not exceed. This Public Health Goal Report must include the numerical public health risk associated with the MCL and PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level and an estimate of the cost to install the treatment if appropriate and feasible.

This report provides information regarding constituents that were detected in the SCWD's water supply between years 2019 and 2021 at levels exceeding an applicable PHG or MCLG. In the reporting period addressed herein, seven constituents including arsenic, bromodichloromethane, bromoform, chloroform, dibromochloromethane, hexavalent chromium, and total coliform were detected in SCWD's water supply at concentrations above their respective PHG or MCLG.

This report is required in addition to the extensive public reporting of water quality information that public water systems are required to provide in the federally mandated Consumer Confidence Report (CCR). Hence, SCWD has also prepared the CCR, which covers more water quality data and in greater depth. (see: https://www.cityofsantacruz.com/government/city-departments/water/online-reports-4326)

There are a few other constituents that are routinely detected in water systems at levels usually well below the drinking water standards for which no PHG or MCLG has yet been adopted by the OEHHA) or EPA. These will be addressed in a future required report after a PHG has been adopted.

PHGs, MCLGs, MCLs and DLRs

PHGs and MCLGs are set at a level that has been determined to have no known adverse effect on a person's health, and for many contaminants, are set at or near zero. In setting MCLGs and PHGs, EPA and the State Water Resources Control Board – Division of Drinking Water (DDW) only consider health based risks because state and federal safe drinking water laws require regulators to set MCLGs and PHGs considering only health based information.

In contrast to PHGs and MCLGs, MCLs and treatment technique regulations are enforceable standards that water suppliers must continuously meet. Water suppliers routinely monitor for and implement treatment procedures, system operation, and maintenance practices to continuously produce and deliver water that meets all regulatory requirements in order to meet applicable MCLs and comply with various treatment techniques.

Federal and state safe drinking water laws require regulators to set drinking water standards for chemical contaminants as close to the corresponding PHG/MCLG as is economically and technologically feasible. This means that DDW/EPA set MCLs at a level that takes into consideration several important practical realities such as analytical detection capability, available treatment technology, as well as the results of a cost versus benefits analysis. In some cases, it may not be feasible for DDW or the EPA to set the drinking water standard for a contaminant at the same level as the PHG. This situation may occur because the technology to treat the chemicals may not be available, or the cost of treatment may be very high. DDW considers these factors when developing a drinking water standard.

A constituent's Detection Limit for Reporting (DLR) is the designated minimum level at or above which any analytical result for drinking water must be reported to DDW. A list published by DDW of regulated constituents with the MCLs, DLRs and PHGs for Regulated Drinking Water Contaminants is included as Attachment 2.

How does OEHHA Establish a Public Health Goal?

The process for establishing a PHG for a chemical contaminant in drinking water is very rigorous. OEHHA scientists first compile all relevant scientific information available, which includes studies of the chemical's effects on laboratory animals and studies of humans who have been exposed to the chemical. The scientists use this data from these studies to perform a health risk assessment in which they determine the levels of the contaminant in drinking water that could be associated with various adverse health effects. When calculating a PHG, OEHHA uses all the information it has compiled to identify the level of the chemical in drinking water that would not cause significant adverse health effects in people who drink 2 liters of that water every day for 70 years.

For cancer-causing chemicals, OEHHA typically establishes the PHG at the "one-in-one million" risk level. At that level, not more than one person in a population of one million people drinking the water daily for 70 years would be expected to develop cancer as a result of exposure to that chemical.

What Quality Data Considered

All treated water quality data collected by SCWD in the years 2019, 2020, and 2021 were considered in this analysis. Data is derived from treated water sampling events at the point-of-entry to the distribution system (treated water leaving the water treatment plants) and water samples collected from within the distribution system. These data were also summarized in our annual Water Quality Reports, or CCRs, which are made available electronically to all customers each June, following the reporting year.
(see: https://www.cityofsantacruz.com/government/city-departments/water/online-reports-4326)

Guidelines Followed

This report has been prepared in accordance with the April 2022, Association of California Water Agencies (ACWA) guidance document titled, "Suggested Guidelines for Preparation of Required Reports of Public Health Goals (PHGs) to Satisfy Requirements of California Health and Safety Code Section 116470(b)". Limited guidance has been provided by DDW for the preparation of these reports.

Best Available Treatment Technology and Cost Estimates

Both DDW and EPA adopt what are known as Best Available Technologies (BATs) that are the best-known methods for reducing contaminant levels below the MCL. Costs can usually be estimated for such treatment technologies. However, since many PHGs, and all MCLGs, are set much lower than the MCL, it is not always feasible to determine what treatment is needed to further reduce a contaminant to or near the PHG or MCLG, many of which are set at zero. Estimating the costs to further reduce a contaminant to zero is difficult, if not impossible, because it is not always possible to verify by analytical measurement that the contaminant level has actually been lowered to near zero. In some cases, installing treatment to try and further reduce very low levels of one contaminant may cause adverse effects on other aspects of water quality.

As described below, during the reporting period seven constituents were detected by the SCWD above the applicable PHGs or MCLGs. Cost estimates for reducing these contaminant concentrations to the PHGs are not relevant to this year's report.

Drinking Water Measurement

Table 1 provides context for drinking water measurement units and can be used throughout this report as a reference when interpreting water quality results.

Table 1: Drinking Water Measurement Units

Units	Units	Equivalence
mg/L = milligrams per liter	ppm = parts per million	1 drop in a hot tub or 1 second in 11.5 days
µg/L = micrograms per liter	ppb = parts per billion	1 drop in an Olympic size swimming pool or 1 second in nearly 32 years

Constituents Detected that Exceed at PHG or a MCLG

Water quality samples collected during the years 2019, 2020, 2021 was considered for this report. None of the 17,229 regulatory treated water samples collected contained levels of regulated constituents that exceeded state or federal compliance standards, highlighting the high quality treated drinking water produced by SCWD. However, seven constituents were detected at levels above the PHG or MCLG. The following is a discussion of these constituents.

Arsenic

Arsenic is a naturally occurring element in the earth's crust and is very widely distributed in the environment. It is found in air, water, soil, rocks and minerals, food, and even living organisms in low concentrations. Arsenic compounds have many uses. Inorganic arsenic compounds are used in industry, most commonly as wood preservative, but also as components of pesticides (particularly herbicides), paints, dyes, and semiconductors. Organic arsenic compounds, which are considered less toxic, are found in small amounts in plants and animals. Erosion of rocks and minerals is believed to be the primary source of naturally occurring arsenic found in drinking water supplies and in soil. Other sources of arsenic

in water and soil include urban runoff, pesticides, fly ash from power plants, treated wood and smelting and mining wastes. Municipal and industrial waste disposal sites may be additional sources of arsenic contamination in water supplies.

The MCL for arsenic is 10 µg/L with a corresponding PHG of 0.004 µg/L. The category of health risk for arsenic is carcinogenicity, or potentially cancer causing. The numerical health risk based on the California PHG for arsenic is 1 in a million. This means one excess cancer case per one million population when 2 liters of the water with an arsenic level of 0.004 µg/L is consumed daily for 70 years.

SCWD collected and analyzed 39 samples for arsenic during 2019-2021, with values that ranged from non-detect (ND) to 1.2 µg/L, with all samples below California's DLR and MCL. Two arsenic samples collected from the Beltz Water Treatment Plant during 2021 were detected above the PHG, with results of 1.1 and 1.2 µg/L. The Beltz Water Treatment Plant is a groundwater treatment plant that utilizes oxidation with chlorine and filtration for water treatment. Historically, arsenic has been detected at the Beltz Treatment Plant due to native groundwater concentrations. A summary of the arsenic results are indicated in Table 2.

For more information on the arsenic PHG setting by OEHAA:
https://oehha.ca.gov/water/public-health-goal/public-health-goal-arsenic-drinking-water

According to Section 64447, Title 22 of the California Code of Regulations, the approved BATs for arsenic treatment are:

- Activated Alumina
- Coagulation/Filtration
- Ion Exchange
- Lime Softening
- Reverse Osmosis
- Electrodialysis
- Oxidation/Filtration

Since the arsenic levels in SCWD treated water are well below the MCL, and the Beltz Water Treatment Plant already uses oxidation and filtration for water treatment, no additional BAT treatment strategies are being considered at this time. The implementation of BAT strategies would significantly increase the operation and maintenance costs as well as an increased cost for each customer. Therefore, no estimate of cost has been included.

Table 2: Summary of Arsenic Results

Constituent	Number of Samples Collected	Number of Samples above PHG	MCL (µg/L)	PHG (µg/L)	Range of Detected Results (µg/L)	Health Risk	Numerical Health Risk at MCL	Numerical Health Risk at PHG
Arsenic	39	2	10	0.004	1.1 – 1.2	Increased risk of cancer	$2.5x10^{-3}$ (2.5 per thousand)	$1x10^{-6}$ (one per million)

Hexavalent Chromium

Hexavalent chromium, also known as chromium 6, is a heavy metal that is commonly found at low levels in drinking water. It occurs naturally in the environment and is present in water from the erosion of chromium deposits found in rocks and soils. It can also be produced by industrial processes, manufacturing activities, leakage, poor storage or inadequate industrial waste disposal practices. Historically, low levels of hexavalent chromium have been detected at both the Beltz and Graham Hill Water Treatment Plants due to native groundwater and surface water concentrations. The hexavalent chromium found in SCWD's source water is naturally occurring and does not come from industrial waste.

Chromium is found in drinking water sources and the environment in two principal forms: trivalent chromium (chromium 3) and hexavalent chromium (chromium 6). Chromium 3 is found naturally in foods at low levels and is an essential human dietary nutrient. Chromium 6 is the more toxic form of chromium. Chromium is used in many products and processes, including stainless steel, textile dyes, wood preservation, leather tanning, and anti-corrosion coatings.

Hexavalent chromium does not have a primary drinking water standard; however, it is regulated under the 0.05 mg/L MCL for total chromium. The total chromium MCL was established to address exposures to hexavalent chromium and trivalent chromium. An MCL of 0.010 mg/L was previously adopted in California for hexavalent chromium on May 28, 2014, but the Superior Court of Sacramento County withdrew it on September 11, 2017. The PHG for hexavalent chromium is 0.00002 mg/L. Total chromium does not have a PHG.

The category of health risk for hexavalent chromium is carcinogenicity, or potentially cancer causing. The numerical health risk based on the California PHG for hexavalent chromium is 1 in a million. This means one excess cancer case per one million population when 2 liters of the water with a hexavalent chromium level of 0.00002 mg/L is consumed daily for 70 years.

SCWD collected and analyzed 13 samples for hexavalent chromium during 2019-2021, with values that ranged from 0.00004 to 0.00018 mg/L, with all results above the PHG. Twenty-five total chromium samples with non-detect results were also collected during the same monitoring period. Twelve of the detected hexavalent results were collected from the Graham Hill Water Treatment and one sample was collected from the Beltz Treatment Plant.

The Graham Hill Water Treatment is a conventional surface water treatment plant that utilizes coagulation, flocculation, sedimentation, filtration, and disinfection for water treatment. As previously mentioned, the Beltz Water Treatment Plant is a groundwater treatment plant that utilizes filtration and oxidation for water treatment. A summary of the hexavalent chromium results are indicated in Table 3.

For more information on the hexavalent chromium PHG setting by OEHAA:
https://oehha.ca.gov/water/public-health-goal-fact-sheet/final-technical-support-document-public-health-goal-hexavalent

According to Section 64447, Title 22 of the California Code of Regulations, the approved BATs for hexavalent chromium treatment are:

- Coagulation/Filtration
- Ion Exchange
- Reverse Osmosis

Since the hexavalent chromium levels in SCWD treated water are extremely low, and the Beltz and Graham Hill Water Treatments already utilize some of the approved BAT's for treatment (coagulation and filtration), no additional BAT treatment strategies are recommended. The implementation of BAT strategies would significantly increase the operation and maintenance costs as well as an increased cost for each customer. Therefore, no estimate of cost has been included.

Table 3: Summary of Hexavalent Chromium Results

Constituent	MCL (mg/L)	PHG (mg/L)	Range of Detected Results (mg/L)	Health Risk	Numerical Health Risk at MCL	Numerical Health Risk at PHG
Hexavalent Chromium	NA	0.00002	(0.00004 – 0.00018)	Increased risk of cancer	NA	$1x10^{-6}$ (one per million)

Total Coliform Bacteria

Coliform bacteria are organisms that are present in the environment and are not generally considered harmful. Total coliforms are monitored because EPA considers them a useful indicator of other pathogens in drinking water. If a sample tests positive for coliform bacteria, it indicates the possibility of pathogenic organisms in the water and needs to be further investigated. It is not unusual for a water system to have an occasional positive sample result for total coliform. Factors that can produce a positive total coliform test include, but are not limited to, the weather and environmental conditions when samples are taken, and human error associated with the collection methods, sample handling, and test procedures.

The MCL for total coliform is 5%, which means that a maximum of 5% of water sampled per month can be positive for total coliform. The MCLG is 0% of samples per month. Because total coliform bacteria are only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. While USEPA normally sets MCLGs "at a level where no known or anticipated adverse effects on person would occur", they indicate that they cannot do so with total coliform bacteria.

During calendar years 2019 through 2021, SCWD was required to collect a minimum of 100 water quality samples per month to meet the monitoring requirement of the Total Coliform Rule and Revised Total Coliform Rule. On average, SCWD collected approximately 115 samples per month, but the actual number varied from month to month. In 2020, the SCWD collected 1,405 compliance samples in the distribution system for total coliform. All months were significantly below the MCL of 5%; however, one sample in March 2020 was reported positive for coliform bacteria. SCWD performed repeat sampling and all secondary samples were negative for total coliform. After a thorough investigation, it was determined that the total coliform positive result was due to improper sampling technique. A summary of the coliform positive sample is indicated in Table 4.

SCWD utilizes chlorine as a primary disinfectant in the treatment process to achieve the requisite microbial inactivation outlined in the Surface Water Treatment Rule to ensure that the water served is microbiologically safe. Before delivery to the distribution system, chlorine is added in carefully controlled amounts to provide the highest level of health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct formation potential. This

careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

SCWD already implements the practices identified by DDW as BATs for coliform bacteria in Section 64447, Title 22 of the California Code of Regulations, including:

- Disinfection using chlorine and maintaining a chlorine residual through the distribution system.
- Monitoring throughout the distribution system to verify the absence of total coliform and the presence of a protective chlorine residual.
- Flushing water mains with low demand to improve water quality.
- Implementing an effective cross-connection control program that prevents the accidental or intentional entry of potentially contaminated water into the drinking water system.
- Maintaining positive pressures in the distribution system.

Table 4: Summary of Total Coliform Results

Month	Number of Samples Collected	Number of Samples Coliform Positive	Percent Positive	Number of Follow-up Sample Coliform Positive
March 2020	134	1	0.75%	0.004

Trihalomethanes

Trihalomethanes (THMs) are a group of disinfection byproduct (DBP) chemicals commonly found in drinking water. DBPs, such as THMs, form when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic matter in the water. In general, surface water contains a higher organic content than groundwater, therefore, THM formation occurs more frequently in water systems that rely on surface water sources. The four THMs are bromodichloromethane, bromoform, chloroform, and dibromochloromethane.

The MCL for total trihalomethanes (TTHMs) is 0.080 mg/L, representing the highest allowable annual average sum of the concentrations of all four THM's. There is no MCL for the individual THM constituents. In February 2020, OEHAA established the following PHG's for the individual THM constituents: bromodichloromethane (0.00006 mg/L), bromoform (0.0005 mg/L), chloroform (0.0004 mg/L), and dibromochloromethane (0.0001 mg/L).

During calendar years 2019 through 2021, SCWD collected 96 THM samples to meet the monitoring requirement of the Stage 2 Disinfection Byproduct Rule (DBPR). Under the Stage 2 DBPR, quarterly samples are taken from predetermined sample stations located throughout the distribution system. SCWD also voluntarily collects monthly samples from the Stage 2 DBPR sample locations to continuously monitor the distribution system water quality. Two hundred and eighty two THM samples were collected between 2019 and 2021, with all results above their respective PHGs, but below the TTHM MCL of 0.080 mg/L. A summary of the THM results are indicated in Tables 5-8.

For more information on the THM PHG setting by OEHAA:

https://oehha.ca.gov/water/crnr/announcement-publication-public-health-goals-and-technical-support-document

Section 64447, Title 22 of the California Code of Regulations, does not provide BATs for THMs. However, according to the EPA, effective processes for THM control include:

- Oxidation by ozone or chlorine dioxide.
- Oxidation with potassium permanganate.
- Moving the point of chlorination.
- Aeration.
- Clarification by coagulation, settling and filtration, precipitative softening, or direct filtration.
- Adsorption by powdered activated carbon or granular activated carbon.
- Monitoring water age throughout the distribution system.

SCWD utilizes aeration, oxidation with potassium permanganate, clarification by coagulation, settling and filtration, and adsorption by powered activated carbon at the Graham Hill Water Treatment Plant for water treatment. Additional measures, such as storage tank aeration and water main flushing, are used to control THM formation in the distribution system.

Currently, the SCWD is constructing a project at the Graham Hill Water Treatment Plant that will move the point of chlorination to nearer the end of the treatment process. This is expected to have the benefit of reducing DBPs in finished water. Further, a facilities improvement project is currently being developed that will provided additional water treatment for unregulated and regulated constituents such as THMs. The improvements to the Graham Hill Water Treatment Plant will include granular activated carbon, ozonation, and biologically active filtration. It is estimated that the treatment process upgrade being planned now will be complete by 2029.

Bromodichloromethane

The PHG for bromodichloromethane is 0.00006 mg/L. The category of health risk for bromodichloromethane is carcinogenicity, or potentially cancer causing. The numerical health risk based on the California PHG for bromodichloromethane is 1 in a million.

Table 5: Summary of Bromodichloromethane Results

Constituent	MCL (mg/L)	PHG (mg/L)	Range of Detected Results (mg/L)	Health Risk	Numerical Health Risk at MCL	Numerical Health Risk at PHG
Bromodichloromethane	0.080*	0.00006	(0.0014 – 0.023)	Increased risk of cancer	$1.3x10^{-3}$ (1.3 per thousand)*	$1x10^{-6}$ (one per million)

*There is no MCLs for individual trihalomethanes. Total trihalomethanes are the sum of bromochloromethane, bromoform, chloroform, and dibromochloromethane. The health risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

Bromoform

The PHG for bromoform is 0.0005 mg/L. The category of health risk for bromoform is carcinogenicity, or potentially cancer causing. The numerical health risk based on the California PHG for bromoform is 1 in a million.

Table 6: Summary of Bromoform Results

Constituent	MCL (mg/L)	PHG (mg/L)	Range of Detected Results (mg/L)	Health Risk	Numerical Health Risk at MCL	Numerical Health Risk at PHG
Bromoform	0.080*	0.0005	(ND – 0.023)	Increased risk of cancer	$2x10^{-4}$ (two per ten thousand)*	$1x10^{-6}$ (one per million)

ND=Constituent not detected

*There is no MCLs for individual trihalomethanes. Total trihalomethanes are the sum of bromochloromethane, bromoform, chloroform, and dibromochloromethane. The health risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

Chloroform

The PHG for chloroform is 0.0004 mg/L. The category of health risk for chloroform is carcinogenicity, or potentially cancer causing. The numerical health risk based on the California PHG for chloroform is 1 in a million.

Table 7: Summary of Chloroform Results

Constituent	MCL (mg/L)	PHG (mg/L)	Range of Detected Results (mg/L)	Health Risk	Numerical Health Risk at MCL	Numerical Health Risk at PHG
Chloroform	0.080*	0.0004	(0.0006 – 0.046)	Increased risk of cancer	$2x10^{-4}$ (two per ten thousand)*	$1x10^{-6}$ (one per million)

*There is no MCLs for individual trihalomethanes. Total trihalomethanes are the sum of bromochloromethane, bromoform, chloroform, and dibromochloromethane. The health risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

Dibromochloromethane

The PHG for dibromochloromethane is 0.0001 mg/L. The category of health risk for dibromochloromethane is carcinogenicity, or potentially cancer causing. The numerical health risk based on the California PHG for dibromochloromethane is 1 in a million.

Table 8: Summary of Dibromochloromethane Results

Constituent	MCL (mg/L)	PHG (mg/L)	Range of Detected Results (mg/L)	Health Risk	Numerical Health Risk at MCL	Numerical Health Risk at PHG
Dibromochloromethane	0.080*	0.0001	(0.0025 – 0.014)	Increased risk of cancer	$8x10^{-4}$ (eight per ten thousand)*	$1x10^{-6}$ (one per million)

*There is no MCLs for individual trihalomethanes. Total trihalomethanes are the sum of bromochloromethane, bromoform, chloroform, and dibromochloromethane. The health risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

Recommendations for Further Action

SCWD's drinking water quality meets all DDW and EPA drinking water standards set to protect public health. The levels of constituents identified in this report are already significantly below the MCLs established to provide safe drinking water. Further reductions in these levels would require additional costly treatment processes and the ability of these processes to provide significant additional reductions in constituent levels is uncertain. In addition, the health protection benefits of these possible reductions are not at all clear and may not be quantifiable. Therefore, no additional action beyond continued implementation of BATs is proposed at his time.

Attachment 1

California Health and Safety Code Public Health Goal Reporting Requirements

California Health and Safety Code
Public Health Goal Reporting Requirements

116470. (b) On or before July 1, 1998, and every three years thereafter, public water systems serving more than 10,000 service connections that detect one or more contaminants in drinking water that exceed the applicable public health goal, shall prepare a brief written report in plain language that does all of the following:

(1) Identifies each contaminant detected in drinking water that exceeds the applicable public health goal.

(2) Discloses the numerical public health risk, determined by the office, associated with the maximum contaminant level for each contaminant identified in paragraph (1) and the numerical public health risk determined by the office associated with the public health goal for that contaminant.

(3) Identifies the category of risk to public health, including, but not limited to, carcinogenic, mutagenic, teratogenic, and acute toxicity, associated with exposure to the contaminant in drinking water, and includes a brief plainly worded description of these terms.

(4) Describes the best available technology, if any is then available on a commercial basis, to remove the contaminant or reduce the concentration of the contaminant. The public water system may, solely at its own discretion, briefly describe actions that have been taken on its own, or by other entities, to prevent the introduction of the contaminant into drinking water supplies.

(5) Estimates the aggregate cost and the cost per customer of utilizing the technology described in paragraph (4), if any, to reduce the concentration of that contaminant in drinking water to a level at or below the public health goal.

(6) Briefly describes what action, if any, the local water purveyor intends to take to reduce the concentration of the contaminant in public drinking water supplies and the basis for that decision.

(c) Public water systems required to prepare a report pursuant to subdivision (b) shall hold a public hearing for the purpose of accepting and responding to public comment on the report. Public water systems may hold the public hearing as part of any regularly scheduled meeting.

(d) The department shall not require a public water system to take any action to reduce or eliminate any exceedance of a public health goal.

(e) Enforcement of this section does not require the department to amend a public water system's operating permit.

(f) Pending adoption of a public health goal by the Office of Environmental Health Hazard Assessment pursuant to subdivision (c) of Section 116365, and in lieu thereof, public water systems shall use the national maximum contaminant level goal adopted by the United States Environmental Protection Agency for the corresponding contaminant for purposes of complying with the notice and hearing requirements of this section.

(g) This section is intended to provide an alternative form for the federally required consumer confidence report as authorized by 42 U.S.C. Section 300g-3(c).

Attachment 2

Table of California Regulated Constituents with MCLs, DLRs, and PHGs

MCLs, DLRs, PHGs, for Regulated Drinking Water Contaminants

(Units are in milligrams per liter (mg/L), unless otherwise noted.)

Last Update: September 14, 2021

The following tables includes California's maximum contaminant levels (MCLs), detection limits for purposes of reporting (DLRs), public health goals (PHGs) from the Office of Environmental Health Hazard Assessment (OEHHA). For comparison, Federal MCLs and Maximum Contaminant Level Goals (MCLGs) (USEPA) are also displayed.

Inorganic Chemicals Table, Chemicals with MCLs in 22 CCR §64431

State Regulated Inorganic Chemical Contaminant	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Aluminum	1	0.05	0.6	2001	--	--
Antimony	0.006	0.006	0.001	2016	0.006	0.006
Arsenic	0.010	0.002	0.000004	2004	0.010	zero
Asbestos (MFL = million fibers per liter; for fibers >10 microns long)	7 MFL	0.2 MFL	7 MFL	2003	7 MFL	7 MFL
Barium	1	0.1	2	2003	2	2
Beryllium	0.004	0.001	0.001	2003	0.004	0.004
Cadmium	0.005	0.001	0.00004	2006	0.005	0.005
Chromium, Total - OEHHA withdrew the 0.0025-mg/L PHG	0.05	0.01	withdrawn Nov. 2001	1999	0.1	0.1

State Regulated Inorganic Chemical Contaminant	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Chromium, Hexavalent - 0.01-mg/L MCL & 0.001-mg/L DLR repealed September 2017	--	--	0.00002	2011	--	--
Cyanide	0.15	0.1	0.15	1997	0.2	0.2
Fluoride	2	0.1	1	1997	4.0	4.0
Mercury (inorganic)	0.002	0.001	0.0012	1999 (rev2005)*	0.002	0.002
Nickel	0.1	0.01	0.012	2001	--	--
Nitrate (as nitrogen, N)	10 as N	0.4	45 as NO3 (=10 as N)	2018	10	10
Nitrite (as N)	1 as N	0.4	1 as N	2018	1	1
Nitrate + Nitrite (as N)	10 as N	--	10 as N	2018	--	--
Perchlorate	0.006	0.002	0.001	2015	--	--
Selenium	0.05	0.005	0.03	2010	0.05	0.05
Thallium	0.002	0.001	0.0001	1999 (rev2004)	0.002	0.0005

Copper and Lead Table, 22 CCR §64672.3

Values referred to as MCLs for lead and copper are not actually MCLs; instead, they are called “Action Levels” under the lead and copper rule.

State Regulated Copper and Lead Contaminant	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Copper	1.3	0.05	0.3	2008	1.3	1.3
Lead	0.015	0.005	0.0002	2009	0.015	zero

Radiological Table, Radionuclides with MCLs in 22 CCR §64441 and §64443

[units are picocuries per liter (pCi/L), unless otherwise state; n/a = not applicable]

State Regulated Radionuclides Contaminant	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Gross alpha particle activity - OEHHA concluded in 2003 that a PHG was not practical	15	3	none	n/a	15	zero
Gross beta particle activity - OEHHA concluded in 2003 that a PHG was not practical	4 mrem/yr	4	none	n/a	4 mrem/yr	zero
Radium-226	--	1	0.05	2006		
Radium-228	--	1	0.019	2006		
Radium-226 + Radium-	5	--	--	--	5	zero

State Regulated Radionuclides Contaminant	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
228						
Strontium-90	8	2	0.35	2006	--	--
Tritium	"20,000"	"1,000"	400	2006	--	--
Uranium	20	1	0.43	2001	30 µg/L	zero

Organic Chemicals Table, Chemicals with MCLs in 22 CCR §64444

Volatile Organic Chemicals (VOCs)

State Regulated Volatile Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Benzene	0.001	0.0005	0.00015	2001	0.005	zero
Carbon tetrachloride	0.0005	0.0005	0.0001	2000	0.005	zero
1,2-Dichlorobenzene	0.6	0.0005	0.6	1997 (rev2009)	0.6	0.6
1,4-Dichlorobenzene (p-DCB)	0.005	0.0005	0.006	1997	0.075	0.075
1,1-Dichloroethane (1,1-DCA)	0.005	0.0005	0.003	2003	--	--
1,2-Dichloroethane (1,2-DCA)	0.0005	0.0005	0.0004	1999 (rev2005)	0.005	zero

State Regulated Volatile Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
1,1-Dichloroethylene (1,1-DCE)	0.006	0.0005	0.01	1999	0.007	0.007
cis-1,2-Dichloroethylene	0.006	0.0005	0.013	2018	0.07	0.07
trans-1,2-Dichloroethylene	0.01	0.0005	0.05	2018	0.1	0.1
Dichloromethane (Methylene chloride)	0.005	0.0005	0.004	2000	0.005	zero
1,2-Dichloropropane	0.005	0.0005	0.0005	1999	0.005	zero
1,3-Dichloropropene	0.0005	0.0005	0.0002	1999 (rev2006)	--	--
Ethylbenzene	0.3	0.0005	0.3	1997	0.7	0.7
Methyl tertiary butyl ether (MTBE)	0.013	0.003	0.013	1999	--	--
Monochlorobenzene	0.07	0.0005	0.07	2014	0.1	0.1
Styrene	0.1	0.0005	0.0005	2010	0.1	0.1
1,1,2,2-Tetrachloroethane	0.001	0.0005	0.0001	2003	0.1	0.1
Tetrachloroethylene (PCE)	0.005	0.0005	0.00006	2001	0.005	zero

State Regulated Volatile Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Toluene	0.15	0.0005	0.15	1999	1	1
1,2,4-Trichlorobenzene	0.005	0.0005	0.005	1999	0.07	0.07
1,1,1-Trichloroethane (1,1,1-TCA)	0.200	0.0005	1	2006	0.2	0.2
1,1,2-Trichloroethane (1,1,2-TCA)	0.005	0.0005	0.0003	2006	0.005	0.003
Trichloroethylene (TCE)	0.005	0.0005	0.0017	2009	0.005	zero
Trichlorofluoromethane (Freon 11)	0.15	0.005	1.3	2014	--	--
"1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)"	1.2	0.01	4	1997 (rev2011)	--	--
Vinyl chloride	0.0005	0.0005	0.00005	2000	0.002	zero
Xylenes	1.750	0.0005	1.8	1997	10	10

Non-Volatile Synthetic Organic Chemicals (SOCs)

State Regulated Non-Volatile Synthetic Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Alachlor	0.002	0.001	0.004	1997	0.002	zero

State Regulated Non-Volatile Synthetic Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Atrazine	0.001	0.0005	0.00015	1999	0.003	0.003
Bentazon	0.018	0.002	0.2	1999 (rev2009)	--	--
Benzo(a)pyrene	0.0002	0.0001	0.000007	2010	0.0002	zero
Carbofuran	0.018	0.005	0.0007	2016	0.04	0.04
Chlordane	0.0001	0.0001	0.00003	1997 (rev2006)	0.002	zero
Dalapon	0.2	0.01	0.79	1997 (rev2009)	0.2	0.2
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00001	0.000003	2020	0.0002	zero
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.01	0.02	2009	0.07	0.07
Di(2-ethylhexyl)adipate	0.4	0.005	0.2	2003	0.4	0.4
Di(2-ethylhexyl)phthalate (DEHP)	0.004	0.003	0.012	1997	0.006	zero
Dinoseb	0.007	0.002	0.014	1997	0.007	0.007

State Regulated Non-Volatile Synthetic Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
				(rev2010)		
Diquat	0.02	0.004	0.006	2016	0.02	0.02
Endothal	0.1	0.045	0.094	2014	0.1	0.1
Endrin	0.002	0.0001	0.0003	2016	0.002	0.002
Ethylene dibromide (EDB)	0.00005	0.00002	0.00001	2003	0.00005	zero
Glyphosate	0.7	0.025	0.9	2007	0.7	0.7
Heptachlor	0.00001	0.00001	0.000008	1999	0.0004	zero
Heptachlor epoxide	0.00001	0.00001	0.000006	1999	0.0002	zero
Hexachlorobenzene	0.001	0.0005	0.00003	2003	0.001	zero
Hexachlorocyclopentadiene	0.05	0.001	0.002	2014	0.05	0.05
Lindane	0.0002	0.0002	0.000032	1999 (rev2005)	0.0002	0.0002
Methoxychlor	0.03	0.01	0.00009	2010	0.04	0.04
Molinate	0.02	0.002	0.001	2008	--	--
Oxamyl	0.05	0.02	0.026	2009	0.2	0.2

State Regulated Non-Volatile Synthetic Organic Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Pentachlorophenol	0.001	0.0002	0.0003	2009	0.001	zero
Picloram	0.5	0.001	0.166	2016	0.5	0.5
Polychlorinated biphenyls (PCBs)	0.0005	0.0005	0.00009	2007	0.0005	zero
Simazine	0.004	0.001	0.004	2001	0.004	0.004
Thiobencarb	0.07	0.001	0.042	2016	--	--
Toxaphene	0.003	0.001	0.00003	2003	0.003	zero
1,2,3-Trichloropropane	0.000005	0.000005	0.0000007	2009	--	--
2,3,7,8-TCDD (dioxin)	3x10-8	5x10-9	5x10-11	2010	3x10-8	zero
2,4,5-TP (Silvex)	0.05	0.001	0.003	2014	0.05	0.05

Disinfection Byproducts Table, Chemicals with MCLs in 22 CCR §64533

State Regulated Disinfection Byproducts Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Total Trihalomethanes	0.080	--	--	--	0.080	--

State Regulated Disinfection Byproducts Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
Bromodichloromethane	--	0.0010	0.00006	2020	--	zero
Bromoform	--	0.0010	0.0005	2020	--	zero
Chloroform	--	0.0010	0.0004	2020	--	0.07
Dibromochloromethane	--	0.0010	0.0001	2020	--	0.06
Haloacetic Acids (five) (HAA5)	0.060	--	--	--	0.060	--
Monochloroacetic Acid	--	0.0020	--	--	--	0.07
Dichloroacetic Adic	--	0.0010	--	--	--	zero
Trichloroacetic Acid	--	0.0010	--	--	--	0.02
Monobromoacetic Acid	--	0.0010	--	--	--	--
Dibromoacetic Acid	--	0.0010	--	--	--	--
Bromate	0.010	0.0050**	0.0001	2009	0.01	zero
Chlorite	1.0	0.020	0.05	2009	1	0.8

Chemicals with PHGs established in response to DDW requests. These are not currently regulated drinking water contaminants.

State Regulated Disinfection Byproducts Contaminants	State MCL	State DLR	State PHG	State Date of PHG	Federal MCL	Federal MCLG
N-Nitrosodimethylamine (NDMA)	--	--	0.000003	2006	--	--

*OEHHA's review of this chemical during the year indicated (rev20XX) resulted in no change in the PHG.

**The DLR for Bromate is 0.0010 mg/L for analysis performed using EPA Method 317.0 Revision 2.0, 321.8, or 326.0.

Attachment 3

Health Risk Information for Public Health Goal Exceedance Reports February 2022

Public Health Goals

Health Risk Information for Public Health Goal Exceedance Reports

February 2022

Pesticide and Environmental Toxicology Branch
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

Health Risk Information for Public Health Goal Exceedance Reports

Prepared by

Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

February 2022

NEW for the 2022 Report: New in this document are an updated Public Health Goal (PHG) for 1,2-dibromo-3-chloropropane (DBCP) and newly established PHGs for the trihalomethanes bromodichloromethane, bromoform, chloroform, and dibromochloromethane.

Background: Under the Calderon-Sher Safe Drinking Water Act of 1996 (the Act), public water systems with more than 10,000 service connections are required to prepare a report every three years for contaminants that exceed their respective PHGs.[1] This document contains health risk information on regulated drinking water contaminants to assist public water systems in preparing these reports. A PHG is the concentration of a contaminant in drinking water that poses no significant health risk if consumed for a lifetime. PHGs are developed and published by the Office of Environmental Health Hazard Assessment (OEHHA) using current risk assessment principles, practices and methods.[2]

The water system's report is required to identify the health risk category (e.g., carcinogenicity or neurotoxicity) associated with exposure to each regulated contaminant in drinking water and to include a brief, plainly worded description of these risks. The report is also required to disclose the numerical public health risk, if available, associated with the California Maximum Contaminant Level (MCL) and with the PHG for each contaminant. This health risk information document is prepared by OEHHA every three years to assist the water systems in providing the required information in their reports.

[1] Health and Safety Code Section 116470(b)
[2] Health and Safety Code Section 116365

Numerical health risks: Table 1 presents health risk categories and cancer risk values for chemical contaminants in drinking water that have PHGs.

The Act requires that OEHHA publish PHGs based on health risk assessments using the most current scientific methods. As defined in statute, PHGs for non-carcinogenic chemicals in drinking water are set at a concentration "at which no known or anticipated adverse health effects will occur, with an adequate margin of safety." For carcinogens, PHGs are set at a concentration that "does not pose any significant risk to health." PHGs provide one basis for revising MCLs, along with cost and technological feasibility. OEHHA has been publishing PHGs since 1997 and the entire list published to date is shown in Table 1.

Table 2 presents health risk information for contaminants that do not have PHGs but have state or federal regulatory standards. The Act requires that, for chemical contaminants with California MCLs that do not yet have PHGs, water utilities use the federal Maximum Contaminant Level Goal (MCLG) for the purpose of complying with the requirement of public notification. MCLGs, like PHGs, are strictly health based and include a margin of safety. One difference, however, is that the MCLGs for carcinogens are set at zero because the US Environmental Protection Agency (US EPA) assumes there is no absolutely safe level of exposure to such chemicals. PHGs, on the other hand, are set at a level considered to pose no *significant* risk of cancer; this is usually no more than a one-in-one-million excess cancer risk (1×10^{-6}) level for a lifetime of exposure. In Table 2, the cancer risks shown are based on the US EPA's evaluations.

For more information on health risks: The adverse health effects for each chemical with a PHG are summarized in a PHG technical support document. These documents are available on the OEHHA website (https://oehha.ca.gov/water/public-health-goals-phgs).

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Alachlor	carcinogenicity (causes cancer)	0.004	NA[5,6]	0.002	NA
Aluminum	neurotoxicity and immunotoxicity (harms the nervous and immune systems)	0.6	NA	1	NA
Antimony	hepatotoxicity (harms the liver)	0.001	NA	0.006	NA
Arsenic	carcinogenicity (causes cancer)	0.000004 (4×10^{-6})	1×10^{-6} (one per million)	0.01	2.5×10^{-3} (2.5 per thousand)
Asbestos	carcinogenicity (causes cancer)	7 MFL[7] (fibers >10 microns in length)	1×10^{-6}	7 MFL (fibers >10 microns in length)	1×10^{-6} (one per million)
Atrazine	carcinogenicity (causes cancer)	0.00015	1×10^{-6}	0.001	7×10^{-6} (seven per million)

[1] Based on the OEHHA PHG technical support document unless otherwise specified. The categories are the hazard traits defined by OEHHA for California's Toxics Information Clearinghouse (online at: https://oehha.ca.gov/media/downloads/risk-assessment//gcregtext011912.pdf).
[2] mg/L = milligrams per liter of water or parts per million (ppm)
[3] Cancer Risk = Upper bound estimate of excess cancer risk from lifetime exposure. Actual cancer risk may be lower or zero. 1×10^{-6} means one excess cancer case per million people exposed.
[4] MCL = maximum contaminant level.
[5] NA = not applicable. Cancer risk cannot be calculated.
[6] The PHG for alachlor is based on a threshold model of carcinogenesis and is set at a level that is believed to be without any significant cancer risk to individuals exposed to the chemical over a lifetime.
[7] MFL = million fibers per liter of water.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Barium	cardiovascular toxicity (causes high blood pressure)	2	NA	1	NA
Bentazon	hepatotoxicity and digestive system toxicity (harms the liver, intestine, and causes body weight effects[8])	0.2	NA	0.018	NA
Benzene	carcinogenicity (causes leukemia)	0.00015	1×10^{-6}	0.001	7×10^{-6} (seven per million)
Benzo[a]pyrene	carcinogenicity (causes cancer)	0.000007 (7×10^{-6})	1×10^{-6}	0.0002	3×10^{-5} (three per hundred thousand)
Beryllium	digestive system toxicity (harms the stomach or intestine)	0.001	NA	0.004	NA
Bromate	carcinogenicity (causes cancer)	0.0001	1×10^{-6}	0.01	1×10^{-4} (one per ten thousand)
Cadmium	nephrotoxicity (harms the kidney)	0.00004	NA	0.005	NA
Carbofuran	reproductive toxicity (harms the testis)	0.0007	NA	0.018	NA

[8] Body weight effects are an indicator of general toxicity in animal studies.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Carbon tetrachloride	carcinogenicity (causes cancer)	0.0001	1×10^{-6}	0.0005	5×10^{-6} (five per million)
Chlordane	carcinogenicity (causes cancer)	0.00003	1×10^{-6}	0.0001	3×10^{-6} (three per million)
Chlorite	hematotoxicity (causes anemia) neurotoxicity (causes neurobehavioral effects)	0.05	NA	1	NA
Chromium, hexavalent	carcinogenicity (causes cancer)	0.00002	1×10^{-6}	none	NA
Copper	digestive system toxicity (causes nausea, vomiting, diarrhea)	0.3	NA	1.3 (AL[9])	NA
Cyanide	neurotoxicity (damages nerves) endocrine toxicity (affects the thyroid)	0.15	NA	0.15	NA
Dalapon	nephrotoxicity (harms the kidney)	0.79	NA	0.2	NA
Di(2-ethylhexyl) adipate (DEHA)	developmental toxicity (disrupts development)	0.2	NA	0.4	NA

[9] AL = action level. The action levels for copper and lead refer to a concentration measured at the tap. Much of the copper and lead in drinking water is derived from household plumbing (The Lead and Copper Rule, Title 22, California Code of Regulations [CCR] section 64672.3).

