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

WATER COMMISSION

Regular Meeting

June 5, 2023

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

Please note: As of March 1, 2023, participation in meetings for City Advisory Bodies is in-person only. Members of the public can continue to stream the audio for the meetings from the City's website, however public comment will no longer be taken virtually and those wishing to address the board must be in attendance at the location provided on the agenda.

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. 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.

Agenda and Agenda Packet Materials: The City Council agenda and the complete agenda packet containing public records, which are not exempt from disclosure pursuant to the California Public Records Act, are available for review on the City's website: https://www.cityofsantacruz.com/government/city-departments/water/city-water-commission and at the Water Department located at 212 Locust Street, STE A, Santa Cruz, California, during normal business hours.

Agenda Materials Submitted after Publication of the Agenda Packet: Pursuant to Government Code §54957.5, public records related to an open session agenda item submitted after distribution of the agenda packet are available at the same time they are distributed or made available to the legislative body on the City's website at: https://www.cityofsantacruz.com/government/city-departments/water/city-water-commission and are also available for public inspection at the Water Department, 212 Locust Street, STE A, Santa Cruz, California, during normal business hours, and at the Council meeting.

Need more information? Contact the Water Department at 831-420-5200.

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

Consent Agenda (Pages 1.1 – 3.6) 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.

1. City Council Actions Affecting the Water Department (Pages 1.1 – 1.2)

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

2. Water Commission Minutes from May 1, 2023 (Pages 2.1 – 2.6)

   That the Water Commission approve the May 1, 2023 Water Commission Minutes.

3. Fiscal Year 2023 3rd Quarter Unaudited Financial Report (Pages 3.1 – 3.6)

   That the Water Commission accept the Fiscal Year 2023 (FY 2023) 3rd Quarter Unaudited Financial Report.

Items Removed from the Consent Agenda

General Business (Pages 4.1 – 5.4) 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.

4. Water Department's Proposed Fiscal Year 2024 Operating and Fiscal Year 2024-28 Capital Investment Program (CIP) Budgets (Pages 4.1 – 4.34)

   That the Water Commission authorize the Chair to send a letter to the City Council related to the Water Department's Fiscal Year 2024 (FY 2024) Budgets and financial position recommending the Water Department's Budgets to the City Council.

5. Groundwater Sustainability Planning (Pages 5.1 – 5.4)

   That the Water Commission receive information and provide feedback to staff on the Sustainable Groundwater Management Act, provisions of the Santa Cruz Mid-County and Santa Margarita Groundwater Sustainability Plans, and the Water Department's water supply augmentation project work in both basins.

Subcommittee/Advisory Body Oral Reports

6. Santa Cruz Mid-County Groundwater Agency

7. Santa Margarita Groundwater Agency

Director's Oral Report

Information Items (Pages 8.1 – 8.10)

Adjournment

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WATER COMMISSION
INFORMATION REPORT

DATE: 06/01/2023

AGENDA OF: 06/05/2023

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 9, 2023

Newell Creek Instream Habitat Restoration – Large Woody Debris Project Professional Services Agreement Amendment (WT)

Motion **carried** to:

- Accept the proposal dated April 14, 2023 of cbec, inc. eco engineering (West Sacramento, CA) for bid support and construction services for the Newell Creek Instream Habitat Restoration – Large Woody Debris Project in the amount of $141,103.00 and to authorize the City Manager to execute Contract Amendment No. 1 in a form to be approved by the City Attorney; and

Authorize the Water Director to approve change orders with cbec, inc. eco engineering in a form to be approved by the City Attorney for amounts that are within the approved adjusted budget.

May 23, 2023

Water Supply Augmentation, Aquifer Storage and Recovery Beltz 9 Pilot Test, Pueblo Water Resources Professional Services Contract (WT)

Motion **carried** to authorize the City Manager to execute an agreement in a form to be approved by the City Attorney with Pueblo Water Resources of Ventura, CA in the amount of $216,425 to conduct pilot testing of Aquifer Storage and Recovery (ASR) at Beltz Well 9 and authorizing the Water Director to execute amendments within the approved project budget.

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

ATTACHMENTS: None.

CITY OF SANTA CRUZ
Water Department

Water Commission
7:00 p.m. – May 1, 2023
Council Chambers
809 Center Street, Santa Cruz

Summary of a Water Commission Meeting

Call to Order: 7:00 PM

Roll Call

Present: J. Burks (Chair); M. Duncan-Merrell; D. Engfer (Vice Chair); A. Paramo; G. Roffe; and S. Ryan.

Absent: T. Burns, with notification

Staff: R. Menard, Water Director; D. Baum, Water Chief Financial Officer; H. Cagliero, Administrative Assistant III; C. Coburn, Deputy Director/Operations Manager; M. Kaping, Principal Management Analyst; H. Luckenbach, Deputy Water Director/Engineering Manager; and Sarah Perez, Principal Planner.

Others: None.

Presentation: None.

Statements of Disqualification: None.

Oral Communications: None.

Announcements:

Water Director Menard announced that Kevin Crossley, Senior Professional Engineer, has been promoted to Assistant Director of Public Works/City Engineer and will begin his new position on May 15th, 2023.

Consent Agenda:

1. City Council Items Affecting the Water Department

2. Water Commission Minutes from March 6, 2023

3. Recommendation on 2023 Peak Season Water Supply Outlook

4. Updated Working Draft 2023 Water Commission Work Plan

Vice Chair Engfer moved approval of the Consent Agenda, with the minutes of the March 6th meeting revised as suggested by Chair Burks', Vice Chair Engfer's, and Commissioner Paramo's comments as amended. Commissioner Ryan seconded.

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

Items removed from the Consent Agenda: None.

General Business

5. FY2024 O&M Budget and Capital Program First Look

R. Menard introduced D. Baum for the presentation and discussion of FY2024 O&M Budget and Capital Program First Look.

Has a budget request ever been denied or readjusted by Council?

- Not during the last decade, if not longer.

In terms of the budget variance, is it common to be around 10% variance for Utilities Services?

- Fitch Credit Analysts and S&P Global Ratings (previously Standard & Poor's) are the two agencies that rate our credit. During our most recent credit rating review, in which S&P affirmed our credit rating at a high level of AA- and Fitch rated our credit at A-, the credit analyst at Fitch said it is common for water agencies across the country to overbudget and underspend. For our Pro Forma, she suggested that the budget could be reduced to accommodate for this trend; however, we have chosen to budget conservatively and not include a reduction to accommodate for underspending at this time. Underspending the projected budget can be helpful and prevent crisis in certain situations such as in 2014 and 2015 when the public was required to reduce water consumption due to drought conditions and these mandatory restrictions resulted in much lower revenue than was projected.

Are the WIFIA and SRF interest rates fixed over the life of the loan?