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Di(2-ethylhexyl) phthalate (DEHP)	carcinogenicity (causes cancer)	0.012	1×10^{-6}	0.004	3×10^{-7} (three per ten million)
1,2-Dibromo-3-chloropropane (DBCP)	carcinogenicity (causes cancer)	0.000003 ($3x10^{-6}$)	1×10^{-6}	0.0002	7×10^{-5} (seven per hundred thousand)
1,2-Dichloro-benzene (*o*-DCB)	hepatotoxicity (harms the liver)	0.6	NA	0.6	NA
1,4-Dichloro-benzene (*p*-DCB)	carcinogenicity (causes cancer)	0.006	1×10^{-6}	0.005	8×10^{-7} (eight per ten million)
1,1-Dichloro-ethane (1,1-DCA)	carcinogenicity (causes cancer)	0.003	1×10^{-6}	0.005	2×10^{-6} (two per million)
1,2-Dichloro-ethane (1,2-DCA)	carcinogenicity (causes cancer)	0.0004	1×10^{-6}	0.0005	1×10^{-6} (one per million)
1,1-Dichloro-ethylene (1,1-DCE)	hepatotoxicity (harms the liver)	0.01	NA	0.006	NA
1,2-Dichloro-ethylene, cis	nephrotoxicity (harms the kidney)	0.013	NA	0.006	NA
1,2-Dichloro-ethylene, trans	immunotoxicity (harms the immune system)	0.05	NA	0.01	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Dichloromethane (methylene chloride)	carcinogenicity (causes cancer)	0.004	1×10^{-6}	0.005	1×10^{-6} (one per million)
2,4-Dichloro-phenoxyacetic acid (2,4-D)	hepatotoxicity and nephrotoxicity (harms the liver and kidney)	0.02	NA	0.07	NA
1,2-Dichloro-propane (propylene dichloride)	carcinogenicity (causes cancer)	0.0005	1×10^{-6}	0.005	1×10^{-5} (one per hundred thousand)
1,3-Dichloro-propene (Telone II®)	carcinogenicity (causes cancer)	0.0002	1×10^{-6}	0.0005	2×10^{-6} (two per million)
Dinoseb	reproductive toxicity (harms the uterus and testis)	0.014	NA	0.007	NA
Diquat	ocular toxicity (harms the eye) developmental toxicity (causes malformation)	0.006	NA	0.02	NA
Endothall	digestive system toxicity (harms the stomach or intestine)	0.094	NA	0.1	NA
Endrin	neurotoxicity (causes convulsions) hepatotoxicity (harms the liver)	0.0003	NA	0.002	NA
Ethylbenzene (phenylethane)	hepatotoxicity (harms the liver)	0.3	NA	0.3	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Ethylene dibromide (1,2-Dibromoethane)	carcinogenicity (causes cancer)	0.00001	1×10^{-6}	0.00005	5×10^{-6} (five per million)
Fluoride	musculoskeletal toxicity (causes tooth mottling)	1	NA	2	NA
Glyphosate	nephrotoxicity (harms the kidney)	0.9	NA	0.7	NA
Heptachlor	carcinogenicity (causes cancer)	0.000008 (8×10^{-6})	1×10^{-6}	0.00001	1×10^{-6} (one per million)
Heptachlor epoxide	carcinogenicity (causes cancer)	0.000006 (6×10^{-6})	1×10^{-6}	0.00001	2×10^{-6} (two per million)
Hexachloroben-zene	carcinogenicity (causes cancer)	0.00003	1×10^{-6}	0.001	3×10^{-5} (three per hundred thousand)
Hexachloro-cyclopentadiene (HCCPD)	digestive system toxicity (causes stomach lesions)	0.002	NA	0.05	NA
Lead	developmental neurotoxicity (causes neurobehavioral effects in children) cardiovascular toxicity (causes high blood pressure) carcinogenicity (causes cancer)	0.0002	$<1\times10^{-6}$ (PHG is not based on this effect)	0.015 (AL[9])	2×10^{-6} (two per million)

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Lindane (γ-BHC)	carcinogenicity (causes cancer)	0.000032	1×10^{-6}	0.0002	6×10^{-6} (six per million)
Mercury (inorganic)	nephrotoxicity (harms the kidney)	0.0012	NA	0.002	NA
Methoxychlor	endocrine toxicity (causes hormone effects)	0.00009	NA	0.03	NA
Methyl tertiary-butyl ether (MTBE)	carcinogenicity (causes cancer)	0.013	1×10^{-6}	0.013	1×10^{-6} (one per million)
Molinate	carcinogenicity (causes cancer)	0.001	1×10^{-6}	0.02	2×10^{-5} (two per hundred thousand)
Monochloro-benzene (chlorobenzene)	nephrotoxicity (harms the kidney)	0.07	NA	0.07	NA
Nickel	developmental toxicity (causes increased neonatal deaths)	0.012	NA	0.1	NA
Nitrate	hematotoxicity (causes methemoglobinemia)	45 as nitrate	NA	10 as nitrogen (=45 as nitrate)	NA
Nitrite	hematotoxicity (causes methemoglobinemia)	3 as nitrite	NA	1 as nitrogen (=3 as nitrite)	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Nitrate and Nitrite	hematotoxicity (causes methemoglobinemia)	10 as nitrogen[10]	NA	10 as nitrogen	NA
N-nitroso-dimethyl-amine (NDMA)	carcinogenicity (causes cancer)	0.000003 (3×10^{-6})	1×10^{-6}	none	NA
Oxamyl	general toxicity (causes body weight effects)	0.026	NA	0.05	NA
Pentachloro-phenol (PCP)	carcinogenicity (causes cancer)	0.0003	1×10^{-6}	0.001	3×10^{-6} (three per million)
Perchlorate	endocrine toxicity (affects the thyroid) developmental toxicity (causes neurodevelop-mental deficits)	0.001	NA	0.006	NA
Picloram	hepatotoxicity (harms the liver)	0.166	NA	0.5	NA
Polychlorinated biphenyls (PCBs)	carcinogenicity (causes cancer)	0.00009	1×10^{-6}	0.0005	6×10^{-6} (six per million)
Radium-226	carcinogenicity (causes cancer)	0.05 pCi/L	1×10^{-6}	5 pCi/L (combined $Ra^{226+228}$)	1×10^{-4} (one per ten thousand)

[10] The joint nitrate/nitrite PHG of 10 mg/L (10 ppm, expressed as nitrogen) does not replace the individual values, and the maximum contribution from nitrite should not exceed 1 mg/L nitrite-nitrogen.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Radium-228	carcinogenicity (causes cancer)	0.019 pCi/L	1×10^{-6}	5 pCi/L (combined $Ra^{226+228}$)	3×10^{-4} (three per ten thousand)
Selenium	integumentary toxicity (causes hair loss and nail damage)	0.03	NA	0.05	NA
Silvex (2,4,5-TP)	hepatotoxicity (harms the liver)	0.003	NA	0.05	NA
Simazine	general toxicity (causes body weight effects)	0.004	NA	0.004	NA
Strontium-90	carcinogenicity (causes cancer)	0.35 pCi/L	1×10^{-6}	8 pCi/L	2×10^{-5} (two per hundred thousand)
Styrene (vinylbenzene)	carcinogenicity (causes cancer)	0.0005	1×10^{-6}	0.1	2×10^{-4} (two per ten thousand)
1,1,2,2-Tetrachloro-ethane	carcinogenicity (causes cancer)	0.0001	1×10^{-6}	0.001	1×10^{-5} (one per hundred thousand)
2,3,7,8-Tetra-chlorodibenzo-*p*-dioxin (TCDD, or dioxin)	carcinogenicity (causes cancer)	5×10^{-11}	1×10^{-6}	3×10^{-8}	6×10^{-4} (six per ten thousand)

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Tetrachloro-ethylene (perchloro-ethylene, or PCE)	carcinogenicity (causes cancer)	0.00006	1×10^{-6}	0.005	8×10^{-5} (eight per hundred thousand)
Thallium	integumentary toxicity (causes hair loss)	0.0001	NA	0.002	NA
Thiobencarb	general toxicity (causes body weight effects) hematotoxicity (affects red blood cells)	0.042	NA	0.07	NA
Toluene (methylbenzene)	hepatotoxicity (harms the liver) endocrine toxicity (harms the thymus)	0.15	NA	0.15	NA
Toxaphene	carcinogenicity (causes cancer)	0.00003	1×10^{-6}	0.003	1×10^{-4} (one per ten thousand)
1,2,4-Trichloro-benzene	endocrine toxicity (harms adrenal glands)	0.005	NA	0.005	NA
1,1,1-Trichloro-ethane	neurotoxicity (harms the nervous system), reproductive toxicity (causes fewer offspring) hepatotoxicity (harms the liver) hematotoxicity (causes blood effects)	1	NA	0.2	NA

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
1,1,2-Trichloro-ethane	carcinogenicity (causes cancer)	0.0003	$1x10^{-6}$	0.005	2×10^{-5} (two per hundred thousand)
Trichloro-ethylene (TCE)	carcinogenicity (causes cancer)	0.0017	1×10^{-6}	0.005	3×10^{-6} (three per million)
Trichlorofluoro-methane (Freon 11)	accelerated mortality (increase in early death)	1.3	NA	0.15	NA
1,2,3-Trichloro-propane (1,2,3-TCP)	carcinogenicity (causes cancer)	0.0000007 (7×10^{-7})	$1x10^{-6}$	0.000005 (5×10^{-6})	7×10^{-6} (seven per million)
1,1,2-Trichloro-1,2,2-trifluoro-ethane (Freon 113)	hepatotoxicity (harms the liver)	4	NA	1.2	NA
Trihalomethanes: Bromodichloro-methane	carcinogenicity (causes cancer)	0.00006	$1x10^{-6}$	0.080*	1.3×10^{-3} (1.3 per thousand)[11]
Trihalomethanes: Bromoform	carcinogenicity (causes cancer)	0.0005	$1x10^{-6}$	0.080*	2×10^{-4} (two per ten thousand)[12]

* For total trihalomethanes (the sum of bromodichloromethane, bromoform, chloroform, and dibromochloromethane). There are no MCLs for individual trihalomethanes.

[11] Based on 0.080 mg/L bromodichloromethane; the risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

[12] Based on 0.080 mg/L bromoform; the risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

Table 1: Health Risk Categories and Cancer Risk Values for Chemicals with California Public Health Goals (PHGs)

Chemical	Health Risk Category[1]	California PHG (mg/L)[2]	Cancer Risk[3] at the PHG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Trihalomethanes: Chloroform	carcinogenicity (causes cancer)	0.0004	$1x10^{-6}$	0.080*	2×10^{-4} (two per ten thousand)[13]
Trihalomethanes: Dibromochloro-methane	carcinogenicity (causes cancer)	0.0001	$1x10^{-6}$	0.080*	8×10^{-4} (eight per ten thousand)[14]
Tritium	carcinogenicity (causes cancer)	400 pCi/L	$1x10^{-6}$	20,000 pCi/L	5×10^{-5} (five per hundred thousand)
Uranium	carcinogenicity (causes cancer)	0.43 pCi/L	1×10^{-6}	20 pCi/L	5×10^{-5} (five per hundred thousand)
Vinyl chloride	carcinogenicity (causes cancer)	0.00005	1×10^{-6}	0.0005	1×10^{-5} (one per hundred thousand)
Xylene	neurotoxicity (affects the senses, mood, and motor control)	1.8 (single isomer or sum of isomers)	NA	1.75 (single isomer or sum of isomers)	NA

* For total trihalomethanes (the sum of bromodichloromethane, bromoform, chloroform, and dibromochloromethane). There are no MCLs for individual trihalomethanes.
[13] Based on 0.080 mg/L chloroform; the risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.
[14] Based on 0.080 mg/L dibromochloromethane; the risk will vary with different combinations and ratios of the other trihalomethanes in a particular sample.

Table 2: Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals

Chemical	Health Risk Category[1]	US EPA MCLG[2] (mg/L)	Cancer Risk[3] at the MCLG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Disinfection byproducts (DBPs)					
Chloramines	acute toxicity (causes irritation) digestive system toxicity (harms the stomach) hematotoxicity (causes anemia)	4[5,6]	NA[7]	none	NA
Chlorine	acute toxicity (causes irritation) digestive system toxicity (harms the stomach)	4[5,6]	NA	none	NA
Chlorine dioxide	hematotoxicity (causes anemia) neurotoxicity (harms the nervous system)	0.8[5,6]	NA	none	NA
Disinfection byproducts: haloacetic acids (HAA5)					
Monochloroacetic acid (MCA)	general toxicity (causes body and organ weight changes[8])	0.07	NA	none	NA

[1] Health risk category based on the US EPA MCLG document or California MCL document unless otherwise specified.
[2] MCLG = maximum contaminant level goal established by US EPA.
[3] Cancer Risk = Upper estimate of excess cancer risk from lifetime exposure. Actual cancer risk may be lower or zero. 1×10^{-6} means one excess cancer case per million people exposed.
[4] California MCL = maximum contaminant level established by California.
[5] Maximum Residual Disinfectant Level Goal, or MRDLG.
[6] The federal Maximum Residual Disinfectant Level (MRDL), or highest level of disinfectant allowed in drinking water, is the same value for this chemical.
[7] NA = not available.
[8] Body weight effects are an indicator of general toxicity in animal studies.

Table 2: Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals

Chemical	Health Risk Category[1]	US EPA MCLG[2] (mg/L)	Cancer Risk[3] at the MCLG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Dichloroacetic acid (DCA)	Carcinogenicity (causes cancer)	0	0	none	NA
Trichloroacetic acid (TCA)	hepatotoxicity (harms the liver)	0.02	NA	none	NA
Monobromoacetic acid (MBA)	NA	none	NA	none	NA
Dibromoacetic acid (DBA)	NA	none	NA	none	NA
Total haloacetic acids (sum of MCA, DCA, TCA, MBA, and DBA)	general toxicity, hepatotoxicity and carcinogenicity (causes body and organ weight changes, harms the liver and causes cancer)	none	NA	0.06	NA
Radionuclides					
Gross alpha particles[9]	carcinogenicity (causes cancer)	0 (^{210}Po included)	0	15 pCi/L[10] (includes radium but not radon and uranium)	up to $1x10^{-3}$ (for ^{210}Po, the most potent alpha emitter)

[9] MCLs for gross alpha and beta particles are screening standards for a group of radionuclides. Corresponding PHGs were not developed for gross alpha and beta particles. See the OEHHA memoranda discussing the cancer risks at these MCLs at http://www.oehha.ca.gov/water/reports/grossab.html.

[10] pCi/L = picocuries per liter of water.

Table 2: Health Risk Categories and Cancer Risk Values for Chemicals without California Public Health Goals

Chemical	Health Risk Category[1]	US EPA MCLG[2] (mg/L)	Cancer Risk[3] at the MCLG	California MCL[4] (mg/L)	Cancer Risk at the California MCL
Beta particles and photon emitters[9]	carcinogenicity (causes cancer)	0 (^{210}Pb included)	0	50 pCi/L (judged equiv. to 4 mrem/yr)	up to $2x10^{-3}$ (for ^{210}Pb, the most potent beta-emitter)

WATER COMMISSION
INFORMATION REPORT

DATE: 06/01/2022

AGENDA OF: 06/06/2022

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: City Council Actions Affecting the Water Department

RECOMMENDATION: That the Water Commission accept the City Council actions affecting the Water Department.

BACKGROUND/DISCUSSION:

May 10, 2022

Newell Creek Pipeline Improvement Project – Final Environmental Impact Report and Project Approval (WT)

Resolution No. NS-29,983 was adopted certifying the Final Environmental Impact Report for the Newell Creek Pipeline Improvement Project; and

Resolution No. NS-29,984 was adopted adopting the Findings of Fact, Statement of Overriding Considerations, and a Mitigation, Monitoring, and Reporting Program and approving the Newell Creek Pipeline Improvement Project.

2022 Pavement Restoration Project – Authorization to Advertise and Award (WT)

Motion carried to approve plans and specifications for the 2022 Pavement Restoration Project, authorize staff to advertise for bids, and authorize the Water Director to execute change orders within the approved project budget. The City Manager is hereby authorized and directed to execute the contract, in a form approved by the City Attorney, and as authorized by Resolution No. NS-27,563.

May 24, 2022

Resolution to Apply for State Water Resources Control Board Funding for the Newell Creek Pipeline (WT)

Resolution No. NS-29,993 was adopted authorizing the Water Department to apply for State Water Resources Control Board (SWRCB) funding for the Newell Creek Pipeline.

PROPOSED MOTION: Accept the City Council actions affecting the Water Department.

ATTACHMENTS: None.

Water Commission
7:00 p.m. – May 2, 2022
Council Chambers/Zoom Teleconference
809 Center Street, Santa Cruz

Summary of a Water Commission Meeting

Call to Order: 7:00 PM

Roll Call

Present: J. Burks (Vice Chair) (via Zoom), T. Burns (Via Zoom), D. Engfer (via Zoom), A. Páramo (via Zoom), S. Ryan (Chair) (via Zoom), G. Roffe (via Zoom)

Absent: D. Alfaro, with notification

Staff: R. Menard, Water Director (via Zoom); D. Baum, Water Chief Financial Officer (via Zoom); C. Coburn, Deputy Director/Operations Manager (via Zoom); E. Cross, Community Relations Specialist (via Zoom); K. Crossley, Senior Professional Engineer (via Zoom); M. Kaping, Principal Management Analyst (via Zoom); H. Luckenbach, Deputy Director/Engineering Manager (via Zoom); Sarah Perez, Principal Planner (via Zoom); K. Fitzgerald, Administrative Assistant III (via Zoom)

Others: Five members of the public (via Zoom)

Presentation: None.

Statements of Disqualification: None.

Oral Communications: One member of the public spoke.

Announcements: None

Consent Agenda

1. City Council Items Affecting the Water Department

2. Water Commission Minutes From April 4, 2022

No public comments were received.

Commissioner Engfer moved the Consent Agenda. Commissioner Burns seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None

ABSTAIN: None

Items Pulled from the Consent Agenda – None.

General Business

3. Update on Vulnerability Analysis with Dr. Casey Brown from the University of Massachusetts, Amherst

H. Luckenbach introduced Dr. Casey Brown for the presentation and discussion of the Vulnerability Analysis Update.

How long was Confluence used for water supply modeling?

- The Water Department started using Confluence in the late 1990s during the development of the Integrated Water Plan.

On slide 31 of the presentation titled "Vulnerability of Water Supply Reliability to Precipitation Change", is precipitation the only component that indicates problematic climate change?

- Both changes in temperature and precipitation are included in the model, not surprisingly, changed precipitation is the factor that has the greatest potential to impact supply reliability in Santa Cruz.

Will staff be able to continue to use the model be used once the vulnerability analysis is complete?

- Yes, the plan all along has been that the City will own and operate the model. Staff will be trained to update, use and interpret the model and its results.

How long does it take to generate results from the model after it is run against different scenarios?

- It takes approximately four days to produce results from 8,000 climate simulations.

Are changes in water demand also being modeled?

- Yes. The water demand assessment performed by D. Mitchell (M.Cubed) during the 2020 Urban Water Management Plan has been incorporated into the model.

No public comments were received.

No action was taken on this item.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
ABSTAIN: None

4. Results of a Recent Telephone Survey on Water Supply and Water Supply Augmentation

R. Menard introduced Gene Bregman (Gene Bregman & Associates) for the presentation and discussion of the Water Supply and Water Supply Augmentation Telephone survey results.

Aside from phone interviews, what other methods were used to conduct the survey?

- The survey was also provided online. About 55% of the surveys were conducted through calls placed to cell phones or landlines and the remaining 45% of the surveys were completed online.

What were the demographics between homeowners and renters?

- 53% of the respondents were homeowners, 42% were renters, and 5% did not respond to this question.

Did the measured demographics include race and or language preferences?

- Neither demographic was included. The survey was only conducted in English.

What were the benchmark questions that are asked during each survey?

- The benchmark questions include asking respondents to rate the seriousness of certain water supply issues such as the threat of climate change, reduced water supply as well as inadequate future supply.

Is it significant that the respondents favor the quality of a new water source over the quantity of water that could be added to supplies?

- Yes, however, both of the options were ranked over 50% which indicates that both options are favored by the respondents.

Were open-ended questions included in the survey?

- No.

One member of the public spoke.

- Mr. Bregman responded to the question posed by the commenter which asked about how the survey questions were asked and whether the items in the various questions with lists of options were asked in the same order every time, and about the gender of the interviewers. Mr. Bregman indicated that for each question including a list of items, the order of the items listed was rotated for each interview. He also indicated that over 200 telephone interviews were conducted and the interviewers consisted of both men and women.

No action was taken on this item.

5. Securing Our Water Future – Water Supply Augmentation Alternatives and Evaluation Criteria

R. Menard and H. Luckenbach discussed Securing Our Water Future – Water Supply Augmentation Alternatives and Evaluation Criteria.

Commissioners discussed the approach to policy making decisions on Water Supply Augmentation Alternatives and their ranked evaluation criteria.

Can staff clarify how the ranking criteria will be used for Securing Our Water Future?

- These criteria will be used to produce information about each of the four Securing Our Water Future supply augmentation projects.

Is there any concern about the time required for implementing water supply augmentation projects?

- One of the key drivers behind the urgency to establish a policy setting direction is the uncertainty of climate change impacts on weather patterns. Having a decision that can be understood and supported by the community means that we can begin to build supply more quickly and likely avoid implementing severe water restrictions.

Are there any legal risks associated with any decision that is made?

- There have not been any long-term legal risks associated with regulatory compliance identified at this time, but the consideration of these criteria is part of the administrative component of some of these projects.

Can staff clarify what projects are planned for the Mid-County groundwater basin (MCGB)?

- As Commissioners know, both aquifer storage and recovery (ASR) and indirect potable reuse (IPR) projects are being actively pursued by the City and the Soquel Creek Water District, respectively. And, as indicated by the Santa Cruz Supplemental Water Supply Alternative Matrix (Table 1 from the April 4, 2022 Water Commission item on Securing Our Water Future), the City has also identified several other possible IPR projects that could be developed and implemented in the MCGB, but at the moment the City's key focus is on developing ASR in that basin. During the development of the Water Supply Augmentation Implementation Plan following completion of the Securing Our Water Future policy setting process, more details about the nature and the potential timing of near term and potential long-term groundwater storage and replenishment projects in the MCGB would be developed.

One member of the public spoke.

Commissioner Engfer motioned to adopt the policy development process that staff has designed and outlined, and that was discussed by the Commission, approve the list of water supply augmentation alternatives to compare as part of that policy development process, and accept a preliminary prioritized list of quantitative and qualitative evaluation criteria considerations to use in the plan comparison. Commissioner Burns seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
ABSTAIN: None

6. Water Department's FY 2023 Operating and FY 2023-27 Capital Investment Program Budgets

R. Menard introduced D. Baum and M. Kaping for the presentation and discussion of the Water Department's FY 2023 Operating and FY 2023-27 Capital Investment Program budgets.

Why are there no salary increases projected in the budget?

- The City is currently negotiating labor contracts and it is not known when the negotiations will be resolved at this time. Should ongoing labor negotiations result in

agreements on salary increases for employees, the City's budgets will be adjusted to reflect labor agreements.

Is there any concern about increasing interest rates as they relate to debt issuance?

- Higher interest rates will reduce the "buying power" of the Department's available resources and may result in having to defer or spread out planned work. On the other hand, lower interest rates drive inflation which increases costs for resources and makes it difficult to execute projects affordably.

One member of the public spoke.

No action was taken on this item.

Subcommittee/Advisory Body Oral Reports

7. Santa Cruz Mid-County Groundwater Agency (MGA)

R. Menard reported that the MGA is a recipient of the state's Sustainable Groundwater Management Act (SGMA) Implementation Round 1 grant for $7.6 million. The next MGA meeting will be held on June 16th and will focus on the development and finalization of the annual budget as well as the potential for a shared agreement with the Santa Margarita Groundwater Agency for administrative services.

8. Santa Margarita Groundwater Agency (SMGWA)

Commissioner Engfer reported that the SMGWA ad hoc committee met on April 18th and reviewed the Regional Water Management Foundation's proposal for the administration of planning work and recommended that the SMGWA accept and approve the proposal, which occurred during the April 28th meeting. Also during the meeting, private well owners from the Lockhart Gulch area reported that their wells are running low on water.

Director's Oral Report: R. Menard discussed the informational items included in the agenda packet.

Adjournment: The meeting was adjourned at 10:15 PM.

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WATER COMMISSION
INFORMATION REPORT

DATE: 06/02/2022

AGENDA OF: 06/06/2022

TO: Water Commission

FROM: David Baum, Chief Financial Officer
Malissa Kaping, Principal Management Analyst

SUBJECT: FY 2022 3rd Quarter Unaudited Financial Report

RECOMMENDATION: That the Water Commission accept the FY 2022 3rd Quarter Unaudited Financial Report.

BACKGROUND: On June 6, 2016, the Water Commission approved the Water Department's Long-Range Financial Plan (LRFP) which created a framework to ensure financial stability and maintain the credit rating needed to debt finance major capital investments planned for the utility. An updated LRFP was approved by the Water Commission on August 23, 2021. The updated LRFP includes financial targets for debt service coverage ratio (1.5x), a combined 180 days cash on hand, $3 million in an Emergency Reserve, and a $10 million Rate Stabilization Reserve.

The data in the Quarterly Financial Report provides a snapshot in time and represents the time period of July 1, 2021 through March 31, 2022. The City operates on a fiscal year basis, which closes on June 30th.

In 2019, an Ad Hoc Subcommittee of the Water Commission and Water Department staff worked together to update the quarterly financial report. The purpose of the update was to provide a clearer picture of financial trends and results to the Water Commission. By conveying better information, we are able to show successes, identify problem areas and provide information to demonstrate that appropriate responses are being implemented. With each successive financial report, Department staff have updated the report to reflect Commissioners' comments and further refine the information presented.

DISCUSSION: The attached financial report presents the Department's unaudited fiscal outlook through the third quarter of FY 2022 and is a snapshot of the transactions posted during the time period of July 1, 2021 through March 31, 2022. Page 1 of the attached Financial Report is focused on the Operating budget and Page 2 reflects the Capital budget. Noteworthy items are discussed on the following pages.

Operating Revenues

Water sales continue to reflect the impact of the COVID-19 pandemic and drought and are 4% lower than the same quarter last year. Compared to the prior year, single family home and multifamily home consumption is lower by 18% and 7%, respectively. Commercial consumption is higher by 15% and UCSC consumption is higher by 51%, due to re-opening of commercial business in June. North Coast irrigation consumption is down 20% compared to the same nine month period in the prior year. All of these ratepayers have decreased consumption from pre-pandemic levels in FY 2019.

Financing Sources

In FY 2022, staff has received $1,051,389 from grants. A $595,763 grant from State Water Resources Control Board to reimburse SCWD for non-paying customers due to the impacts of COVID-19. A $455,626 Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant application submitted to FEMA for the Brackney Landslide Pipeline Risk Reduction Project to address the 2017 winter storm damage.

In the period FY 2021 to May 30, 2022, Water Department staff submitted 23 Drinking Water State Revolving Fund disbursement claims to the State Water Resources Control Board (SWRCB) for the Newell Creek Inlet/Outlet Pipeline replacement and Concrete Tanks replacement projects totaling $72 million. Through May 30, 2022, $66 million was received and $6 million is owed to SCWD.

A $50 million line of credit was obtained on June 15, 2021 and will supplement cash flow while SCWD awaits reimbursement from SWRCB. $21 million was drawn from the line of credit through May 30, 2022.

On July 28, 2021, staff submitted a Letter of Interest (LOI) to the United States Environmental Protection Agency (EPA) to solicit a Water Infrastructure Finance and Innovation Act (WIFIA) Loan. The Loan would provide approximately $164 million for the Graham Hill Water Treatment Plant improvements, Newell Creek Pipeline replacement, University Tank 4 replacement, and Aquifer Storage and Recovery projects. This loan program has produced loans for other water agencies with more favorable terms than are available in traditional capital markets. The next step is an application, which is expected to be approved by the EPA in the middle of 2023.

The expected reimbursements, line of credit and grants described above will help improve cash flow and cash reserves contemplated by the LRFP.

Operating Expenses

Similar to the drop in revenues, operating expenses are trending 16% below the Adopted Budget. Salary costs are down 6% due primarily to the 6-10 vacant positions during the first three quarters. There are currently nine vacancies. Allocating labor costs to capital projects have also served to reduce labor expense, we expect this budget strategy will account for nearly $700,000 incremental improvement above the $950,000 budget for the entire year.

Significant service and supply operating expenses trending lower than the budget are as follows:

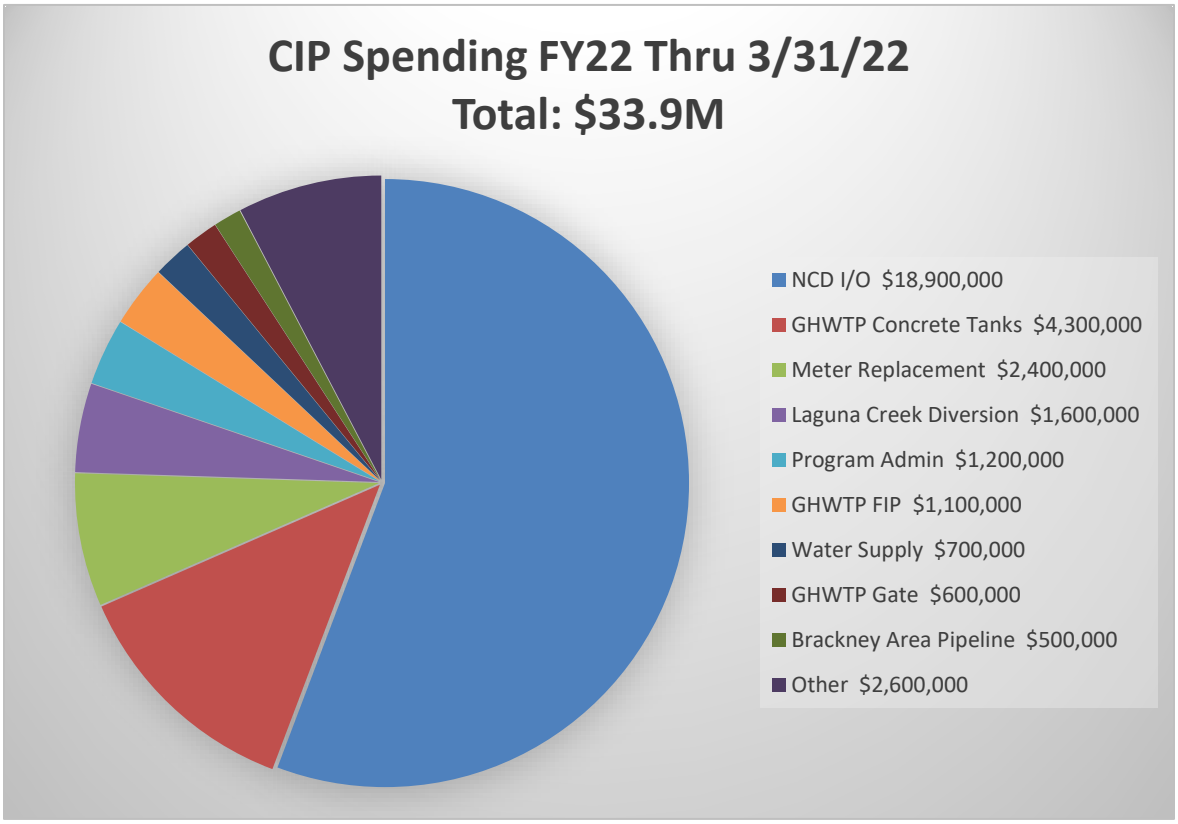
- Legal, training, printing/binding and postage are under budget by $426,000. The reduction of outside services is attributed to the COVID-19-related reduction in revenues, which reduces funds available for third-party services.

- Water, sewer and refuse fees are under budget by $160,000. These fees are incurred primarily by the water treatment plant and the pipeline distribution system. The sewer discharge fee had not yet been charged by the City for the past three months and is approximately $100,000.

Other significant cost items, such as electricity, chemicals and system maintenance, are trending in-line with the Adopted Budget.These fees are paid from the Services, Supplies and Other line items.

CIP Highlights

$33.9 million was spent through the 3rd quarter of FY 2022 on CIP projects. The largest project continues to be the Newell Creek Dam Inlet/Outlet Replacement project which out-spent the next top three projects combined. The next top three projects include the Graham Hill Water Treatment Plant Concrete Tanks project, the Meter Replacement project, and the Laguna Creek Diversion Retrofit project.



The Management Reserve was not used in the 3rd quarter of FY 2022, no new CIP projects were created, and no projects were completed and removed from the quarterly report.

The estimated cash flow for FY 2022 was adjusted as a step in creating the FY 2023 budget request. As of March 31, 2022, the current year end estimate of spending is $69.5 million; however, that amount includes the Management Reserve and project contingencies. If neither is needed, the actual fiscal year spend may be closer to $50 million. Unspent funds remain in the project budget and are planned into estimates for FY 2023 spending.

Schedule delays experienced on the Newell Creek Dam Inlet/Outlet Replacement project is the primary reason for costs being delayed into the next fiscal year. The project is 70% complete with full construction completion now anticipated at the end of May 2023. The City has taken all feasible actions to keep the project on schedule. However, external factors, not under the City's control, have impacted the overall construction schedule including a two-week evacuation during the CZU Fire, staffing adjustments needed due to COVID-19 protocols, supply chain delays, and availability of American Iron and Steel compliant materials (a requirement of the financing agreement).

The Department continues to seek grant and low-interest funding for the capital program and submitted an application in March to FEMA's Hazard Mitigation Grant Program (HMGP) for the Newell Creek Pipeline (NCP). If selected, this grant will provide 75% - 90% of the nearly $70 million planned for the replacement of the entire NCP (GHWTP – Felton and Felton – Loch Lomond). The application is currently under review and preliminary grant awards will be announced in fall 2022.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the FY 2022 3rd Quarter Financial Report.

ATTACHMENTS:
1. Santa Cruz Water Department Financial Report

SANTA CRUZ WATER DEPARTMENT FINANCIAL REPORT

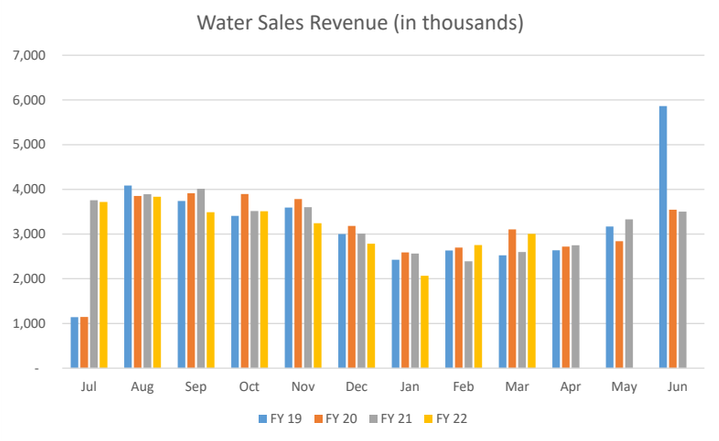
Fiscal Year 2021-22 through March 31, 2022

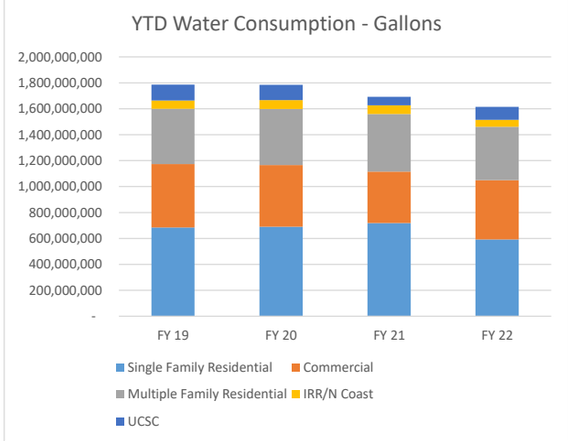
(Unaudited)

Financial Summary

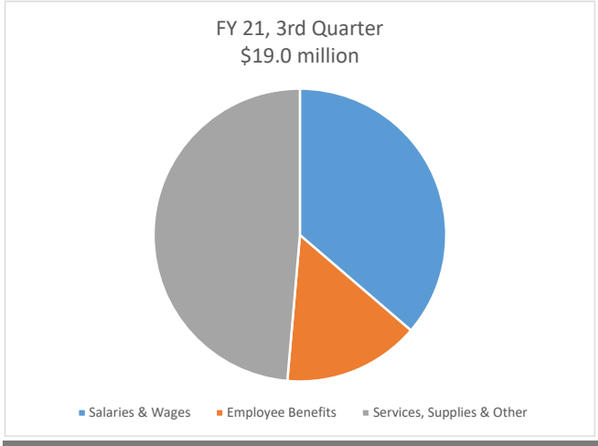
	FY 2022 Adjusted Budget	YTD Budget	Actual	Actual vs. YTD Budget Variance $ +/(-)	Actual vs. YTD Budget Variance % +/(-)
Operating Revenues					
Water Sales	42,270,994	31,703,246	28,414,653	(3,288,592)	(10%)
Other Charges for Services	1,323,299	992,474	1,032,046	39,572	4%
Other Revenues	362,235	271,676	164,480	(107,196)	(39%)
Grants	975,260	731,445	1,051,389	319,944	44%
Investment Earnings	29,124	21,843	104	(21,740)	(100%)
Total Operating Revenues	44,960,913	33,720,684	30,662,672	(3,058,013)	(9%)
Operating Expenses					
Salaries & Wages	10,763,913	8,072,935	7,621,481	(451,454)	(6%)
Employee Benefits	5,715,330	4,286,498	2,586,267	(1,700,230)	(40%)
Services, Supplies & Other	15,529,407	11,647,055	9,397,300	(2,249,755)	(19%)
Capital Outlay	110,427	82,820	194,994	112,173	135%
Debt Service - Principal & Interest	3,829,040	2,871,780	2,871,780	-	0%
Total Operating Expenses	35,948,117	26,961,088	22,671,822	(4,289,266)	(16%)
Net Operating Revenue (Loss)	9,012,796	6,759,597	7,990,850	1,231,253	18%
Debt Service Coverage (Target >= 1.50x)	3.35x	3.35x	3.78x		

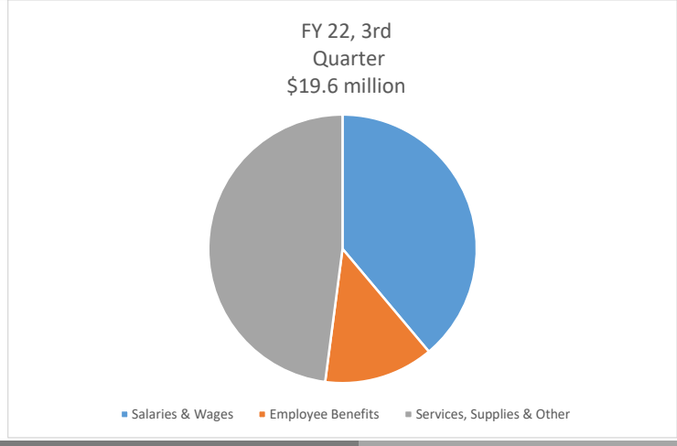
Revenues





Expenses





Cash

Fund Balances	YTD Balance	Year End Target Balance
711 - Enterprise Operations	5,121,947	7,919,772
713 - Rate Stabilization	9,440,189	10,000,000
715 - System Development Charges	5,575,815	N/A
716 - 90 Day Operating Reserve	8,206,869	7,919,772
717 - Emergency Reserve	3,010,258	3,000,000
718 - Mount Hermon June Beetle Endowment	145,352	144,000
719 - Equipment Replacement	649,401	700,000
Days' Cash (Includes only Funds 711 & 716)	151	180
Days' Cash Target	180	180

CIP Summary: Fiscal Year 2022 3rd Qtr Project Titles	Total Project Budget at Completion [1] *(escalated dollars)*	Prior Year Actuals	FY22 Actuals thru 3/31/22	Remaining to Complete	Status as of 2/15/22
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS					
Water Supply Augmentation Strategy					
Beltz Wellfield Aquifer Storage and Recovery					
ASR Planning	3,950,000	2,986,391	209,701	753,908	Planning
ASR Mid County Existing Infrastructure	2,360,000	43,219	185,506	2,131,275	Planning
ASR Mid County New Wells	22,410,000	-	-	22,410,000	Planning
Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges					
ASR Santa Margarita Groundwater	21,750,000	-	-	21,750,000	Planning
ASR New Pipelines	42,320,000	-	-	42,320,000	Planning
In Lieu Transfers and Exchanges	-	-	-	-	Planning
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery					
Water Supply Augmentation	1,340,000	698,965	291,831	349,205	Planning
Recycled Water Feasibility Study	1,010,000	767,821	35,225	206,954	Planning
Subtotal Water Supply Augmentation Strategy	**95,140,000**	**4,496,396**	**722,264**	**89,921,341**	
Subtotal Water Supply Resiliency and Climate Adaptation Projects	**95,140,000**	**4,496,396**	**722,264**	**89,921,341**	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION					
Raw Water Storage Projects					
NCD I/O Replacement Project [2]	109,570,000	48,501,511	18,862,719	42,205,771	Construction
Aerators at Loch Lomond	640,000	440,462	20,329	179,209	Construction
Subtotal Raw Water Storage Projects	**110,210,000**	**48,941,973**	**18,883,048**	**42,384,980**	
Raw Water Diversion and Groundwater System Projects					
Laguna Creek Diversion Retrofit	3,810,000	1,158,521	1,561,934	1,089,546	Post Construction
North Coast System Majors Diversion Retrofit	5,330,000	163,187	-	5,166,813	To close
Tait Diversion Retrofit	6,630,000	297,062	34,655	6,298,282	Planning
Coast Pump Station Rehab/Replacement	10,370,000	-		10,370,000	Not Initiated
Beltz 10 and 11 Rehab & Development	360,000	187,814	-	172,186	To close
Felton Diversion Pump Station Improvements	4,270,000	201,255	51,125	4,017,620	Planning
Beltz 12 Ammonia Removal	1,800,000	-	84,052	1,715,948	Construction
Beltz WTP Filter Rehabilitation	450,000	69,525	286,545	93,930	On-hold
Subtotal Raw Water Diversion and Groundwater System Projects	**33,020,000**	**2,077,364**	**2,018,311**	**28,924,325**	
Raw Water Transmission					
Coast Pump Station 20-inch RW Pipeline Replacement	7,140,000	6,879,089	30,652	230,259	To close
Newell Creek Pipeline Rehab/Replacement	1,680,000	1,162,817	265,283	251,900	To close
Newell Creek Pipeline Felton/GHWTP	30,650,000	1,065,789	820,755	28,763,456	Design
Newell Creek Pipeline Felton/Loch Lomond	40,730,000	-		40,730,000	Planning
Brackney Landslide Area Pipeline Risk Reduction [3]	5,640,000	577,691	527,594	4,534,715	Design
North Coast Pipeline Repair/Replacement - Planning	640,000	599,524	136,412	(95,936)	Planning
North Coast Pipeline Repair/Replacement - Ph 4	20,140,000	-		20,140,000	Planning
North Coast Pipeline Repair/Replacement - Ph 5	20,870,000	-		20,870,000	Not Initiated
Subtotal Raw Water Transmission	**127,490,000**	**10,284,911**	**1,780,696**	**115,424,393**	
Surface Water Treatment					
GHWTP Tube Settler Replacement	1,630,000	1,459,022	-	170,978	To close
GHWTP Flocculator Rehab/Replacement	1,980,000	1,783,039	28,484	168,477	Post Construction
GHWTP Concrete Tanks Replacement	46,210,000	7,412,373	4,305,837	34,491,790	Construction
GHWTP Facilities Improvement Project	146,170,000	6,513,293	1,140,897	138,515,810	Design
River Bank Filtration Study	7,390,000	963,735	4,719	6,421,546	Planning
Subtotal Surface Water Treatment	**203,380,000**	**18,131,462**	**5,479,936**	**179,768,602**	
Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects					
University Tank No. 4 Rehab/Replacement	6,320,000	199,525	78,489	6,041,986	Design
University Tank No. 5 Rehab/Replacement	4,310,000	4,228,104	8,919	72,977	To close
Meter Replacement Project	13,710,000	1,656,857	2,427,144	9,625,999	Construction
Engineering and Distribution Main Replacement Projects [4]	35,050,000	5,878,920	616,600	28,554,480	Ongoing
Distribution System Water Quality Improvements	90,000	24,259	2,989	62,752	Planning
Facility & Infrastructure Improvements	7,890,000	-	8,753	7,881,247	Ongoing
Subtotal Distribution Storage, Wmain Pressure Reg, and Metering	**67,370,000**	**11,987,665**	**3,142,895**	**52,239,440**	
Subtotal Infrastructure Resiliency and Climate Adaptation	**541,470,000**	**91,423,374**	**31,304,886**	**418,741,740**	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS					
Site Safety and Security					
Security Camera & Building Access Upgrades	550,000	281,433	28,404	240,163	Construction
GHWTP Gate Entrance Upgrades	745,000	184,351	572,157	(11,508)	Construction
GHWTP SCADA Radio System Replacement	150,000	-	-	150,000	Planning
CMMS Software Replacement - Water Share	390,000	-	11,085	378,915	Planning
Subtotal Site Safety and Security	**1,835,000**	**465,784**	**611,646**	**757,570**	
Staff Augmentation					
Water Program Administration [5]	23,850,000	-	1,240,328	22,609,672	Ongoing
Subtotal Staff Augmentation	**23,850,000**	**-**	**1,240,328**	**22,609,672**	
Contingency					
Management Reserve [6]	45,630,000	-	-	45,630,000	Ongoing
Subtotal Contingency	**45,630,000**	**-**	**-**	**45,630,000**	
Storage for Emergency Facility and System Repair Tools and Equipment					
Bay Street Reservoir Storage Building	150,000	-	-	150,000	To close
Union/Locust Admin Building Back Up Power Generator	50,000	-	-	50,000	Design
Subtotal Storage for Emergency and System Repair	**200,000**	**-**	**-**	**200,000**	
Subtotal Other Risk Management and Risk Reduction Projects	**71,515,000**	**465,784**	**1,851,974**	**69,197,242**	
GRAND TOTAL	**708,125,000**	**96,385,554**	**33,879,124**	**577,860,322**	

[1] Total Project Budget at Completion is from the FY22 budget request and rounded to the nearest 10,000.

[2] City Finance moved $197,756 in Prior Year Actuals to FY22 Actuals.

[3] FY22 Actuals do not include $449,187 in FEMA HMGP grant funding received.

[4] Prior year actuals for Main Replacements start in FY19.

[5] Staff augmentation budget appropriations and actual expenses are transferred to specific projects during year-end process.

[6] Management Reserve budget appropriations are transferred to specific projects upon approval.

WATER COMMISSION
INFORMATION REPORT

DATE: 06/01/2022

AGENDA OF:	06/06/2022
TO:	Water Commission
FROM:	David Baum, Chief Financial Officer Malissa Kaping, Principal Management Analyst Nicole Dennis, Principal Management Analyst
SUBJECT:	Water Department's Proposed Fiscal Year 2023 Operating and FY 2023-27 Capital Investment Program (CIP) Budgets – Final Review

RECOMMENDATION: That the Water Commission authorize the Chair to send a letter to the City Council related to the Department's FY 2023 Budgets and financial position recommending the Water Department's Budgets to the City Council.

BACKGROUND: As outlined in the Water Commission's Bylaws, the Commission's role includes the duty to "make recommendations concerning the proposed annual Water Department budget and CIP." To that end, the Department is presenting the proposed FY 2023 Budget materials to the Water Commission and seeking a recommendation to the Council in the form of a signed letter along with related materials to submit to the City Council.

The Water Department's Operating and Capital Investment Budgets authorize the necessary appropriation amounts for the Department to fulfill its mission to "ensure public health and safety by providing a clean, safe, reliable supply of water to its customers."

The Budgets have been specifically developed to support the continuing operations and maintenance of the water system and its ability to serve the community with high quality and reliable water supply, to provide the resources needed to finance major capital investments for the rehabilitation and replacement of water infrastructure, make further investments in improving the reliability of the Santa Cruz water supply, and prepare the water system to be more resilient and reliable in the face of the significant uncertainty that arises from climate change.

Information in this report is based on the budget effective May 17, 2022. Santa Cruz City Council held its FY 2023 Operating and CIP budget hearings on May 24th and 25th and is currently scheduled to adopt the budget on June 14, 2022.

DISCUSSION: On May 2, 2022, the Water Commission reviewed the Department's FY 2022-23 Operating and FY 2023-27 CIP Budgets and included the following documents:

- Water Department's FY 2023 Proposed Operating Budget
- Water Department's FY 2023-27 Proposed CIP Budget
- Water Department's CIP Project Descriptions
- Draft of the Five Year FY 2023 Financial Pro Forma

These documents were provided as part of the package of materials for Water Commission consideration and for transmittal to the City Council as part of the Water Commission's recommendation. Staff were available to respond to Commissioner's questions.

FY 2023 Operating Budget

All questions related to the Department's FY 2021 Operating Budget were answered at the May 2nd meeting.

FY 2023-2027 Proposed Capital Investment Program Budget

All questions related to the Department's FY 2021 Operating Budget were answered at the May 2nd meeting.

A number of documents related to the Department's FY 2023 Budget and Pro Forma are provided as part of the package of materials for Water Commission consideration and transmittal to the City Council as part of the Water Commission's recommendation. Included are the Water Department's:

1. FY 2023 Proposed Operating Budget
2. FY 2023-27 CIP Summary by Project
3. Budget Analytics
4. Updated Five-Year Financial Pro Forma

Proposed FY 2023 Operating Budget

The FY 2023 Proposed Operating Budget is $39.3 Million and is 3.4% more than the FY 2022 amended budget. The City separates the operating budget into 4 major categories:

- Personnel Services,
- Services, Supplies, and Other Charges,
- Capital Outlay (non-CIP), and
- Debt Service.

	Fiscal Year* 2021 Actuals	Fiscal Year 2022 Adopted Budget	Fiscal Year 2022 Amended* Budget	Fiscal Year 2022 Year-End Estimate	Fiscal Year 2023 Proposed
EXPENDITURES BY CHARACTER:					
Personnel Services	13,774,554	16,479,243	16,714,151	15,427,372	17,691,829
Services, Supplies, and Other Charges	13,504,675	15,646,123	16,402,854	14,113,092	16,156,539
Capital Outlay	383,593	601,500	762,898	537,012	323,000
Debt Service	3,683,200	4,098,626	4,098,626	4,098,710	5,131,705
Total Expenditures	31,346,021	36,825,492	37,978,530	34,176,186	39,303,063

Direction was provided to Department Managers to budget within 5% of FY 2021 actuals due to continued reduced revenues from drought and the COVID pandemic. Extraordinary inflation over the past two years has caused the increase to equal 19.6% of FY 2021 actuals for Services & Supplies and Capital Outlay. In particular, electricity and chemical costs are large contributors to the increase. Also, Personnel Services are budgeted to increase 28%, which will be reduced by vacancies. The main reasons for the 28% increase from FY 21 to FY 23 proposal are (1) falling revenues induced a 10% furlough wage reduction in the first 10 ½ months of FY 21 and (2) merit increases, cost of living adjustments, pension benefits and healthcare contributed to the cost increase. Detailed information regarding changes in the budget is explained below in the Five-Year Budget Analytics section.

Five-Year Budget Analytics

Attachment 4 is a five-year analysis comparing budgeted to actual expenditures at the Department and Section/program level beginning in FY 2018 through the FY 2023 Proposed Budget. The "adjusted budget" column represents the approved budget for a specific year plus any budget adjustments approved administratively or by the City Council. The following are highlights of expenditure trends and notes on the larger year to year changes:

1) FY 2022 Year-End Estimates are lower than the FY 2022 Amended Budget by $2.8 million which is a much smaller difference than in previous years. This is the result of deliberate efforts on the part of management to budget more conservatively. The continuing difference between the FY 22 budget and the year-end estimate to complete is the result of some lingering pandemic impacts, reduced ability to proceed on projects when working with our State partners, recruitment delays, and equipment delivery delays, among others.

2) Personnel costs in the FY 2023 Proposed Budget include the addition of 3.0 FTEs of new positions: a Management Analyst (Conservation), an Engineering Technician (Engineering) and a Programmer Analyst (Information Technology) as well as merit increases, and increased costs of health insurance and pension costs. No negotiated salary increases have been included in the FY 2023 Proposed Budget since negotiations with the various labor groups have not been concluded.

   The additional FTEs are in response to evolving workloads. The Engineering counter has experienced a significant increase in plan reviews due to recent state law changes, increased requirements for backflow and cross-connection controls, increased support needed for CIP projects, and increased public visits/calls. The work in Conservation has also been evolving, primarily due to the new metering infrastructure being installed and climate change impacts,

and additional analysis is needed for changing water use and consumption trends, water supply availability, source water use, and curtailment impacts. The new Programmer Analyst, funded by Water but in the Information Technology org chart, will provide software programming needed to implement new technologies such as the new metering infrastructure, create reports such as those needed to analyze changing water consumption and provide ongoing support for the Santa Cruz Municipal Utilities billing system and planned new Computerized Maintenance Management software.

3) Services, supplies, & other costs have decreased 1.5% from the FY 2022 Amended Budget which is largely the result of progress or completion of several projects such as Water Rights, Risk and Resiliency Analysis, and the 2021 Water Rate work.

4) Overall, FY 2023 expenditures are increasing when compared to FY 2021 Actuals and FY 2022 Year-End Estimates which is reflective of a more "normal" return to work for the Department. Year-end FY 2022 operating expenses are based on Year-End estimates developed by Department managers based on six months' worth of data, with projected year-end personnel and cost allocation expenses provided by the Finance Department. The FY 2022 4th Quarter Financial report will show an updated year-end financial position that is provided to the Commission in the fall of 2022.

5) The budget for debt service continues to increase as the Department issues more debt to fund the ambitious CIP. A breakout of the various debt instruments and the FY 2023 Proposed debt service amounts are listed in the table below:

FY 2023 Debt Service	**All Funds**
2014 Refinancing	$705,038
2016 IBank	$1,372,677
2019 Green Bonds	$1,378,500
2020-21 SRF Loans	$1,050,490
2021 Line of Credit	$625,000
Total FY 2023 Debt Service	$5,131,705

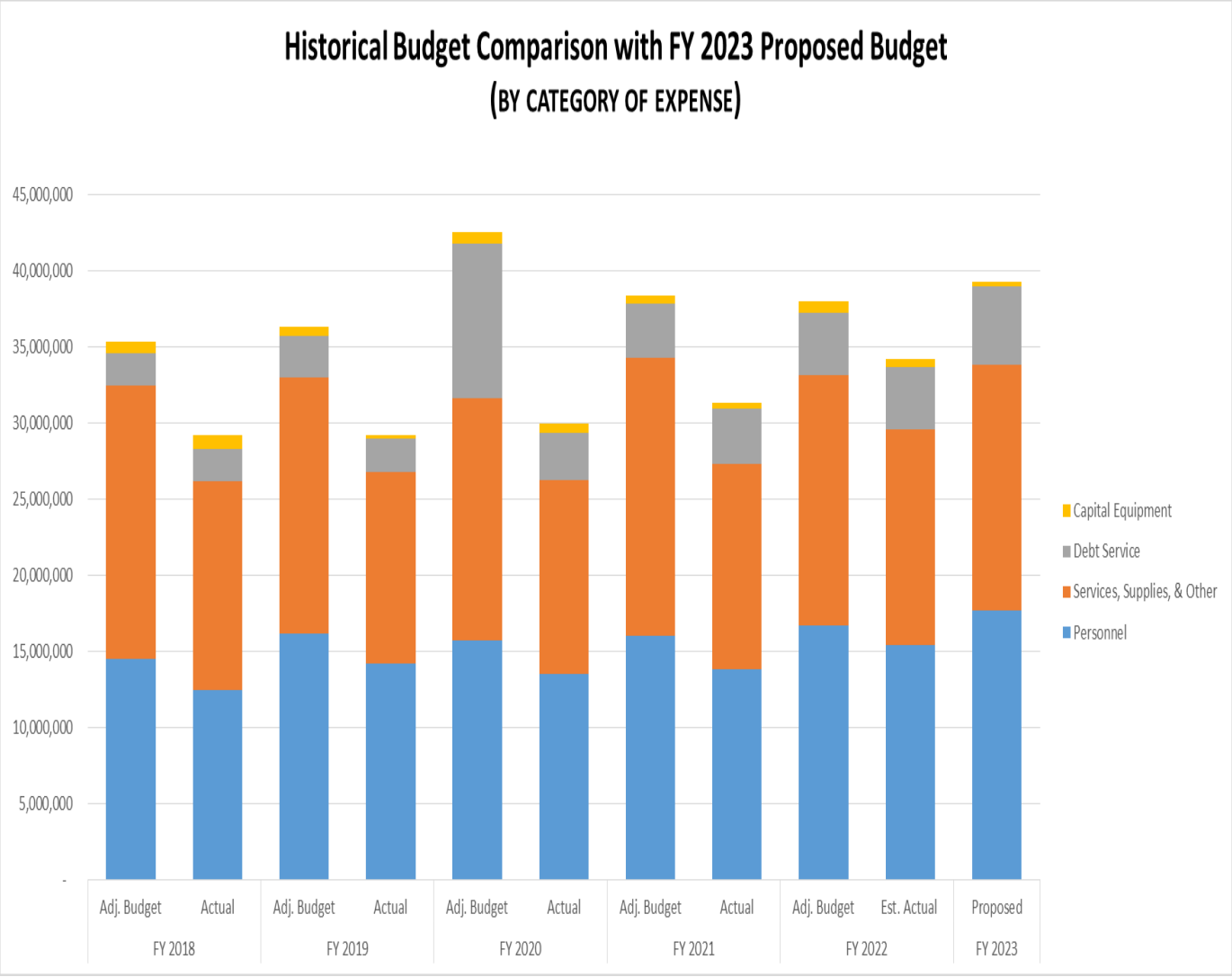
The 2020 and 2021 State Revolving Fund (SRF) loans, which total $149.4 million, will not commence the repayment of principal until after the projects are completed. Accordingly, the first principal payment is likely due on October 31, 2023.

6) Capital Outlay purchases continue to fluctuate from year to year based on identified capital equipment needs, and capital purchases planned for FY 2023 are limited with the largest piece of equipment requested being an additional portable generator. During FY 2022 durable equipment purchases were funded from the Water Equipment Replacement Fund (719).

7) In regard to the individual sections and the overall increase between the FY 2022 Year-End Estimates and the FY 2023 Proposed Budget, there are common themes that contribute to increases: merit increases, increased costs of health insurance, pension costs, and increased funding for training and travel. Additional increases are discussed below:

a) Engineering – The addition of an Engineering Technician position is the primary reason for the increased cost. In addition, staff seeks to charge its labor to the CIP, if appropriate, thereby reducing operating costs.
b) Meter Shop –Increased costs for FY 2023 can be attributed to additional temporary workers to support the AMI project and new AMI Badger Beacon meter reading costs. After the 22,700 new meters have been installed, savings will occur due to reduced maintenance costs associated with operating the new meters. These reduced costs will be reflected in the FY 24 budget and potentially a FY 2023 mid-year reduction.
c) Conservation – an additional Management Analyst position is recommended and typical salary and benefit costs account for the primary increase in FY 2023.
d) Operations Management and Administration – Cost increases are related to additional project work planned for FY 2023 such as the fire resiliency work.
e) Water Resources – FY 2023 Proposed costs have increased as compared to the FY 2022 Year-End Estimates due to: the transfer of a vacant Associate Planner position from Engineering to support planned implementation of the anadromous salmonid habitat conservation plan, and the water rights changes, as well as costs for office space and an additional vehicle for this group when they had to be relocated away from the Graham Hill Water Treatment Plant due to construction impacts
f) Production – Increased costs for FY 2023 are largely due to increased energy and chemical costs as well as increased security patrols, well assessment/testing/rehabilitation and vegetation management services at the Department's various facilities.
g) Quality Lab – Increased costs are for chemicals, outside laboratory testing, support for implementation of new regulations which require consultants and a standards audit.

Overall, the following chart highlights the difference between operating budget and actual expenses from FY 2018 through FY 2023. For each fiscal year in the chart, the first bar is the budget and the second bar is actual expenses. In each of the five prior years, the actual expenses were at least 10% less than the adopted budget. FY 21 was lower by 18% due to a 10% salary reduction for the first 10 ½ months, which was the primary reason for the reduction in FY 21.



Proposed FY 2023-2027 CIP Budget

Included in the agenda packet are two attachments for the FY 2023-2027 Proposed CIP Budget is a detailed CIP summary of per project budget estimates by fiscal year.

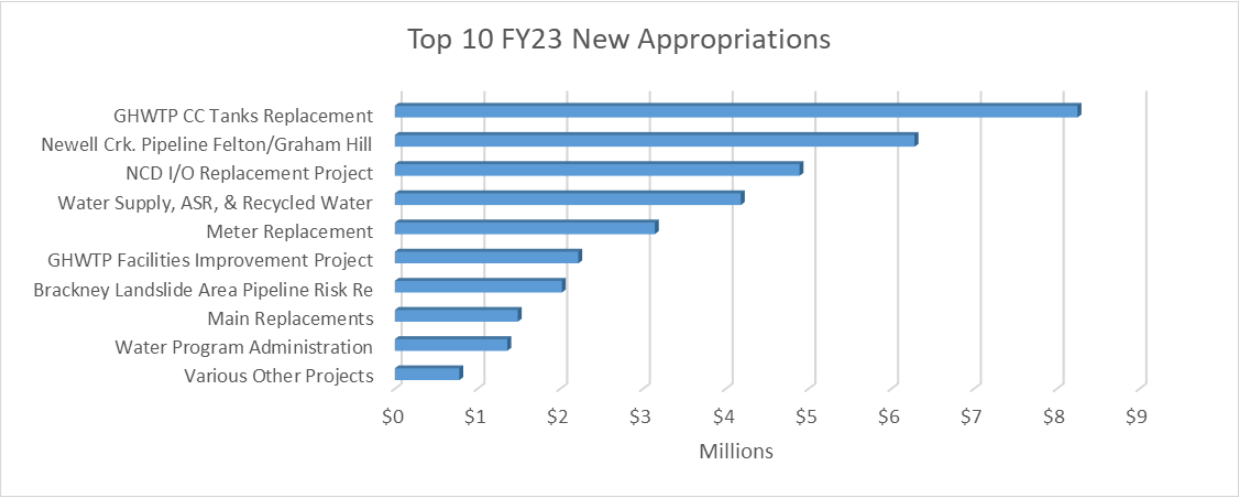
The proposed budget to be presented to Council is for the five-year period of FY 2023-2027 recommending nearly $295 Million in new appropriations, with the bulk of the money for Infrastructure Resiliency and Climate Adaptation projects.

The FY 2023 new appropriation of $35.5 Million and a significant carryforward is expected from previously budget, unspent funds. Supply chain disruptions have delayed projects, especially during the past couple of years due to the COVID-19 pandemic.

Prudent budgeting would include the expectation that the amount spent remains below the budget each year (which would result in some carry-forward each fiscal year); however, the large carry-forward from FY 2022 is due in part to current volatile market conditions causing

scheduling changes and is not expected to be experienced in the future. Project costs are not changing but rather deferred to a future fiscal year.

The following highlights the largest new appropriations in the upcoming budget cycle.



Master Service Agreement Extension (with HDR)

2022 represents the five-year milestone for the Water Department and HDR's partnership on the Santa Cruz Water Program. As background, in 2017, recognizing that the staffing needs of a large-scale capital program would exceed the capable but small Water Department Engineering Section, staff recommended a consultant program management model to deliver the unprecedented set of projects. Program Management services can vary widely based on the types of projects and needs of their owners from project management, administrative systems and support, processes and software tools and applications, as well as technical review/advice, and financial, legal and permitting support. In December 2017, City Council authorized a master service agreement for Program Management Services (MSA) with HDR, Inc. Recognizing the long-term nature of implementing public infrastructure projects, the contract with HDR was approved for a five-year period, with an option to renew.

At the core, HDR serves as an extension of staff to directly manage or support the management of projects. This flexible staffing model has worked well given the diverse types and sizes of projects. In addition to staffing support, HDR has introduced industry best practices to execute projects in the most efficient and cost-effective manner. These organizational systems and structures provide a framework for effective project management including schedule development, project cost estimating and forecasting systems, risk management, and decision making and change management procedures. The changes introduced by HDR have strengthened the institutional systems around project delivery and will continue after the HDR/Water Department partnership concludes.

The Water Program has developed significant momentum and progress is tangible on multiple fronts. A final water supply augmentation implementation plan is under development, two Newell Creek Pipeline projects with a combined value of nearly $40 Million are completing design, and the Newell Creek Dam Inlet/Outlet project, a $100 Million project will complete

construction in early 2023. Despite the progress made there is much work left to complete. As described above, approximately $295 Million of Capital Investments are planned between FY 23-27 focusing on water treatment and water supply.

Given the work ahead, staff recommends the extension of the program management contract with HDR. As support of this recommendation, the draft FY 2023 annual work plan is included as an attachment, to give a sense of work on just the next year's horizon. As mentioned above the resource needs to support the Program are dynamic and should be flexible to adapt to the evolving project and program needs. Over the last 5 years, the Water Department has added several permanent positions in response to the expanded capital program. Cross-training and transitions are also underway to "insource" roles and services typically provided by HDR including design management, administrative support, cost controls, contract management, quality assurance, and construction management and inspection. Ongoing staff resource planning analysis has informed transition/succession planning, and defined a more concrete timeline for the conclusion of the program management contract in 2027, at which point the need for HDR's services will be reassessed.

Beyond extending the MSA, no significant changes are proposed to the program management contract structure or scope. Because the five-year MSA is set to expire in December of this year and midway through the upcoming FY 2023, staff is planning to take a single item to Council to renew the MSA for an additional five years and approve the annual work plan and fees for FY 2023 in June 2022.

Working Draft FY 2022-2037 Pro Forma

The updated Financial Pro Forma is provided (Attachment 5) and includes an overview of the Water Department's financial performance for the FY 2023 Proposed Operating Budget and a 1 year CIP. The Pro Forma is based on running the model developed for the 20 Long Range Financial Plan (LRFP) as appropriately updated over time. There are a number of assumptions incorporated into the Pro Forma which include:

1) Sales of 2.37 billion gallons of water each fiscal year;
2) Inflation factors of:
    a) 6.9% for rate increase FY 2023;
    b) 8.5% salaries/benefits average annual increase through FY 2027;
    c) 6.9% for services, supplies and other costs through FY 2027; and

3) CIP is based upon an updated five-year plan;
4) Interest rate for future debt is up to 4% through 2027.

The updated Financial Pro Forma reflects FY 2023 estimated total revenues of $42,056,855 and total operating expenditures of $31,905,685, debt service of $5,131,705 as well as $35,499,221 in capital expenditures.

The Department obtained a $50 Million Line of Credit (LOC) at the end of FY 2021 to help meet short-term financing needs for FY 2022 through FY 2024 and provide a financial bridge to planned long-term debt financing. As of May 17, 2022, SCWD has submitted claims totaling

$72.0 million and has received reimbursements totaling $61.6 million with a balance due of $10.4 million. The wait time to receive reimbursements is averaging 119 days. A $21 million draw from the LOC has allowed the SCWD to keep pace with the increasing capital expenditures, especially during the long reimbursement waiting periods.

Staff is also pursuing funding from the Environmental Protection Agency (EPA) Water Infrastructure Finance and Innovation Act (WIFIA) which is currently reflected in the Pro Forma as well as grant opportunities as available. Staff submitted a Letter of Interest in July 2021. As a result, EPA invited SCWD to apply for a WIFIA loan. The WIFIA application is due in December but staff expects to submit the application in the summer. EPA is expected to review the application for up to nine months, structuring the loan is expected to take three months and closing should occur by Summer 2023. Due to rising interest rates, we will seek to complete the loan expeditiously. As of May 17, 2022, the WIFIA loan rate for 40 years would be 3.13%.

The projected size and timing of debt issues to finance these capital projects are summarized in the table below. These figures include the additional DWSRF, WIFIA, or grant funding for projects that may defer or replace projected borrowing shown on the next page. The total anticipated debt issues total $244 Million over the next five years.

Size and Timing of Debt Issues Needed to Fund Capital Program

2023	2024	2025	2026	2027
$ 34,456,835	$ 53,004,997	$ 50,526,288	$ 54,191,228	$ 51,976,209

Amounts reflected in the Financial Pro Forma include Fund 711 (Water Operations), Fund 713 (Rate Stabilization), Fund 716 (90 Day Operating Reserve), and Fund 717 (Emergency Reserve) and Fund 715 (System Development). The current established reserves and target funding levels include the following:

- Rate Stabilization Reserve (Fund 713) of $10 million;
- Water Emergency Reserve Fund (Fund 717) at a minimum level of $3 million; and
- An Operating Reserve equal to 180 days of operating expenses, with 90 days of operating cash in Water Operating Cash Reserve Fund (Fund 716), and the remaining 90 days of operating cash in the Water Operating Fund (Fund 711). The annual funding targets for these reserves are based on the Department's annual operating budget and the metric is to have both Fund 716 and Fund 711 meet the annual 90 days operating cash criterion by the fiscal year's June 30 closing date.

The reserves in the Long-Range Financial Plan (LRFP) set forth above are all met in the proposed budget. Similarly, the debt service coverage ratio is a minimum of $1.50 net revenue for each $1 of debt service as established in the LRFP.

FISCAL IMPACT: Funds are available to support the FY 2023 Proposed Budgets as demonstrated in the Financial Pro Forma.

ATTACHMENTS:
1. FY 2023 Proposed Operating Budget
2. FY 2023-27 CIP Summary by Project
3. Budget Analytics
4. Five-Year Financial Pro Forma
5. Water Commission Recommendation to Council

Water Department

The mission of the Water Department is to ensure public health and safety by providing a clean, safe and reliable supply of water. We strive to serve the community in a courteous, efficient, cost-effective and environmentally sustainable manner.

We are passionate about our work and try to instill our values of integrity, innovation, objectivity, professionalism, teamwork and transparency in everything we do. We collect water, treat and test it, move it, store it, distribute it, track how much is used and bill our customers for their use. We are at the end of the phone when customers call, and the smiling faces customers see when they visit the Department. We educate our customers about the quality of their water and how to use less. Our work includes maintenance and operation of the Loch Lomond Recreation area, as well as the protection of Majors, Liddell, Newell Creek, Zayante and Laguna watersheds. We are stewards of an important community asset - the water system and all it entails, as well as a range of natural resources and ecosystems that many species depend on. We take pride in meeting the diverse needs of the broad region we serve and value our partnerships with neighboring agencies to develop long range solutions to the regions drinking water needs.

Core Services

Everyday Department staff work hard to produce and deliver millions of gallons of water to nearly 98,000 customers and perform all the related utility, land and natural resource management activities that often happen behind the scenes, but play a part in providing reliable, high quality water service to our community. In addition to the Department's daily duties, the Department is undergoing a major reinvestment in water infrastructure from upgrades to the water treatment plant, improvements to the Loch Lomond dam and the replacement of all system meters, to mention a few. In order to perform this work, the Water Department is organized into four areas: Operations, Engineering, Customer Service and Administration.

Operations - The Operations group is responsible for managing the watersheds; collecting, treating and testing untreated and treated water; and storing and distributing treated water to our customers and consists of the following sections: Water Resources, Water Production, Water Quality Control (laboratory), Distribution and the Water Recreation Facility (Loch Lomond).

- The Water Resources Management section is responsible for the drinking water source protection, environmental regulatory compliance, and general natural resource management. The section coordinates environmental projects related to water rights, water supply, habitat conservation, and environmental resource protection.
- The Water Production section is responsible for production, operation, and maintenance of water storage, diversion, collection, pumping, and treatment facilities from all sources throughout the system. This 24/7 work is made more challenging with the Concrete Tank Replacement project underway and planned upgrades to the Graham Hill Water Treatment Plant in the near future.
- The Water Quality Control (laboratory) section performs all water quality testing, and oversees matters pertaining to water quality control to maintain compliance with State and federal standards and for planning for future treatment needs.
- The Water Distribution section is responsible for the maintenance and operation of all transmission mains, distribution mains, service lines, and hydrants in the service area. Distribution staff also replace significant segments of distribution mains as part of the Capital Investment Program (CIP).
- The Water Recreation Facility section operates and maintains Loch Lomond Recreation Area. This section is also responsible for patrolling watershed property and protecting source water quality. We are pleased our ranger staff are, once again, providing in-person, watershed education program for local elementary school children at Loch Lomond.

Engineering - The Water Engineering section is composed of two main functions: Engineering and Utility and Environmental Planning.

- The Water Engineering section provides engineering, planning, project design and construction management necessary for water facilities, as well as evaluation and installation of water saving technologies. The section keeps current with new technologies and water quality issues, remaining sensitive to mitigation of environmental impacts; reviews all requests for water services; maintains record of facilities, installations and maps; and oversees the Backflow Prevention Program. In 2017, the department embarked on an ambitious system-wide reinvestment with the Engineering section at the helm. This program includes the replacement of storage tanks, transmission lines, and the exploration of increasing storage in underground aquifers in partnership with neighboring agencies.
- The Utility and Environmental Planning group helps the Department to plan adequately for a 21st century drinking water system. Foundational documents such as the Urban Water Management Plan, serves as a guide to future projects by ensuring there are adequate water supplies. In addition, there are numerous federal, State and local environmental laws the Department must comply with to complete the planned infrastructure investments in the water system.

Customer Service - The Customer Service group consists of three sections: Customer Service, the Meter Shop and Water Conservation. These three sections interface with the public frequently and we strive to provide consistently excellent customer service.

- The Customer Service section (Santa Cruz Municipal Utilities – SCMU) provides customer service for water, sewer, refuse and recycling services to the residents and businesses of the City of Santa Cruz, and only water services to the unincorporated surrounding areas. This section manages utility accounts and billing, processes opening and closing of accounts; and provides service in response to customer requests.
- The Meter Shop section is responsible for reading, inspecting, installing, maintaining, and replacing water meters in the service area that covers the City of Santa Cruz and the unincorporated surrounding areas. As part of a large capital project, all water meters in the service area are being replaced. The new meters will give water customers more timely and accurate usage information as well as improve the billing process.
- The Water Conservation section is responsible for promoting efficient water use and for implementing management practices that reduce customer demand for water, including public information and education activities, water budgets for large landscape customers, plumbing fixture replacement and appliance rebate programs, technical assistance, administration of landscape, and water waste regulations. The Conservation section has been instrumental to teaching customers about the new metering system and how to use it to their advantage.

Administration - The Water Administration section coordinates and manages department business by focusing on the following operational areas: human resources, finances, public relations, safety, and regulatory compliance. Administration is responsible for maintaining a rate structure that reflects cost of service, solicits federal, state and other funds to finance the Department's Capital Investment Program, and ensures adequate reserves. This section also facilitates the communication and interaction with the Water Commission, City Council City Manager’s Office and regulatory agencies.

Accomplishments and Goals

FY 2022 Accomplishment	Infrastructure	DT & Other Business Sectors	Fiscal Sustainability	Core Services	Equity, Health & Well-Being, Sustainability	New & Improved Funding Sources	Green Economy
Produced and delivered 2.49 billion gallons of clean, safe, reliable drinking water.				x			
Completed the Proposition 218 process which resulted in City Council approval of 5 year rates (2023-2027) along with the Long Range Financial Plan	x		x				
Secured funding for critical water supply capital projects, including an application invitation from the Environmental Protection Agency to obtain a $164 million low interest loan.	x		x			x	
Completed the Department Emergency Response Plan, as required by the 2018 America's Water Infrastructure Act				x			
Completed Laguna Creek Diversion retrofit project	x			x			
Incorporated the source water monitoring program which resulted in 34% more samples processed	x			x			
Completed the Ocean Street Extension Water Main Replacement	x			x			
Began installation phase of the system-wide Meter Replacement Project	x		x	x			
Updated the Operations Plan for the Graham Hill Water Treatment Plan				x			
Completed the 2020 Urban Water Management Plan and Water Shortage Contingency Plan			x				

FY 2023 Goals	Infrastructure	DT & Other Business Sectors	Fiscal Sustainability	Core Services	Equity, Health & Well-Being, Sustainability	New & Improved Funding Sources	Green Economy
Submit the $164 million low interest loan application for the federal Environmental Protection Agency (WIFIA) and the initial package for Drinking Water State Revolving Fund for Facility Improvement Project at the Graham Hill Water Treatment Plant.	x		x				
Solicit grants from federal and state programs as they become available			x				
Complete the Anadromous Salmonid Habitat Conservation Plan	x				x		
Finalize the water rights petition process	x			x	x		
Continue work on wildfire resiliency planning	x		x				
Complete construction on the Newell Creek Dam Inlet/Outlet Project	x						
Complete the installation phase of the Meter Replacement Project	x		x				
Complete design and begin construction on two pipelines (Brackney Landslide Risk Reduction project and the Newell Creek Pipeline Felton to Graham Hill Road project)	x						
Complete the Aquifer Storage and Recovery (ASR) demonstration studies at Beltz Wells 8 and 12 leading to the development of full scale & permanent injection and retrieval sites	x						

Workload Indicators and Performance Measures

Workload Indicators	Focus Area	FY 2019 Actual	FY 2020 Actual	FY 2021 Actual	FY 2022 Estimate	FY 2023 Goal
Drinking water consumed (billions of gallons)	Core Service	2.36	2.26	2.13	2.04	2.5
Number of phone calls, emails and lobby visits handled by SCMU Customer Service Unit	Core Service	59,621	63,653	64,000	64,000	64,000
Amount of dollars of new construction investments (in millions)	Infrastructure	$48.5	$29.7	$46.0	$113.2	$35.5

Performance Measures	Focus Area	FY 2019 Actual	FY 2020 Actual	FY 2021 Actual	FY 2022 Estimate	FY 2023 Goal
Compliance with drinking water standards	Core Service	100%	100%	100%	100%	100%
Number of workers comp claims requiring employee absence greater than 30 days	Core Service	1	0	0	0	0
Maintain excellent bond ratings to ensure favorable borrowing rates thereby reducing cost to customers	Infrastructure	AA-/A+	AA-/A+	AA-/A+	AA-/A-	AA-/A-
Percentage of customer bills paid within 60 days (1)	Fiscal Sustainability	98%	97%	91%	94%	98%

(1) The Governor's Executive Order prohibited water shut-off from 4/2/20 to 12/31/21. Accordingly, FY20 an FY21 are higher than normal delinquency rates.