- Yes, both these sources have fixed interest rates over the life of the loan. Specifically for the WIFIA loan, if interest rates go down by a significant amount, they offer the option to reopen the interest rate discussion to renegotiate a lower rate.

Is the projected interest rate for future debt of 5.4% through Fiscal Year 2028 a reflection of the most conservative estimate?

- The higher rate is based on the short-term rate for the line of credit which has an outstanding balance of $16 million. This is all construction debt, and the plan is to pay this down in the next year by converting short-term borrowing to long-term loans with lower interest rates.

The debt service coverage ratio calculation is looking forward over the next 5-year period, do you anticipate increasing challenges after that, and would there be an effort to mitigate any challenges you anticipate through a subsequent 5-year rate cycle?

- For debt service coverage, it is important to look at all the pieces involved and recognize how they are related. One important aspect is we have a 180-day cash reserve, and at the end of the five-year period shown on the Pro Forma, we're showing that cash reserves exceed the target 180 days of operating costs. This means that there is some financial flexibility that could be used elsewhere, whether that is additional funding for pay-as-you-go capital or other expenses. There isn't an urgent need to worry about looking at the debt service coverage ratio farther than 5 years out because so many things can happen between then and now.

Where is the revenue from the manual adjustment due to a misalignment between the approved rates and the expected revenue coming from on the balance sheet?

- It is not revenue; it is a reduction in the total revenue we are anticipating that is due to projected rates not producing the anticipated revenues. We need to dig into the water sales figures for the various customer classes and tiers to determine exactly what is going on here and we will be doing that work in the coming months.

Where would the carryover for the capital expenditures show up in the Pro Forma?

- The CIP budget is midway down the page in the capital expenditures line item. For Fiscal Year 2023, we are showing $64.3 million in capital expenditures which is less than we had budgeted for that year. There is an assumption that in addition to the proposed amount of approximately $32 million budgeted for Fiscal Year 2024, we are expecting an extra $21 million carryover from the previous fiscal year in that capital expenditures line, giving us a Fiscal Year 2024 CIP total of $53 million.

Why is there variance in the manual adjustment numbers between years?

- The revenue expectations when the rate study was done were similar to revenue numbers prior to the drought and COVID, which were higher by about $4 million each year so the manual adjustment continues every year until Fiscal Year 2028 because that rate amount hasn't yet been approved by Council; those numbers are just an estimate on staff's part. The amount of adjustment through FY 2027 reflects lower consumption than was expected when the revenues were forecast in 2021.

If people aren't using water at the amounts we were expecting and it is causing decreased revenue, have we translated to the public that the full allotment each home is given can be used?

- We only give allotments when rationing water due to curtailment; there is currently no curtailment in effect.

Are there any concerns regarding recent debt service and how that may affect our credit ratings?

- Our proposed lender for the WIFIA loan required that our rating agencies review and affirm our credit rating, including the financial obligations associated with the WIFIA loan. Our current credit ratings were affirmed.

No public comments were received.

Commissioner Roffe moved the staff recommendation on Item 5. Commissioner Ryan seconded.

VOICE VOTE: MOTION CARRIED
AYES: All

NOES: None
DISQUALIFIED: None

6. Water Supply Augmentation Implementation Plan Update

R. Menard introduced H. Luckenbach for the presentation and discussion of Water Supply Augmentation Implementation Plan Update.

Is the contract with Soquel Creek Water District a Memorandum of Agreement or a Cooperative Agreement?

- The grant was awarded to the Mid-County Groundwater Agency (MGA) and both Soquel Creek and the City have "local project sponsor" agreements with the MGA covering the component of the grant that each party is responsible for.

How is the machine-learning different the Monte Carlo analyses that U Mass did for us?

- Machine Learning (ML) uses known input data (e.g., ASR injection and extraction rates) and output data (e.g., groundwater elevations) to develop the relationship between the two and applies criteria to optimize the system (e.g., a water supply project). A Monte Carlo simulation uses data ranges (e.g., temperature and precipitation) and a known model (e.g., weather generator) to predict probable outcomes or thresholds for change.

  The use of ML would be appropriate for the grant funded work (as opposed to Monte Carlo simulations) because our goal is to use existing data gained through pilot testing, modeling, etc., and understand (or develop a model for) the most efficient project by applying agreed-upon criteria.

Is it cost, a newness of technology, or strain of assets that makes machine-learning not of interest at this time?

- We aren't necessarily in the business of research and development, so we would want to see that this technology has been proven by its application in other agencies and we are not sure it has at this time.

Is machine learning being recommended by other consultants like Montgomery, and are the others excited to try this technology or are they similarly unsure?

- Montgomery did include machine learning in their scope of work. The project partners decided to leave this in the final scope of work as an optional task to allow more time to see how the groundwater modeling work unfolds and to learn more about how ML is being applied to similar types of work. Montgomery is very excited about the prospect of using it.

Would the proposal for the Beltz 8 and 12 wells be for the full project to replace the demonstration sites?

- It would convert both Beltz 8 and 12 to permanent facilities for both injection and extraction of water. The temporary facilities are currently operating basically as if they are full-scale so injection rates will remain the same once they are permanent facilities.

In a wet year such as this year, is there opportunity to continue injection further into the season if the stream flows can accommodate this use during the dry time of the year?

- We do have flexibility to extend injection beyond April 30th as long as there is sufficient flow.

Can you explain why the high Total Organic Carbon (TOC) in the City's source water would be a problem for injection?

- TOC is a precursor for the formation of disinfection byproducts (DBP) such as total trihalomethanes (THMs) and haloacetic acids (HAAs). Current water quality regulations require that water stored in groundwater basins meet the exact same DBP maximum contaminant levels (MCLs) that apply in water distribution systems. DBP levels typically aren't static and the amount of precursor in the water will cause DBP levels to increase over time if the water continues to be exposed to chlorine (or other disinfectants). When stored in groundwater, THMs have a growth period followed by a decay period. To ensure our ASR projects comply with regulations and will be permitted by the State, we need to understand what that decay period is to receive our final permit from the State.

  The improvements from the Graham Hill Water Treatment Facilities Improvement project in terms of the water quality will increase our ability to remove TOC and other potential DBP precursors from the water before it leaves the water treatment plant, and this will give us a better quality of water going out in the distribution system that further enhances the quality of injected water.

Are the experiences you are having with the ASR demonstration projects included in the work being done for operational modeling?

- Yes.

With respect to the Water Supply Augmentation Planning, have the demonstration studies provided information on how much supply can be expected in terms of reducing the potential water deficit under drought conditions?

- The demonstration work we have done helps us determine how much of the potential gap we can fill through water storage in the Mid-County Groundwater Basin. Based on work to date we think that figure is 50% or less, which is a very important result. The modeling work being performed as part of the grant will help us confirm, refine, or revise that figure and understand how ASR and the Pure Water Soquel projects will impact the basin and each other.

What is the Water Supply Augmentation program level versus project level, and what is the significance of what we saw in the template?