Budget Summary - Water

		Fiscal Year* 2021 Actuals	Fiscal Year 2022 Adopted Budget	Fiscal Year 2022 Amended* Budget	Fiscal Year 2022 Year-End Estimate	Fiscal Year 2023 Proposed
EXPENDITURES BY CHARACTER:						
Personnel Services		13,774,554	16,479,243	16,714,151	15,427,372	17,691,829
Services, Supplies, and Other Charges		13,504,675	15,646,123	16,402,854	14,113,092	16,156,529
Capital Outlay		383,593	601,500	762,898	537,012	323,000
Debt Service		3,683,200	4,098,626	4,098,626	4,098,710	5,131,705
Total Expenditures		31,346,021	36,825,492	37,978,530	34,176,186	39,303,063
EXPENDITURES BY ACTIVITY:						
Water Administration	7101	5,838,628	6,832,579	7,030,921	6,171,092	6,952,879
Water Engineering	7102	1,969,117	2,733,585	2,759,319	2,331,996	2,929,364
Water Customer Services	7103	1,985,247	2,156,811	2,159,047	2,073,964	2,221,949
Water Conservation	7104	726,902	923,414	1,095,295	801,656	1,238,470
Water Resources	7105	2,039,642	1,898,211	2,111,936	1,673,906	2,104,695
Water Production	7106	6,641,345	8,114,704	8,231,200	7,773,018	8,315,225
Water Quality	7107	1,601,453	1,766,806	1,785,987	1,754,292	2,052,894
Water Distribution	7108	4,428,150	5,164,890	5,330,832	4,868,405	5,292,431
Water Recreation	7109	1,117,544	1,398,771	1,401,827	1,227,785	1,399,896
Water Operations	7110	500,959	832,416	719,055	450,772	635,719
Water Meter Shop	7113	861,595	904,679	979,178	808,920	1,027,836
Water Debt Service	7140	3,604,550	4,098,626	4,098,626	4,098,710	5,131,705
Drought Response 2014	7199	30,890	-	275,307	141,670	-
Subtotal Other Funds		31,346,021	36,825,492	37,978,530	34,176,186	39,303,063
Total Expenditures		31,346,021	36,825,492	37,978,530	34,176,186	39,303,063
RESOURCES BY FUND						
Water	711	37,572,138	40,699,706	40,707,839	36,129,170	38,526,543
Water Rate Stabilization Fund	713	2,980,114	3,248,689	3,248,689	2,860,909	3,058,312
Water System Development Fees Fund	715	1,325,845	410,000	410,000	472,000	472,000
Water - Emergency Reserve Fund	717	131,970	-	-	-	-
Total Resources		42,010,066	44,358,395	44,366,528	39,462,079	42,056,855
		FY 2020			**FY 2021**	**FY 2022**
TOTAL AUTHORIZED PERSONNEL:		117.25			118.25	120.25

*Sums may have discrepancies due to rounding

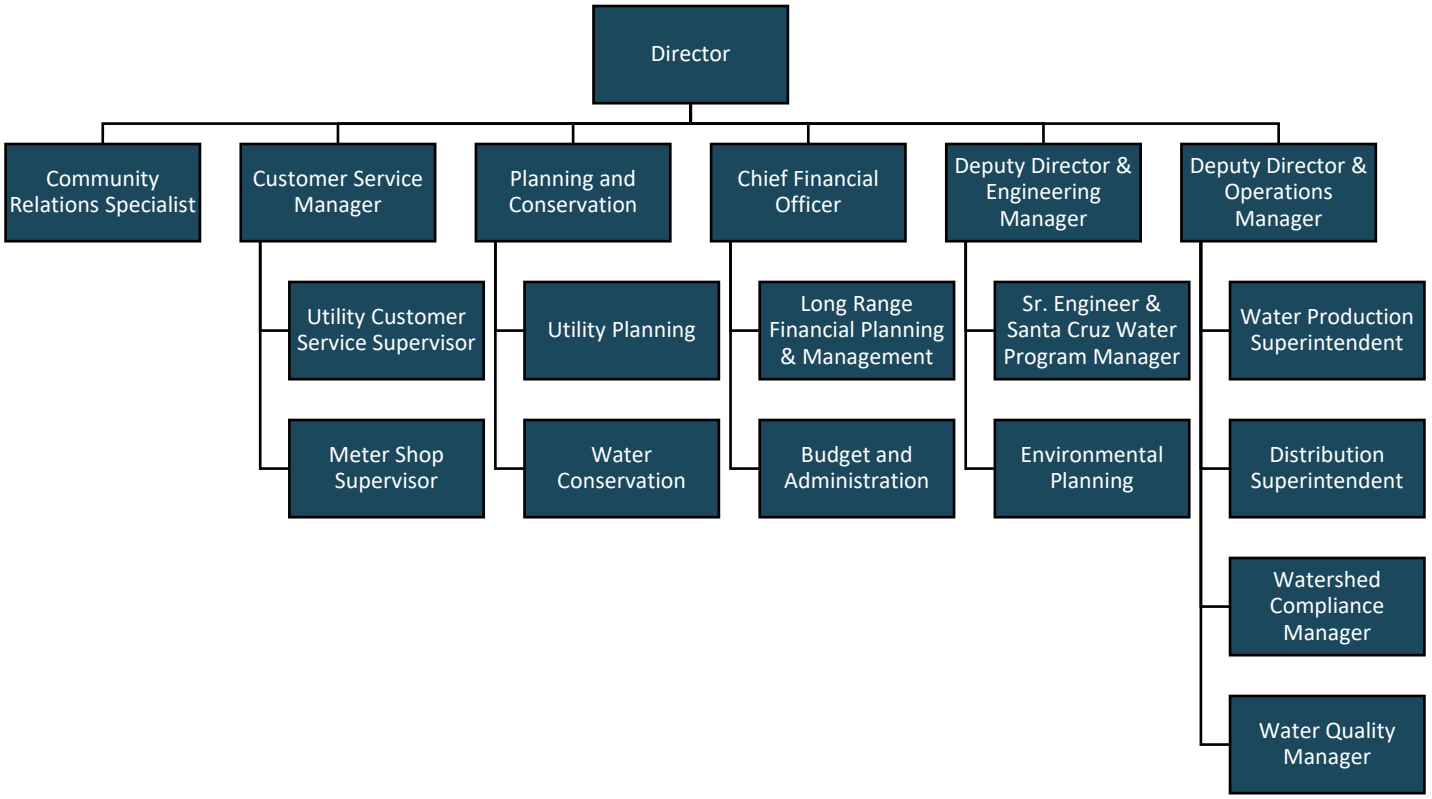
Staffing

Positions	2019-20 Revised*	2020-21 Revised*	2021-22 Revised*	2022-23 Proposed	FY 2023 Change
Administrative Assistant I/II	2.00	2.00	2.00	2.00	-
Administrative Assistant III	2.00	2.00	2.00	2.00	-
Assistant Engineer I/II	4.00	4.00	4.00	4.00	-
Associate Planner I/II	3.00	3.00	3.00	3.00	-
Associate Professional Engineer	4.75	4.75	4.75	4.75	-
Chief Ranger	1.00	1.00	1.00	1.00	-
Community Relations Specialist	1.00	1.00	1.00	1.00	-
Customer Service Manager	1.00	1.00	1.00	1.00	-
Deputy Water Director/Engineering Manager	1.00	1.00	1.00	1.00	-
Deputy Water Director/Operations Manager	1.00	1.00	1.00	1.00	-
Director of Water Department	1.00	1.00	1.00	1.00	-
Engineering Associate	1.00	1.00	1.00	1.00	-
Engineering Technician	2.00	2.00	2.00	3.00	1.00
Environmental Microbiologist I/II/III	2.00	2.00	2.00	2.00	-
Environmental Programs Analyst I/II	1.00	1.00	1.00	1.00	-
Laboratory Technician	2.00	2.00	2.00	2.00	-
Management Analyst	2.00	3.00	3.00	4.00	1.00
Principal Management Analyst	1.00	1.00	2.00	2.00	-
Principal Planner	1.00	1.00	1.00	1.00	-
Ranger I/II	3.00	3.00	3.00	3.00	-
Ranger Assistant	3.50	3.50	3.50	3.50	-
Senior Electrician	1.00	1.00	1.00	1.00	-
Senior Professional Engineer	1.00	1.00	1.00	1.00	-
Senior Ranger	2.00	2.00	2.00	2.00	-
Senior Water Distribution Operator	6.00	6.00	6.00	6.00	-
Superintendent of Water Treatment and Production	1.00	1.00	1.00	1.00	-
Superintendent of Water Distribution	1.00	1.00	1.00	1.00	-
Utility Account Specialist	4.00	4.00	4.00	4.00	-
Utility Maintenance Technician	4.00	4.00	4.00	4.00	-
Utility Service Field Technician I/II	2.00	2.00	2.00	2.00	-
Utility Service Representative I/II	6.00	6.00	6.00	6.00	-
Utility Supervisor	1.00	1.00	1.00	1.00	-
Water Chief Financial Officer	1.00	1.00	1.00	1.00	-
Water Conservation Representative	2.00	2.00	2.00	2.00	-
Water Distribution Crew Leader III/IV	6.00	6.00	6.00	6.00	-

	2019-20 Revised*	2020-21 Revised*	2021-22 Revised*	2022-23 Proposed	FY 2023 Change
Water Distribution Operator II/ III	9.00	9.00	9.00	9.00	-
Water Distribution Sup V Chief Distribution Operator	1.00	1.00	1.00	1.00	-
Water Facilities Electrical/Instr Tech II/III	1.00	1.00	1.00	1.00	-
Water Facilities Field Supervisor	1.00	1.00	1.00	1.00	-
Water Facilities Mechanical Tech II/III	2.00	2.00	2.00	2.00	-
Water Facilities Mechanical Supervisor	1.00	1.00	1.00	1.00	-
Water Meter Specialist	3.00	3.00	3.00	3.00	-
Water Meter Supervisor	1.00	1.00	1.00	1.00	-
Water Meter Technician	1.00	1.00	1.00	1.00	-
Water Quality Chemist I/II/III	2.00	2.00	2.00	2.00	-
Water Quality Manager	1.00	1.00	1.00	1.00	-
Water Resources Analyst	3.00	3.00	3.00	3.00	-
Water Resources Supervisor	2.00	1.00	1.00	1.00	-
Water Treatment Operator II/III/IV	8.00	8.00	8.00	8.00	-
Water Treatment OIT II/III/IV	1.00	1.00	1.00	1.00	-
Water Treatment Sup IV/V-Chief Plant Operator	1.00	1.00	1.00	1.00	-
Watershed Compliance Manager	1.00	1.00	1.00	1.00	-
	117.25	117.25	118.25	120.25	2.00

*Revised salary authorizations are Adopted staffing plus any Mid-year adjustments

Organization Chart



FY23-27 Capital Investment Program Budget (Active Projects)

Project Title	FY23 Request	FY24 Estimate	FY25 Estimate	FY26 Estimate	FY27 Estimate
1.3.1 Tait Diversion Rehab/Replacement	112,125	-	306,466	634,382	583,239
1.4 Felton Diversion Pump Station Assessment	-	-	123,159	509,763	446,244
1.5 NCD I/O Replacement Project	4,891,490	531,368	544,090	564,222	371,202
2.1.1 N. Coast Repair Ph 4 Des and Const	150,000	-	-	1,879,294	3,647,046
2.2.1 Newell Crk. Pipeline Felton/Graham Hill	6,282,090	14,366,405	8,123,366	-	-
2.2.3 Brackney Landslide Area Pipeline Risk Re	2,019,210	7,750,168	-	-	-
3.1 Water Supply Augmentation	2,119,721	2,932,871	6,342,964	8,934,115	10,225,337
3.2 Recycled Water Feasibility Study	-	-	-	-	-
3.2 Recycled Water- SDC	-	-	-	-	-
3.3 ASR Planning	718,540	62,000	-	-	-
3.3 ASR Planning- SDC	-	-	-	-	-
3.3.1 ASR - Mid County Existing Infrastructure	1,261,950	3,543,978	2,760,432	-	-
3.3.2 ASR - Mid County New Wells	45,541	2,571,670	3,846,369	3,927,533	2,443,635
3.3.3 ASR - Santa Margarita Groundwtr Basin	36,306	167,274	57,821	29,980	-
4.3 GHWTP CC Tanks Replacement	8,250,865	10,661,566	4,128,439	-	-
4.4.1 Distribution System Water Quality Improv	-	-	-	-	-
4.4 GHWTP Facilities Improvement Project	2,218,339	5,638,712	23,776,977	36,311,883	37,820,422
4.5 River Bank Filtration Study	44,221	539,201	2,115,461	1,901,130	817,429
4.7 Beltz 12 Ammonia Removal	107,519	-	-	-	-
5.2 Meter Replacement	3,142,958	-	-	-	-
6.1 University Tank 4 Rehab/Replacemen	253,523	4,720,472	161,034	-	-
Aerators at Loch Lomond	38,323	-	-	-	-
Beltz WTP Filter Rehabilitation	480,645	-	-	-	-
CMMS Software Replacement for Water Dept	-	-	-	-	-
Facility & Infrastructure Improvements	-	446,064	462,568	479,684	497,432
GHWTP Chlorination Station Improvements	250,000	-	-	-	-
GHWTP SCADA I/O Comm Replacement	230,000	-	-	-	-
GHWTP SCADA Radio System Replacement	-	-	-	-	-
Main Replacements - Eng Section - Transm	-	-	-	-	-
Main Replacements - Engineering Section	1,048,976	2,333,345	-	-	-
Main Replacements - Transmission -SDC	-	-	-	-	-
Main Replacements -Customer Initiated	-	55,758	57,821	59,961	62,179
Main Replacements- Distribution Section	437,315	1,449,708	1,503,346	1,558,973	1,616,654
Main Replacements -Outside Agency	-	55,758	57,821	59,961	62,179
N Coast System Repair/Replace-Planning	-	-	-	-	-
Security Camera & Building Access Upgrad	-	-	-	-	-
Union/Locust Back-up Generator	-	-	-	-	-
Water Program Administration	1,359,564	2,527,076	2,495,788	2,588,132	2,487,160
Water Program Management Reserve	-	5,099,815	5,228,658	5,469,230	5,635,455
FY Total	**35,499,222**	**65,453,210**	**62,092,578**	**64,908,242**	**66,715,612**
				Total FY23-27:	**294,668,865**

Water O&M FY23 Proposed by Section

Actv	Title	FY 2021 Actual	FY 2022 Ado Budget	FY 2022 Adj Budget	FY 2022 Year-To-Date Actual	FY 2022 Year End Est	FY 2023 FN Approved
Fund 711 -- Water							
7101	Water Administration	5,780,593	6,832,579	7,083,921	4,967,239	6,171,092	6,952,879
7102	Water Engineering	1,969,117	2,733,585	2,759,319	1,633,965	2,331,996	2,929,364
7103	Water Customer Services	1,985,247	2,156,811	2,159,047	1,504,383	2,073,964	2,221,949
7113	Water Meter Shop	861,595	904,679	979,178	536,078	808,920	1,238,470
7104	Water Conservation	579,067	923,414	1,095,295	586,811	801,656	2,104,695
7105	Water Resources	2,039,642	1,898,211	2,111,936	1,124,585	1,673,906	8,315,225
7110	Water Operations	500,959	832,416	719,055	312,643	450,772	2,052,894
7106	Water Production	6,641,345	8,114,704	8,231,200	5,036,755	7,773,018	5,292,431
7107	Water Quality	1,601,453	1,766,806	1,785,987	1,298,577	1,754,292	1,399,896
7108	Water Distribution	4,428,150	5,164,890	5,277,832	3,082,172	4,868,405	635,719
7109	Water Recreation	1,117,544	1,398,771	1,401,827	878,463	1,227,785	1,027,836
7140	Water Debt Service	3,467,752	4,098,626	4,098,626	1,483,534	4,098,710	5,131,705
7199	Drought Response	30,890	-	275,307	143,844	141,670	-
		31,003,353	36,825,492	37,978,530	22,589,050	34,176,186	39,303,063

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Criteria: As Of = 4/20/2022; Period = 0,1..12; Summarize By = Report,Fund,Object; Activity = 7101, 7102, 7103, 7104, 7105, 7106, 7107, 7108, 7109, 7110, 7110, 7113, 7140, 7199

Water Department Proposed FY 23-FY 27 Proforma

Fiscal Year	2022	2023	2024	2025	2026	2027
Fixed Fee Revenue	$ 3,716,844.60	$ 3,849,279.72	$ 4,474,198.32	$ 5,201,496.96	$ 5,562,040.68	$ 5,947,543.08
Volumetric Revenue	34,184,533.80	40,092,547.35	46,116,668.02	53,549,701.54	56,572,432.29	60,288,764.36
Elevation Surcharges	352,788.00	352,788.48	352,788.48	352,788.48	352,788.48	352,788.48
Rate Stabilization Revenue	3,007,787.00	3,163,368.00	3,163,368.00	3,163,368.00	3,163,368.00	3,163,368.00
Manual Adjustment to conform water rate revenue to proposed budget	(2,875,156.40)	(6,476,410.55)	(2,461,676.82)	(1,743,613.98)	(2,994,902.45)	(1,383,975.92)
Total Rate Revenue	38,386,797.00	40,981,573.00	51,645,346.00	60,523,741.00	62,655,727.00	68,368,488.00
Non-Rate Revenue						
Other Income	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00
Investment Income	75,282.24	75,282.24	75,282.24	75,282.24	75,282.24	75,282.24
Total Non-Rate Revenue	1,075,282.24	1,075,282.24	1,075,282.24	1,075,282.24	1,075,282.24	1,075,282.24
Total Revenues	39,462,079.24	42,056,855.24	52,720,628.24	61,599,023.24	63,731,009.24	69,443,770.24
Operating Expenses						
Personnel	15,427,372.00	17,691,829.00	18,930,257.03	20,255,375.02	21,673,251.27	23,190,378.86
Services, Supplies & Other	14,113,092.00	16,156,528.98	16,964,355.43	17,812,573.20	18,703,201.86	19,638,361.95
Capital Outlay	537,012.00	323,000.00	339,150.00	356,107.50	373,912.88	392,608.52
Other Operating Expenses	-	-	-	-	-	-
Total Operating Expenses	30,077,476.00	34,171,357.98	36,233,762.46	38,424,055.72	40,750,366.01	43,221,349.34
Net Operating Revenues	9,384,603.24	7,885,497.26	16,486,865.78	23,174,967.51	22,980,643.23	26,222,420.90
Capital Expenditures (Fund 711 and 715)	113,169,717.00	35,499,221.00	65,453,210.00	62,092,579.00	65,628,243.00	66,715,613.00
Grant Funded		-	-	-	-	-
SRF Funded	45,098,299.81	34,456,834.73	11,192,934.01	4,672,528.36	564,222.31	371,202.41
WIFIA Funded	4,797,903.63	-	20,005,117.34	31,900,342.24	36,311,882.80	37,820,422.37
Currently Funded	-	-	-	-	-	-
Pay-Go Funded	15,094,283.35	734,891.55	6,503,196.98	8,570,477.84	8,308,923.05	11,477,942.20
Debt Funded (Tax-Exempt Bonds)	48,179,230.21	-	27,751,961.67	16,949,230.56	20,443,214.84	17,046,046.02
Debt Service	4,098,710.00	5,131,705.00	8,968,610.94	13,531,445.06	13,526,448.66	13,527,861.58
Net Income	(9,808,390.11)	2,018,900.71	1,015,057.85	1,073,044.61	1,145,271.52	1,216,617.12
Ending Cash Balances by Fund						
Fund 717 (Emergency Reserve)	3,000,000.00	3,000,000.00	3,000,000.00	3,000,000.00	3,000,000.00	3,000,000.00
Fund 713 (Rate Stabilization)	10,000,000.00	10,000,000.00	10,000,000.00	10,000,000.00	10,000,000.00	10,000,000.00
Fund 713 (Rate Stabilization Excess)	10,000,000.00	10,000,000.00	13,163,368.00	13,163,368.00	13,163,368.00	13,163,368.00
Fund 716 (90 Day Operating Reserve)	7,416,363.95	8,425,814.30	8,934,352.39	9,474,424.70	10,048,035.45	10,657,319.01
Fund 711 (Water Operations)	7,416,363.94	8,425,814.30	8,932,334.06	9,465,306.36	10,036,967.12	10,644,300.68
Coverage and Targets						
Debt Service Coverage (W/Out Reserves)	2.29	1.54	1.84	1.71	1.70	1.94
Debt Service Coverage Target	1.50	1.50	1.50	1.50	1.50	1.50
Debt Service Coverage (W/Reserves)	9.08	7.35	5.28	4.07	4.14	4.47
Days' Cash (Includes only Funds 711 & 716)	180	180	180	180	180	180

WATER COMMISSION
212 Locust Street, Suite A, Santa Cruz, CA 95060 Phone: (831) 420-5200

June 7, 2022

Mayor Sonja Brunner
Vice Mayor Martine Watkins
Councilmember Sandy Brown
Councilmember Justin Cummings
Councilmember Renee Golder
Councilmember Shebreh Kalantari-Johnson
Councilmember Donna Meyers

Dear Mayor Brunner, Vice Mayor Watkins and Councilmembers Brown, Cummings, Golder, Kalantari-Johnson and Meyers:

The Santa Cruz Water Commission is pleased to convey our recommendations regarding the Water Department's FY 2023 Recommended Operating Budget and Capital Investment Program (CIP) Budget. Per the discussion below, we unanimously recommend the Council's approval of the proposed budgets.

Through a series of staff presentations and discussions at publicly noticed Water Commission meetings between June 2021 and May 2022, the Water Commission participated in detailed reviews of the Department's financial position, including the 2021 Long-Range Financial Plan and proposed FY 2023 – FY 2027 Water Rates, the FY 2023 proposed CIP, Operating Budget and an updated 5-year Financial Pro Forma. The Financial Pro Forma is a product of the Department's financial model and provides a comprehensive, 5-year view of not only the Department's revenue requirements, expenditures and projected use of debt funding and the resulting debt service for capital investments, but also a picture of the Department's ability to meet its financial performance target and metrics such as debt service coverage and days of operating cash in reserve.

The Water Department's Recommended FY 2023 Operating and CIP budgets (Budgets) were developed to address the needs of the Water Department to provide a reliable and high quality supply of potable water to a population of approximately 100,000 people. The Commission's recommendations to the Council to approve the FY 2023 Budgets is the result of the Commission receiving and discussing information with staff on a diverse set of topics covering the projects and resources needed to meet water supply and infrastructure reliability goals. The details of the Water Commission's

work provided in the list below include items with both direct and indirect relevance to the Department's budgets and financial planning.

- July 2021, the Commission received and accepted the FY 21 3rd Quarter Unaudited Financial Report and asked questions about its contents, discussed Water Rate Structures and provided feedback from Single-Family Residence Customer Panels on Rate Structure Approaches, and received a presentation on the status of federal and state initiatives related to rate assistance programs for low-income customers.
- August 2021, received information on staff's recommendation to City Council to authorize the Graham Hill Water Treatment Plant Facility Improvements Project Progressive Design-Build Phase 1 Agreement with the AECOM/WM Lyles Joint Venture, and provided feedback to staff on the updated Long Range Financial Plan and Proposed FY 2023 - FY 2027 Water Rates schedule developed to reflect the Commission's input and took action to recommend a proposed water rate schedule for FY 2023 - FY 2027 to the Council for use in the Proposition 218 public notification and public hearing processes that are legally required prior to adoption and implementation of new rates.
- August 2021, updated the Commission on the including the working draft of the Long Range Financial Plan and October 2021, received presentation on the Urban Water Management Plan and Water Shortage Contingency Plan Review and commented on the draft 2020 Urban Water Management Plan, which includes the Water Shortage Contingency Plan, and recommend filing these plans with the California Department of Water Resources.
- November 2021, received information and a presentation on the progress of pipeline planning efforts and design progress report in advance of Commission receipt of the draft programmatic environmental impact report.
- December 2021, accepted the FY 2021 4th Quarter and FY 2022 1st Quarter Unaudited Financial Reports.
- February 2022, received a presentation on the Department's accomplishments and progress of 2021 on capital investment projects and its 2022 planned projects.
- March 2022, accepted the FY 2022 2nd Quarter Unaudited Financial Report.

In addition to the Water Commission's financially focused items highlighted above, the Commission continues to actively work with the Water Department on water supply reliability issues and will be heavily engaged in this year's Securing Our Water Future planning and community engagement work.

The Commission's active engagement and work with the Department over time has effectively prepared Water Commission members to understand the Water Department's current performance, and plans and strategies for the future. The Commission's recommendations to the Council on the Department's FY 2023 Operating Budget and FY 2023 to 2027 CIP reflect the Commission's ongoing engagement with staff to identify, understand and effectively address the water system's challenges.

Included with this letter is a set of attachments that the Water Commission reviewed and discussed in detail at its annual budget and CIP review meetings this year:

- Water Attachment 1 is the FY 2023 Operating Budget;
- Water Attachment 2 is an example of Quarterly Financial Reports prepared for and distributed to the Water Commission;
- Water Attachment 3 is a CIP summary sheet for every project in the 2023 – 2027 CIP;
- Water Attachment 4 covers analytics and trends for the Water Department Budget over the last five years; and
- Water Attachment 5 is the Water Department's 5-year Financial Pro Forma.

Given these materials as a backdrop, we would like to draw your attention to the following budget and CIP highlights:

- Revenues for FY 2023, including water rate revenues and other revenues, are projected to total $42,056,855.
- The proposed Operating Budget for FY 2023 is $39,303,063. The Operating Budget supports ongoing 24/7/365 water utility operations and for personnel and services and supplies is 3.4% higher than the adopted FY 2022 Operating Budget.
- Three new positions to the Water Department's personnel complement are planned for FY 2023, including a Management Analyst, Engineering Tech and Programmer Analyst (residing in the IT Department).
- The Department continues to invest in developing its own fund to support leveling annual resources needed for heavy equipment replacement and is making some up-front investments to build the fund balance to help gain access to the long term benefits of this best practice approach to fleet management. Funds from this account (Fund 719) are proposed to be used to replace a Ford F-350 utility truck and a Ford Escape SUV for the Production staff. These vehicles will be leased at an annual cost of $33,000.
- The CIP budget for the five year period FY 2023-2027 is $295 million, with a focus of these resources on improving infrastructure resiliency and adaptability to climate change. The proposed CIP budget for FY 2023 totals $35,499,221, with ongoing spending of $5 million for the Newell Creek Inlet/Outlet Replacement Project, $6 million for Newell Creek Pipeline and $8 million for the concrete tanks included as part of this total. The FY 2023 funding level will be supplemented by a significant, unspent amount carried over from FY 2022. Major progress is expected on several key CIP projects during FY 2023 including:
    - The Newell Creek Dam Inlet/Outlet Replacement project – Construction on the Newell Creek Dam Inlet/Outlet Replacement project, a $69 million project awarded to Obayashi Corporation the spring of 2020, is well underway. The 1500 foot long tunnel and new intake structures in the reservoir are complete and work is beginning on the new intake pipeline connecting the new intake structures to the Newell Creek Pipeline, Completion is expected in early 2023.

    - GHWTP Concrete Tanks Replacement –Pacific Hydrotech Corporation from Perris, California was awarded a $28,352,350 contract for the replacement of three concrete tanks at the City's 62-year-old surface water treatment plant. Construction of this project is well underway and be completed in September

2024. An SRF loan in the amount of $45,900,000 has been obtained to cover the total cost of this project.

- Newell Creek Pipeline replacement (NCP) -- NCP is a 9.5 mile pipeline that delivers water from Loch Lomond to the GHWTP. Due to increased frequency of breaks caused by age, corrosion and land movement, the NCP will be replaced in two phases. The first phase is to replace the segment from Felton to GHWTP, which is 4.4 miles. Construction is scheduled to commence in January 2023 and completion is expected May 2024. The forecasted cost for phase I is $33 million.

- Water Supply Augmentation – Work on the Council-approved Water Supply Augmentation Strategy continues with significant progress made advancing plans for implementation of Aquifer Storage and Recovery (ASR) in the Mid County Groundwater Basin (MCGB), and exploring opportunities for the use of Recycled Water.

  Pilot testing is one of the studies needed to demonstrate feasibility of ASR as a reliable source of supply and, while seemingly time-consuming, provides valuable insight into the operational and water quality parameters associated with this new water storage alternative. Also necessary is groundwater modeling, used to identify the number, size and location of ASR wells. After nearly 40 model scenarios, a project has been identified using the best available information to maximize the use of the MCGB for groundwater storage.

  The Santa Cruz Water Rights project plays an important role in the advancement of ASR in the MCGB in that it is analyzing many of the ASR components at a project level so that following certification of this EIR active implementation of ASR in the MCGB can proceed.

  With respect to Recycled Water, staff is developing several concepts that build on the Pure Water Soquel Project, and balance opportunities with other stakeholders such as large irrigation customers, and neighboring water agencies like Scotts Valley water District also interested in sustainable supply augmentation.

- Meter Replacement – The Council authorized a full system meter replacement project in August of 2020, and the $11 million meter replacements commenced January 2022; completion is expected in early 2023. Jacobs Engineering is the project manager, procurement of meter box lids, meters and radios is continuing. The meter installation contractor is Utility Partners of America (UPA), who agreed to hire local labor for the project. This project has been approved for a $1 million EPA grant.

- CIP Funding – Given the scale of the Department's CIP, a major focus over the last several years has been on securing least cost financing for projects. The Department has had considerable success with these efforts, and low-interest long-term financing will benefit rate-payers both now and in the future. Some relevant details include:
    - Projects with Drinking Water State Revolving Loan (DWSRF) funding: Both the Newell Creek Dam Inlet/Outlet Replacement project and the Graham Hill Water Treatment Plant (GHWTP) Concrete Tanks project are being funded through the DWSRF program, with loan rates of 1.4%. Loan repayment for these loans commences once construction has been completed for the projects in 2023 and 2024 respectively.

    - Projects being developed to submit for DWSRF loan funding: The Graham Hill Water Treatment Plant Facilities Improvement Project (GHWTP FIP) is being developed in a manner that will allow it to be considered for funding with DWSRF funds. The DWSRF funding application process is a multi-stepped one, requiring reviews and approvals as project elements such as basis of design reports and environmental assessments are completed.

    - Projects being considered for inclusion in a July 2022 application submittal for a $164 million federal Water Infrastructure Finance and Innovation Act (WIFIA) loan: Along with the GHWTP FIP project, the Department is planning to include the Newell Creek Pipeline Replacement Project, ASR project and the University Tank #4 Replacement Project.

    - The Santa Cruz Mid-County Groundwater Agency (MCGA) received a $7.6 million check from the California Department of Water Resources for implementation work on the MCGA's groundwater sustainability plan. The Water Department's share of this grant is $1.7 million and will further the development of the ASR wells. The grant is provided to reimburse development expenses.

    - Potential additional sources of funding for capital projects are being actively monitored and pursued. For example, the Hazard Mitigation Grant Program (HMGP) application pending before the program administrator (CalOES) which, if approved, would provide up to $63 million for the Newell Creek Pipeline Replacement project.

    - A consequence of DWSRF and many other sources of low-interest loans is that loan funds are disbursed on a reimbursable basis. This means that the Department has to have the cash to pay vendors and meet its other financial obligations and then file claims for reimbursement from approved loan funds after the costs are incurred. This approach introduces significant cash-flow challenges into the Department's operation. To address these challenges, the Department obtained a $50M short-term line of credit that can be used as

bridge funding over the coming several years while significant DWSRF projects are in construction.

As the Water Commission has worked with the Water Department on budget and financial planning over the last several years, the Commission has received regular updates on the Department's finances through the quarterly financial reports (Water Attachment 2) and annual comparative budget analytics (Water Attachment 4). Using these reports, the Commission has been actively tracking several key indicators of financial health, for example, how actual revenues generated by water sales compare with revenue projections for water sales included in the 2016 and 2021 Cost of Service and Water Rate Studies. Tracking this metric helps both staff and Commissioners keep focused on how accurate our system is for projecting revenues, which helps us identify and implement refinements to our projections in the event we are over or under forecasting. This and other analyses now in regular use by the Department's finance section and leadership team are helpful in ongoing financial planning and in the ongoing work to update the cost of service analysis and water rate structure and future water rates.

Another major goal of the Department's budget analytics work is to highlight trends and support greater understanding financial changes at both the organization and section level. Commissioners are always impressed by the staff's knowledge and ability to concisely describe circumstances and conditions across the Department that influence actual spending from year to year and projected spending for the next fiscal year and beyond. Some key topics we inquired about during our review of the FY 2023 Budgets:

- Projected performance in meeting the Department's 1.5 debt service coverage ratio and 180 days' cash;
- Long-term projections of capital needs and financing strategies.
- How the local economic recovery from the COVID pandemic, is expected to affect water use and water revenues; and
- How federal or state pandemic recovery initiatives and infrastructure funding legislation might provide opportunities for funding for some of the identified CIP projects, particularly those related to improved water system reliability, water infrastructure resiliency and climate adaptation.

With respect to financial forecasting and being able to put the proposed Budgets in an appropriate and understandable context, Water Commissioners would like to especially commend the City and the Department for the financial analysis and modeling tools that they have developed and applied at the Water Department. For the last five years, the Commission's budget review has focused heavily on not just the figures included in the Department's proposed Budgets, but on what they mean in terms of potential customer rate increases and achieving the financial metrics that the City Council set for the Department when it adopted the 2016 Long Range Financial Plan (LRFP) and the updated 2021 LRFP in September 2021. The key tool that the Commission uses in understanding how the Department's proposals fit into that plan is the Five-year Financial Pro Forma, a financial performance forecast that is generated by the Water Department's financial model (Water Attachment 5).

The one-page Financial Pro Forma provides a long-range view of operating and capital spending, performance related to key financial metrics such as debt service coverage, and illustrates how assumptions about capital spending, and operating costs including salary, benefits, and pension obligations, will affect revenue requirements over time. Department staff has been transparent in describing the key assumptions driving the financial model, and Water Commissioners have received detailed and thoughtful answers to questions about various aspects of the results presented in the Financial Pro Forma. The Commission's key takeaway from these efforts is that the Department has a well-considered long-range financial plan and strategy – a plan which has continued to evolve and improve based on Department staff increasing their familiarity with this essential analytical and planning tool as well as the Department's ongoing experience with challenges such as the continuing dry conditions and opportunities such as those created by the City's participation in regional collaboration and local groundwater sustainability planning efforts.

In closing, at its June 6, 2022 meeting the Water Commission unanimously approved a motion in support of the City Council adopting the Water Department's proposed FY 2023 Operating and CIP budgets. Our careful review of these proposals shows that they have been developed using realistic assumptions that are well aligned with the financial policies and assumptions approved by the Council in its 2021 action approving the Department's LRFP.

We appreciate this opportunity to provide our recommendation to the Council and are available to answer any questions you may have.

Sincerely,

Sierra Ryan
Chair, Santa Cruz Water Commission

cc: Matt Huffaker, City Manager
Members of the Santa Cruz Water Commission
Rosemary Menard, Santa Cruz Water Director

Attachments:

Water Attachment 1:	Water Department FY 2023 Proposed Operating Budget
Water Attachment 2:	Example of Quarterly Financial Reports prepared for and distributed to the Water Commission
Water Attachment 3:	CIP Summary
Water Attachment 4:	Water Department FY 2023 Budget Analytics
Water Attachment 5:	Water Department FY 2023 Five-year Financial Pro Forma

WATER COMMISSION
INFORMATION REPORT

DATE: 06/02/2022

AGENDA OF:	06/06/2022
TO:	Water Commission
FROM:	Rosemary Menard, Water Director
SUBJECT:	June Water Commission Discussion on Securing Our Water Future Initiative Topics

RECOMMENDATION: That the Water Commission receive information on the four water supply augmentation project concepts options being evaluated in the Securing Our Water as well as the initial evaluation of these options using the evaluation criteria identified in the May Commission meeting and provide feedback to staff.

BACKGROUND: At the Water Commission's April 2022 meeting, staff presented an initiative, Securing Our Water Future that would develop policy recommendations on water supply augmentation by consideration by the Santa Cruz City Council later in 2022. That presentation laid out a schedule of engagement with the Water Commission through the spring, summer and early fall of 2022 to develop those recommendations. That schedule, as updated by the inclusion of Water Commission meeting dates in July and August, and the addition of a potential Study Session with the City Council in August, is included below:

- May 2, 2022 -
  - Presentation on and Approval of Evaluation/Decision-Making Criteria.
  - Update on the water system vulnerability analysis work being done in collaboration with the University of Massachusetts (UMass) team.
- June 6, 2022 -
  - Phase 1 of Project Concept Evaluations – initial information provided to stimulate conversation and provide an opportunity to assess how well the proposed evaluation criteria cover the range of topics or issues of interest.
- July 21, 2022 -
  - University of Massachusetts work on climate change vulnerability analysis.
- August 16, 2022 -
  - Potential City Council Study Session on Securing Our Water Future.
- August 29, 2022 -
  - Phase 2 of Project Concept Evaluations, including the impact/influence of the vulnerability assessment work.
- October 3, 2022 -

    - Draft final technical memoranda on project concept comparisons, draft Council Resolution and draft Council Policy.
- November 7, 2022 -
    - Water Commission action on recommendations to Council on Securing Our Water Future, including all the elements described in this report, for Council action on November 22, 2022.

At the Water Commission's May 2022 meeting, staff presented recommendations on a set of four supply augmentation project concepts to explore in the Securing Our Water Future process and also provided the results of a prioritized list of evaluation criteria for use in a planned side-by-side comparison of the four supply augmentation projects. In addition, the Commission received an update on our work with our UMass team on the water system vulnerability analysis.

To assist Commissioners in reviewing materials in advance of and during meetings, staff has included as Attachment 1 to this document a Glossary of Terms and Acronyms.

DISCUSSION: For the June 6, 2022 Water Commission meeting, City staff and consultants have prepared a project concept information sheet for each of the four water supply options being considered. Each project concept information sheet presents information about each evaluation criteria for that project concept as well as a project concept map or schematic. At the meeting, staff from Kennedy Jenks will present an overview of this phase 1 evaluation and also provide some side-by-side comparison data for the projects in a presentation, also included in the packet

The goal for the Water Commission discussion on June 6th is to hear from Water Commissioners what questions they have, what comments they have and what types of additional information, if any, they would find useful as the Securing Our Water Future work continues to move forward. A second round of project evaluations is planned for presentation and discussion by Water Commissioners at its August 29, 2022 meeting. Those results will be informed by the results of the Water System Vulnerability Analysis work that the Commission will discuss in July.

FISCAL IMPACT: None at this time.

PROPOSED MOTION: No motion needed – Discussion item only at this time.

ATTACHMENTS:

1. Water Department Glossary and List of Acronyms
2. Water Supply Project Concepts Information Sheets
3. PowerPoint Presentation

City of Santa Cruz, Water Department
Glossary of Terms

List of Commonly Used Acronyms

1) ACAYY: Annualized Cost per million gallons of Average Year Yield
2) ACOE: United States Army Corps of Engineers (sometimes USACOE or Corps)
3) ACWA: Association of California Water Agencies
4) ADA: Americans with Disabilities Act
5) ADU: Accessory Dwelling Unit
6) AMBAG: Association of Monterey Bay Area Governments
7) AMI: Advanced Metering Infrastructure
8) AFY: Acre Feet per Year
9) ASR: Aquifer Storage and Recovery
10) AV: Air Valve
11) AWWA: American Water Works Association
12) AWP/AWTF: Advanced Water Purification/Advanced Water Treatment Facility
13) BABA or BABAA: Build America, Buy America Act
14) BAT: Best Available Technology
15) BGS: Below Ground Surface
16) BGY: Billion Gallons per Year
17) BMP: Best Management Practice
18) BWP: Bar Wrapped Pipe
19) BWTP: Beltz Water Treatment Plant
20) BSR: Bay Street Reservoir
21) CA: California
22) CA-ELAP: California's Environmental Laboratory Accreditation Program
23) Cal-EPA: California Environmental Protection Agency
24) CCC – California Coastal Commission
25) CCF: Hundred (Centum) Cubic Feet
26) CCR: Consumer Confidence Report
27) CEQA: California Environmental Quality Act
28) cfs: cubic feet per second
29) CK or Crk: Creek
30) CMMS: Computerized Maintenance and Management System
31) CRLF: California Red-Legged Frog
32) CIP: Capital Investment Program
33) CWA: California Water Association
34) CWC: Coastal Watershed Council
35) CY: Calendar Year
36) DDW: CA Division of Drinking Water
37) DBPR: Disinfection Byproduct Rule
38) CDFG: Department of Fish and Game (now CDFW)
39) CDFW: CA Department of Fish & Wildlife
40) DEIR: Draft Environmental Impact Report
41) DLR: Detection Limit for Reporting
42) DPR: Direct Potable Reuse
43) DSCR: Debt Service Coverage Ratio
44) DWR: CA Department of Water Resources
45) DWSRF: Drinking Water State Revolving Fund
46) EPA: United States Environmental Protection Agency
47) EIR: Environmental Impact Report

48) FIP: Facility Improvements Project
49) FTE: Full Time Equivalency
50) FY: Fiscal Year
51) GAC: Granular Activated Carbon
52) GHWTP: Graham Hill Water Treatment Plant
53) GRR: Groundwater Replenishment Reuse
54) GSP: Groundwater Sustainability Plan
55) HCP: Habitat Conservation Plan
56) HET: High Efficiency Toilets
57) IBank: California Infrastructure and Economic Development Bank
58) IPR: Indirect Potable Reuse
59) IRWMP: Integrated Regional Water Management Plan
60) JPA: Joint Powers Agreement
61) LAFCO: Local Agency Formation Commission
62) LF: Lineal Feet
63) LIMS: Laboratory Information Management System
64) LRFP: Long Range Financial Plan
65) MBNMS: Monterey Bay National Marine Sanctuary
66) MCDS: Multi-Criteria Decision Support
67) MCGB: Mid County Groundwater Basin
68) MCL: Maximum Contaminant Level
69) MCLG: Maximum Contaminant Level Goal
70) MG: Million Gallons
71) MGA: Santa Cruz Mid-County Groundwater Agency
72) MGD: Million Gallons per Day
73) MGY: Million Gallons per Year
74) MHJB: Mount Herman June Beetle
75) MRF: Multi-Family Residential
76) MRLD: Maximum Residual Disinfectant Level
77) MRLDG: Maximum Residual Disinfectant Level Goal
78) MSL: Mean Sea Level
79) MW: Monitoring Well
80) MXU: Multiplex Unit
81) NEPA: National Environmental Policy Act
82) NMFS: National Marine Fisheries Service
83) NOAA: National Oceanic and Atmospheric Administration
84) NPDES: National Pollutant Discharge Elimination System
85) NPR: Non-potable Reuse
86) NTU: Nephelometric Turbidity Units (measure of water clarity)
87) OEHHA: California Environmental Protection Agency Office of Environmental Health and Hazard Assessment
88) pCi/L: picocuries per liter (a measurement of radioactivity)
89) PCP: Prestressed Concrete Pipe
90) PDWS: Primary Drinking Water Standard
91) PHG: Public Health Goal
92) PRV: Pressure Regulating Valve
93) PVC: Polyvinyl Chloride pipe
94) ppm: parts per million or milligrams per liter (mg/L)
95) ppb: parts per billion or micrograms per liter (µg/L)
96) ppt: parts per trillion or nanograms per liter (ng/L)PWS: Soquel Creek Water District's Pure Water Soquel Project

97) RCP: Reinforced Concrete Pipe
98) RWFPS: Recycled Water Facilities Planning Study
99) RWMF: Regional Water Management Foundation
100) SAGMC: Soquel Aptos Groundwater Management Committee (now MGA)
101) SCMU: Santa Cruz Municipal Utilities
102) SCWD: Santa Cruz Water Department
103) scwd^2: Santa Cruz Water Department/ Soquel Creek Water District [Regional Desalination Project]
104) SDC: System Development Charges
105) SFR :Single Family Residential
106) SGMA: Sustainable Groundwater Management Act
107) SLR: San Lorenzo River
108) SLVWD: San Lorenzo Valley Water District
109) SqCWD: Soquel Creek Water District
110) SMGB: Santa Margarita Groundwater Basin
111) SMGWA: Santa Margarita Groundwater Agency
112) SOWF: Securing our Water Future
113) SRF: State Revolving Fund
114) SVWD: Scotts Valley Water District
115) SWRCB: State Water Resources Control Board
116) TTHMs: Total Trihalomethanes
117) TUCP: Temporary Urgency Change Petition
118) UHET: Ultra High Efficiency Toilets
119) Umho/cm: unit of measurement of water's electrical conductivity
120) UWMP: Urban Water Management Plan
121) WIFIA: Water Infrastructure Financing and Innovation Act
122) WSAC: Water Supply Advisory Committee
123) WSAS: Water Supply Augmentation Strategy
124) WTP: Water Treatment Plant
125) WWTP/WWTF: Wastewater Treatment Plant/Wastewater Treatment Facility
126) WY: Water Year

Glossary of Terms

Active recharge: Regarding aquifer storage, active recharge implies artificially moving water from the surface into ground water systems.

Adaptation framework: General approach to enable the City and Water Department to adjust plans (i.e., to adapt) in the face of key future uncertainties, by taking account of future information as it becomes available.

Adaptive flexibility: The ability of a plan to adjust to changing circumstances and emerging information over time.

Adaptive pathway: The path forward through time, representing where and why plans may need adjustment (adaptation) as new information becomes available.

Adjustment framework: Similar to the adaptation framework, but pertaining to modest-sized adjustments to a path rather than a possible movement from one future path to another.

AFY: acre feet per year: A unit of measurement that demonstrates both water supply and demand on a municipal-wide scale. One acre foot is the volume of one acre of surface area to a depth of one foot. One acre foot is 43,560 cubic feet or 325,851 gallons per year.

Alternatives: Proposed solutions or alleviations to the system's supply shortfall that intend to use new or underutilized sources of water, expanding storage, and/or creating or adapting production methods.

AMI: Advanced metering infrastructure: AMI is an integrated system of smart meters, communications networks, and data management systems that is capable of collecting detailed water consumption records and enables two-way communication between utilities and customers.

CII: Commercial, institutional and industrial entities; non-residential customers of the Water Department.

CII MF: CII and multi-family residential customers.

Confluence®: An analytical water resources planning tool that simulates current and future water supply and demand scenarios, evaluates the results, and presents them in an understandable fashion. (Confluence was developed by Gary Fiske and Associates.)

Confluence model: The presentation of the Confluence results which provides a vast array of information in a flexible manner.

Conjunctive use: Using groundwater and surface waters together to improved water availability and reliability.

Continuity Agreement: an ongoing or "rolling" service application used by many property management companies to assume responsibility of the account after a tenant discontinues service. Continuity agreements allow utility services to remain active while the dwelling unit is vacant so that property management companies can "clean & show" the apartment while it's for rent.

Debt Service Coverage Ratio: It is a financial ratio that measures the ability of an organization to pay current debt obligations by comparing its net operating income with its total debt service obligations. The Debt Service Coverage Ratio is defined as net operating income divided by total debt service. The ratio states net operating income as a multiple of debt obligations due within one year, including interest, principal and sinking fund obligations.

Decision nodes: Points along an adaptive pathway at which information is anticipated that may support a decision to either proceed as initially planned, or adjust the plan (e.g., switch to a different pathway forward).

Decision space: The factors, information, and time in which a decision is to be made.

Demand management: The guidance of reduced water consumption through conservation and other curtailment methods (e.g., departmental rebate for low-flow toilet installation).

Direct potable reuse: An approach to recycled water where advanced purified wastewater is introduced directly into a potable water supply distribution system.

Drought-resistant: Alternative water supply that is not highly dependent on rainfall for its source.

Econometric: A form of statistical analysis applied in the social sciences (e.g., to explain or forecast water demand).

GL (General Ledger) edit & post: a process by which utility payments are reconciled and posted to the City's main accounting record or "ledger." The general ledger is the City's accounting record of revenue and expense transactions; general ledger financial reports show how utility payments pay for operations & maintenance, capital improvement, emergency reserves, etcetera, as well as your benefits and wages.

Fiscal Year (FY): is a one-year period that a company or government uses for accounting purposes and preparation of its financial statements. The City's Fiscal Year period runs from July 1st – Jun 30th.

Fish flows: Designation of specific stream flows at a particular location for a defined time, and typically follows seasonal variations with the intent of protecting and preserving resources for the surrounding environment and fish. [Ref. http://www.dfg.ca.gov/water/instream_flow.html]

Flow regime: The amount of water that is (or is required to be) found instream, across seasons and hydrologic years.

Forward osmosis (FO): A system of filtering water by using a "draw solution." Water molecules cross a semi-permeable membrane from a less salty liquid to a more salty liquid because of the osmotic pressure differential of the two solutions. Compared to reverse osmosis, forward osmosis is a low pressure-driven system.

Gantt chart: A bar chart that demonstrates components of a project's schedule.

GPCD: Gallons per capita per day, or the average daily water usage per person.

HCP: A Habitat Conservation Plan (HCP) is a required part of an application for permits to continue to take water from the San Lorenzo River and North Coast Streams. The HCP evaluates the impacts the City's water withdrawals have on endangered fish and spells out how they will be avoided or minimized. The HCP establishes an agreed upon amount of water that is needed for fish protection, and therefore how much remains for City consumption.

Indirect potable reuse: An approach to recycled water where advanced purified water is combined with water from a natural water source (often in an aquifer or reservoir) where it can later receive more treatment before being introduced to a potable water supply distribution system.

Interest-based bargaining: A method intended to increase the effectiveness of negotiations to develop consensus. The goal is for every member of the negotiation to win something, and to do so by addressing all interests, maintain a cooperative approach, and focus on the importance of relationships among members. There is usually more than one satisfactory solution in Interest-based bargaining.

Intertie: A connecting pipeline between water systems that allows the transfer of potable water.

Karst: A terrain with distinctive landforms and hydrology created from the dissolution of soluble rocks, principally limestone and dolomite. Karst terrain is characterized by springs, caves, sinkholes, and a unique hydrogeology that results in aquifers that are highly productive but extremely vulnerable to contamination. In the United States, about 40% of the groundwater used for drinking comes from karst aquifers. [http://water.usgs.gov/ogw/karst/pages/whatiskarst]

LRAA: Locational Running Annual Average: The locational average of the most recent 12 months of data.

MCDS: Multi-criteria decision system: A framework for organizing, analyzing, and communicating considerations of proposed approaches to water supply and demand. MCDS produces a model that contains criterion and alternatives. Each criterion and alternative have a description, ratings scales, and weights.

MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.

Meter Inventory: a multi-layered record of each meter and its associated parts and attributes. In the utility billing database, each meter is linked to several other unique ID numbers, including the radio ID, register ID, usage point, and route. All ID numbers need to be exact and exactly aligned for meter reads to make it into billing.

MGY: Million gallons per year: A unit of measurement that demonstrates both water supply and demand on a municipal-wide scale.

Modeling and forecasting: Water supply planning and analytical tools used in designing the water system and estimating its performance and demands under various future scenarios.

Mount Herman June Beetle Endowment (Fund 718): Mount Herman June Beetle (MHJB) Endowment was established in 2015 to mitigate the impacts due to normal operations at the Graham Hill Water Treatment Plant. The endowment was required buy a United States Fish and Wildlife permit and, in addition to preserving high quality MHJB habitat at Laguna Creek, we established a 30-year, non-wasting endowment to demonstrate our commitment to fund costs associated with protecting the MHJB.

MRDL: Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG: Maximum Residual Disinfectant Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NTUs: Nephelometric Turbidity Units: A measure of the level of turbidity, or suspended particles, in a liquid. Drinking water standards require turbidity to be in the range of ~ 0-1NTU.

Passive recharge: Regarding aquifer storage, passive recharge implies moving water naturally from the surface into ground water systems (such as by substituting surface water to supply water users, and thereby resting extraction wells).

PDWS: Primary Drinking Water Standard: MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Peak season: The months between May and October where demand for water is higher than the remaining months due to dry weather conditions and a significant increase in tourist activity.

PHG: Public Health Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Portfolio: Collections of potential solutions and alleviations to the system's supply and demand shortfall distributed to the Committee to review, consider, and assess.

Price elasticity: Regarding demand, price elasticity is an economic term that represents the responsiveness of demand when the price of goods and/or services are subjected to changes.

RAL: Regulatory Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Ranney collectors: A patented type of radial collector well used to extract water from a direct connection to a surface water source (e.g., a river) by extending radially under the surface floor (e.g., river bed). These radial or horizontal wells flow to a conventional well before being pumped to the surface.

Rating Agency Credit Scale – Credit ratings express risk in relative rank order and are considered a point in time opinion of the rating agencies. Rating agencies (S&P, Fitch) use the same scale with "AAA" at the top and "BBB-" at the bottom of investment grade ratings. Non-investment or speculative grade ratings begin with BB+ to D. Factors used in assigning a water agency credit rating include: system characteristics, financial strength, management and legal provisions.

Rate Sheet: a handout that lists the monthly price (or rate) of each utility service. Rate sheets are not comprehensive—there are too many miscellaneous services to include on one sheet of paper—but instead include the most common utility services.

Remittance: utility payments sent via the mail. Customer Service now processes an average of 300 mail payments each morning. This process includes picking up the mail from the post office, opening it, batching payment stubs with checks, scanning stubs and checks, reconciling discrepancies between stubs, checks, and accounts, balancing batch payment files, and uploading the receipts into the utility billing system.

Reverse osmosis: A system of filtering dissolved solids from water by driving the water through a semi-permeable membrane. Compared to forward osmosis, reverse osmosis is a high pressure driven system.

Rule curve: As applied to dam operations, for example, indicating the guidelines for how releases from the dam are managed (i.e., when to use the water, and when to store it).

Runoff: The flow of surface water from excess rain or other sources. This occurs when the source of water is distributed faster than the surface is able to absorb it, resulting in the flow of water.

Scalability: The capability to alter a project's plans to meet differing demand scenarios (ex.: adapting the plans regarding the size of a recycled water plant to produce less water for a smaller customer base than what was originally imagined).

Scenario planning: Exercises intended to demonstrate potential future water supply and demand situations (ex.: long periods of drought, lowered demand due to conservation, etc.).

SDWS: Secondary Drinking Water Standards: MCLs for contaminants that may adversely affect the taste, odor or appearance of drinking water. These are aesthetic considerations that are not considered as health concerns.

State Revolving Fund: The California State Revolving Fund (SRF) is a source of low-interest financing for investments in infrastructure. The California State Water Resources Control Board (SWRCB), under the federal Safe Drinking Water ACT, combines federal and State funds in the form of Drinking Water State Revolving Fund (DWSRF) program.

Supply augmentation: Adding to the water supply.

Supply-demand gap: The difference between a water system's ability to sustainably store and provide water to its customers and the demand on the system. The amount by which demand may exceed supply, such as in the peak demand season.

TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

Turbidity: The cloudiness or haziness of a fluid caused by the presence of particulates in the water.

Urban Water Management Plan: A report that fulfills the requirements described in the Urban Water Management Planning Act. The report describes the utility's water resource supplies and projects needs over a twenty-year planning horizon with relation to conservation, water service reliability, water recycling, opportunities for water transfers, and contingency plans for drought events. The latest report was published in 2015.

Water 90 Day Operating Fund (Fund 716) – The Water 90 Day Operating Fund provides financial stability, including supporting the Water Department in addressing cash flow issues which are an inherent result of the seasonability of water revenues. Maintaining a strong cash reserve also helps maintain the utility's bond rating and ensure the lowest possible borrowing costs. Together with the Water Operations Fund (Fund 711), the two funds are designed to meet the Water Department's 180 day operating reserve financial goal.

Water Emergency Reserve (Fund 717) – The Water Emergency Reserve provides resources necessary for any emergency repairs required to ensure continued water service to customers and service areas as the result of events which are impossible to anticipate. The fund shall be used in situations such as natural disasters or other unforeseeable cause of damage to or disruption of the system that require financial resources above those that would normally be available to respond to such a situation.

Water Operations Fund (Fund 711) – The Water Operations Fund includes all expenditures and revenues related to the daily operations of the Water Department including the majority of funding for the Department's CIP. Together with the Water 90 Day Operating Fund (Fund 716), the two funds are designed to meet the Water Department's 180 day operating reserve financial goal.

Water Public Art Fund (Fund 714) – The Water Public Art Fund is a set aside for public art projects throughout the City. The Water Department participates in the creation of art which promotes and/or educates the public on the water system. Calculated by fund, 1% is levied on an average of the most recent three-year total eligible capital spending. More information about the City's Public Art program can be found in the Municipal Code Chapter 12.80.

Water Shortage Contingency Plan - Required as part of the Urban Water Management Plan, the WCSP outlines how an agency will manage water supplies during long-term shortages.

Water Rate Stabilization Fund (Fund 713) – The Water Rate Stabilization Fund is intended to provide a financial buffer for the risks which may result from uncontrollable factors such as cool or rainy weather, and economic downturns. It will also help mitigate the inherent risk of basing so much revenue on the volume of water sold.

Water System Development Charges (Fund 715) – The Water System Development Charges (SDC) are one-time fees, collected as a condition of establishing a new connection to the City's water system or the expansion of an existing connection. The purpose of these fees is to pay for the development's share of the costs of new and existing water facilities and infrastructure. These funds support the Department's conservation rebate programs as well as funds a portion of specific CIP projects which improve the system's capacity. Also referred to as "connection fees."

Water-neutral: As applied to development paths (i.e., levels of population or economic growth), signifying an approach that does not change overall demand for water.

Water year: Each water year begins October 1 and extends through September 30.

Calculations

- (#) – negative number

- > - less than
- < - more than
- **Debt Service Coverage Ratio Calculation**: The Water Department financial model calculates the debt coverage ratio without reserves. The calculation with reserves is:
  - Net Revenues/Debt Service

  Where NET REVENUE is the number that is left in 711 on June 30 of the fiscal year after all transfers to other reserve funds have been made.

Source Documents

2016 Annual Report
Annual Budgets
Comprehensive Cost of Service Water Rate Study, August 2016
Consumer Confidence report 2016
Customer Service Glossary, 2017
Long Range Financial Plan, June 2016
Staff Reports, City Council & Water Commission
Water Department Financial Reserve Policy, December 2016
Water System Development Charge Study, April 2015
WSAC Final Report on Agreements and Recommendations, October 2015

Concept 1
Aquifer Storage and Recovery (ASR) in Mid County Groundwater Basin (MCGB)

Fact Sheet

Description	Available winter flows from the City's surface water sources treated at the Graham Hill Water Treatment Plant (GHWTP) would be injected in the Mid County Groundwater Basin (MCGB) at the existing Beltz Wellfield and additional new wells, and recovered as a supplemental groundwater supply in dry summer periods. (Referred to as "Scenario 11.2" in prior ASR feasibility investigations and groundwater modeling efforts.) [1]
Water Source(s)	Average Injection: 930 AFY / 300 MGY (1.7 MGD) of potable city water supply [2] Max Injection: 1,110 AFY /360 MGY (2.0 MGD) of potable city water supply [2]
Project Yield	Average Extraction: 750 AFY / 250 MGY (1.3 MGD) of groundwater [3] Max Extraction: 1,620 AFY / 530 MGY (3.0 MGD) of groundwater [3]
Evaluation Criteria	
Project's supply contribution as a % of worst year supply shortfall	44% [4] of the 1.2 billion gallons per year (bgy) supply gap [5]
Increases resilience to climate change	Yes; the project would utilize available capacity in the MCGB for storing winter flows, to be recovered through additional groundwater extraction during dry periods, thereby increasing resilience to drought and the impacts of climate change.
Annualized Cost per million gallons of Average Year Yield (ACAYY)	$12,400 - $26,000 per MG [6] $4,100 - $8,500 per AF [6]
Is understood and accepted by the public and key stakeholders	Yes; this alternative is understood and continues to be viewed favorably as a viable alternative to address a water shortage.
Scalable or can be implemented incrementally or in phases	Yes; ASR can and should be implemented over time to ensure predicted outcomes; ASR is limited by groundwater basin capacity, surface water availability, and influence of Pure Water Soquel (PWS) injection to the MCGB.
Technical Feasibility	Yes; ongoing pilot testing demonstrated technical feasibility.
Likelihood project being funded by state or federal grants	Likely; funding from the Bureau of Reclamation and State Water Resources Control Board (SWRCB) is available for construction of new wells.
Opportunity for shared funding	No; City does not have a project partner and would likely assume all costs.
Greenhouse gas emissions	110 - 140 million ton (MT) of carbon dioxide (CO_2) emissions per year [7]
Time required for implementation	More than 10 years [8]
Operational Complexity	Low to Medium; would require minimal changes to current potable water supply operations, but increased effort for O&M of ASR wells.
Energy Use	710,000 – 930,000 KWh/yr [9] 0.6 – 0.9 MWh/AF [9]
Potential impacts for CEQA required mitigations to impact project cost or timeliness	Low; preliminary analysis indicates that the project would not have significant environmental impacts due to limited footprint of new facilities. The first phase of this project (conversion of existing Beltz Wells) was evaluated at the project level in the Water Rights EIR.
Adaptable to future regulatory or source water changes	Yes; for regulatory changes, but limited adaptability to new water sources. Prior to source water changes, geochemistry, travel time, and post-recovery water treatment needs will need to be revisited.
Degree of administrative complexity	Low; located within the City of Santa Cruz water service area and no need for partnerships with outside agencies.
Project Assumptions	• Based on Scenario 11.2 [1] and does not consider operation of Pure Water Soquel project and impacts to injection or extraction rates. • Pipelines sized for peak injection (2.0 MGD) and peak extraction (3.0 MGD) • Injection period = 6-month (Nov – Apr) • Extraction period = 6-month extraction (May – Oct)

NOTES:

[1] Scenario 11.2 was performed by Pueblo Water Resources in their Phase 1 ASR Feasibility Investigation groundwater modeling (Pueblo, 2021). This scenario uses 2016-18 demands (2.6 bgy), the GFDL2.1A2 climate change scenario, uses the four existing Beltz wells plus four new wells and does not include the use of native groundwater supplies.

[2] Average and Max injection rates provided by City from Gary Fiske modeling results based on Scenario 11.2 (May, 2022).

[3] Average and Max extraction rates provided by City from Gary Fiske modeling results based on Scenario 11.2 (May, 2022).

[4] Percentage based on max extraction rate of 530 MGY.

[5] As compared with the supply gap identified by Santa Cruz Water Supply Advisory Committee (WSAC).

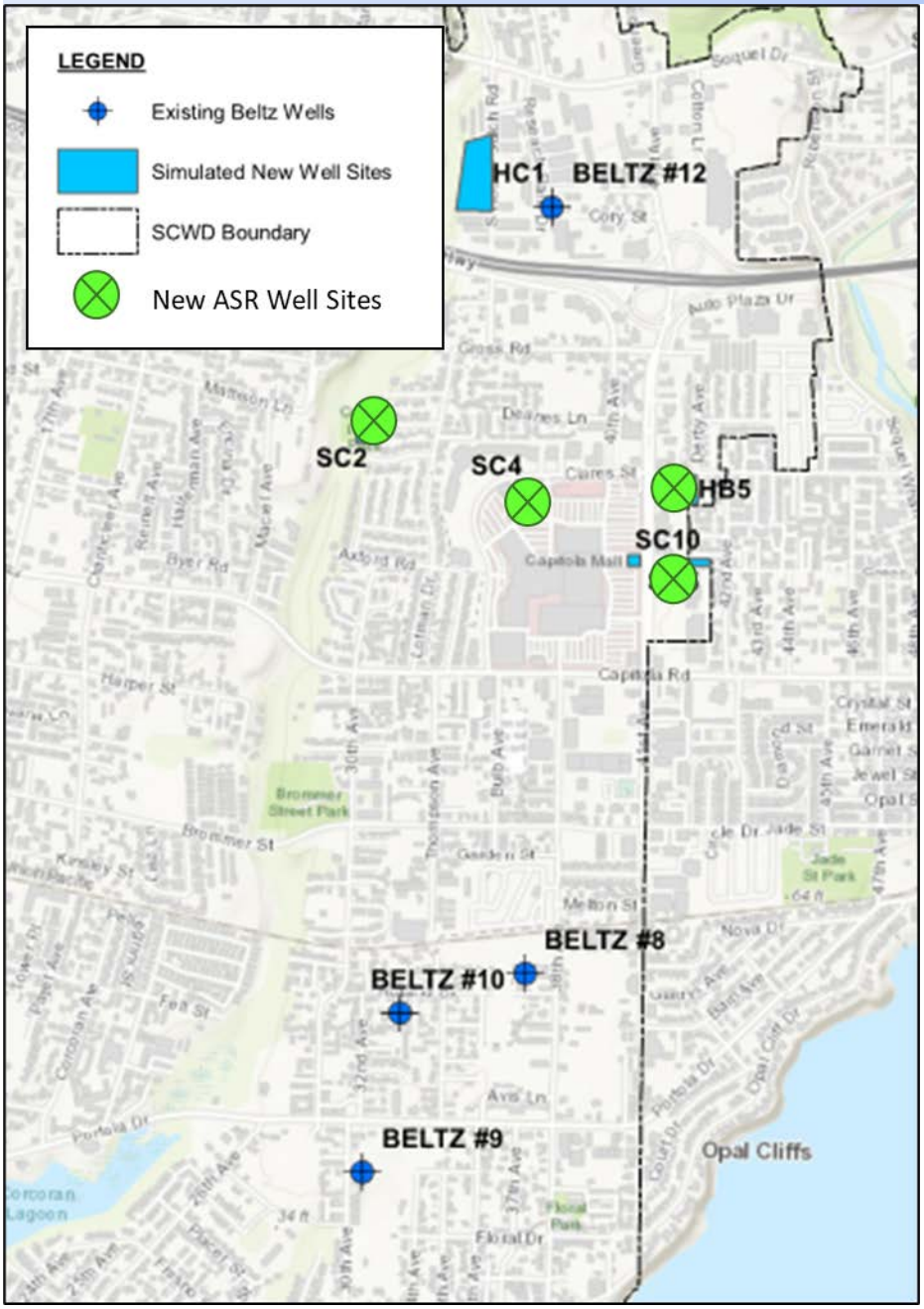
[6] Costs are estimated at an AACE Class 5 level with -/+50% cost variation. Costs include: conversion of 4 Beltz wells to ASR wells, 4 new ASR wells, wellhead treatment for Beltz 12 and new wells, upgrades to Beltz Water Treatment plant (WTP), pilot testing, connections to/from water system, site acquisition, and additional facility costs. Costs also include markups, mobilization, contractor overhead, and a 30% estimate contingency. If additional new wells are required, infrastructure and treatment costs would be added accordingly. Low range of ACAYY is based on maximum extraction year (530 MGY). High range of ACAYY is based on average extraction year (250 MGY). Cost sources include: Santa Cruz ASR Project - Phase 1 Feasibility Investigation; Summary of Groundwater Modeling Scenario 11.2 Results (Pueblo, 2021); Beltz Treatment Plant Rehabilitation Project (CDM, 2008); Beltz 12 Capital Asset Record Construction & Treatment Cost (City, 2015), and estimates from the City for Beltz 12 ammonia treatment costs (Dec, 2021).

[7] Based on average emission rates for PG&E (2014-2018). Low emissions range based on energy use for an average extraction year, and high emissions range based on energy used for a max extraction year. PG&E increase in use of green energy sources in the future will reduce or eliminate GHG emissions.

[8] Based on estimates from the City and Pueblo Water Resources of 1.5 years for pilot testing existing wells, 3 years for pilot testing new wells, 1.5 years per well for upgrading existing wells, 2.5 years for developing new wells, and assuming 2 years of injection before commencing extraction. Estimates include property acquisition permitting, design, contractor procurement and construction. Construction will occur in phases

[9] Energy estimates for injection and extraction based on pumping information provided by the City. Energy for treatment based on estimate of energy use from Beltz Treatment Plant Rehabilitation Project (CDM, 2008). Low range is based on energy use for an average extraction year and high range is for energy used for a max extraction year. Unit energy estimated based on average and max AFY extraction rates.

Figure 1 - Concept 1 - ASR in the MCGB



Modified figure from “Santa Cruz ASR Project - Phase 1 Feasibility Investigation; Summary of Groundwater Modeling Scenario 11.2 Results (Pueblo, 2021)”

Concept 2
Indirect Potable Reuse (IPR) in Santa Margarita Groundwater Basin (SMGB)
Fact Sheet

Description	Expansion of treatment capacity at Pure Water Soquel (PWS) Advanced Water Treatment Facility (AWTF) at Chanticleer, and conveyance of purified water to Scotts Valley for injection into the Santa Margarita Groundwater Basin (SMGB). In addition to any agreements with the SMGWB GSA, this concept could require some form of buy-in agreement with Soquel Creek Water District (SqCWD).
Water Source(s)	1,500 AFY/ 490 MGY (1.4 MGD) of purified water [1]
Project Yield	710 AFY/ 220 MGY of groundwater to restore SMGB levels [2] 790 AFY/ 260 MGY of groundwater extracted for City use
Evaluation Criteria	
Project's supply contribution as a % of worst year supply shortfall	21%[3] of the 1.2 billion gallons per year supply gap.[4]
Increases resilience to climate change	Yes; the project would utilize available capacity in the SMGB for storing purified water to be recovered as additional groundwater during dry periods, increasing resilience to drought and the impacts of climate change.
Annualized Cost per million gallons of Average Year Yield (ACAYY)	$24,000 per MG [5] $7,800 per AF [5]
Is understood and accepted by the public and key stakeholders	Yes; this alternative is viewed somewhat favorably by the public as a way to address water shortages.
Scalable or can be implemented incrementally or in phases	Yes; limited by groundwater basin capacity and PWS AWTF expansion capacity [1] unless additional AWTF capacity is added elsewhere.
Technical Feasibility	Yes; groundwater replenishment reuse projects have been successfully implemented in Southern California for over 50 years. Additional groundwater modeling and/or pilot testing may be required to demonstrate feasibility for the SMGB.
Likelihood project being funded by state or federal grants	Likely; funding from the Bureau of Reclamation and SWRCB is available for water reuse projects.
Opportunity for shared funding	Yes; Scotts Valley Water District could provide cost-share, and potentially other member agencies of the Santa Margarita Groundwater Agency (SMGWA)
Greenhouse Gas Emissions	1,210 MT of CO_2 emissions per year [6]
Time required for implementation	8 -10 years
Operational complexity	High; would require coordination with multiple agencies to construct and operate the system and meet regulatory requirements.
Energy Use	8,220,000 KWh/yr [7] 5.5 MHh/AF [7]
Potential impacts for CEQA required mitigations to impact project cost or timeliness	High; short-term construction-related impacts that could likely be mitigated through alternative construction techniques, preconstruction surveys, and implementation of best management practices.
Adaptable to future regulatory or source water changes	Yes; beneficial to meet groundwater sustainability goals as well as potential opportunity to blend surface water could be considered.
Degree of administrative complexity	High; due to multi-agency involvement and complex regulatory requirements.
Assumptions	• Injection of 1,500 AFY (710 AFY to replenish SMGB[2] and 790 AFY for City extraction) • City would need new injection and extraction wells, and conveyance to Newell Creek Pipeline. • Groundwater modeling required to confirm injection, extraction, and well locations. • ACAYY is based on beneficial reuse of 1,500 AFY.

NOTES:

[1] PWS project was designed with a capacity to increase production by an additional 1,500 AFY for a total project capacity of 3,000 AFY of purified water produced.

[2] SMGB Groundwater Sustainability Plan (GSP) objectives to restore groundwater levels.

[3] Percentage based on 260 MGY of groundwater extracted for City use.

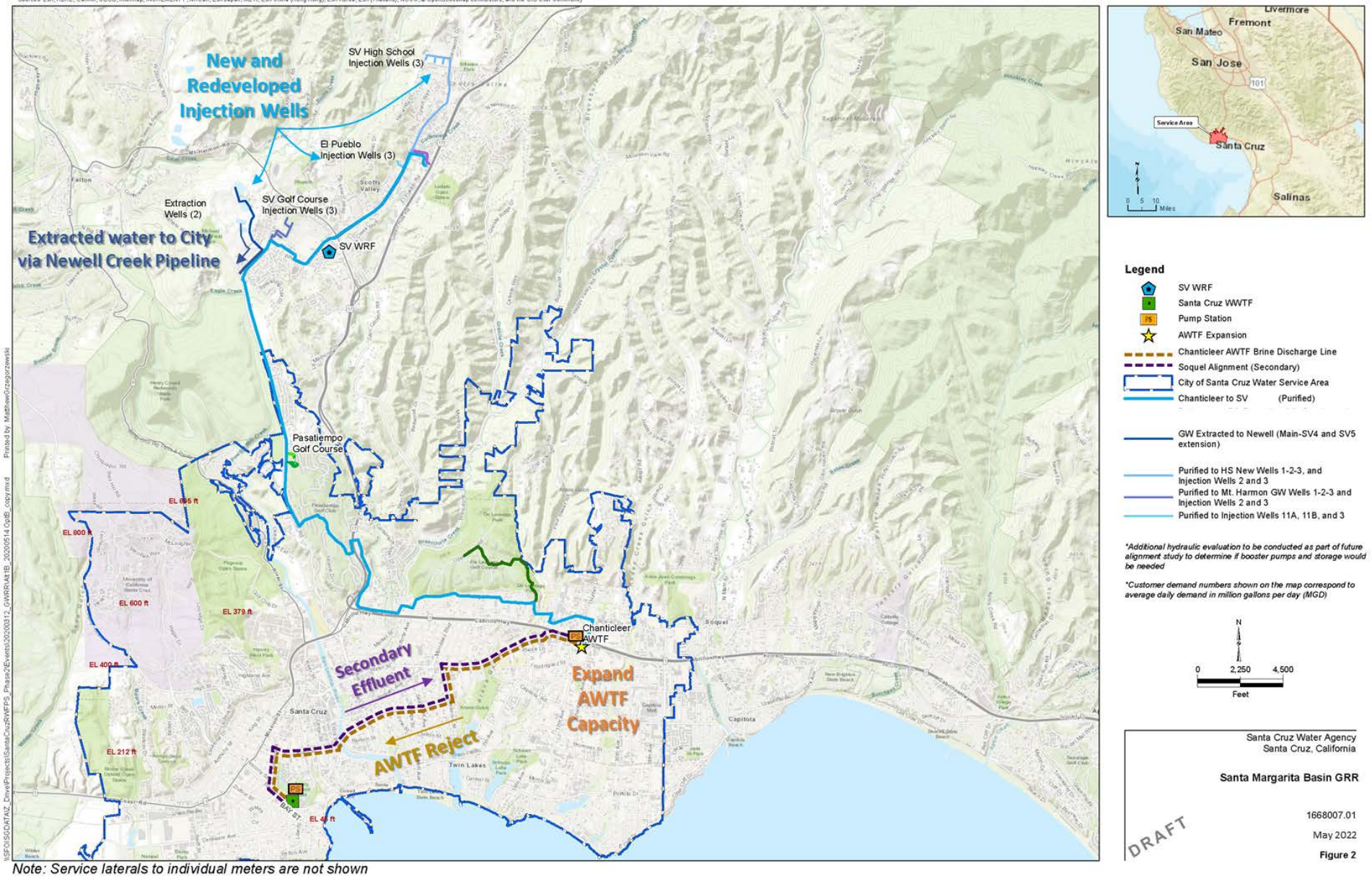
[4] As compared with the supply gap identified by Santa Cruz Water Supply Advisory Committee (WSAC).

[5] Costs are estimated at an AACE Class 5 level with -/+50% cost variation. Costs include: expansion of PWS treatment capacity, conveyance to Scotts Valley, upgrading 2 wells for injection at El Pueblo, 7 new injection wells, 2 new extraction wells, conveyance of extracted water to Newell Creek pipeline connection, and additional facility costs. Costs also include markups, mobilization, contractor overhead, and a 30% estimate contingency. Costs based on Regional Recycled Water Alternatives Evaluation TM (KJ, 2021), escalated to 2022 and adjusted to extract 790 AFY for City use.

[6] Based on average emission rates for PG&E (2014-2018). PG&E increase in use of green energy sources in the future will reduce or eliminate GHG emissions.

[7] Energy estimates for treatment and conveyance. Unit energy estimated based on beneficial reuse of 1,500 AFY.

Figure 2 - Concept 2 - IPR in the SMGB



Note: Service laterals to individual meters are not shown

Fact Sheet

Description	Develop a new AWTF to treat effluent from the Santa Cruz WWTF and produce purified water to be blended with raw surface water prior to additional treatment at the GHWTP.
Water Source(s)	4,800 AFY/ 1,600 MGY (4.3 MGD) of Santa Cruz WWF effluent
Project Yield	3,700 AFY/ 1,200 MGY (3.3 MGD) of purified water
Project's supply contribution as a % of worst year supply shortfall	100% of the 1.2 billion gallons per year supply gap[1]
Increases resilience to climate change	Yes; the project would provide a consistent supply of locally produced, purified water to directly supplement the City's potable water system, increasing resilience to drought and the impacts of climate change.
Annualized Cost per million gallons of Average Year Yield (ACAYY)	$10,700 per MG [2] $3,500 per AF [2]
Is understood and accepted by the public and key stakeholders	This project type is generally understood by the public and key stakeholders however no information has been gathered about local understanding and acceptance of this form of water reuse.
Scalable or can be implemented incrementally or in phases	Yes; the City has adequate source supply and can produce purified water incrementally to fill the water supply gap.
Technical Feasibility	Yes; existing and proven treatment technologies are available to meet the proposed criteria and anticipated regulatory requirements for DPR.
Likelihood project being funded by state or federal grants	Likely; funding from the Bureau of Reclamation and SWRCB is currently available for water reuse and demonstration projects, and additional future funding will likely be made available for DPR once regulations are finalized.
Opportunity for shared funding	No; City does not have a project partner identified and would likely assume all costs; however future purchase agreements may present an opportunity for water transfers and exchanges.
Greenhouse Gas Emissions	960 MT of CO_2 emissions per year [3]
Operational complexity	High; would require operation of a new AWTF and meeting complex regulatory requirements, which are still in development.
Time required for implementation	More than 10 years
Energy Use	6,750,000 KWh/yr [4] 1.8 MWh/AF [4]
Potential impacts for CEQA required mitigations to impact project cost or timeliness	High; short-term construction-related impacts could likely be mitigated through alternative construction techniques, preconstruction surveys and implementation of best management practices.
Adaptable to future regulatory or source water changes	Uncertain, may depend on adopted regulations by the SWRCB Division of Drinking Water, expected by December 2023. Potential opportunities to treat seawater, brackish water, or impaired groundwater at the AWTF could be considered.
Degree of administrative complexity	High; due to complex regulatory requirements.
Assumptions	• New AWTF located near the Santa Cruz WWTF with 3,700 AFY (3.3 MGD) purified water treatment capacity. • Assumes consistent production and use of purified water. • Treatment train based on draft DPR criteria but does not include nitrification of City effluent.

NOTES:

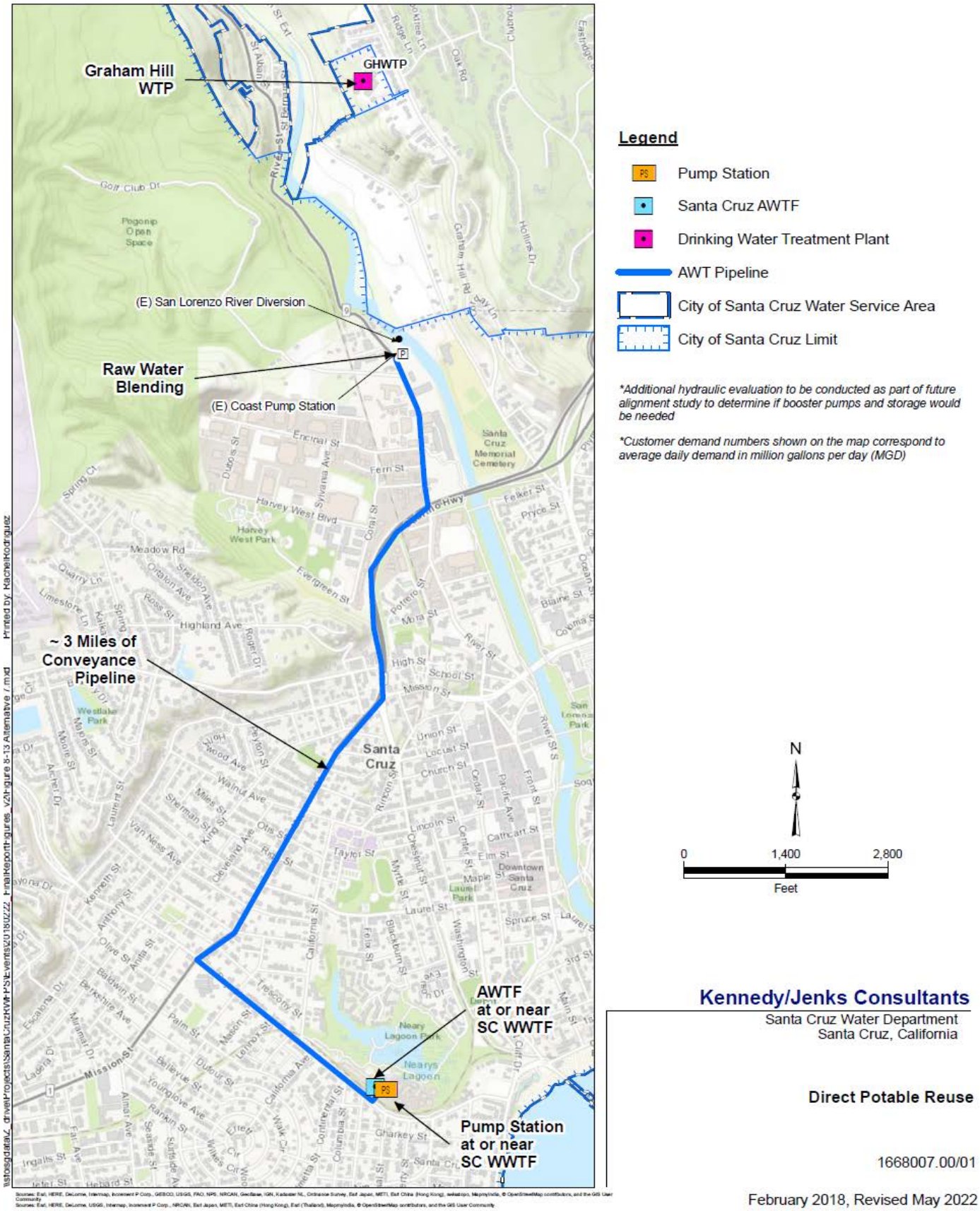
[1] As compared with the supply gap identified by Santa Cruz Water Supply Advisory Committee (WSAC).

[2] Costs are estimated at an AACE Class 5 level with -/+50% cost variation. Costs include: new AWTF, conveyance to raw water blending station, and additional facility costs. Costs also include markups, mobilization, contractor overhead, and a 30% estimate contingency. Costs based on Recycled Water Facilities Planning Study RWFPS (KJ, 2018), escalated to 2022.

[3] Based on average emission rates for PG&E (2014-2018). PG&E increase in use of green energy sources in the future will reduce or eliminate GHG emissions.

[4] Energy estimates for treatment and conveyance, based on RWFPS (KJ, 2018). Unit energy estimated based on 3,700 AFY capacity.

Figure 3 - Concept 3 - DPR with Raw Water Augmentation



Fact Sheet

Description	Construct a new, local seawater desalination facility and ocean intake (3 options considered).
Water Source(s)	Ocean water from the Monterey Bay.
Project Yield	3,700 AFY / 1,200 MGY (3.3 MGD) of desalinated water.
Project's supply contribution as a % of worst year supply shortfall	100% of the 1.2 billion gallons per year supply gap [1]
Increases resilience to climate change	Yes; project would provide a consistent supply of locally produced potable water to directly supplement the City's potable water system, increasing resilience to drought and the impacts of climate change. The location of the seawater desalination facility would consider sea-level rise.
Annualized Cost per million gallons of Average Year Yield (ACAYY)	$13,800 to $17,800 per MG [2] $4,500 to $5,800 per AF [2]
Is understood and accepted by the public and key stakeholders	This project type is generally understood by the public and key stakeholders. While desalination is recognized as a potential supply alternative, broad acceptance is unknown.
Scalable or can be implemented incrementally or in phases	Yes; the desalination plant could be designed to be scalable to incrementally to fill the water supply gap.
Technical Feasibility	Yes; though challenging to permit, desalination is technically feasible as demonstrated by projects implemented in the state of California and elsewhere.
Likelihood project being funded by state or federal grants	Likely; funding from the Bureau of Reclamation is available for desalination projects that have an approved Title XVI feasibility study. Additional future funding from the SWRCB could be available if drought persists.
Opportunity for shared funding	No; City has not identified a project partner and would likely assume all costs; however future purchase agreements may present an opportunity for water transfers and exchanges.
Greenhouse Gas Emissions	2,500 MT of CO2 emissions per year [3]
Time required for implementation	More than 10 years
Operational complexity	High; would require operation of a new desalination facility; balancing cost to operate versus ramping down or shutting down the plant in favor of less costly supplies
Energy Use	17,500,000 KWh/yr [4] 4.7 MWh/AF [4]
Potential impacts for CEQA required mitigations to impact project cost or timeliness	High; in addition to short-term mitigations, desalination projects may result in additional required mitigations to protect marine life in the Monterey Bay and the complex permitting process would impact timeline for construction.
Adaptable to future regulatory or source water changes	Potentially; though no current example exists in California, ocean water could potentially be blended with effluent from the Santa Cruz WWTF at the desalination plant to produced purified water to augment the potable water system; or the desalination plant could be converted to a DPR facility once DPR regulations are finalized.
Degree of administrative complexity	High, due to complexity of regulations and permitting requirements.
Assumptions	• Construction of desalination plant and facilities to provide 3.3 MGD of potable water. • ACAYY range represents costs for 3 ocean intake alternatives (Dudek, 2018). • Energy use estimated previously was for a smaller size (2.5 mgd) desalination plant. Energy consumption was estimated to be increased for treatment capacity of 3.3 mgd.

NOTES:

[1] As compared with the supply gap identified by Santa Cruz Water Supply Advisory Committee (WSAC).

[2] Costs are estimated at an AACE Class 5 level with -/+50% cost variation. Cost range is based on 3 different Alternatives for ocean intake, SI-1, SI-2, and SI-3, per Desalination Feasibility Study by Dudek (August 2018).

[3] Based on average emission rates for PG&E (2014-2018). PG&E increase in use of green energy sources in the future will reduce or eliminate GHG emissions.

[4] Energy estimates based on SCWD2 Regional Desalination Plant Phase I Preliminary Design Report-Volume 1 Draft Report (2012, CDM Smith). Unit energy estimated based on 3,700 AFY capacity.