- The project level is specific to implementable projects (e.g., ASR in the Beltz wells) while program level lacks this specificity and applies to feasibility-level work. This template was drafted for use on capital projects, but the water supply work includes both project and program level. It's this distinction between the two that we were trying to make clear; some projects are being implemented while the remainder of work continues to focus on the identification of future projects.

On page 6.4, would the three items listed next to the dates June 2023, August 2023, and January/February 2023, be appropriate to add to the schedule?

- Yes. These are items that would come to the Water Commission-they weren't added to the Work Plan yet, but that is generally where they would be listed. They will most likely be included in the next update to the Work Plan.

No public comments were received.

No motion is required for this item.

Subcommittee/Advisory Body Oral Reports

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

The Santa Cruz Mid-County Groundwater Agency has not met since March. The agenda for the March 16th meeting focused primarily on the annual report and draft budget. The next meeting is scheduled for June 15th and will have the option of remote attendance for the public and will focus on the budget and project reporting for the Sustainable Groundwater Management Implementation Grant that was discussed in item 6 above.

8. Santa Margarita Groundwater Agency (SMGWA)

The Santa Margarita Groundwater Agency met on March 23rd and during this meeting approved the annual report for submission. SMGWA received State approval of Groundwater Sustainability Plan (GSP) with modest list of recommended improvements that need to be addressed by the first 5-year update. They are still waiting to hear about whether the SMGWA will receive funding from round two of the state's Sustainable Groundwater Management Implementation Grant program. The next meeting is scheduled for May 25th.

Director's Oral Report: None.

Information Items: Information items included in the agenda packet were not discussed.

Adjournment: The meeting was adjourned at 8:58 PM.

WATER COMMISSION
INFORMATION REPORT

DATE: 6/1/2023

AGENDA OF: 6/05/2023

TO: Water Commission

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

SUBJECT: Fiscal Year 2023 3rd Quarter Unaudited Financial Report

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RECOMMENDATION: That the Water Commission accept the Fiscal Year 2023 (FY 2023) 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 LRFP includes financial targets for debt service coverage ratio (1.5x), a combined 180-days cash on hand, $3.1 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, 2022, through March 31, 2023. 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 2023 and reflects the transactions posted during the time period of July 1, 2022, through March 31, 2023. Page 1 of the attached Financial Report is focused on the Operating budget and Page 2 summarizes the Capital budget. Noteworthy items are discussed on the following pages.

Operating Revenues

Water sales are 3% below budgeted amounts. The FY 2023 budget forecasts a 6.9% increase in water sales. We expect higher water use through the end of June enabling the Department to meet or exceed budgeted revenues for FY 2023.

For the nine-month period ending March 31, 2023, consumption is trending five percent higher compared to the same period last year.

In FY 2023, the Department received $492,466 from a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant and from the California Office of Emergency Services for the Brackney Landslide Pipeline Risk Reduction project to mitigate potential damage from increasing severe storms.

In the period of fiscal year 2021 to May 31, 2023, Water Department staff submitted forty-five Drinking Water State Revolving Fund (SRF) disbursement claims to the State Water Resources Control Board (SWRCB) for the Newell Creek Inlet/Outlet Pipeline Replacement and Concrete Tanks Replacement projects totaling $102.3 million. Through May 31, 2023, $95.4 million was received and $7.0 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 SRF. $21 million was drawn from the line of credit. $5 million was repaid on December 1, 2022. $16 million remains outstanding.

On May 4, 2023, SCWD received a $127.7 million loan from the United States Environmental Protection Agency (EPA) through its Water Infrastructure Finance and Innovation Act (WIFIA) Loan program. The Loan provides 49% of the funding needed for the Graham Hill Water Treatment Plant improvements, Newell Creek Pipeline Replacement (GHWTP – Felton), 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 loan to SCWD carries an interest rate of 3.77% and matures in 40 years. Compared to a tax-exempt bond issue, we estimate interest savings of more than $18 million over the life of the loan.

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

Operating Expenses

Operating expenses are trending 19% below the Adopted Budget. Personnel costs are down 16% due primarily to the 10-14 vacant positions during the first nine months of the fiscal year. The vacancy rate is approximately 12% of budgeted positions; the budget assumes no vacancies.

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

- Legal, training, printing/binding and postage are under budget by $151,000. The ongoing reduction of outside services is attributed to the drought-related reduction in revenues, which reduces funds available for third-party services.

- Electricity cost for the period was $909,000, which is under budget by $309,000 compared to the Adopted Budget. Electricity is trending lower by 14%, when compared to the same period last year. As improvements are designed for the water system, we will comply with the City's Climate Action Plan.

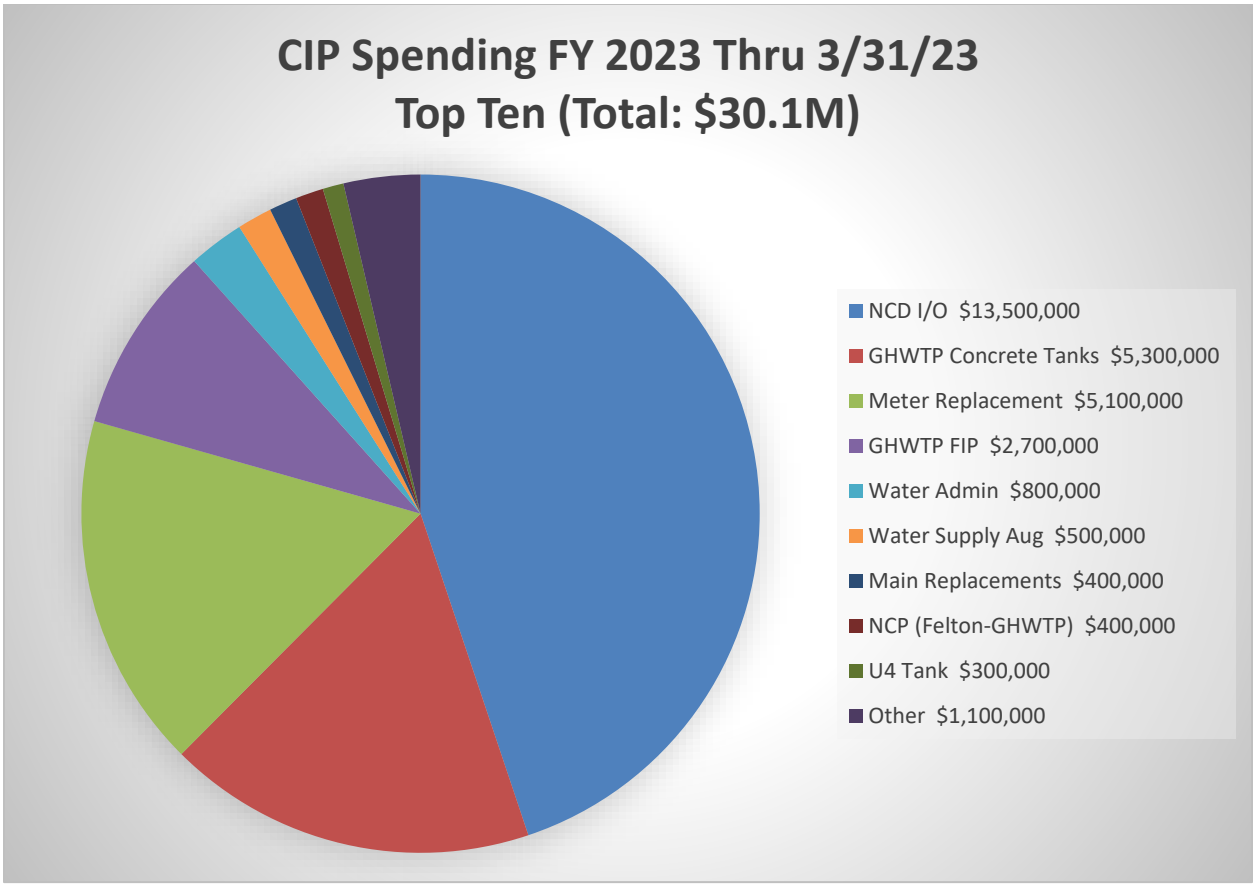
These highlighted operating expenses are paid from the Services, Supplies and Other line items.