Figure 4 - Concept 4 - Seawater Desalination

SOURCE: URS 2013; Updated by Dudek in 2017, Bing 2017

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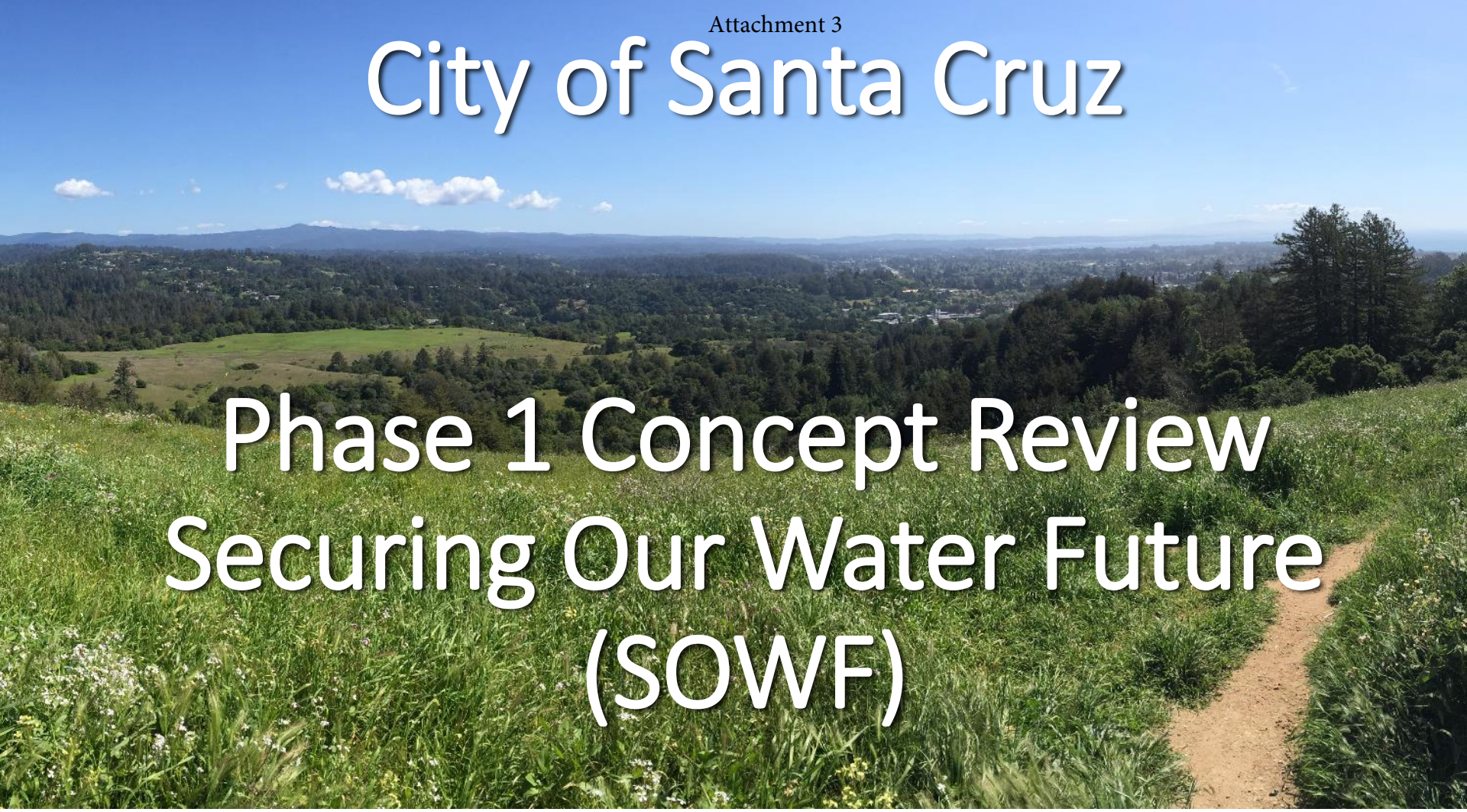
FIGURE 4

Updated Seawater Desalination Project Overview

City of Santa Cruz Seawater Desalination Project

City of Santa Cruz



Phase 1 Concept Review
Securing Our Water Future (SOWF)

06 June 2022

CITY OF SANTA CRUZ
Water Department

Kennedy Jenks

Agenda

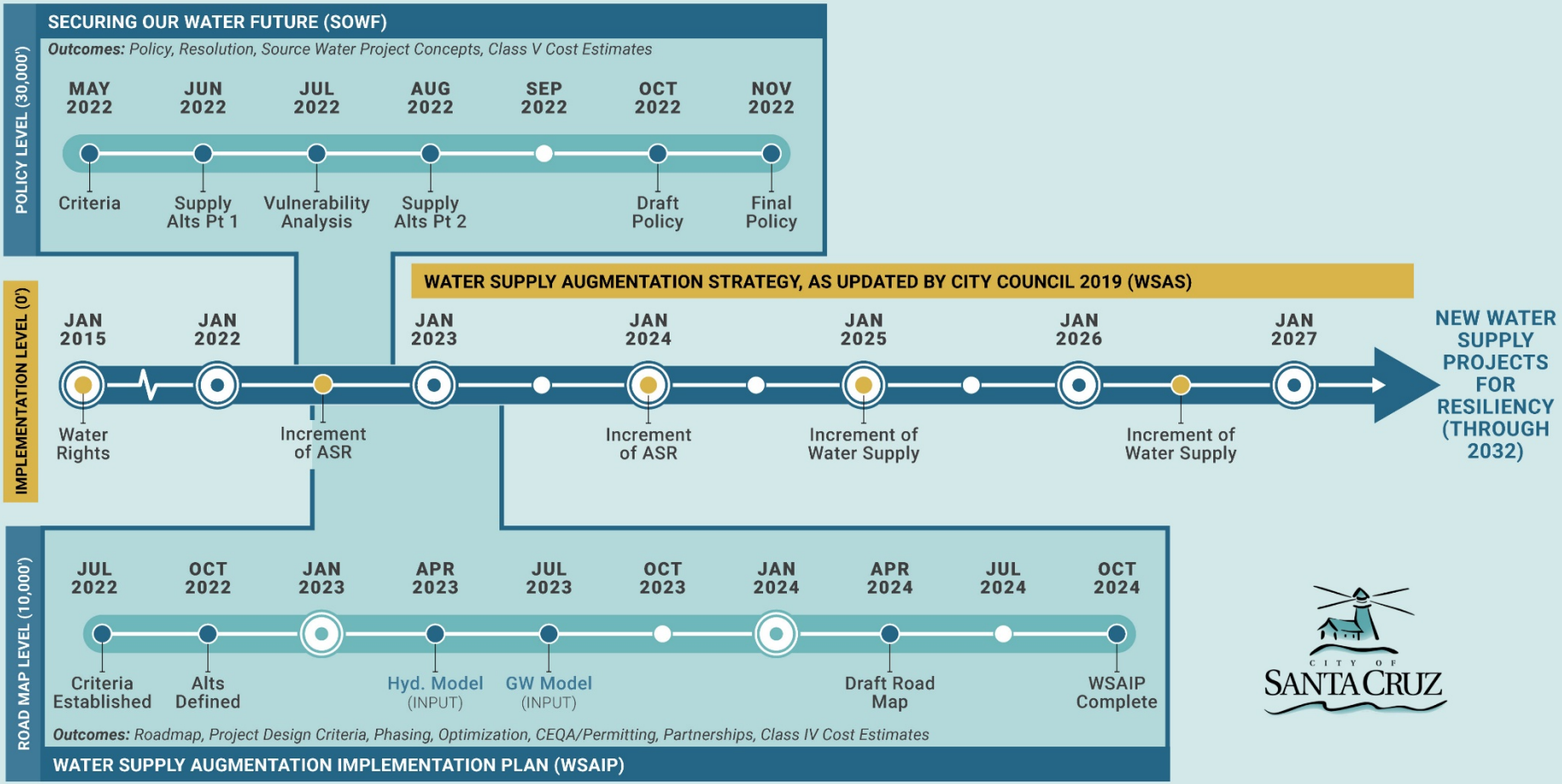
SOWF Timeline

SOWF Water Supply Project Concepts

Evaluation Criteria Applied to Project Concepts

Next Steps

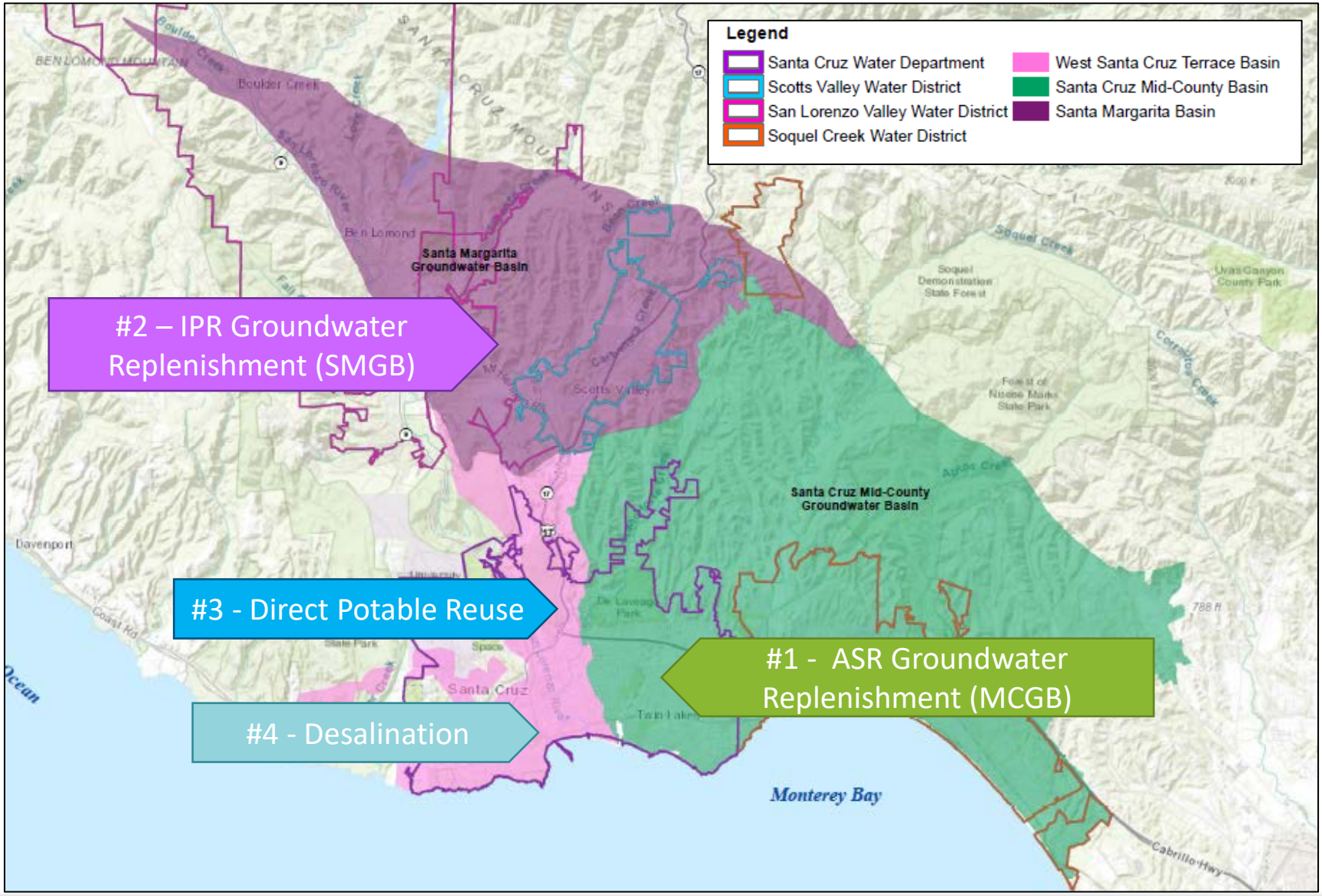
Water Supply Augmentation Timelines



SOWF – Concept Projects Evaluated

Concept	Project Type	Description
#1	Aquifer Storage and Recovery (ASR)	Groundwater replenishment in the Mid County Groundwater Basin (MCGB) using available winter surface water flows treated at Graham Hill Water Treatment Plant (GHWTP)
#2	Indirect Potable Reuse (IPR)	Groundwater replenishment in the Santa Margarita Groundwater Basin (SMGB) using purified water produced at Pure Water Soquel (PWS) Chanticleer Advanced Water Treatment Facility (AWTF)
#3	Direct Potable Reuse (DPR)	Blending of raw water with purified water produced at a new AWTF for further treatment at GHWTP
#4	Seawater Desalination	New desalination facility

SOWF – Four Concepts Evaluated



Evaluation Criteria & Prioritization

Criteria*	Criteria Evaluation
Project's **supply contribution** as a % of worst year supply shortfall	% of the 1.2 bg worst year gap
Increases **resilience to climate change**	Yes/No
Annualized Cost per million gallons of Average Year Yield (**ACAYY**)	$ per million gallons of average year yield
Is understood and **accepted by the public and key stakeholders**	Yes/No
Scalable or can be implemented incrementally or in phases	Yes/No
Technical Feasibility	Yes/No
Likelihood of project being funded by state or federal **grants**	Highly likely/ Highly unlikely
Opportunity for **shared funding**	Yes/No
Greenhouse Gas (GHG) Emission	MT of CO_{2e}
Time required to for implementation	Years
Operational complexity	High / Medium / Low
Energy Use	KWh/yr
Potential impacts for CEQA required mitigations to impact project cost or timeliness	High / Medium / Low
Adaptable to future regulatory or source water changes	Yes/No
Degree of **administrative complexity** of regulatory, permitting or right-of-way issues; time required to address and resolve issues	Complexity = High/Medium/Low; Time required = Months or Years

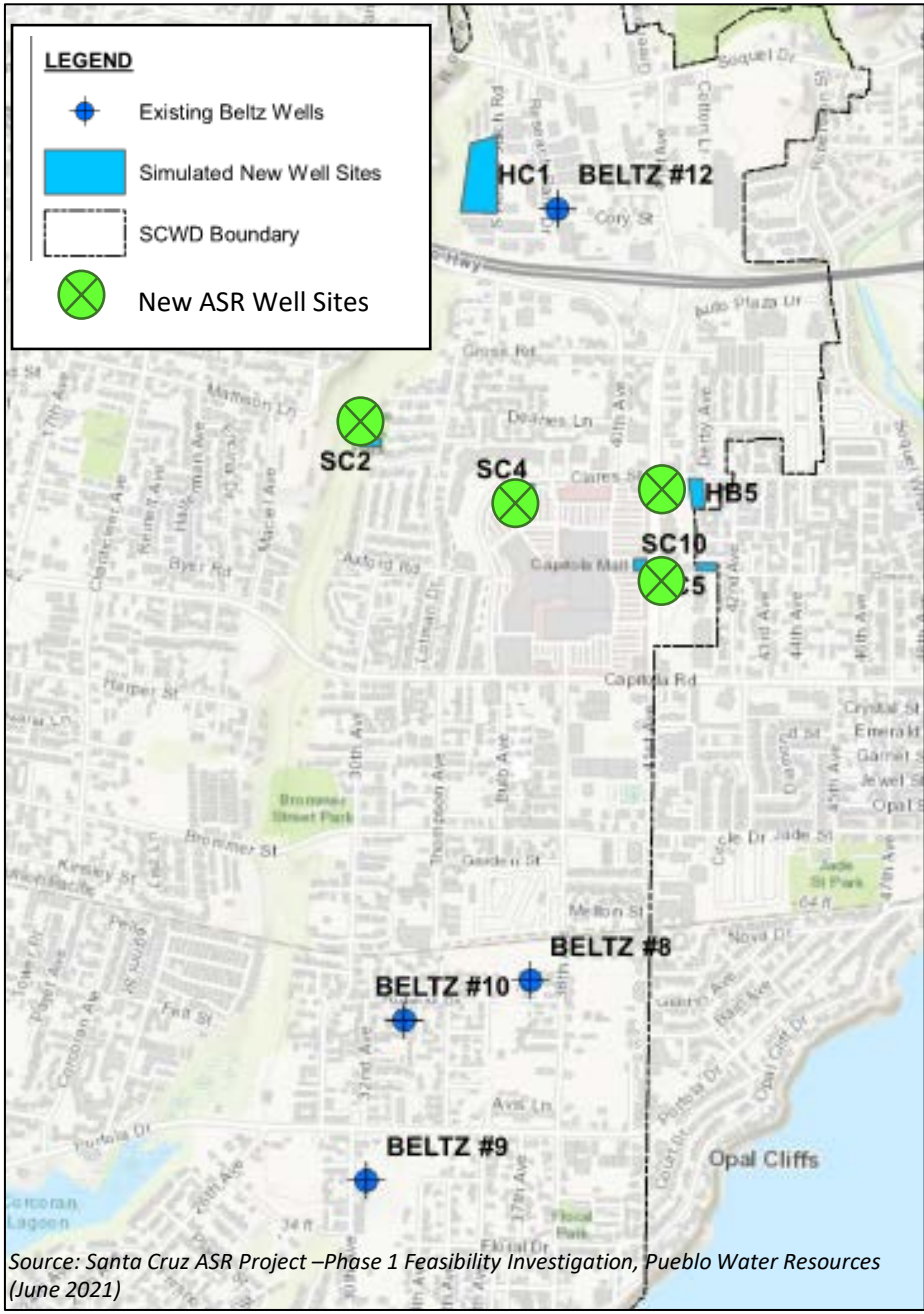
* Criteria prioritized (top to bottom) based on Water Commission ranked results, as presented on May 2, 2022 meeting

Concept #1: Aquifer Storage and Recovery (ASR) in the Mid-County Groundwater Basin (MCGB)

1. Injection of available treated surface water during winter months in MCGB

2. Extraction of groundwater from MCGB

3. Infrastructure Assumptions:
   - Conversion of 4 existing Beltz wells to ASR wells
   - 4 New ASR wells
   - Upgrades to Beltz WTP
   - Upgraded treatment for Beltz 12
   - New wellhead treatment for new ASR wells
   - Connections from wells to/from City's Potable Water System



Source: Santa Cruz ASR Project –Phase 1 Feasibility Investigation, Pueblo Water Resources (June 2021)

Concept #1: ASR in MCGB

1. **Water Source:** potable water supply
   - ✓ Inject available treated surface water during winter months
   - ✓ Average Injection: 930 AFY / 300 MGY (1.7 mgd)
   - ✓ Maximum Injection: 1,110 AFY/ 360 MGY (2 mgd)

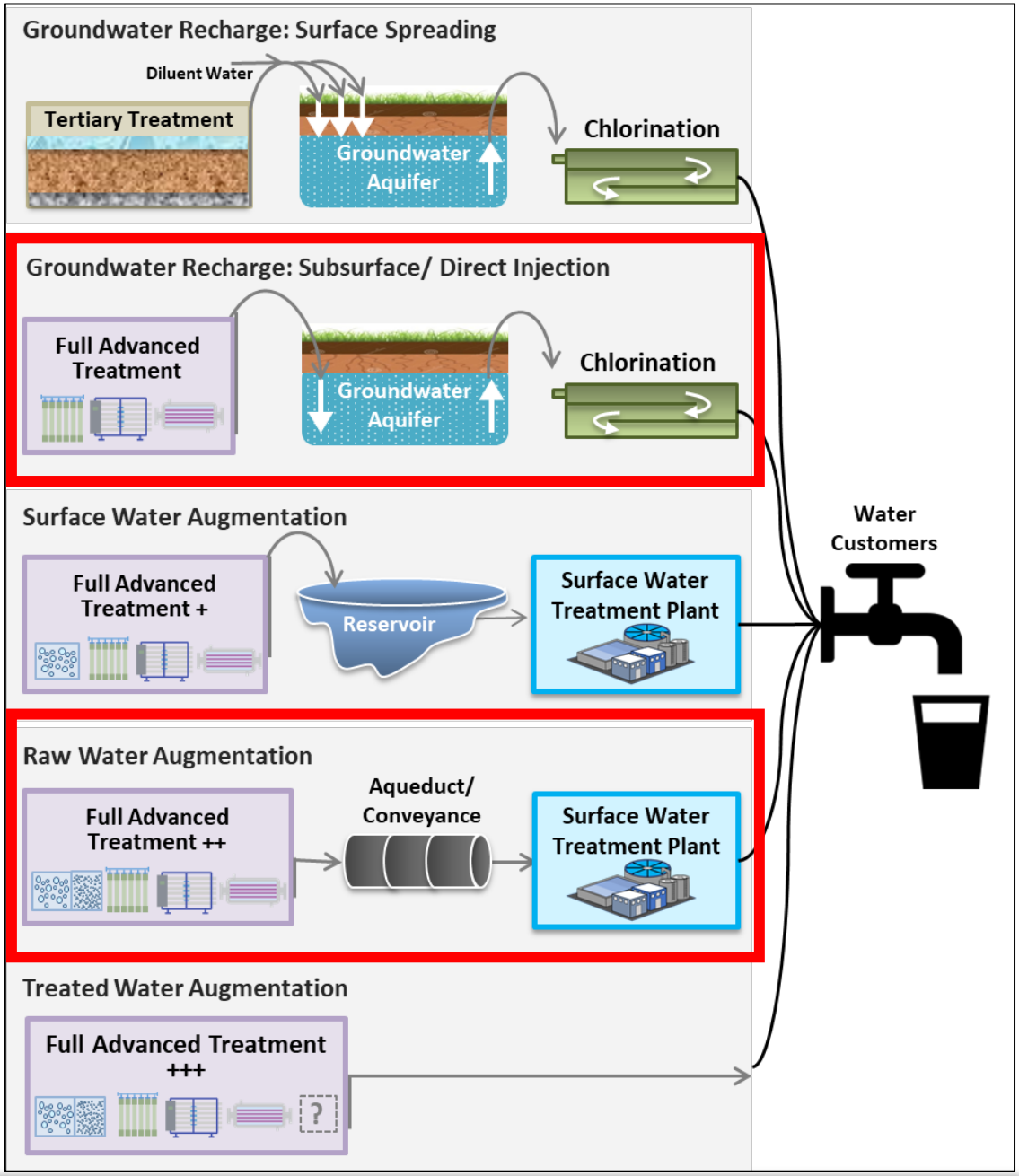
2. **Project Yield:** extraction of groundwater from MCGB
   - ✓ Increased extraction during drought/summer months
   - ✓ Average Extraction: 750 AFY / 250 MGY (1.3 mgd)
   - ✓ Maximum Extraction: 1,620 AFY / 530 MGY (3 mgd)
   - ✓ Contributes to ~44% of the 1.2 BGY supply gap

3. **Evaluation Criteria Highlights:**
   - ✓ Increases resiliency to climate change by using existing MCGB storage capacity
   - ✓ ACAYY range based on range of average to maximum yield
   - ✓ Technically feasible and implementable
   - ✓ 10+ Years to Implement
   - ✓ Moderate complexity to implement

TYPES OF POTABLE REUSE

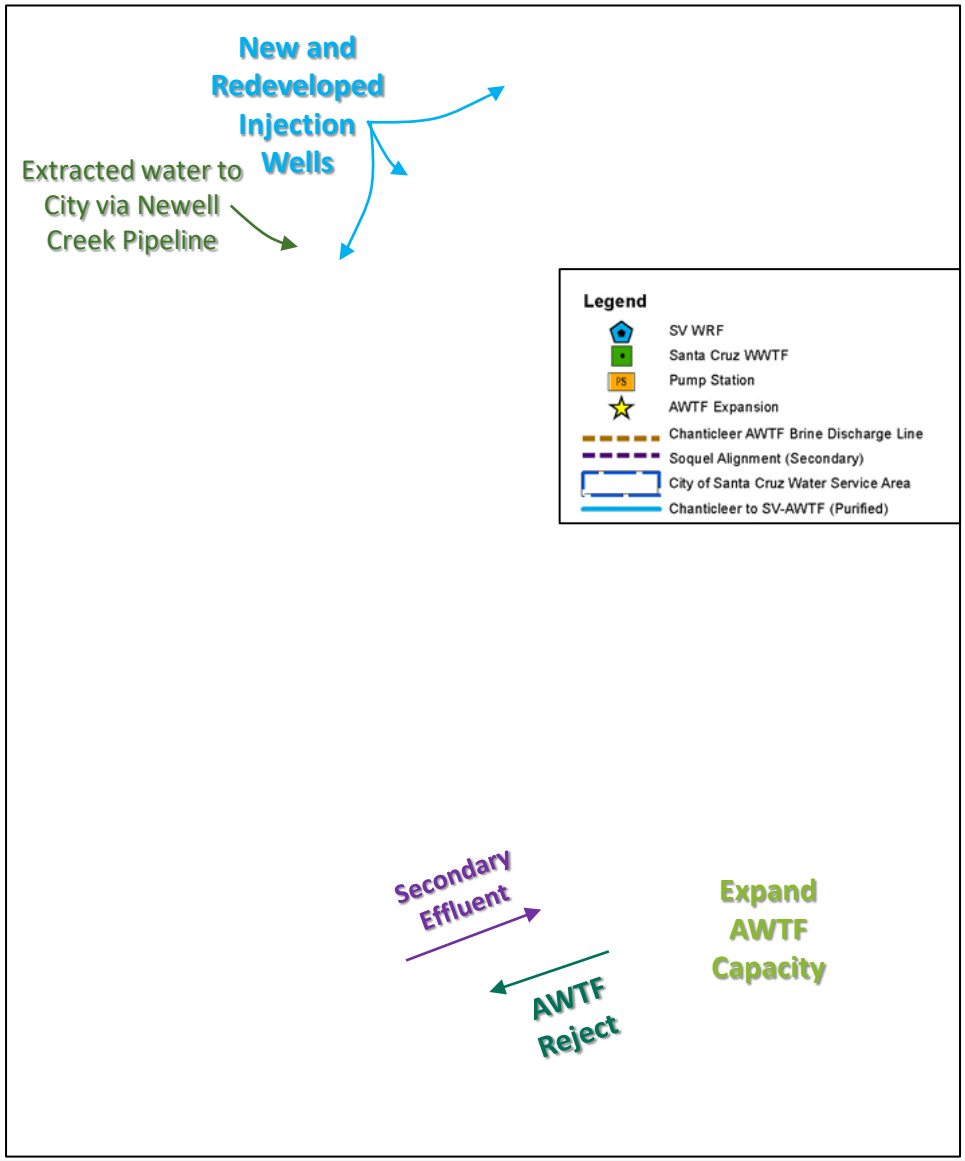
Concept #2 - **Indirect Potable Reuse (IPR)** in SMGB

Concept #3 - **Direct Potable Reuse (DPR)** to Graham Hill WTP



Concept #2: Indirect Potable Reuse (IPR) in the Santa Margarita Groundwater Basin (SMGB)

1. Injection of Purified Water in SMGB
2. Extraction of groundwater from SMGB
3. Infrastructure Assumptions:
   - ✓ Expansion of PWS Chanticleer AWTF to produce additional 1,500 AFY
   - ✓ New Pipeline from AWTF to Scotts Valley
   - ✓ 2 Upgraded injection wells at El Pueblo
   - ✓ 7 New injection wells
   - ✓ 2 New extraction wells
   - ✓ New pipeline from extraction wells to Newell Creek Pipeline



Concept #2: IPR in SMGB

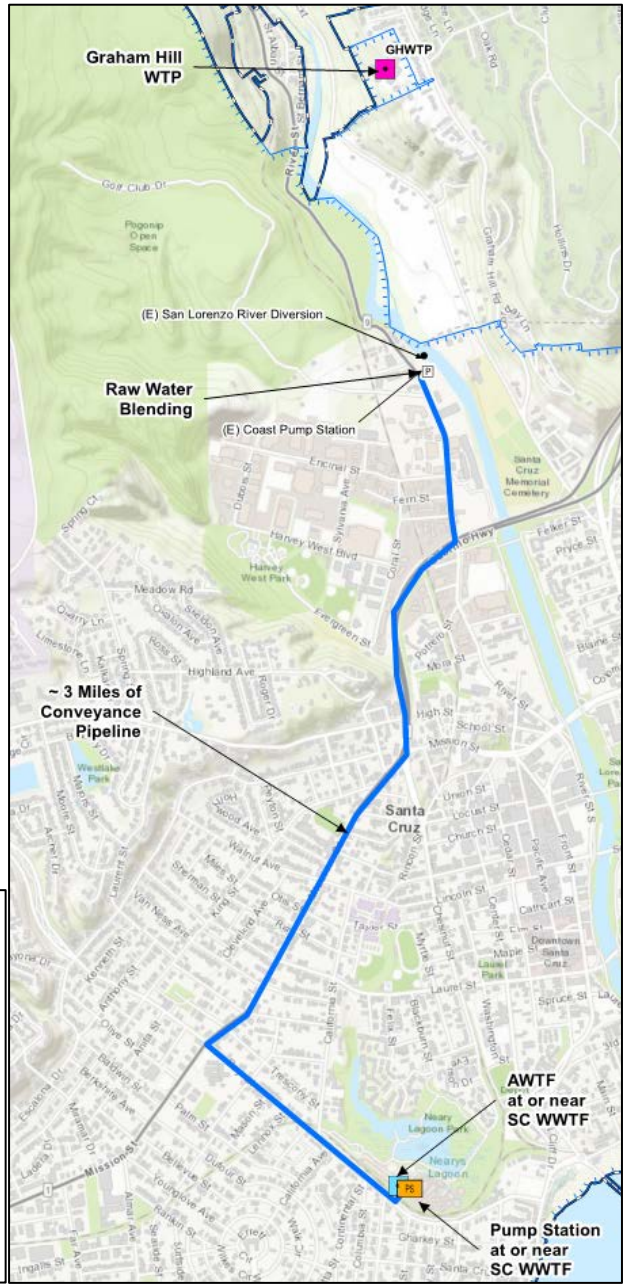
1. **Water Source:** Purified water produced at Chanticleer AWTF
   - ✓ Inject purified water year-round in SMGB
   - ✓ Injection: 1,500 AFY / 490 MGY (1.4 mgd)

2. **Project Yield:** extraction of groundwater from SMGB
   - ✓ Replenishment: 710 AFY / 220 MGY (0.6 mgd) remains in the SMGB
   - ✓ Extraction: 790 AFY / 260 MGY (0.7 mgd) extracted for City use
   - ✓ Contributes to 21% of the 1.2 BGY supply gap

3. **Evaluation Criteria Highlights :**
   - ✓ Increases resiliency to climate change by using existing SMGB storage capacity
   - ✓ ACAYY based on beneficial reuse of 1,500 AFY
   - ✓ Technically feasible and implementable
   - ✓ 8 - 10 Years to Implement
   - ✓ High complexity to implement

Concept #3: Direct Potable Reuse (DPR) via Raw Water Augmentation

1. Production of Purified Water in Santa Cruz
2. Blending of Purified water with Raw Surface Water
3. Treatment of blended water at Graham Hill WTP
4. Infrastructure Assumptions:
   - ✓ New AWTF near SC WWTF
   - ✓ Conveyance of purified water to Coast Pump Station



AWTF: Advanced Water Treatment Facility
SC WWTF: Santa Cruz Wastewater Treatment Facility

Concept #3: DPR via Raw Water Augmentation

1. **Water Source:** Santa Cruz WWTF Effluent
   - ✓ Secondary effluent from WWTF
   - ✓ 4,800 AFY / 1,600 MGY (4.3 mgd)
2. **Project Yield:** Purified water from new AWTF
   - ✓ Produce purified water year-round at a new AWTF in the City (designed to meet DPR treatment standards in development by State Water Resources Control Board Division of Drinking Water)
   - ✓ 3,700 AFY / 1,200 MGY (3.3 mgd)
   - ✓ Contributes to 100% of the 1.2 BGY supply gap
3. **Evaluation Criteria Highlights :**
   - ✓ Increases resiliency to climate change by providing a new water supply source without requiring additional storage
   - ✓ Technically feasible, pending regulations to be adopted by State Water Resources Control Board expected by 2023
   - ✓ 10+ Years to Implement
   - ✓ High complexity to implement

Concept #4: Seawater Desalination

SOURCE: URS 2013; Updated by Dudek in 2017, Bing 2017

DUDEK 0 750 1,500 Feet

FIGURE 4

Updated Seawater Desalination Project Overview

City of Santa Cruz Seawater Desalination Project

Concept #4: Seawater Desalination

1. **Water Source:** Ocean water from the Monterey Bay
   - ✓ Three different ocean water intake alternatives assessed (Dudek, 2018)

2. **Project Yield:**
   - ✓ 3,700 AFY / 1,200 MGY (3.3 mgd) of desalinated water
   - ✓ Contributes to 100% of the 1.2 BGY supply gap

3. **Infrastructure Assumptions:**
   - ✓ New ocean water intake system and pipeline to Desalination plant
   - ✓ New Seawater Reverse Osmosis (SWRO) Desalination plant
   - ✓ New pipeline to convey desalinated water to drinking water system
   - ✓ Brine storage and pipeline to SC WWTF outfall with outfall improvements

4. **Evaluation Criteria Highlights :**
   - ✓ Increases resiliency to climate change by providing a new water supply source with no storage component
   - ✓ ACAYY range based on cost for the 3 different ocean intake alternatives
   - ✓ Technically feasible, though challenging to permit
   - ✓ 8- 10 Years to Implement
   - ✓ High complexity to implement

Criteria Results for Concept Projects

Criteria	ASR [a]	IPR [b]	DPR	Desal [c]
Annual Yield	Ave: 250 MGY (750 AFY) Max: 530 MGY (1,620 AFY)	260 MGY (790 AFY)	1,200 MGY (3,700 AFY)	1,200 MGY (3,700 AFY)
% of Supply gap	44%	21%	100%	100%
ACAYY ($/MG)	$12,400 to $26,000	$24,000	$10,700	$13,800 to $17,800
($/AF)	$4,100 to $8,500	$7,800	$3,500	$4,500 to $5,800
GHG (MT of CO2)	110 to 140	1,210	960	2,500
Energy use (MWh/yr)	710 to 930	8,220	6,750	17,500
(MWh/AF)	0.6 to 0.9	5.5	1.8	4.7

a. ASR ranges for ACAYY, GHG, and Energy Use are based on average and max yield.
b. IPR yield limited by 1,500 AFY production less 710 AFY to restore SMGB groundwater levels.
c. Desal range for ACAYY is based on cost for three alternatives ocean intakes.
d. Refer to Fact Sheets for additional information and assumptions made for each concept.

Water Commission Next Steps

(as included in the Staff Report)

July 21, 2022

University of Massachusetts work on climate change vulnerability analysis

August 16, 2022

Potential City Council Study Session on Securing Our Water Future

August 29, 2022

Phase 2 of Project Evaluations, including the impact/influence of the vulnerability assessment work

October 3, 2022

Draft final technical memoranda on project comparisons, draft Council Resolution and draft Council Policy

November 7, 2022

Water Commission action on recommendations to Council on Securing Our Water Future, including all the elements described in this report, for Council action on November 22, 2022.

Q & A

Thank you

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Kennedy Jenks

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Santa Cruz Civil Grand Jury

701 Ocean Street, Room 318−I, Santa Cruz, CA 95060
(831) 454−2099 <grandjury@scgrandjury.org>

Our Water Account Is Overdrawn

Beyond Conservation: Achieving Drought Resilience

Summary

Santa Cruz County faces a water crisis. Periodic and sustained drought has become a fact of life. If we don't achieve drought resilience—and make meaningful progress toward achieving it soon—the results may prove to be catastrophic. This report examines our current water situation and proposes achievable steps that can be taken toward drought resilience by our County water districts, city water departments, and groundwater basin agencies. With these steps, residents, businesses, and farms can thrive and avoid economic hardship during times of drought.

We will highlight the important work that is currently planned or completed. This work demonstrates that our water agencies have the means to create a water capture, storage, and transfer system that will go far toward solving our current crisis. Solid, innovative drought plans for drought resilience exist, but are nearly invisible to the public. This consistent lack of transparency has made water a very charged topic, especially with regard to population growth. Residents need to know the facts when deciding issues.

The County has the means to achieve drought resilience. What's been missing is urgency and tightly integrated, cross-agency collaboration to accelerate this work. Although considerable interagency collaboration has been demonstrated, it has not resulted in the leadership needed to turn plans into action. The time to act is now.

Table of Contents

Background

"When the well's dry, we know the worth of water." —Benjamin Franklin

Water is the lifeblood of our community; it is essential for residents, businesses, and agriculture. Santa Cruz County relies on several large water suppliers, many smaller water suppliers, and thousands of private wells in rural areas. Agriculture uses about half our water, mostly in South County. For a quick snapshot, see Appendix A.

Santa Cruz County is one of a few counties in California that does not receive any water from outside the County. All of Santa Cruz's water is locally sourced from rainfall.

Some of our County supply comes from surface water in rivers and creeks; much more comes from groundwater pumped from aquifers. These groundwater basins are replenished by rainwater. Figure 1 shows the primary water supply resources in the County.

Figure 1. **Major Santa Cruz County Water Sources**
(Source: Santa Cruz County Grand Jury)

Ensuring a consistent water supply for all residents during multi-year droughts is an ongoing challenge. During the years 2012–2015, California suffered the worst drought in almost 450 years.[1] Santa Cruz County combated the drought through various actions, including implementing a first-time, state-mandated 25% reduction of urban water use.[2] Since that time, only a small amount of dry season storage has been added.

Climate Change Is Accelerating Water Supply Risks

Santa Cruz County has a Mediterranean climate, with cool, rainy winters and warm, dry summers. Water usage is much higher in the summer, driven mostly by landscaping and agricultural needs. Santa Cruz County has two main rivers—the San Lorenzo River and the Pajaro River—and numerous creeks. River flow varies highly from year to year. Over the last 100 years, the maximum flow in the San Lorenzo River of 91 billion gallons of

water occured in 1983, and the least flow of three billion gallons occurred in 1977. The average flow is about 30 billion gallons per year.[3]

The City of Santa Cruz and its neighbors within the City's water service area use less than three billion gallons of water a year (see Table 1 in Appendix A), which is no more than a tenth of the San Lorenzo River's average annual flow. Water storage for the City of Santa Cruz and some neighboring communities is provided by Loch Lomond Reservoir, which can hold about a year's worth of water usage by the City and its neighbors.[4] Water is diverted from the San Lorenzo River to Loch Lomond Reservoir during the rainy season and this stored water supplements the dry season river flow during the summer months. The water not diverted to Loch Lomond Reservoir or sent to the water treatment plant flows unused to Monterey Bay because we have nowhere to store it. Maintaining high levels at Loch Lomond Reservoir, shown in Figure 2, as a reserve is a critical part of the City's water supply planning.

Figure 2. **Half Empty or Half Full? Loch Lomond Reservoir, 2015**
(Credit: Photo Courtesy of the *Santa Cruz Sentinel*)

In California, climate change has resulted in higher year-to-year rainfall variability. This means we have both more frequent drought years and more frequent high- rainfall years. We are also experiencing fewer, heavier storms. This results in more runoff, with less rainfall reaching the aquifers. In mid-County, only about 5 percent of the rainfall replenishes our aquifers.[5] Population growth and expanded agriculture have increased groundwater pumping. This has caused chronic water shortages and critical

groundwater overdrafts. Unless replenishment of the aquifers improves, this shortage will only worsen with future extended and severe droughts.

Because there is insufficient storage to address periodic droughts, the County's water agencies have responded by stressing conservation. This has been extremely successful but is reaching practical limits. For example, in the City of Santa Cruz gross daily per capita water use declined from about 127 gallons in 2000 to 70 gallons—almost half—in 2015.[6] Conservation measures continue to reduce water usage to less than 50 gallons per person in 2020, one of the lowest levels in California.[7]

During normal rainfall years, the water supply mostly meets County water needs. During droughts, however, demand exceeds supply in parts of the County, resulting in a deficit, particularly through pumping groundwater basins. In the worst case, the projected deficit can reach 1.2 billion gallons in a year.[8] Over many years, this has led to chronic overdrafting of the basins. The lowering of the groundwater level causes saltwater intrusion to occur near the coast.

Drought Costs Everyone—a Lot!

The entire County lacks an economic impact report on the effects of a sustained drought. However, drought's economic effects are visible to all.[9]

The City of Santa Cruz has developed the "2020 Water Shortage Contingency Plan"[10] that details drought contingency allocations. A Stage 5 drought reduces allocations to 60 percent of normal (40% cut), while the less severe Stage 4 drought limits allocations to 79 percent of normal (21% cut). Stage 4 is somewhat less severe than the 25 percent cut mandated during the 2012–2015 drought.[2] See Appendix B for more detail.

Encouraging the City to avoid Stage 5 cutbacks should be a high priority for all businesses in the City. Water users should keep in mind that drought contingency fees kick in during droughts. Water infrastructure needs to be paid for whether the pipes are full or not.

The County depends heavily on tourism and the Transient Occupancy Taxes generated to support the general fund. The area's tourist and restaurant businesses are highly dependent on workers from across the County. Since a Stage 5 drought would limit tourist-oriented commercial water usage, many of those workers could be put out of work. Stage 5 restrictions will cause revenue drops for both the County and City of Santa Cruz.

Beyond the economic impact, our quality of life matters too. From the last sustained drought we remember watching our gardens wilt, driving cars we could not wash, and flushing toilets only when absolutely necessary. Santa Cruz County is a less desirable place to live when our water use is severely restricted. Water-wise appliances, native plant landscaping, and other conservation measures are now normal for our residents, but further cuts in the water supply will adversely impact daily living for all of us.