Capital Investment Program (CIP) Highlights

Thirty-three CIP projects were active during the first nine months of FY 2023 and $30.09 million was spent. This amount is nearly 50% of the current estimate of $60.38 million for total expenses for FY 2023 which is similar to the rate of spend versus estimates at this point in prior years. The $60.38 million in estimated spend includes project contingencies and Management Reserve which will likely not be fully spent. It is also worth noting that Consultants and Contractors bill in arrears and the bulk of FY 2023 expenses will be paid in July and August and accrued back to June. Spending and estimates remain well below the FY 2023 Amended Budget of $96.6 million. The remaining unspent appropriations will be applied to the FY 2024 CIP Budget.

Top CIP Spending

Over 88% of FY 2023 spending through March 31st was for four projects: Newell Creek Inlet/Outlet Pipeline Replacement (NCD I/O), the Graham Hill Water Treatment Plant (GHWTP) Concrete Tanks project, the Meter Replacement project, and the GHWTP Facilities Improvement Project.



There are twenty-four projects included in Other above. Of that group, the following projects exceeded $100,000 in spend: Aquifer Storage and Recovery planning and Mid-County Existing Infrastructure projects, the Brackney Landslide Area Pipeline project, CMMS Software Replacement, Tait Diversion Retrofit project, and Intertie 1 (Scotts Valley Water Department–SCWD) project.

Management Reserve Use

$2.74 million was moved from Management Reserve to fund two main replacement projects on Soquel Avenue and Soquel Drive, and to fund the relocation of a utility pole at the GHWTP entrance.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the FY 2023 Third Quarter Financial Report.

ATTACHMENTS:
1. Santa Cruz Water Department Financial Report

SANTA CRUZ WATER DEPARTMENT FINANCIAL REPORT

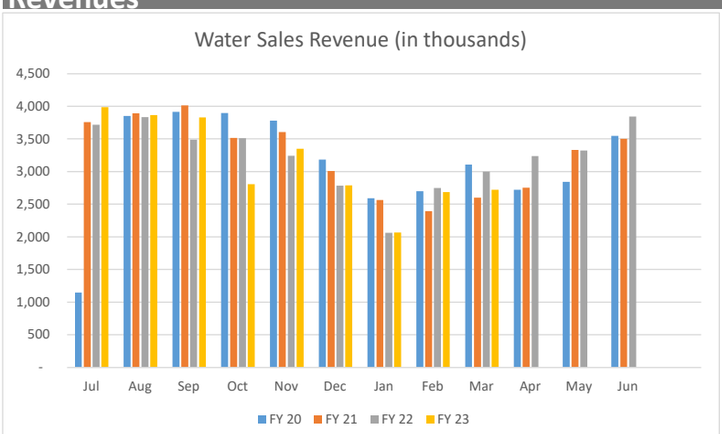
Fiscal Year 2022-23 through March 31, 2023

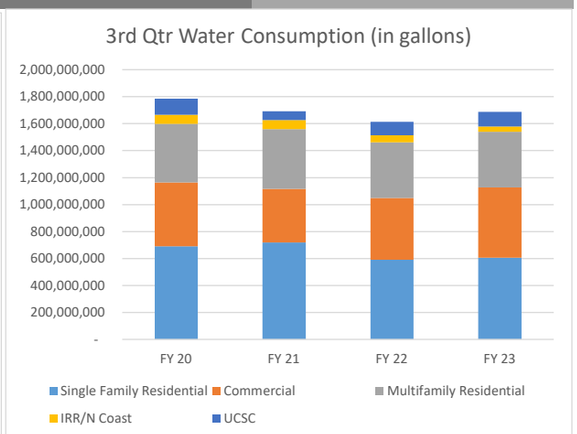
(Unaudited)

Financial Summary

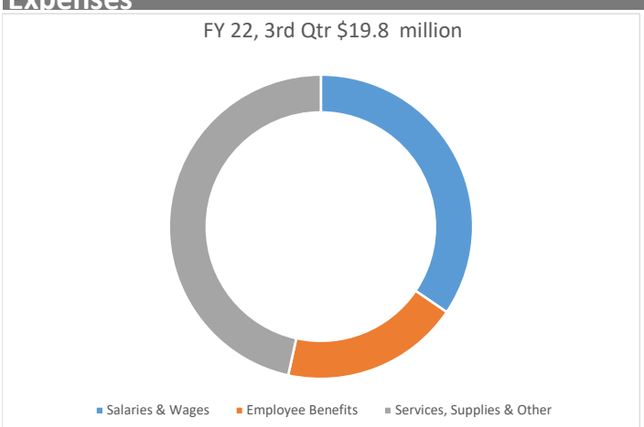
	FY 2023 Adjusted Budget	YTD Budget	Actual	Actual vs. YTD Budget Variance $ +/(-)	Actual vs. YTD Budget Variance % +/(-)
Operating Revenues					
Water Sales	39,793,705	29,845,279	28,837,092	(1,008,187)	(3%)
Other Charges for Services	1,219,800	914,850	1,074,439	159,589	17%
Other Revenues	575,883	431,912	310,625	(121,287)	(28%)
Grants	60,664	45,498	492,466	446,969	-
Investment Earnings	6,600	4,950	52,995	48,045	-
Total Operating Revenues	41,656,652	31,242,489	30,767,618	(474,871)	(2%)
Operating Expenses					
Salaries & Wages	11,440,159	8,580,119	7,183,778	(1,396,342)	(16%)
Employee Benefits	6,471,622	4,853,717	4,136,558	(717,159)	(15%)
Services, Supplies & Other	17,223,256	12,917,442	9,652,978	(3,264,464)	(25%)
Capital Outlay	570,523	427,893	382,307	(45,585)	(11%)
Debt Service - Principal & Interest	10,231,706	7,673,780	6,396,522	(1,277,258)	(17%)
Total Operating Expenses	45,937,266	34,452,950	27,752,142	(6,700,808)	(19%)
Net Operating Revenue (Loss)	(4,280,615)	(3,210,461)	3,015,475	-	-
Debt Service Coverage (Target >= 1.50x)	1.14x	1.67x	6.74x		