Forty Years of Single-Agency Efforts Have Shown Limited Results

Recognition of recurring water shortages in our County goes back decades. Originally, a second reservoir at Zayante was planned to store San Lorenzo River water. Due to cost and environmental concerns, it was never built. At the time, the City of Santa Cruz believed they could provide an adequate water supply through several smaller projects.[11]

In the 1980s, seawater intrusion into the Mid-County aquifers that underlie much of Soquel and Capitola was detected. This intrusion was due to overdrafting, meaning more water was being pumped from the groundwater basin than was being replenished by rainfall, which results in lowering the groundwater level. Monitoring wells were drilled to track the extent of the intrusion and conservation measures were promoted.[12] Figure 3 illustrates the saltwater intrusion relationship between local aquifers and Monterey Bay.

The focus of conservation was to reduce the demand on the system, and has been very successful. The Mid-County and Santa Margarita groundwater agencies have been chartered to achieve sustainability of the groundwater basin. We have been told that sustainability means, “Don’t make anything worse.” This sentiment refers to critical basin metrics, including groundwater level, groundwater storage reduction, land subsidence, water quality degradation, and seawater intrusion. Sustainability is not the same as resilience, which enlarges supply. For more detail on groundwater sustainability laws, see the section titled, “Laws That Drive Water Agency Actions.”

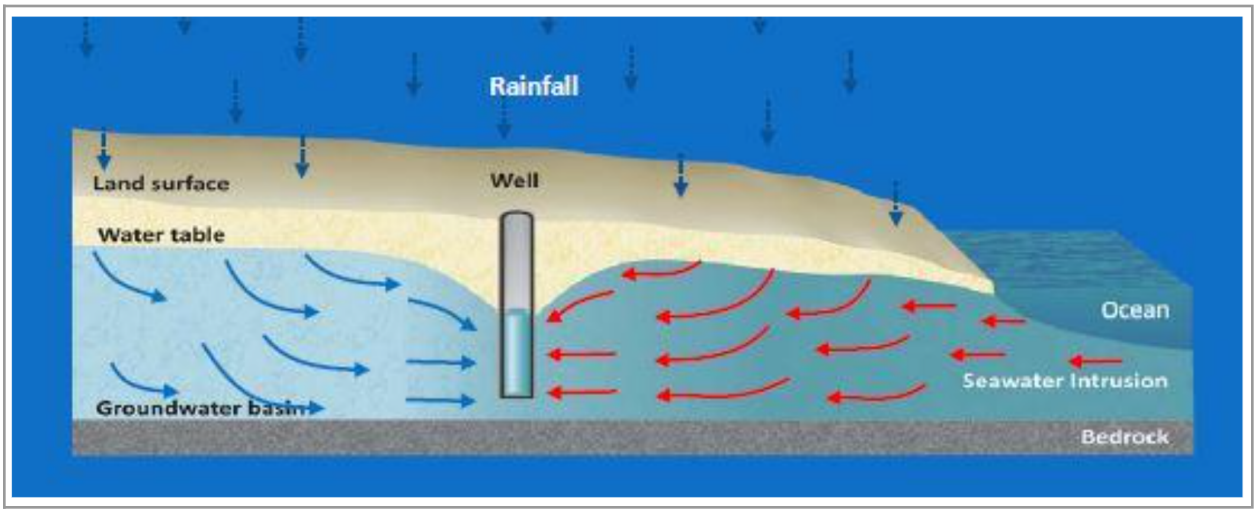

Figure 3. **Saltwater Intrusion Process**[13]

In 2010, planning began on a desalination plant that would serve the City of Santa Cruz and neighboring communities. The City of Santa Cruz discontinued the plan in 2016 after significant objections were heard from the local community. These objections included high setup and operational costs, insufficient evaluation of alternatives, the need for a more regional approach, a greater focus on conservation, and the likelihood of drought scenarios needing further analysis.[14]

In the early 2000s, investigations began into the possibility of taking water from the San Lorenzo River during the winter, treating it, and storing it in the neighboring groundwater

basins which have lots of “headroom” due to overdrafting. This stored water would both replenish the basins and provide water that could be returned to the City of Santa Cruz during droughts. The concept of integrated management of surface and groundwater to maximize water storage and availability under changing climate conditions is referred to as conjunctive use. This concept has finally reached the demonstration phase, 20 years later.

The State funded a planning grant through the Integrated Regional Water Management Act (see “Laws,” next section) to study the feasibility of conjunctive water use in Santa Cruz County. The grant funding produced a major report in 2015 that indicated that injecting treated water from the San Lorenzo River into the neighboring groundwater basins and recovering it for later use is feasible.[15] Integrated Water Resources Management funds were applied to this work because conjunctive use binds local water agencies together to improve the reliability of the regional water supply. Further evaluation, captured in reports from the Santa Cruz Water Supply Advisory Committee, indicate that groundwater storage can equal the three billion gallons stored in Loch Lomond Reservoir.[4] When at capacity, this groundwater supply could deliver a maximum of one billion gallons in a single year, which is one third of the total capacity of Loch Lomond Reservoir.[16]

However, water rights are a significant barrier to conjunctive use. The City of Santa Cruz is restricted from transferring San Lorenzo River water to neighboring water agencies. Modifying the water rights requires State Water Resources Control Board approval, and obtaining this approval requires an exhaustive Environmental Impact Report (EIR).[17] Work on revision of the water rights *alone* began in 2013 and was only completed in late 2021.[18] With the EIR complete, the change in water rights can be approved by the State. That will allow vastly more flexible water-sharing options between the districts serving the City of Santa Cruz, Mid-County, and North County. Most important among these options is efficiently capturing rainy season flow from the San Lorenzo River to recharge local aquifers.

As stated earlier, wildlife protection is an important aspect of water management. The EIR discusses the potential impacts of conjunctive use on local fish like coho salmon and steelhead trout, which are a threatened species. These fish need sufficient flow for adults to swim upstream during the spawning season, and for the juvenile fish to hatch and swim downstream to the ocean. The conjunctive use described in the EIR would divert water from the San Lorenzo River only during the winter months when sufficient river flow is not an issue. Conjunctive use may help protect the fish by allowing more flexibility in limiting diversions from the river during periods of low flow. For more detail on fish protection, consult the EIR.[18]

Laws That Drive Water Agency Actions

The State of California has enacted legislation aimed at protecting and preserving its water resources while providing adequate water supply to residents, businesses, and agriculture. The laws guiding our water agencies’ ability to deliver a resilient water supply, and some background on local effects, are listed here:

California Environmental Quality Act (CEQA) of 1970. This law requires that state and local agencies disclose and evaluate the significant environmental impacts of proposed projects and adopt all feasible mitigation measures to eliminate those impacts or at least minimize them. Capital improvement projects such as those described in this report require an Environmental Impact Report (EIR). Feedback from local agency leaders indicates that detailed plans may trigger a CEQA requirement which would be expensive and time-consuming. Many of the plans reviewed for this report deliberately lacked any specificity that might require an EIR. Addressing that problem is outside the scope of the grand jury.

Urban Water Management Planning Act of 1983. The Act promotes efficient water use and conservation. It requires large water suppliers providing water for municipal purposes to prepare and submit an Urban Water Management Plan to the California Department of Water Resources every five years. In response to the expected effects of climate change, recent amendments to the Act require local water agencies to plan for five consecutive drought years.

Integrated Water Resources Management (IWRM) Act of 2002. The Act aims to improve water supply reliability and water quality. It encourages water supply agencies and local governments to work together to more effectively manage water resources regionally.

Sustainable Groundwater Management Act (SGMA) of 2014. This legislation aims to prevent further degradation of the State's essential groundwater supply. It directs the California Department of Water Resources to identify groundwater basins where “continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.” These identified basins are designated as critically overdrafted, and the Act requires that they be sustainable by 2040. Twenty-one groundwater basins have been designated as critically overdrafted in California. Two of them are in Santa Cruz County. The responsible groundwater management agencies are described in Appendix A.

Scope and Methodology

As residents of Santa Cruz County, we see the impact of drought and share a high level of concern about adequate water supplies. We wanted to understand how water is sourced, stored, and distributed to customers, the limitations inherent in the current water infrastructure, and what can be done to provide a more resilient water supply. We looked at the existing and planned physical infrastructure, the charters of the responsible water agencies, and finally, at the barriers to achieving real drought resilience.

This report focuses on North County where the water storage problem has a solution within reach. South County, the small and minor water suppliers, individual wells, and agriculture areas are not included in this investigation. The limited scope of this report does not diminish the need to address drought resilience in those areas.

This investigation report describes the infrastructure that collects, treats, and distributes water. Our intent is to provide enough information that residents can see the big

picture—that drought resilience is achievable and that population growth need not threaten our access to sufficient water. We also address the systemic barriers to achieving that goal. We had hoped that a succinct drought resilience document already existed, but found only massive documents—some more than 1,000 pages long—sprinkled with disconnected nuggets of useful information.

The investigation included:

- Interviewing local water agencies
- Reviewing reports and plans describing current and future local water infrastructure
- Researching local water agency charters, collaborations, conflicts, and overlaps
- Seeking out best practices from integrated water management
- Considering options for improving county-wide water supply planning and execution
- Examining barriers to achieving county-level drought resiliency

Definitions

This report relies on many information sources that vary in terminology usage. In some cases, terms have specific legal meanings, but this gets lost in everyday conversation. The following terms will be used consistently in this report:

Critically overdrafted groundwater basin: A basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.[19]

Conjunctive use: The concept of integrated management of surface water and groundwater to maximize water storage and availability under changing climate conditions is referred to as conjunctive use.[15]

Groundwater sustainability: The development and use of groundwater resources to meet current and future beneficial uses without causing unacceptable environmental or socioeconomic consequences.[20]

Drought resilience: Groundwater sustainability supports drought resilience, but is not equivalent. Resilience requires storage, recycling, or other methods that bank water or draw it from other areas so that drastic water service reductions are *not* required when severe droughts occur.

Water rights: A water right is a legal entitlement authorizing water to be diverted from a specified source and put to beneficial, non-wasteful use. Current water rights prevent excess water from the San Lorenzo River being sent to the neighboring water agencies, which means that it is discharged into Monterey Bay.

Water augmentation strategy: Augmentation is the process of adding water to an existing source water supply (such as a reservoir, lake, river, wetland, or groundwater basin). The added water may be treated or purified in transit as required by water quality regulations. The goal is to capture water to be used later.

In-lieu recharge: This recharge method indirectly enables aquifers to refill with water by utilizing surface water "in-lieu" of pumping groundwater. The substitution thereby retains an equal amount of water in the groundwater basin. This approach is also termed passive recharge or resting wells. The limitation of this approach in Santa Cruz County is that surface water is most available during the winter, when pumping is less because water usage is less. Active Storage and Recharge, defined below, recharges aquifers when excess surface water is available. The recharge volumes can far exceed simply avoiding pumping.

Aquifer storage and recovery: Aquifer storage and recovery is a water resources management technique for actively storing water underground during wet periods for recovery when needed, usually during dry periods. This approach typically relies on injection wells to push water into the aquifer. The timeframe can range from months to decades.

Investigation

This section describes the key water sources and delivery system elements. Our goal was to understand and report on the capabilities and limitations of the current system, with a focus on agency silos and opportunities for improving resilience.

The City of Santa Cruz Existing Surface-Water System

The City of Santa Cruz water system is the largest in the County, serving close to 100,000 people. The system includes capturing water from the San Lorenzo River or from Loch Lomond Reservoir, moving the water to the treatment plant, treating the water, and distributing it to customers. We describe the system in some detail because it is relevant to the conjunctive use described later in this report. We include a brief description of the water treatment plant because it also contributes to conjunctive use. Figure 4 shows the key elements of the system.

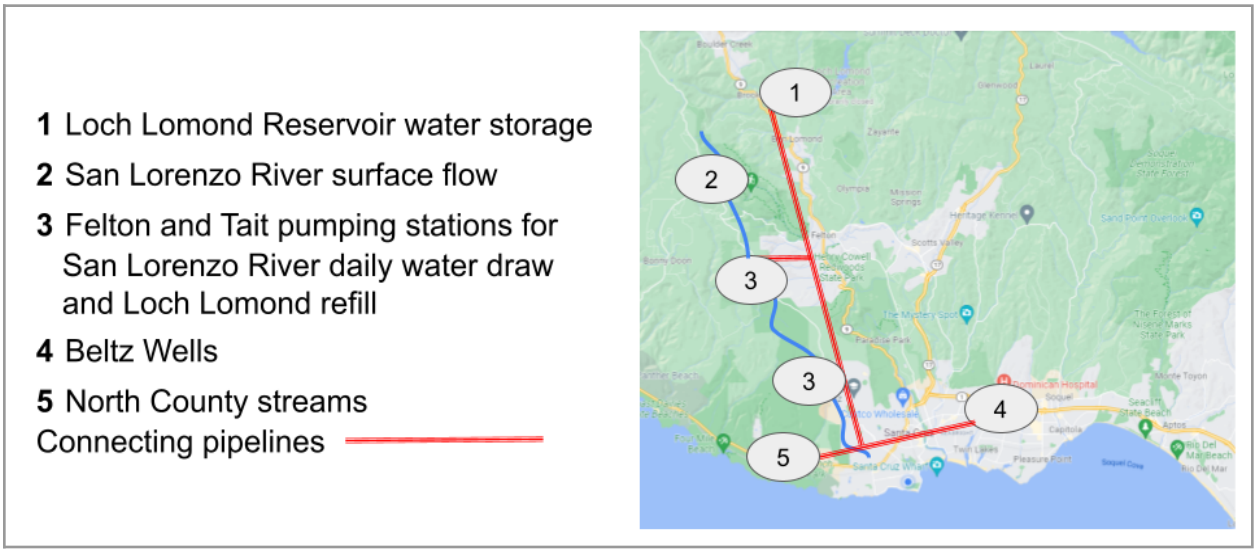

Figure 4. **City of Santa Cruz Water Supply**
(Source: Santa Cruz County Grand Jury)

The following are the key elements of the City of Santa Cruz water supply:

- *Sourcing water.* The City gets the vast majority of drinking water from the San Lorenzo River. This source is augmented by streams and springs in North County and groundwater wells near Tait Street and 41st Avenue. Newell Creek is an indirect surface water source because it feeds Loch Lomond Reservoir.[21]
- *Moving surface water.* The City relies on pumping stations and pipelines.
  - North County stream water travels to the City's Graham Hill Water Treatment Plant by pipeline.
  - San Lorenzo River water is pumped uphill from the Felton Diversion facility to Loch Lomond Reservoir. From there it flows to the Graham Hill plant.
  - River water is also pumped directly to the Graham Hill plant from the Tait Street Diversion.[22]
- *Storing water.* Loch Lomond Reservoir is the City's only large water storage reservoir. It has capacity roughly equivalent to the water used by the City in one year.[23] During the rainy season, there is excess pump capacity to push water to Loch Lomond Reservoir. Water from Loch Lomond supplies the City during low river flow dry months.
- *Treating water.* The Graham Hill Water Treatment Plant prepares water prior to use by customers. Treatment includes eliminating cloudiness in the surface water sources, which is frequent during high-flow winter months.
- *Sharing water with other districts.* The City water system connects to the Soquel Creek Water District. This connecting pipeline was used to transfer water to the Soquel Creek Water District during the pilot demonstration of Aquifer Storage in 2017.[24]
- *Sewage treatment.* The Santa Cruz Wastewater Treatment facility near Neary Lagoon treats water so it can be safely dumped into the ocean. The plant receives untreated sewage from the City of Santa Cruz along with the City of Scotts Valley and communities such as Capitola in the Mid-County region.[25] The plant's treated water will be redirected to saltwater intrusion control wells in the Pure Water Soquel project (described in the next section). This requires additional purification.[26]

Santa Margarita Groundwater Sources

The Santa Margarita Groundwater Basin (**SMGB**) is a groundwater basin largely contained between Highways 9 and 17, and bounded by Boulder Creek and Lompico in the north and Mount Hermon communities in the south. The SMGB is overseen by the Santa Margarita Groundwater Agency, described in Appendix A. Because of successful conservation efforts, demand and supply have been in balance in the SMGB for the last ten years.[27]

The Scotts Valley Water District and the Mount Hermon Association get their water from the SMGB. This basin also supplies 13 small water systems and more than 1,100 individual well users. The San Lorenzo Valley Water District receives about half its water from the SMGB.

Finally, 40–50 percent of the flow of the San Lorenzo River leaks into the river from aquifers of the SMGB as the river passes through the Santa Cruz Mountains. The City of Santa Cruz, while reporting that it receives 95 percent of water from the surface, benefits greatly from the same aquifers that the Scotts Valley and San Lorenzo Valley Water districts depend on.[28]

Santa Cruz Mid-County Groundwater Sources

The Santa Cruz Mid-County Basin (**MCB**) is a groundwater basin that underlies parts of the cities of Santa Cruz and Capitola, and unincorporated parts of Santa Cruz County, including Soquel, Aptos, and La Selva Beach. The Soquel Creek Water District and the Central Water District obtain all their water from the Santa Cruz Mid-County Basin.[29]

The MCB is overseen by the Santa Cruz Mid-County Groundwater Agency (**MGA**), described in Appendix A. The MCB is designated as in "critical overdraft" because of seawater intrusion at several wells located close to the coast, and a lowering of groundwater levels at wells further inland. A well that is contaminated by saltwater may not be recoverable and may need to be abandoned. Saltwater intrusion still occurs in spite of significant conservation efforts led by the MGA and implemented by the residents.[30]

The district had been working on achieving a sustainable water supply for several years before the Groundwater Sustainability Plan (**GSP**) was produced. The Pure Water Soquel project, which is intended to prevent further seawater intrusion into the basin, is currently under construction. See the next section, *"*Agency Collaboration: Pure Water Soquel.*"*

Agency Collaboration: Pure Water Soquel

The Soquel Creek Water District does not have sufficient water to meet the demands of residents in this service area. All of the supply comes from groundwater pumping and the water quality is at risk from saltwater intrusion. Simply put, the district needs more water to stay afloat. The joint project between the Soquel Creek Water District and the Santa Cruz Water District[26]—Pure Water Soquel—is a groundwater replenishment and seawater intrusion prevention project. It will provide close to 500 million gallons of recycled water annually to push back the saltwater intrusion along the coast using injection wells.[31] It is currently under construction with completion expected in 2022 and production starting in 2023.

The Santa Cruz Wastewater Treatment Facility (Neary Lagoon) supplies water for this project. The plant currently treats wastewater in order to discharge it into the ocean. A new pipeline will transfer a portion of this water to the Soquel Creek Water District's water treatment facility in Capitola for further purification and reuse. The treatment plant ties to existing pipelines that connect to injection wells near the coast which aim to block saltwater intrusion.[32]

Completing this project will reduce the degree of overdraft in the Mid-County Basin and protect against further seawater intrusion. Importantly, this project demonstrates successful large-scale collaboration between local agencies. It also accelerates the use of recycled water in the County, similar to the use of recycled water from Watsonville to address saltwater intrusion in South County. This use of recycled water is described in the following section titled, “Agency Spotlight: Pajaro Valley College Park Project.” Figure 5 illustrates the evolution of groundwater pumping practices and their relationship to seawater intrusion, which the Pure Water Soquel project is designed to address.

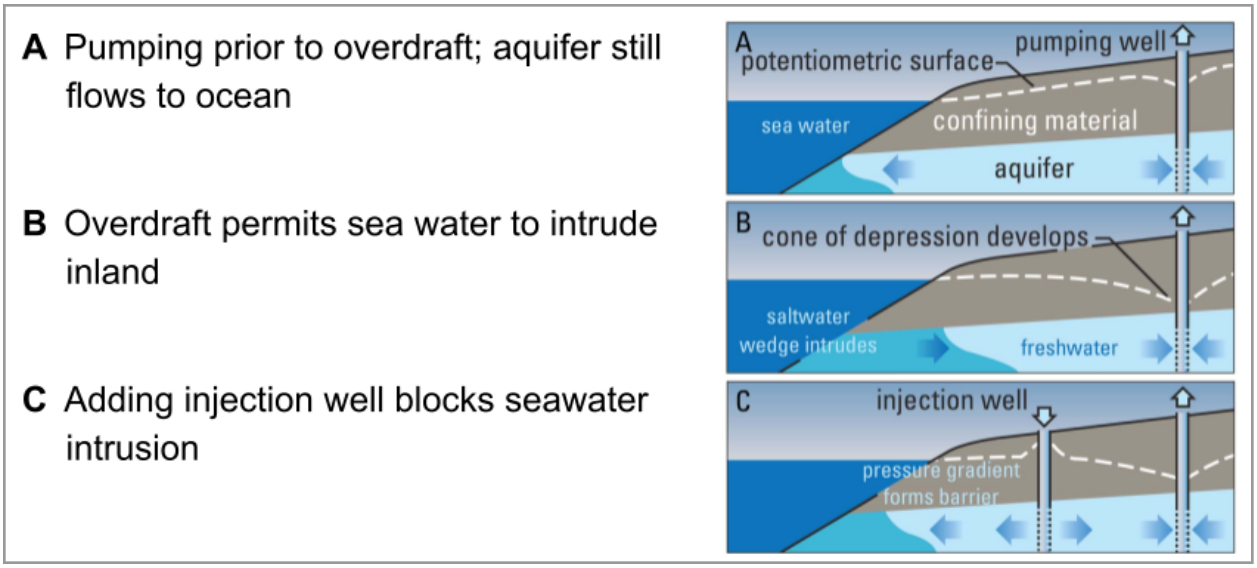

Figure 5. **Stemming the Flow of Seawater Intrusion**[33]

The Pure Water Soquel project, while a significant step toward basin sustainability, does not build a reserve within the aquifer. More water from the Santa Cruz Wastewater Treatment Plant is available than is being used by the Pure Water Soquel project. That excess water currently flows to the ocean.

The City of Santa Cruz Water Augmentation Strategy

> “But if we get to three, four, five dry years in a row the system is just simply not designed to accommodate that.”
>
> —Rosemary Menard
> Director, City of Santa Cruz Water Department[34]

The City has been exploring conjunctive use for many years. Treated water from the San Lorenzo River could be transferred to the San Lorenzo Valley Water District, the Scotts Valley Water District, and the Soquel Creek Water District, initially to allow them to “rest” their wells. This treated water would allow for passive recharge of those districts’ aquifers,[35] and also be available to those districts to actively inject additional water into the overdrafted Mid-County Basin and the Santa Margarita Basin. The injected water would recharge the aquifer, and allow the City to get some of this water back during times of drought.[36]

Eventually, the reserve described above would contain roughly one year's worth of water that could be transferred back to the City. The recharged aquifers would effectively become a second "strategic reserve" of water for the City similar in size to Loch Lomond Reservoir. The water would come from improved rainy season water capture and transport. As mentioned previously, in average and rainy winters, total flow far exceeds the actual usage by the City. Figure 6 illustrates the relative volumes.

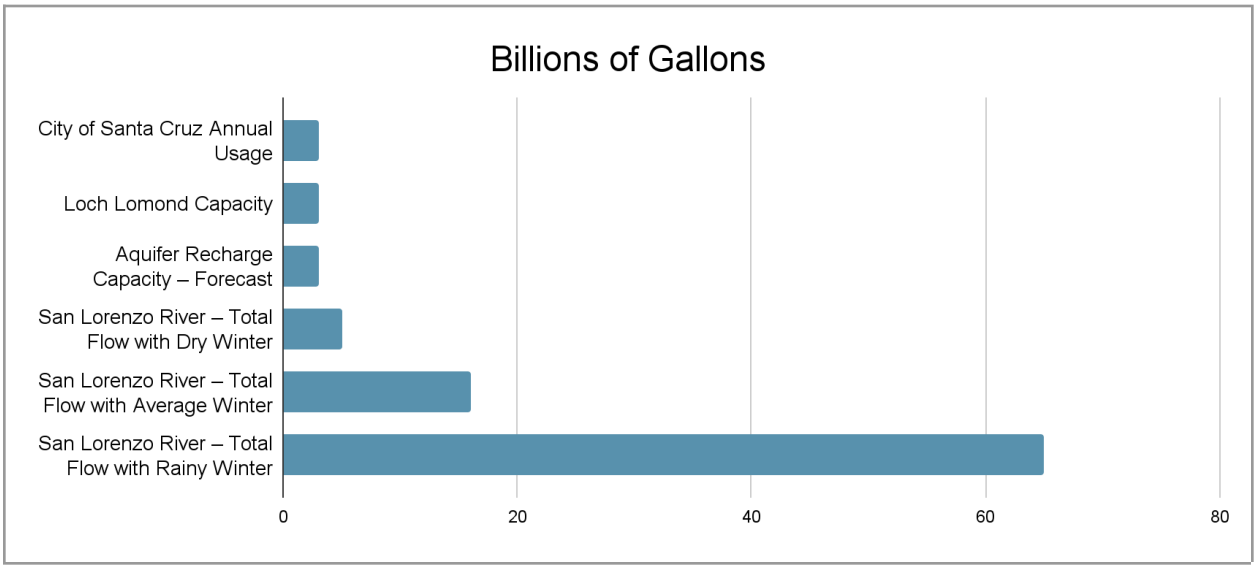

Figure 6. **San Lorenzo River Flow and Local Needs**
(Source: Santa Cruz County Grand Jury)

Current water rights limit the City's flexibility in how San Lorenzo River water can be used. For instance, during the rainy season, the City has pumping capacity to push water to nearby districts where it can be stored. However, current rights do not allow this action because it is not an authorized beneficial use.[37]

Another water rights issue is that water pumped from the San Lorenzo River, but not directly used by the City, must be sent to Loch Lomond Reservoir. If Loch Lomond is full, then the excess pumping capacity cannot be used. The issue is not the *amount* of water that the City has rights to; it is that the City has very limited flexibility in *how to use* the water. Water flowing to the ocean during the winter rainy season far exceeds amounts that could be redirected to groundwater reserves.[37]

Changing the City's water rights to allow water transfers to the neighboring water districts is a major undertaking which required an Environmental Impact Report under California Environmental Quality Act rules. The report has been completed and was published in November 2021.[18] The California Department of Water Resources is expected to approve the EIR in 2022. These are the components of the City of Santa Cruz Water Augmentation Strategy as described in the EIR:

- *Give the City more flexibility to move and store water from existing sources.* This component requires adjusting the City's water rights so that unused rainy season water that the City has rights to can actually be used to increase water storage.[38]

Specific elements of the revised rights include moving water from the Graham Hill Water Treatment Plant to the neighboring water districts and storing this water in groundwater reservoirs.

- *Develop groundwater storage near Capitola and Scotts Valley.* This component includes injection wells, recovery wells, and pre-injection treatment.[39] Testing and qualifying the groundwater storage aquifers for quality and capacity has been conducted for both locations.
- *Establish two-way transport to the storage areas.* Pipeline costs have not been published, however laying groundwater pipes is a well-understood engineering and construction project.
- *Obtain water to store from existing pumping stations.* Current upgrade plans for the Felton Diversion, Tait Street Diversion, and the Graham Hill Water Treatment Plant include capacity to push water to the storage sites. They also include upgraded initial treatment so that winter storm water can be redirected to ground storage. This water movement will not interfere with fishery conservation because those issues generally arise during low water periods. This has been documented in the city water rights application materials.[38]
- *Set new water-sharing agreements with adjacent agencies.* The Mid-County Groundwater Agency and the Santa Margarita Groundwater Agency are responsible for groundwater management in the locations that the city plans to use. Collaboration amongst the agencies is underway and being worked in parallel with the water rights revision.[40]

Bottom line for the City: Completing this project will provide City residents with a much more drought-resilient water supply—in essence, a *strategic reserve*. Coupled with the conservation measures already embraced by City residents, the City of Santa Cruz will be much better prepared for recurring droughts.

Contribution to drought resilience at the County level: While not called out by local agencies, the Grand Jury believes the following appear to be opportunities to broaden the value of the augmentation project.

- The project could extend access to the previously described strategic reserve for Santa Cruz Mountains residents. Early discussions have been held to connect the City of Santa Cruz and the Scotts Valley water distribution systems. With this connection, water could be supplied to the San Lorenzo Valley Water District through the existing emergency connecting pipeline. The reserve approach appears to be extendable over time; this would further leverage the value of aquifer recharge infrastructure investments.
- The documented contention for groundwater aquifer space between the City of Santa Cruz and the Soquel Creek Water District demonstrates the importance of the Mid-County aquifers. While short term, there is rework to address this contention on both Pure Water Soquel and the City of Santa Cruz aquifer recharge projects. In the long term this effort benefits both districts.[41]

- The Mid-County Groundwater Agency and the City of Santa Cruz share pipeline capacity that could be used to recharge the Mid-County aquifers beyond the Capitola area. The extra capacity could be used to recharge the aquifers so Mid-County residents gain a reserve beyond the legal requirements for sustainability. Such additional work would maximize recharge and resilience for the Mid-County aquifers.

Agency Spotlight: Pajaro Valley College Lake Project

Aquifers along the coast in the Pajaro Valley region are heavily overdrafted. Resting wells used by local agriculture helps to slow the rate of saltwater intrusion but does not reverse the intrusion.[42] The Pajaro Valley College Lake Project shows local expertise and serves as an example of approaches that can be applied in North County and Mid-County.

Project

The project extends the use of College Lake, a seasonal lake in the Pajaro Valley near Watsonville. By raising the maximum lake level with a small adjustable dam, commonly known as a weir, additional water can be stored. Besides storage, a pipeline has been built to transport water from the lake to the Pajaro Valley Coastal Distribution System, which already receives recycled wastewater from the City of Watsonville. The project adds to the surface water resource available for farming. Wells in the area can be rested, which aids in countering saltwater intrusion.

Annual water transfer capability

College Lake can store up to 600 million gallons, approximately 20 percent of Loch Lomond Reservoir. It can deliver between 600 to 750 million gallons in typical years, with a maximum of one billion gallons. Monthly usage of water varies from five million gallons to 150 million gallons.

History of College Lake

Historically, College Lake formed naturally during the wet season. Since 1920, draining has been authorized to free up the land for farming. Making the water available to the Coastal Distribution System has been discussed for many years and was documented in 2014.[43] However, the project is still not complete. This delay reflects the slow pace of water project development when only a single agency with limited resources is responsible for its execution.

Contribution to drought resilience at the County level

As with the Pure Water Soquel project, this project's end goal is to gain supplemental water in order to rest the wells that are at risk for saltwater intrusion. In the same way as the Pure Water Soquel project, the College Lake project does not optimize water use to reflect water availability.

Wet weather surplus simply overflows into Monterey Bay. There are opportunities to:

- Use wet weather surplus for active injection in threatened agricultural areas
- Apply surplus in areas that are not directly threatened to improve groundwater levels
- Transfer water to adjacent districts if additional surplus exists or a water emergency arises.

The Role of Wastewater Recycling

As previously mentioned, wastewater recycling is practiced in both South County and Mid-County. In both cases, the water is used to counter saltwater intrusion. Direct potable reuse is another emerging option. Less than half of the wastewater from the City of Santa Cruz Wastewater Treatment Facility (Neary Lagoon) will be used by the Pure Water Soquel project. The remainder of the wastewater will still be available to improve drought resilience, for instance, in countering saltwater intrusion.

There are other examples of wastewater recycling in California. Orange County Water District's Groundwater Replenishment System (GWRS) became operational in 2008. It has since produced more than 365 billion gallons of drinking water from wastewater.[44]

Additionally, Santa Clara Valley Water District expects to produce eight billion gallons of potable water from wastewater per year beginning in 2025, with a target of increasing production to 15 billion gallons per year.[45]

Limitations on Resilience Posed by District and Agency Charters

As mentioned previously, Santa Cruz County lacks external water resources. Multiple independent agencies, as well as individual well owners, share groundwater and surface resources. While there is meaningful cooperation and collaboration among agencies, periodically district-centric objectives and strategies come into conflict. During interviews on district priorities, phrases such as "protect our districts" surfaced. However, water in Santa Cruz County need not be viewed as a zero-sum game.

This report points to many opportunities for collaborations that share water and improve water security for all residents. Unfortunately, there is no oversight agency or organizational structure in place to resolve conflicts and ensure that outcomes serve the greater good of the entire County. The end result is delay. Decades are spent on seemingly straightforward and beneficial projects, such as:

- Projects addressing saltwater intrusion have been a multi-district issue since the 1980s.
- The Santa Cruz City Water Department, along with the San Lorenzo Valley Water District and the Scotts Valley Water District, has been evaluating San Lorenzo River water-sharing since the early 2000s.

Collaboration is not the same as leadership. Our interviewees made it clear that an agency taking a leadership position would imply they had the funding to implement projects. Individual water districts are not tasked with a county-wide focus and they lack

both the funds and authority to address this void in leadership. The groundwater agencies are chartered only for aquifer sustainability. As discussed previously, sustainability is only one component of drought resilience. With no consistently funded leadership, the districts cannot align for the greater good.

Achieving a Resilient Future

While Santa Cruz County's water resources are vulnerable to unpredictable climatic conditions, there is a clear path forward to drought resilience. The key to creating a resilient water future for Santa Cruz County residents is storing more of the surface water that falls as rain during the winter. The overdrawn condition of the Mid-County and Santa Cruz Mountains aquifers has created ample headroom for stashing surface water during the rainy season. Only a small percentage of the San Lorenzo River's rainy season flow is captured. The vast majority flows into Monterey Bay.

If Santa Cruz County is to attain water security in the presence of climate change and droughts, developing a strategy to capture, move, and store our rainy season surplus is essential. We found there are well-documented proposals for capturing and storing excess rainy season surplus water to provide water security for the future. The problem is execution. Management of the County's water is controlled by numerous independent agencies. While these agencies share a common goal of providing their own customers with abundant clean water, they are not resourced or chartered to plan, fund, and build a cohesive water capture and supply infrastructure to deliver regional drought resiliency. Examples of district-centric execution are well-documented in the previous sections. Notably:

- Pure Water Soquel: Saltwater intrusion and well resting
- College Lake: Wet season water capture and distribution

Specific benefits of adopting a more integrated and regional agency structure include:

- Improving credibility when requesting grant funds for large infrastructure projects such as pipelines. These projects all improve flexibility and resiliency but are expensive to build.
- Improving flexibility and reaction time when moving water across district boundaries. This change can provide better service to residents as well as protection against saltwater intrusion.
- Simplifying the planning and project execution: this is necessary to make full use of recycled water, such as could be sourced from Watsonville and Santa Cruz.

In short, it is time to recognize that the medley of collaboration and cooperation at the interdistrict level has not delivered resiliency. Figure 7 shows the current set of connecting pipelines between districts.

Figure 7. **Interdistrict Water Supply Connecting Pipelines**
(Source: Santa Cruz County Grand Jury)

It is time to move toward a more integrated set of agencies that can achieve the following:

- Create a wet-weather runoff capture system, strategic aquifer-based water reserve, and a robust connecting pipeline fabric between districts to optimize water use.
- Demonstrate broad consensus to strengthen the case for major infrastructure funding from state and federal sources.
- Embrace innovative approaches to improving resilience. For example, establishing a continuous chain of saltwater intrusion protection wells along the existing railway right of way. This change could leverage recycled wastewater from Santa Cruz and Watsonville.
- Deliver County residents water security that will support economic prosperity despite expected droughts.

Figure 8 shows the key elements required to achieve drought resilience. It is based on proposals that have existed for years but have not yet been addressed as a unit. The approval of the EIR opens the door for this work to be done.

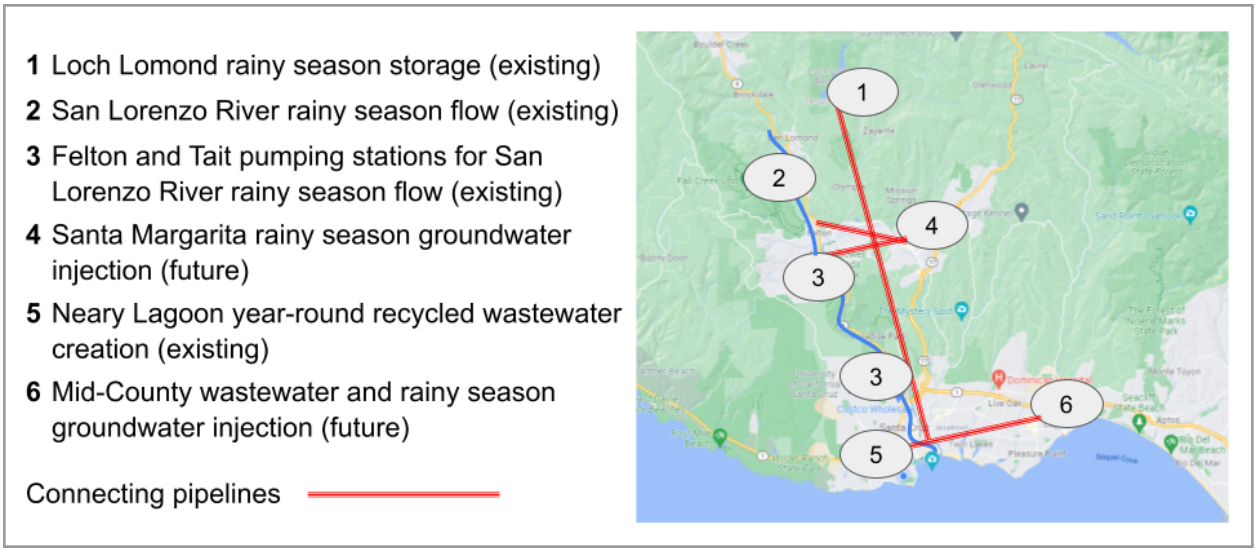

Figure 8. **Drought Resilience Components**
(Source: Santa Cruz County Grand Jury)

The Mid-County and North County regions both have groundwater management agencies. The City of Santa Cruz is a member of each agency. Each agency is a Joint Powers Authority (**JPA**) and both are currently chartered to only address aquifer sustainability. As such, any activity to support drought resilience is currently out of scope.

The agreements forming these JPAs can be amended by the member agencies that formed them. A new amendment could be added to support drought resilience. Such a move could upgrade drought-resilience proposals (such as the City of Santa Cruz Water Augmentation Strategy) to the regional level. This revision is not a complex process requiring state-level approval.[46] The Amendment form appears as Appendix D.

Conclusion

Severe, multi-year droughts are part of our future. Conservation is not sufficient because the reduced water supply during Stage 5 droughts will cause severe economic hardship across residences, businesses, and farms. The existing patchwork of agencies has not shown vision and initiative to knit their individual plans together. Some of the most ambitious plans are barely known to the public.

The most critical next step is delivering major new water storage by reclaiming unused aquifer space in Mid-County and North County. This step creates the strategic groundwater reserve described in the City of Santa Cruz Water Rights Project and Augmentation Strategy. Beyond storage, a fabric of pipelines should be created to enable water sharing between districts. Figure 9 identifies the elements of an integrated approach.

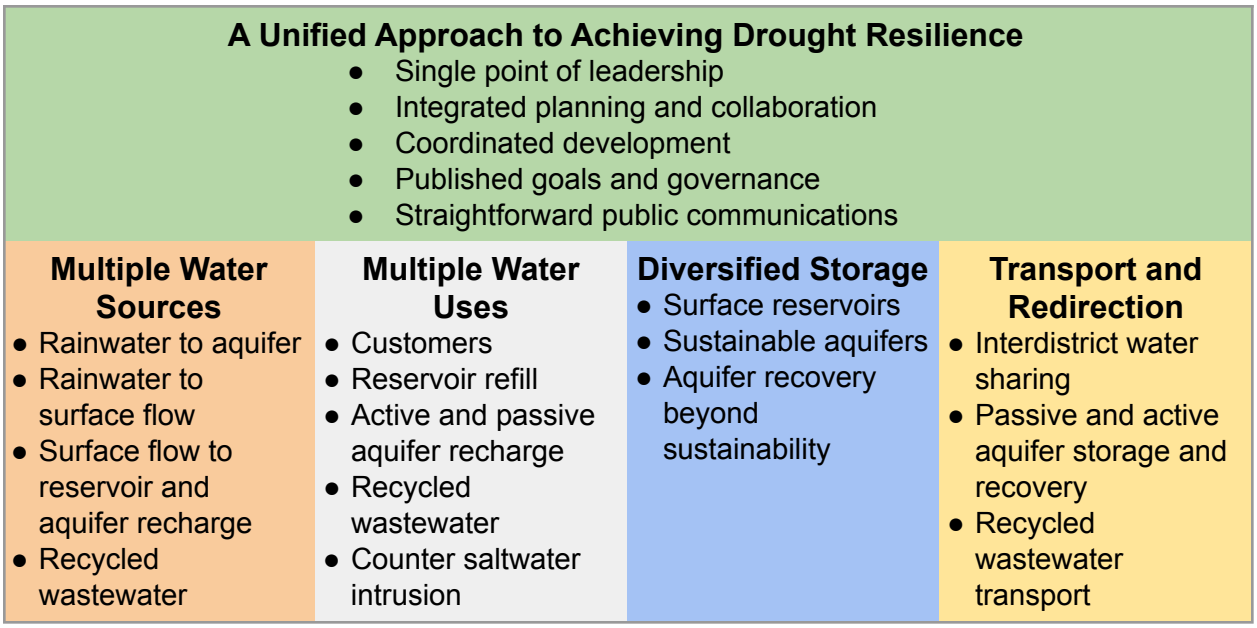

Figure 9. **A Unified Approach to Achieving Drought Resilience**
(Source: Santa Cruz County Grand Jury)

Consistent access to water through drought resilience supports County residents and the economy. The combination of surface and groundwater storage, wastewater recycling, and pipelines will deliver the drought resilience that the County requires to thrive and prosper. Now is the time for agencies to work together to deliver drought resilience to residents.