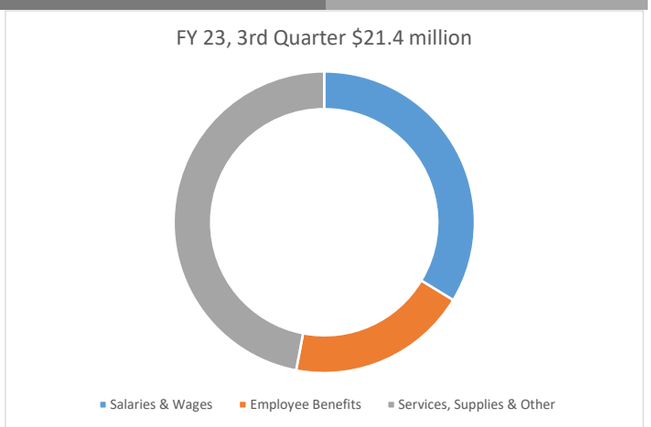
Revenues





Expenses





Cash

Fund Balances	YTD Balance	Year End Target Balance
711 - Enterprise Operations	6,081,568	8,804,111
713 - Rate Stabilization	12,343,375	10,000,000
715 - System Development Charges	6,476,285	N/A
716 - 90 Day Operating Reserve	8,245,924	8,804,111
717 - Emergency Reserve	3,024,142	3,000,000
718 - Mount Hermon June Beetle Endowment	145,824	144,000
719 - Equipment Replacement	590,086	700,000
Days' Cash (Includes only Funds 711 & 716)	146	180
Days' Cash Target	180	180

CIP Summary: Fiscal Year 2023 3rd Quarter Project Titles	Prior Year Actuals	Project Cost Estimate [1] *(escalated dollars)*	FY23 Actuals thru 3/31/23	FY23-32 Estimate To Complete	Project Schedule
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS					
Water Supply Augmentation Strategy					
Beltz Wellfield Aquifer Storage and Recovery					
ASR Planning	3,250,079	5,151,696	112,657	1,788,960	2019-2023
ASR Mid County Existing Infrastructure	383,887	8,971,750	168,144	8,419,720	2020-2027
ASR Mid County New Wells	-	26,696,860	-	26,696,860	2021-2027
Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges					
ASR Santa Margarita Groundwater	-	456,381	-	456,381	2020-2027
ASR New Pipelines	-	-	-	-	2022-2027
In Lieu Transfers and Exchanges	-	-	-	-	
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery					
Water Supply Augmentation	1,613,222	89,876,215	481,859	87,781,134	2019-2033
Recycled Water Feasibility Study	847,884	1,792,224	46,615	897,725	2018-2023
Subtotal Water Supply Augmentation Strategy	**6,095,072**	**132,945,127**	**809,274**	**126,040,781**	
Subtotal Water Supply Resiliency and Climate Adaptation Projects	**6,095,072**	**132,945,127**	**809,274**	**126,040,781**	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION					
Raw Water Storage Projects					
NCD I/O Replacement Project	74,224,158	105,378,613	13,530,655	17,623,801	2018-2024
Aerators at Loch Lomond	460,791	741,911	33,983	247,137	
Subtotal Raw Water Storage Projects	**74,684,949**	**106,120,524**	**13,564,638**	**17,870,937**	
Raw Water Diversion and Groundwater System Projects					
Laguna Creek Diversion Retrofit	2,935,396	3,130,276	30,517	164,364	2018-2023
Tait Diversion Retrofit	385,639	7,642,148	108,311	7,148,198	2018-2030
Coast Pump Station Rehab/Replacement	-	9,777,912	-	9,777,912	2029-2033
Felton Diversion Pump Station Improvements	351,872	4,408,650	1,667	4,055,111	2020-2029
Beltz 12 Ammonia Removal	177,281	1,915,818	75,278	1,663,259	2021-2025
Beltz WTP Filter Rehabilitation	465,370	987,062	21,259	500,433	2022-2023
Beltz WTP Upgrades [4]	-	17,663,985	6,653	17,657,332	2022-2027
Subtotal Raw Water Diversion and Groundwater System Projects	**4,315,558**	**45,525,851**	**243,685**	**40,966,608**	
Raw Water Transmission					
Newell Creek Pipeline Rehab/Replacement - Planning	1,568,669	1,627,564	2,983	55,912	2018-2023
Newell Creek Pipeline Felton/GHWTP	2,555,890	33,194,375	372,771	30,265,714	2019-2027
Newell Creek Pipeline Felton/Loch Lomond	-	38,458,126	-	38,458,126	2027-2033
Newell Creek Pipeline Grant Management	10,371	30,000	7,498	12,131	
Brackney Landslide Area Pipeline Risk Reduction [2]	1,604,376	11,540,345	240,700	9,695,269	2020-2026
North Coast Pipeline Repair/Replacement - Planning (w/ Major Div)	907,956	943,724	67	35,701	2018-2021
North Coast Pipeline Repair/Replacement - Ph 4	-	90,802,291	-	90,802,291	2026-2032
Subtotal Raw Water Transmission	**6,647,262**	**176,596,425**	**624,018**	**169,325,145**	
Surface Water Treatment					
GHWTP Flocculator & Tube Settler Replacement	3,285,958	3,373,941	3,077	84,906	2018-2022
GHWTP Concrete Tanks Replacement	16,663,399	46,673,142	5,282,178	24,727,565	2018-2026
GHWTP Facilities Improvement Project	9,852,383	151,592,006	2,662,783	139,076,840	2018-2029
River Bank Filtration Study	998,601	7,028,637	375	6,029,661	2018-2028
GHWTP SCADA Radio System Replacement	-	240,000	-	240,000	On-going
GHWTP SCADA IO Hardware & Wiring Upgrade	-	230,000	-	230,000	2022-TBD
GHWTP Chlorination Station Improvements	-	250,000	-	250,000	2022-TBD
Subtotal Surface Water Treatment	**30,800,341**	**209,387,726**	**7,948,412**	**170,638,972**	
Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects					
University Tank No. 4 Rehab/Replacement	371,278	6,246,806	263,904	5,611,625	2018-2026
Meter Replacement Project	6,901,970	14,910,502	5,104,941	2,903,591	2018-2023
Engineering and Distribution Main Replacement Projects [3]	13,539,850	37,146,201	399,455	23,206,896	On-going
Distribution System Water Quality Improvements	33,725	107,427	7,614	66,087	2021-TBD
Facility & Infrastructure Improvements	8,753	5,020,972	1,026	5,011,193	On-going
Intertie 1: Santa Cruz - Scotts Valley [2] [4]	-	8,720,261	182,260	8,538,001	2022-2026
Subtotal Distribution Storage, Wmain Pressure Reg, and Metering	**20,855,577**	**72,152,169**	**5,959,200**	**45,337,393**	
Subtotal Infrastructure Resiliency and Climate Adaptation	**137,303,687**	**609,782,695**	**28,339,953**	**444,139,055**	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS					
Site Safety and Security					
Security Camera & Building Access Upgrades	315,490	550,996	5,388	230,117	On-going
GHWTP Gate Entrance Upgrades	878,212	903,067	17,151	7,704	2020-2023
CMMS Software Replacement - Water Share	64,479	390,000	138,764	186,757	2022-2023
Subtotal Site Safety and Security	**1,258,181**	**1,844,063**	**161,304**	**424,578**	
Staff Augmentation					
Water Program Administration [5]	1	16,969,426	768,448	16,200,976	On-going
Subtotal Staff Augmentation	**1**	**16,969,426**	**768,448**	**16,200,976**	
Contingency					
Management Reserve [6]	-	33,456,394	-	33,456,394	On-going
Subtotal Contingency	**-**	**33,456,394**	**-**	**33,456,394**	
Storage for Emergency Facility and System Repair Tools and Equipment					
Union/Locust Admin Building Back Up Power Generator	1,970	110,000	10,137	97,894	TBD
Subtotal Storage for Emergency and System Repair	**1,970**	**110,000**	**10,137**	**97,894**	
Other Projects					
Branciforte Streambank Restoration [4]	-	780,143	5,624	774,519	TBD
Subtotal Other Projects	**-**	**780,143**	**5,624**	**774,519**	
Subtotal Other Risk Management and Risk Reduction Projects	**1,260,152**	**53,160,026**	**945,512**	**50,954,361**	
GRAND TOTAL	**144,658,912**	**795,887,848**	**30,094,739**	**621,134,197**	

[1] Project Cost Estimates are FY23 adopted budget plus FY23 adjustments/carry-forwards plus FY23-32 projections.

[2] Expenses are not adjusted for grant funding.

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

[4] Intertie 1, Branciforte Streambed, and Beltz WTP Upgrades project cost estimates established after FY23 budget adoption and are as of 12/31/22.

[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: 04/26/2023

AGENDA OF:	06/05/2023
TO:	Water Commission
FROM:	David Baum, Chief Financial Officer Malissa Kaping, Principal Management Analyst
SUBJECT:	Water Department's Proposed Fiscal Year 2024 Operating and Fiscal Year 2024-28 Capital Investment Program (CIP) Budgets

RECOMMENDATION: That the Water Commission authorize the Chair to send a letter to the City Council related to the Water Department's Fiscal Year 2024 (FY 2024) 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 (SCWD or the Department) budget and CIP." To that end, the Department is presenting the proposed FY 2024 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 a 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 11, 2023. Santa Cruz City Council held its FY 2024 Operating and CIP budget hearings on May 22 and 23 and is currently scheduled to adopt the budget on June 13, 2023.

DISCUSSION: Several documents related to the Department's FY 2024 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 2024 Proposed Operating Budget
2. Budget Analytics
3. FY 2024-28 CIP Summary by Category
4. FY 2023-28 Financial Pro Forma

Proposed FY 2024 Operating Budget

	FY 2022 Budget	FY 2023 Adjusted Budget	FY 2024 Proposed
Personnel Services	16,714,151	17,911,780	17,721,968
Services, Supplies & Other	16,402,854	17,223,256	18,427,029
Capital Outlay	762,898	570,523	510,732
Debt Service (1)	4,098,626	5,231,706	6,017,146
	37,978,530	40,937,265	42,631,280

(1) An extra $5 million debt principal payment is omitted in Fiscal Year 2023 (FY 2023), as it was a reimbursement from the State Revolving Fund (SRF) loan. Another $7 million is owed from SRF and the remaining $9 million owed on the bank line of credit will be paid by converting short-term debt to long-term debt through use of the Water Infrastructure Finance and Innovation Act (WIFIA) loan proceeds or liquidating outstanding short-term debt with cash on hand.

The FY 2024 Proposed Operating Budget is $42.6 million and is 4.2% higher than FY 2023. This is an improvement compared to the FY 23 budget which was 7.9% higher than Fiscal Year 2022 (FY 2022). The City separates the budget into four major categories:

1) Personnel Services;

2) Services, Supplies, and Other Charges;

3) Capital Outlay (non-CIP); and

4) Debt Service.

The FY 2024 budget is higher by 7.0% for Services, Supplies, and Other Charges and Capital Outlay compared to the FY 2022 budget. The main drivers for this are chemicals costs, power costs, supply chain disruption, regulatory requirements, training costs, security upgrades, liability insurance, and increased City overhead. For example, supply chain shortages have caused managers to stockpile some parts to avoid disruption to water service.

In the area of Personnel Services, a variety of factors including scheduled merit increases, cost of living adjustments, pension benefits, and healthcare cost increases is resulting in a 1.1% decrease in spending for personnel services over the FY 2023 budget. The FY 2024 budget assumes $1.7 million salary savings due to expected vacancies; the FY 2023 budget assumed no vacancies (Without the proposed salary savings, the FY 2024 budget for personnel would be 8.4% higher than FY 2023).

Detailed information about the FY 2024 proposal is provided in Attachment 1.

Five-Year Budget Analytics

Attachment 2 is a historical analysis comparing budgeted to actual expenditures at the Department, Section, and program level beginning with Fiscal Year 2019 (FY 2019) and includes the FY 2024 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 larger year-to-year changes:

1) FY 2023 Year-End Estimates are lower than the FY 2023 Amended Budget by 12%, which is comparable to budget versus actuals 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 2023 budget and the complete year-end estimate is the result of some lingering pandemic impacts, slower-than-anticipated implementation of projects, recruitment delays, equipment delivery delays, etc.
2) Personnel costs in the FY 2024 Proposed Budget are based on 121.25 budgeted positions. Merit increases, health insurance, and pension costs are primary factors driving costs higher. Salary savings assumptions totaling $1.7 million are now included in the Proposed Budget to acknowledge the ongoing vacancies in SCWD's workforce. Similar salary savings occurred in previous years but were not incorporated into the adopted budgets. The future salary savings, as we have discussed previously, will help us to provide a more transparent spending plan and reduce the underspending.
3) Services, Supplies, and Other Charges and capital equipment are increasing 12.2% from the FY 2022 Amended Budget which is largely the result of increasing regulatory compliance, chemical costs, electricity costs, insurance premiums and City overhead charges.
4) Overall, FY 2024 expenditures are increasing when compared to FY 2022 Actuals and FY 2023 Year-End Estimates. Year-end FY 2023 operating expenses are based on the current operating environment, which includes higher inflation, fuel prices, chemical costs, supply chain issues, and labor costs.