Findings

Findings describe the “so what” of the facts evaluated by the Grand Jury. They provide support for the Recommendations.

Current Situation

F1. If extended drought conditions lead the City of Santa Cruz to execute Stage 5 of its Water Shortage Contingency Plan, it will have extreme economic impacts on all residents throughout the County.

F2. There is an urgent need to create a county-wide drought-resilient water storage and delivery infrastructure.

F3. Interdistrict water-sharing plans spanning North County and Mid-County that could benefit all residents have existed since 2015 and deserve to be accelerated.

Elements of a Solution

F4. Establishing a strategic groundwater reserve, as described in documents from the City of Santa Cruz, is a well-understood and achievable first step.

F5. The City of Santa Cruz’s completion of the water rights revision project is a critical element of enabling district collaboration in support of county-level drought resilience.

F6. Limited interdistrict water transfers have been achieved and serve as proof of concept.

F7. Existing City of Watsonville and City of Santa Cruz wastewater resources are only partially utilized to address passive well resting and saltwater intrusion issues.

Agency Capabilities

F8. Each agency described in this report communicates well with neighboring agencies, but collaboration is limited and narrow in scope.

F9. Agency communications to the public emphasize conservation and sustainability while downplaying agency planning to achieve drought resilience.

F10. The individual water supply districts lack funding, resources, and charters to develop county-centric drought-resilience infrastructure.

F11. The Groundwater Sustainability Management agencies lack the charters, staff, and resources to plan or execute a county-wide drought-resilience strategy.

F12. There is no county-level agency chartered to plan, propose, or build regional district-spanning drought-resilience infrastructure.

Recommendations

Recommendations reflect the “now what?” conclusions drawn by the Grand Jury, and are based on the Findings. They frame expectations for how the agencies can improve their service to County residents.

R1. By December 31, 2022, the Boards of the Santa Margarita Groundwater Management Agency and the Mid-County Groundwater Management Agency should extend their charters to include and proactively deliver drought-resilience project planning and execution. (F1–F6, F8–F12)

R2. By December 31, 2022, local water districts should jointly publish an integrated drought-resilience action plan that includes essential infrastructure improvements, estimated costs and schedule to complete improvements that will deliver drought resilience to the Mid-County Groundwater Basin, the City of Santa Cruz, and the Santa Margarita Basin by December 31, 2029. Agencies to respond are the San Lorenzo Water District, the Scotts Valley Water District, the City of Santa Cruz Water Department, the Soquel Creek Water District, the Santa Margarita Groundwater Management Agency, and the Mid-County Groundwater Management Agency. (F1–F6, F8–F10, F12)

R3. By December 31, 2022, local water districts should jointly publish an integrated recycled wastewater action plan that specifies the infrastructure improvements, expected costs, and construction schedule that will fully utilize existing wastewater sources by December 31, 2026. Responding agencies are the Scotts Valley Water District, the City of Santa Cruz Water Department, the Soquel Creek Water District, the Central Water District, the Mid-County Groundwater Management Agency, the Pajaro Valley Water Management Agency, and the City of Watsonville Water Division. (F1, F6–F9, F12)

Commendations

C1. The City of Santa Cruz Water Department, the Santa Margarita Groundwater Agency, and the Mid-County Groundwater Agency have shown strong collaboration and innovation toward partially defining the water reserve plan.

C2. The Soquel Creek Water District and the City of Santa Cruz Water Department have shown strong collaboration to deliver the Pure Water Soquel project.

Required Responses

Responses are the opportunity for agency boards and leaders to advise County residents on how or whether they will address the Findings and Recommendations. Those responses can guide residents to better understand the priorities and values of those boards and their leaders. The Grand Jury will publish those responses later this year and may do a followup report in three years.

Required Respondent	***Findings***	***Recommendations***	***Respond Within/ Respond By***
City Council, City of Santa Cruz	F1, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Board of Directors, Mid-County Groundwater Management Agency	F6, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Board of Directors, Santa Margarita Groundwater Management Agency	F8, F9, F10, F11, F12	R1, R2	90 Days August 22, 2022
Board of Directors, Scotts Valley Water District	F2, F3, F4, F6, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Board of Directors, San Lorenzo Valley Water District	F2, F3, F4, F6, F8, F9, F10, F11, F12	R1, R2	90 Days August 22, 2022

Board of Directors, Soquel Creek Water District	F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Board of Directors, Pajaro Valley Water Management Agency	F6, F9	R3	90 Days August 22, 2022
City Council, City of Watsonville	F6, F9	R3	90 Days August 22, 2022

Invited Responses

Invited Respondent	***Findings***	***Recommendations***	***Respond Within/ Respond By***
Director, City of Santa Cruz Water Department	F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Point of Contact, Mid-County Groundwater Management Agency	F2, F4, F6, F7, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Point of Contact, Santa Margarita Groundwater Management Agency	F2, F3, F4, F8, F9, F10, F12	R1, R2	90 Days August 22, 2022
General Manager, Scotts Valley Water District	F1, F2, F4, F7, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
District Manager, San Lorenzo Valley Water District	F1, F2, F3, F4, F8, F9, F10, F11, F12	R1, R2	90 Days August 22, 2022
General Manager, Soquel Creek Water District	F1, F2, F3, F4, F6, F7, F8, F9, F10, F11, F12	R1, R2, R3	90 Days August 22, 2022
Executive Officer , Santa Cruz County Local Area Formation Commission	F10, F11, F12,	R1	90 Days August 22, 2022
General Manager, Pajaro Valley Water Management Agency	F6, F9, F12	R3	90 Days August 22, 2022
Operations Supervisor, City of Watsonville Water Department	F6, F9, F12	R3	90 Days August 22, 2022

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Disclaimer

This report was issued by the Grand Jury with the exception of one juror who disclosed a perceived conflict of interest. This juror was excluded from every aspect of the investigation, including interviews, deliberations, and the writing and approval of this report.

Appendix A—Who Is Involved with Water in Santa Cruz County?

Residents of Santa Cruz County obtain water from a variety of sources—from city water departments to private wells. The geography and rural nature of the County has generated fragmented water delivery and management agencies. This report considers only the larger agencies that are within the oversight granted to the jury.

Water Delivery Agencies

Water is provided to the residents of Santa Cruz County by five large (greater than 1,000 connections), four small (200–1,000 connections), and 115 minor water suppliers. Additionally, there are some 8,000 private wells. Each of these suppliers effectively operates independently, although there is significant communication and cooperation among the agencies. As described in the Background section, water is sourced from rivers and creeks (surface flow), and groundwater basins underlying much of the County. Table 1 catalogs the major water suppliers and the sources of their water. This table is based on a more comprehensive version found in the *Santa Cruz County Water Resources Management Status Report for 2020* (page 24)[47] and repeated in Appendix B.

It is immediately apparent from the table that most of the County's water comes from groundwater. The City of Santa Cruz Water Department is the exception, obtaining nearly all of its water from surface flow, specifically the San Lorenzo River and creeks in the northern part of the County. In contrast, the City of Watsonville and the Soquel Creek Water District get their water from groundwater. Overall, the County receives about 75 percent of its water from groundwater and 25 percent from surface water.

Groundwater Management Agencies

Under the Groundwater Sustainability Act, groundwater management agencies are charged with achieving groundwater sustainability. Capital projects are generally undertaken by the individual water agencies to support the objectives of the groundwater management agency.

Santa Margarita Groundwater Agency (SMGWA). The SMGWA operates through a Joint Powers Authority (JPA), with members from the San Lorenzo Water District, the Scotts Valley Water District, and Santa Cruz County. Under the SGMA, the Groundwater Sustainability Plan for the Santa Margarita Groundwater Basin was completed ahead of the statutory requirement in November 2021.[48]

Mid-County Groundwater Agency. The MGA operates through a Joint Powers Authority, with members from Santa Cruz County, the City of Santa Cruz, the Soquel Creek Water District, and the Central Water District.[49] The State designated the Mid-County Basin as being critically overdrafted in 2015. Under the SGMA, this designation required production of the *Santa Cruz Mid-County Groundwater Sustainability Plan* by January 2020.[49] This plan was produced by the MGA and is intended to achieve and maintain groundwater stability over a 50-year planning and implementation horizon.

Table 1. Water Sources and Water Agencies

Entity	Population	Annual Usage (Billion Gallons)	Water Source (percentage)	
			Ground	Surface / (Other)
Santa Cruz City Water Department	97,417	2.7	5	95
Watsonville City Water Service	65,966	2.3	100	0
Soquel Creek Water District	40,632	1.1	97	3
San Lorenzo Valley Water District	23,700	0.6	53	47
Scotts Valley Water District	10,709	0.4	87	13 (recycled)
Other Residential Water Districts	16,017	0.8	80	20
Private Wells	21,000	0.8	100	0
Total Residential / Commercial	275,441	8.8 Billion Gallons	6.2 Billion Gallons	2.6 Billion Gallons
Pajaro Agriculture		7.2	92	17 (recycled)
Mid- and North County Agriculture		0.8	90	10
Total Agricultural Billion Gallons		8.0	7.5	0.5
Total Annual Surface and Groundwater Usage Billion Gallons		16.8	13.7	3.1

Source: *Pajaro Valley Water Management Agency (PVWMA).* The PVWMA operates independently and is responsible for agricultural water delivery in its service region. The Pajaro Valley Basin is rated as “critically overdrafted.” Under the SGMA, this designation required production of a Groundwater Sustainability Plan by January 2020. This plan was produced by the PVWMA and is intended to achieve and maintain groundwater stability over a 50-year planning and implementation horizon.[50]

The Other Players

The following are several local and state agencies that shape local projects and agencies and could contribute to developing county-wide drought resilience.

Resource Conservation District (RCD). In the area of drought resilience, the RCD has programs in South County that help farmers develop percolation systems. Percolation systems assist with groundwater recharge. These programs appear to be available

when requested by farmers. The agency does not seem to be participating with water districts directly on drought resilience.

Local Agency Formation Commission (LAFCO). LAFCO provides guidance when new special-purpose districts are formed. They also review district performance on a five-year cycle. All of the water supply districts and groundwater management agencies were formed under LAFCO guidance.

California Department of Water Resources (DWR). The DWR oversees execution of state laws that affect water delivery. This oversight includes approving the Water Supply Contingency plans and Groundwater Sustainability Management plans created by local agencies. The DWR is authorized to step in and manage groundwater basins if the local agencies do not meet state requirements.

Appendix B—Water By the Numbers

Table 2. Water Use in Santa Cruz County, 2020

(data for smaller systems is from 2019)

Water Supplier	Connections	Population	Water Use (acre-feet /year)	Ground Water	Surface Water	Recycled Water	Imported from Outside County
Santa Cruz City Water Department	24,561	97,417	8,375	5.0%	95.0%		
Watsonville City Water Service	14,855	65,966	7,201	100.0%	0.0%		
Soquel Creek Water District	14,479	40,632	3,312	96.7%	3.3%		
San Lorenzo Valley Water District	7,900	23,700	1,953	53.0%	47.0%		
Scotts Valley Water District	3,807	10,709	1,339	87.0%		13.0%	
Central Water District	823	2,706	411	100.0%			
Big Basin Water Company	605	1,694	205	37.0%	63.0%		
Mount Hermon Association	494	2,850	155	100.0%			
Forest Lakes Mutual Water Company (Felton)	326	1,076	40	100.0%			
Smaller Water Systems (5–199 connections.)	2,616	7,691	1,552	91.0%	6.0%		3.0%
Individual Users*	8,000	21,000	2,400	95.0%	5.0%		
Pajaro Agriculture (Santa Cruz County-only)**†			22,250	92.0%	1.0%	7.2%	
Mid- and North-County Agriculture*			2,400	90.0%	10.0%		
Totals	**78,466**	**275,441**	**51,593**	**78%**	**19%**	**3%**	**0.1%**
Summary by Water Source (acre-feet/year)				**40,027**	**9,788**	**1,776**	**47**
Summary of Non-Agricultural Use (acre-feet/year)			**26,943**	**17,397**	**9,326**	**174**	**47**

* Values are estimates. ** Includes a small number of water systems.

† Recycled water source is the City of Watsonville.

Source: Santa Cruz County Water Resources Management Status Report for 2020 (page 24)[47]

Drought Stages and Water Consumption Reduction for the City of Santa Cruz

The following chart shows how business use of water is cut back as drought severity increases.

Sample Business Allocation Example

Customer Class	Normal Demand (Million Gallons) Jun-Nov	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
		Delivery (%)	Delivery (%)	Delivery (%)	Delivery (%)	Delivery (%)
		Volume (MG)	Volume (MG)	Volume (MG)	Volume (MG)	Volume (MG)
Business	297	95%	90%	85%	79%	60%
Total Business Use		282	267	252	234	178

Source: *Updated Interim Water Shortage Contingency Plan* (Table 12, page 23), City of Santa Cruz Water Department, February 5, 2021.[10]

Appendix C—Supporting Reports

Key Documents

The Grand Jury reviewed the major published documents from numerous water agencies to determine how they plan to improve drought resilience. Most available plans are written to support the application for grants from state and other agencies. These agencies specify the content and the format of the documents. Typically, these plans intentionally lack the specificity that would require preparing an Environmental Impact Report. These documents are updated, usually on a five-year schedule. Progress from the previous plan is often required in each update.

Local Hazard Mitigation Plan. This class of document is not a plan to mitigate local hazards such as drought. Rather, it is a catalog of local hazards, with commentary on how they could be addressed. It is in place so agencies can apply for grants to address issues as they arise, or to receive state or federal funds after a disaster.

Water Shortage Contingency Plan. This documents how water restrictions are applied during drought conditions. It reflects local priorities for residential and commercial use and agriculture.

Groundwater Sustainability Plan. This plan is a requirement of the Sustainable Groundwater Management Act (SGMA, 2014), and it documents current groundwater supplies, usage patterns, and approaches to maintain the current aquifer levels. Recovery beyond the current depleted state is not addressed. Both the Santa Cruz Mid-County Groundwater Agency and the Santa Margarita Groundwater Agency have Groundwater Sustainability plans.

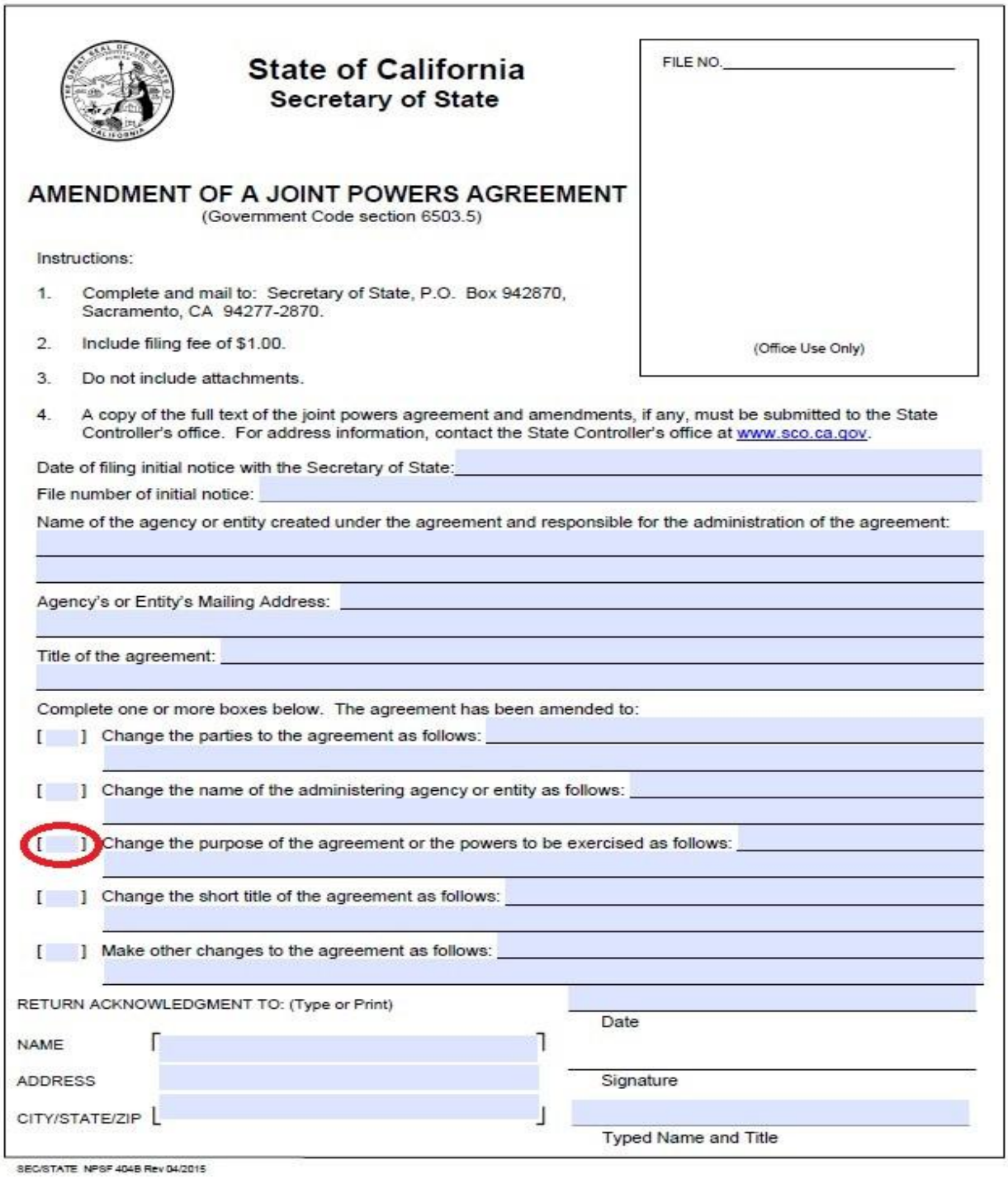
Urban Water Management Plan. This is a requirement under the Urban Water Management Act. The Scotts Valley Water District and the San Lorenzo Valley Water District prepared a joint Urban Water Management Plan. The cities of Santa Cruz and Watsonville and the Soquel Creek Water District have these plans.

Santa Cruz Water Rights Project Environmental Impact Report 2021. The EIR is required to address the necessary changes to the historical water rights on the San Lorenzo River. The current rights do not allow sending surplus water to neighboring water districts.

Final Report, Conjunctive Use and Water Transfers Phase II—(Task 6), 2015. This report documents the results of studies conducted to demonstrate the feasibility of storing excess San Lorenzo River water in the Santa Margarita and Mid-County groundwater basins.

Appendix D—Amendment of a Joint Powers Agreement

Amending the charter for a JPA requires the following application form.



State of California
Secretary of State

FILE NO.

AMENDMENT OF A JOINT POWERS AGREEMENT
(Government Code section 6503.5)

(Office Use Only)

Instructions:

1. Complete and mail to: Secretary of State, P.O. Box 942870, Sacramento, CA 94277-2870.
2. Include filing fee of $1.00.
3. Do not include attachments.
4. A copy of the full text of the joint powers agreement and amendments, if any, must be submitted to the State Controller's office. For address information, contact the State Controller's office at www.sco.ca.gov.

Date of filing initial notice with the Secretary of State:

File number of initial notice:

Name of the agency or entity created under the agreement and responsible for the administration of the agreement:

Agency's or Entity's Mailing Address:

Title of the agreement:

Complete one or more boxes below. The agreement has been amended to:

[ ] Change the parties to the agreement as follows:

[ ] Change the name of the administering agency or entity as follows:

[ ] Change the purpose of the agreement or the powers to be exercised as follows:

[ ] Change the short title of the agreement as follows:

[ ] Make other changes to the agreement as follows:

RETURN ACKNOWLEDGMENT TO: (Type or Print)

NAME

ADDRESS

CITY/STATE/ZIP

Date

Signature

Typed Name and Title

SEC/STATE NPSF 404B Rev 04/2015

Figure 10. **Amendment of a Joint Powers Agreement**[51]

LATEST NEWS

Is This California's Year for a Long-Te Drinking Water Assistance Program?

Gov. Newsom's revised budget includes money for a one-time drinking water crisis program, bu

Published on May 30, 2022
By **Dan Ross**

Photo: Nattapong Wongloungud / EyeEm

For 35 days between March and April of this year, Dante Woolfolk went without any running water in his house in Brooktrails, a small town nestled amid the leafy canopies of Mendocino County in Northern California. A spiraling unpaid water bill had led the local water system to turn off the spigot.

For those 35 days, says Woolfolk, his life was upended. He purchased water to cook, make coffee and clean the house. He believes he "easily" spent $600 on bottled water alone. The 36-year-old's three children stayed with a nearby friend. Woolfolk showered there, too. "I'm so grateful for that," Woolfolk says of his friend's largesse. But those 35 days without running water were hard, he says.

Woolfolk lost his hotel maintenance job at the start of the pandemic and has been unemployed since. His water bill, he says, was roughly $1,700 in arrears when the tap was shut off. He tried numerous times to make incremental payments on the debt, but the local community services district wouldn't accept his overtures, he says. Woolfolk's mother even made a $100 payment, but the water system operators still turned his water off soon thereafter, Woolfolk says.

The Brooktrails Township Community Service District failed to respond to questions. State water board spokesperson Blair Robertson wrote in an email that the agency wouldn't comment on an "open investigation."

The issue spilled out at Brooktrails Township board meeting in April when Woolfolk and several community advocates took to the floor to decry the shutoff, and to offer money to cover the debt using funds raised through a GoFundMe campaign. The service district subsequently accepted the money, he says, and water once more flows through the faucets in Woolfolk's home.

Woolfolk's experience underscores a gaping hole in California's low income safety net: the lack of a long-term drinking water rate-payer assistance program.

Adjusting for inflation, the average California household paid around 45% more per month for their drinking water in 2015 than they did in 2007.

The state has been working towards such a program for years, but these efforts have been shaped by disagreement over issues like long-term funding sources and which agency should manage it. These differences are exemplified in Gov. Newsom's May revised budget, which includes $200 million to bolster a federally funded, nationwide low income water assistance program rolled out here in California by a state agency. With that particular pot of money, eligible customers can apply for a one-time remittance to help cover any water-related debt.

"We support the governor's proposal," said Cindy Tuck, deputy executive director of the Association of California Water Agencies (ACWA), the largest statewide coalition of public water agencies in the U.S., representing 90% of the water delivered in California.

Advocates for a permanent — as opposed to a one-time — drinking water rate assistance safety net say the state can do better. Such a program, outlined in a bill introduced last year, would offer ongoing relief to struggling households, and potentially the undocumented. If instituted, it would be the first such program in the nation.

"It's positive we're putting money towards the low income household water assistance program," said Michael Claiborne, directing attorney with the Leadership Counsel for Justice and Accountability, a policy advocacy nonprofit, referring to the federal crisis assistance program. "But it doesn't establish the low income rate assistance program we've been working towards."

* * *

A confluence of events have conspired to make drinking water costs a worsening headache for many Californians, and vulnerable low income households in particular.

The average California household paid around 45% more per month for their drinking water in 2015 than they did in 2007 (adjusting for inflation), while the expenses associated with bringing struggling water systems up to code — especially amid a drought worsened by climate change — are expected to raise the cost to households again significantly. An indication of the impact from these rising costs can be seen in a state survey from the end of 2020 that found around $1 billion in water debt affecting 1.6 million California households and 5 million

individual residents. In 2019 alone, some 500,000 Californians suffered water shutoffs. Those shutoffs came not only before the pandemic but before the impact of soaring inflation, which has weighed heaviest on California's poorest.

Without a statewide drinking water rate-payer assistance program, the task of helping debt-riddled customers has largely fallen to local water agencies. A report from early 2020, however, found that only about half of California's community water system customers are served by a utility that offers a rate-payer assistance program, and less than 20% of the state's poorest received such a subsidy. Even when a water system does offer assistance, the amount of financial assistance can vary drastically. Further complicating matters, say utility operators, is that they are statutorily precluded from raising rates on wealthier customers to subsidize lower income residents.

Ten years ago, California passed the Human Right to Water Act — a landmark slab of legislation intended to guarantee every Californian clean, accessible and affordable water. That bill has precipitated a slew of actions including a sweeping plan to better manage the state's vulnerable groundwater resources, and a program to fix failing water systems. Legislation passed in 2015 set the ball rolling towards a statewide water assistance program, one outlined in SB 222, introduced last year by Sen. Bill Dodd.

While that bill works its way through the Legislature, the state water board has given a trial run to a drinking water and wastewater assistance program using nearly $1 billion in funds allocated last year to cover debts accrued during the height of the COVID pandemic.

The water board says it distributed some $301 million through the drinking water portion of the arrearages program. (Brooktrails received nearly $300,000 to cover drinking water debt accrued between March 4 of 2020 and June 15 of last year.) The water board has also issued some $73 million to cover wastewater arrearages. Nearly $60 million went to the Los Angeles City Bureau of Sanitation alone.

A long-term water program funded solely through the federal government would preclude undocumented households, a sticking point for community advocates.

As part of that arrearages program, utilities were required to apply to the water board on

behalf of their customers — in contrast to the federal Low Income Household Water Assistance Program (LIHWAP), for which the public can apply directly once their water or wastewater utility has enrolled in the program. That fund, managed by the California Department of Community Services and Development (CSD), offers low income households a one-time credit of up to $2,000 on their water or wastewater bill from a federal allocation to the state of $116 million. Newsom's revised budget feeds the program another $200 million.

In terms of any long-term water assistance program in California, ACWA supports a federally funded model, says Tuck. Furthermore, any permanent water-related assistance program in California should be managed by CSD, she says.

"Part of it is getting low income households to apply, and CSD is really set up for that work," says Tuck. "CSD's work with local service providers streamlines the eligibility verification process."

But a program funded solely through the federal government would preclude undocumented households, a sticking point for community advocates, some of whom argue that the state water board, rather than CSD, would be better placed to manage the program, at least in some ways.

"The [long-term] bill assistance program would take some percentage or portion of your bill and pay it so that you would have a lower water bill on an ongoing basis," says Jennifer Clary, California director of Clean Water Action, an environmental advocacy organization. And because the water board already has existing billing and regulatory relationships with individual water systems, that agency "has to be involved" in any drinking water assistance program, she adds.

Such a program should also be mandatory, says Clary, pointing to the state water board's voluntary arrearages program, which failed to encompass all struggling households in the state. The water board says that small utilities had the lowest participation rate in the program, with systems of less than 500 connections participating at a rate of 55%, and systems with over 10,000 connections participating at a 91% rate.

Of the nearly $1 billion earmarked for the two arrearages programs handled by the state water board this past year, there remains

nearly $550 million unspent. The question now is what to do with that money.

That said, the water board has helped over half a million households, wrote agency spokesperson Robertson, "and demonstrated a need for customer assistance programs in the water and wastewater utility sectors."

Claiborne also raises concerns about the federal water crisis assistance fund's potentially "limited reach." He compares it to another national energy assistance program run by CSD that in recent years met the needs of only about 20% of eligible customers.

Of the nearly $1 billion earmarked for the two arrearages programs handled by the state water board this past year, there remains nearly $550 million unspent. The question now is what to do with that money. Claiborne said that state officials have suggested it could be used in part to pay for the $200 million Newsom has budgeted towards the national LIHWAP crisis fund. If that's the case, then those monies wouldn't be available for undocumented households in California, Claiborne says. State appropriation is needed to ensure California's undocumented can access that help, he adds.

Despite the funding omission in the governor's May revised budget for a long-term water assistance program in California, proponents of such a program appear encouraged that the final budget will reflect that end goal. Upon publicly releasing his revised budget, Newsom specifically mentioned Sen. Dodd's legislative efforts in this arena. Dodd could not be reached for comment.

The Senate Committee on Budget and Fiscal Review also issued its own proposed budget which includes $330 million to fund the first two years of a statewide program as outlined in SB 222.

"We view that there is a viable path this year," says Uriel Saldivar, a senior policy advocate with the Community Water Center, a grassroots environmental nonprofit, who added that his organization would be involved in a rally and press conference in Sacramento on May 31 around this issue.

"We would like to see a harmonization between the governor's proposal, the senate's proposal and the assembly to include this, since we do feel all the makings of a historic moment are in line right now."

Would ACWA, a powerful political actor in Sacramento, support that harmonization? The answer once again boils down to funding, Tuck says. “A long-term low income rate assistance program will need a long-term funding source.”

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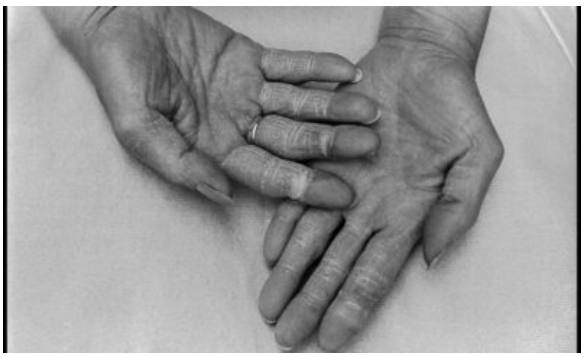

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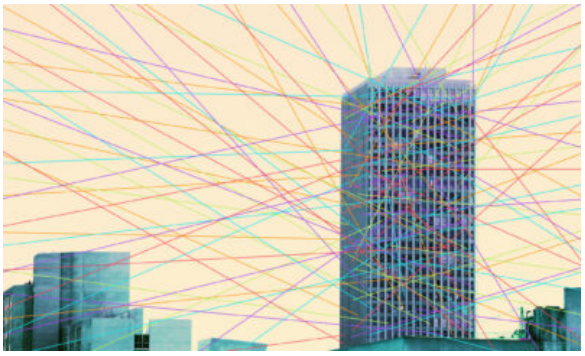

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STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2022-0018

TO ADOPT AN EMERGENCY REGULATION
TO REDUCE WATER DEMAND AND IMPROVE WATER CONSERVATION

WHEREAS:

1. On April 21, May 10, July 8, and October 19, 2021, Governor Newsom issued proclamations that a state of emergency exists statewide due to severe drought conditions and directed state agencies to take immediate action to preserve critical water supplies and mitigate the effects of drought and ensure the protection of health, safety, and the environment.

2. These proclamations urge Californians to reduce their water use.

3. On March 28, 2022, Governor Newsom signed an Executive Order directing the State Water Resources Control Board (State Water Board or Board) to consider adopting emergency regulations to increase water conservation. The Executive Order includes a request that the Board require urban water suppliers to implement Level 2 of their water shortage contingency plans, establish water shortage response actions for urban water suppliers that have not submitted water shortage contingency plans, taking into consideration model actions that the Department of Water Resources, and establish a ban on the irrigation of non-functional turf by entities in the commercial, industrial, and institutional sectors.

4. Many Californians and urban water suppliers have taken bold steps over the years to reduce water use; nevertheless, the severity of the current drought requires additional conservation actions from urban water suppliers, residents, and the commercial, industrial, and institutional sectors.

5. Water conservation is the easiest, most efficient, and most cost-effective way to quickly reduce water demand and extend limited water supplies through this summer and into the next year, providing flexibility for all California communities. Water saved is water available next year, giving water suppliers added flexibility to manage their systems effectively over time. The more water that is conserved now, the less likely it is that a community will experience dire shortages that may require water rationing or other emergency actions.

6. Most Californians use more water outdoors than indoors. In many areas, 50 percent or more of daily water use is for irrigation of lawns and outdoor landscaping irrigation. Outdoor water use is generally discretionary, and many irrigated landscapes would not suffer greatly from receiving a decreased amount of water.

7. The use of potable water to irrigate turf on commercial, industrial, or institutional properties that is not regularly used for human recreational purposes or for civic or community events can be reduced in commercial, industrial, and institutional areas to protect local water resources and enhance water resiliency.

8. Public information and awareness are critical to achieving conservation goals, and the Save Our Water campaign (SaveOurWater.com), run jointly by the Department of Water Resources (DWR) and the Association of California Water Agencies, is an excellent resource for conservation information and messaging that is integral to effective drought response.

9. SaveWater.CA.Gov is an online tool designed to help save water in communities. This website lets anyone easily report water waste from their phone, tablet, or computer by simply selecting the type of water waste they see, typing in the address where the waste is occurring, and clicking send. These reports are filed directly with the State Water Board and relevant local water supplier.

10. Enforcement against water waste is a key tool in conservation programs. When conservation becomes a social norm in a community, the need for enforcement is reduced or eliminated.

11. On March 28, 2022, the Governor suspended the environmental review required by the California Environmental Quality Act to allow State Water Board-adopted drought conservation emergency regulations and other actions to take place quickly to respond to emergency conditions.

12. Water Code section 1058.5 grants the State Water Board the authority to adopt emergency regulations in certain drought years in order to: “prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion, of water, to promote water recycling or water conservation, to require curtailment of diversions when water is not available under the diverter’s priority of right, or in furtherance of any of the foregoing, to require reporting of diversion or use or the preparation of monitoring reports.”

13. On May 13, 2022, the State Water Board issued public notice that it will consider the adoption of the regulation at the Board’s regularly scheduled May 24, 2022 public meeting, in accordance with applicable State laws and regulations. The State Water Board also distributed for public review and comment a Finding of Emergency that complies with State laws and regulations.

14. The emergency regulation exempts suppliers from enforcing connection moratoria, if their Level 2 demand management actions call for them, because new residential connections are critical to addressing the state’s housing supply shortage. However, the Board recognizes connections for other projects may not be appropriate given the shortage conditions and urges water suppliers to carefully evaluate new development projects for their water use impacts.

15. Disadvantaged communities may require assistance responding to Level 2 conservation requirements, including irrigation restrictions, temporary changes to rate structures, and prohibited water uses. State shortage contingency plans aimed at increasing water conservation, and state and local agencies should look for opportunities to provide assistance in promoting water conservation. This assistance should include but not be limited to translation of regulation text and dissemination of water conservation announcements into languages spoken by at least 10 percent of the people who reside in a water supplier's service area, such as in newspaper advertisements, bill inserts, website homepage, social media, and notices in public libraries.

16. The Board directs staff to consider the following in pursuing any enforcement of section 996, subdivision (e): before imposing monetary penalties, staff shall provide one or more warnings; monetary penalties must be based on an ability to pay determination, consider allowing a payment plan of at least 12 months, and shall not result in a tax lien; and Board enforcement shall not result in shutoff.

17. The Board encourages entities other than Board staff that consider any enforcement of this regulation to apply these same factors identified in resolved paragraph 16. Nothing in the regulation or in the enforcement provisions of the regulation precludes a local agency from exercising its authority to adopt more stringent conservation measures. Moreover, the Water Code does not impose a mandatory penalty for violations of the regulation adopted by this resolution, and local agencies retain their enforcement discretion in enforcing the regulation, to the extent authorized, and may develop their own progressive enforcement practices to encourage conservation.

THEREFORE BE IT RESOLVED THAT:

1. The State Water Board adopts California Code of Regulations, title 23, section 996, as appended to this resolution as an emergency regulation that applies to urban water suppliers, as defined by Water Code section 10617.

2. State Water Board staff shall submit the regulation to the Office of Administrative Law (OAL) for final approval.

3. If, during the approval process, State Water Board staff, the State Water Board, or OAL determines that minor corrections to the language of the regulation or supporting documentation are needed for clarity or consistency, the State Water Board Executive Director or designee may make such changes.

4. This regulation shall remain in effect for one year after filing with the Secretary of State unless the State Water Board determines that it is no longer necessary due to changed conditions or unless the State Water Board renews the regulation due to continued drought conditions, as described in Water Code section 1058.5.

5. The State Water Board directs State Water Board staff to work with the Department of Water Resources and the Save Our Water campaign to disseminate information regarding the emergency regulation.

6. The State Water Board directs staff to, by January 1, 2023, survey urban water suppliers on their experience protecting trees and tree cover during drought, with attention to disadvantaged communities. The survey shall inquire about challenges encountered, strategies used, costs, and successes in protecting trees.

7. Nothing in the regulation or in the enforcement provisions of the regulation precludes a local agency from exercising its authority to adopt more stringent conservation measures. Local agencies are encouraged to develop their own progressive enforcement practices to promote conservation.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 24, 2022.

AYE:	Chair E. Joaquin Esquivel Vice Chair Dorene D'Adamo Board Member Sean Maguire Board Member Laurel Firestone
NAY:	None
ABSENT:	Board Member Nichole Morgan
ABSTAIN:	None

Jeanine Townsend
Clerk to the Board

ADOPTED EMERGENCY REGULATION TEXT

Version: May 24, 2022

Title 23. Waters

Division 3. State Water Resources Control Board and Regional Water Quality Control Boards

Chapter 3.5. Urban Water Use Efficiency and Conservation

Article 2. Prevention of Drought Wasteful Water Uses

§ 996. Urban Drought Response Actions

(a) As used in this section:

(1) "Commercial, industrial and institutional" refers to commercial water users, industrial water users, and institutional water users as respectively defined in Water Code, section 10608.12, subdivisions (e), (i), and (j), and includes homeowners' associations, common interest developments, community service organizations, and other similar entities but does not include the residences of these entities' members or separate interests.

(2) "Common interest development" has the same meaning as in section 4100 of the Civil Code.

(3) "Community service organization or similar entity" has the same meaning as in section 4110 of the Civil Code.

(4) "Homeowners' association" means an "association" as defined in section 4080 of the Civil Code.

(5) "Non-functional turf" means turf that is solely ornamental and not regularly used for human recreational purposes or for civic or community events. Non-functional turf does not include sports fields and turf that is regularly used for human recreational purposes or for civic or community events.

(6) "Plant factor" has the same meaning as in section 491.

(7) "Separate interest" has the same meaning as in section 4185 of the Civil Code.

(8) "Turf" has the same meaning as in section 491.

(9) "Urban water supplier" has the same meaning as Water Code section 10617.

(10) "Water shortage contingency plan" means the plan required by Water Code section 10632.

(b) Each urban water supplier shall submit to the Department of Water Resources a preliminary annual water supply and demand assessment consistent with section

10632.1 of the Water Code no later than June 1, 2022, and submit a final annual water supply and demand assessment to the Department of Water Resources no later than the deadline set by section 10632.1 of the Water Code.

(c) (1) Each urban water supplier that has submitted a water shortage contingency plan to the Department of Water Resources shall implement by June 10, 2022, at a minimum, all demand reduction actions identified in the supplier's water shortage contingency plan adopted under Water Code 10632 for a shortage level of ten (10) to twenty (20) percent (Level 2).

(2) Notwithstanding subdivision (c)(1), urban water suppliers shall not be required to implement new residential connection moratoria pursuant to this section.

(3) Notwithstanding subdivision (c)(1), an urban water supplier may implement the actions identified in subdivision (d) in lieu of implementing the demand reduction actions identified in the supplier's water shortage contingency plan adopted under Water Code section 10632 for a shortage level of ten (10) to twenty (20) percent (Level 2), provided the supplier meets all of the following:

(i) The supplier's annual water supply and demand assessment submitted to the Department of Water Resources demonstrates an ability to maintain reliable supply until September 30, 2023.

(ii) The supplier does not rely on, for any part of its supply, the Colorado River, State Water Project, or Central Valley Project, and no more than ten (10) percent of its supply comes from critically overdrafted groundwater basins as designated by the Department of Water Resources.

(iii) The supplier's average number of gallons of water used per person per day by residential customers for the year 2020 is below 55 gallons, as reported to the Board in the Electronic Annual Report.

(d) Each urban water supplier that has not submitted a water shortage contingency plan to the Department of Water Resources shall, by June 10, 2022, and continuing until the supplier has implemented all demand reduction actions identified in the supplier's water shortage contingency plan adopted under Water Code 10632 for a shortage level of ten (10) to twenty (20) percent (Level 2), implement at a minimum the following actions:

(1) Initiate a public information and outreach campaign for water conservation and promptly and effectively reach the supplier's customers, using efforts such as email, paper mail, bill inserts, customer app notifications, news articles, websites, community events, radio and television, billboards, and social media.

(2) Implement and enforce a rule or ordinance limiting landscape irrigation with potable water to no more than two (2) days per week and prohibiting landscape irrigation with potable water between the hours of 10:00 a.m. and 6:00 p.m.

(3) Implement and enforce a rule or ordinance banning, at a minimum, the water uses prohibited by section 995. Adoption of a rule or ordinance is not required if the supplier has authority to enforce, as infractions, the prohibitions in section 995 and takes enforcement against violations.

(e) (1) To prevent the unreasonable use of water and to promote water conservation, the use of potable water is prohibited for the irrigation of non-functional turf at commercial, industrial, and institutional sites.

(2) Notwithstanding subdivision (e)(1), the use of water is not prohibited by this section to the extent necessary to ensure the health of trees and other perennial non-turf plantings or to the extent necessary to address an immediate health and safety need.

(3) Notwithstanding subdivision (e)(1), an urban water supplier may approve a request for continued irrigation of non-functional turf where the user certifies that the turf is a low water use plant with a plant factor of 0.3 or less, and demonstrates the actual use is less than 40% of reference evapotranspiration.

(f) The taking of any action prohibited in subdivision (e) is an infraction punishable by a fine of up to five hundred dollars ($500) for each day in which the violation occurs. The fine for the infraction is in addition to, and does not supersede or limit, any other remedies, civil or criminal.

(g) A decision or order issued under this section by the Board, or an officer or employee of the Board, is subject to reconsideration under article 2 (commencing with section 1122) of chapter 4 of part 1 of division 2 of the Water Code.

Authority: Section 1058.5, Water Code.

References: Article X, Section 2, California Constitution; Sections 4080, 4100, 4110, and 4185, Civil Code; Section 8627.7, Government Code; Sections 102, 104, 105, 275, 350, 377, 491, 1122, 10608.12, 10617, 10632, and 10632.1, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

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