5) The budget for debt service continues to increase as the Department issues more debt to fund the CIP. A summary of the various debt instruments and the FY 2024 proposed debt service amounts are listed in the table below:

FY 2024 Debt Service	All Funds
2014 Refinancing	$706,538
2016 IBank	$1,370,588
2019 Green Bonds	$1,380,000
2020-21 SRF Loans	$1,610,000
2021 Line of Credit	$770,020
2023 WIFIA Loan	$180,000
Total	$6,017,146

The 2020 and 2021 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, 2024.

Capital Outlay purchases continue to fluctuate from year to year based on identified capital equipment needs and capital purchases (such as utility vehicles) planned for FY 2024. During FY 2023, durable equipment purchases, primarily utility trucks, have been funded from the Water Equipment Replacement Fund (719).

6) In regard to the individual sections and the overall increase from FY 2023 Year-End Estimates to the FY 2024 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. In some cases, these increases are offset for noteworthy reasons discussed below:
   a) Administration – FY 2024 costs have increased due to the larger volume of debt applications and reimbursement claims for federal and state loan programs.
   b) Engineering – Staff seek to charge its labor to the CIP, if appropriate, thereby limiting the rise in operating costs.
   c) Meter Shop – Increased costs for FY 2024 can be attributed to additional temporary workers to support the Meter Replacement project and new meter reading costs. Meter installations will be complete in the summer of 2023.There are still hundreds of meters to be installed by the highly skilled SCWD staff, as the contract installer (Utility Partners of America) was limited to routine installations. Once the meters are fully installed, a per-meter monitoring fee is paid to the meter manufacturer, which is a new cost.
   d) Conservation – Staffing resources previously focused on Conservation are shifting to developing and implementing Customer Assistance programs. Water efficiency

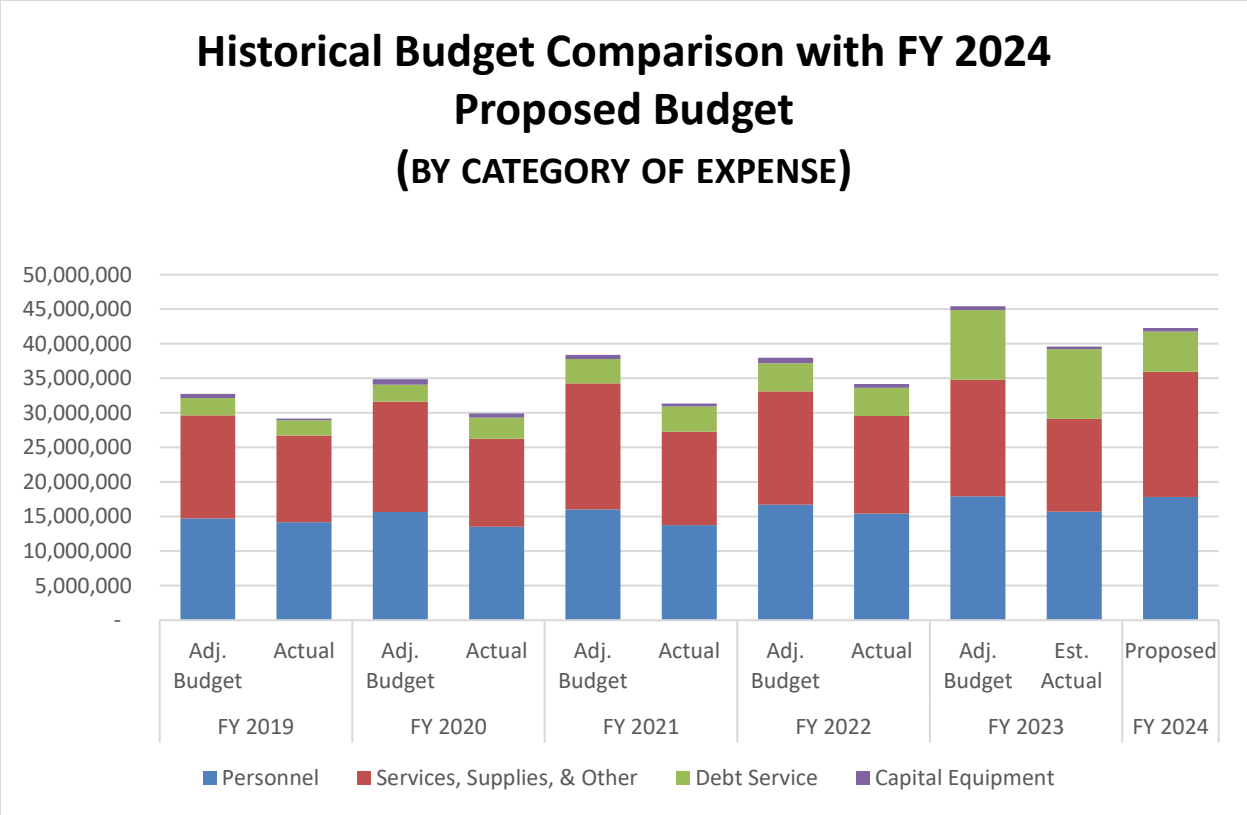
messaging and some ongoing conservation programs focused on indoor and outdoor water-use efficiency will continue.

e) Operations Management – Cost increases are related to expanded support for section managers involved in developing and implementing various programs and projects to respond to regulatory requirements and operating needs.
f) Water Resources – FY 2024 proposed costs have increased as compared to the FY 2023 Year-End Estimates due to implementation of the Anadromous Salmonid Habitat Conservation Plan, which requires an additional $455,000 to be added to agreed-upon Non-Flow Mitigation projects. Funds are also added for a forest management consultant with the possibility of some revenue generated from timber sales that would be used to help fund forest health and fire preparedness work.
g) Production – Increased costs for FY 2024 are largely due to increased energy and chemical costs as well as increased security patrols, well assessment/testing/rehabilitation and vegetation management services at SCWD's various facilities. With the increased engagement of Production staff in various CIP project work, employee costs associated with this work are captured as part of CIP project costs rather than being reflected in the Operating budget.
h) Quality Lab – Increased costs include an increase in chemical use from two extra algaecide treatments which are expected at Loch Lomond in FY 2024, outside laboratory testing, and support for implementation of new regulations, which requires additional consultants.

To provide a larger perspective, the following chart highlights the difference between operating budget and actual expenses from FY 2019 through FY 2024. For each fiscal year in the chart, the first bar is the budget, and the second bar is actual expenses. Over the past five years, the actual expenses were an average of 86% of budgeted amounts. In Fiscal Year (FY 2021), the actual expenses were lower by 18% due to 10% salary reduction for the first 10 ½ months from furloughs imposed as part of the City's response to the pandemic.

In FY 2023, a $5 million budget adjustment was made to pay down outstanding principal on the short-term debt due to the extraordinary rise in interest rates this year. The $5 million used to pay down the loan came from the State Revolving Fund, which provides 30-year, fixed-rate debt at 1.4%. The remaining $16 million of the line of credit will be repaid from SRF reimbursements, WIFIA loan proceeds, and cash on hand.

The chart below also indicates that we have gradually improved budgeting in the past two years. In FY 2022, actuals were 86% of budget; in FY 2023, actuals are projected at 87% of budget. In FY 2024, actuals should be closer to budget because salary savings totaling $1.7 million have reduced the projected budget to align with typical staff vacancies.



As mentioned above, revenues continue to be under projections due to lower residential consumption and lower overall consumption during the COVID-19 pandemic. This trend may improve due to a wet year, increasing consumption, and a stable rate base.

Proposed FY 2024-2028 CIP Budget

Attachment 3 is the FY 2024-2028 Proposed CIP Budget Summary organized by project category. Staff are recommending $373 million in new funding over the 5-year CIP window, with the bulk of the money for Infrastructure Resiliency and Climate Adaptation projects. Current revenue projections have been approved by City Council through Fiscal Year 2027 (FY 2027).

Before setting any kind of rate for Fiscal Year 2028 (FY 2028), we will be completing a cost-of-service analysis that is the foundation of a Proposition 218 compliant rate-setting process.

The FY 2024 new appropriation of $31.9 million and a significant carryforward is expected from previously budgeted, unspent funds. Supply chain disruptions have delayed projects, especially during the past three years due to COVID. During this time, these delays have resulted in routine rollovers of underspending from one fiscal year to the next.

Prudent budgeting would include the expectation that the amount spent would remain below the budget each year (which would result in some carryforward each fiscal year); however, the large carryforward from FY 2023 is due in part from current volatile market conditions causing scheduling changes and is not expected to be experienced in the future.

Working Draft FY 2023-2028 Pro Forma

The updated Financial Pro Forma is provided (Attachment 4) and includes an overview of the Water Department's financial performance for the FY 2024 Proposed Operating Budget and a five-year CIP. The Pro Forma is based on running the financial model developed for the 2021 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) 16.4% for rate increase FY 2024;
   b) 7% for salaries;
   c) 7% for benefits;
   d) 5% for services and supplies;
   e) 5% for Capital Outlay;
3) That the CIP is based upon an updated 5-year plan; and
4) Interest rate for future debt is 2.1% to 5.7% through 2028.

The updated Financial Pro Forma reflects FY 2024 estimated total revenues of $50.8 million, total operating expenditures of $33.2 million, debt service of $7.5 million, and $53.4 million 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 30, 2023, SCWD has submitted claims totaling $102 million and received reimbursements totaling $95 million with a balance due of $7 million. The wait time to receive reimbursements is an average of 103 days.

Staff have also secured the Environmental Protection Agency (EPA) WIFIA loan, which is currently reflected in the Pro Forma as well as grant opportunities as available. This loan closed on May 4 and has a fixed interest rate of 3.77% for a period of 40 years.

The projected size and timing of debt issues to finance these capital projects is summarized in Attachment 4. These figures include the additional amounts from Drinking Water State Revolving Fund (DWSRF), WIFIA, and grant funding for projects that may defer or replace projected borrowing. The anticipated debt issues total $336 million over the next five years.

Financial reserve amounts reflected in the Financial Pro Forma include Fund 711 (Water Operations), Fund 713 (Rate Stabilization), Fund 716 (90-Day Operating Reserve), 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 30th closing date.

The reserves set forth in the LRFP outlined above are all met in the proposed budget. Similarly, the debt service coverage ratio is a minimum of 1.5 net revenue for each $1 of debt service as established in the LRFP.

FISCAL IMPACT: Funds are available to support the FY 2024 Proposed Budgets as demonstrated in the Financial Pro Forma.

ATTACHMENTS:

1. FY 2024 Proposed Operating Budget
2. Budget Analytics
3. FY 2024-28 CIP Summary by Category
4. FY 2023-28 Financial Pro Forma
5. Water Commission Recommendation to City 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. 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 soon.
- 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 Customer Assistance section will help customers resolve leaks and implement a water affordability program for low-income households.

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 2023 Accomplishments	Infrastructure	DT & Other Business Sectors	Fiscal Sustainability	Core Services	Equity, Health & Well-Being, Sustainability	New & Improved Funding Sources	Green Economy
Completed construction of the $102 million Newell Creek Dam Inlet Outlet project to renew major infrastructure	X			X			
Substantially completed installation of the system-wide Meter Replacement Project	X		X	X			
Advanced design of the $160 million Graham Hill Water Treatment Project to modernize and enhance treatment and water quality	X			X	X		
Secured over $9M in grant funding for regional projects to build an intertie between the City of Santa Cruz and the Scotts Valley Water District to increase opportunities for conjunctive use of surface and groundwater resources, support opportunities for regional collaboration, and achieve Santa Margarita Basin Groundwater Sustainability Plan recommendations	X		X		X	X	
Responded to, and repaired, 47 main leaks through the end of December 2022, the largest of these in front of Bay Street Elementary School, where the 14” cast iron main failed	X		X	X	X		
Repaired or replaced 161 City-owned service laterals to date	X		X	X			
Completed an ASR Demonstration Study on Beltz Wells 8 and 12 to determine feasibility in achieving the City’s water supply reliability goal	X		X				
Improved fire suppression capability at the Loch Lomond Recreation Area by installing two 10,000-gallon water storage tanks	X		X	X			

FY 2023 Accomplishments (continued)	Infrastructure	DT & Other Business Sectors	Fiscal Sustainability	Core Services	Equity, Health & Well-Being, Sustainability	New & Improved Funding Sources	Green Economy
Finalized replacement of the Ocean Street water main by replacing a fire hydrant that required the longest GHWTP shut down on record: 20 hours (a record previously set at 12 hours)	X						
Developed and proposed Securing Our Water Future to the City Council to guide towards achieving a reliable water supply			X	X	X		
Provided $579,582 in federal/state program funding to 858 low-income water service customers and $175,778 in program funding to 546 low-income wastewater customers				X	X	X	
Completed the loan application and approval process for a $125 Million EPA WIFIA (Water Infrastructure Finance and Innovation Act) Loan, a low-interest, flexible-term funding source from USEPA	X		X	X		X	

FY 2024 Goals	Infrastructure	DT & Other Business Sectors	Fiscal Sustainability	Core Services	Equity, Health & Well-Being, Sustainability	New & Improved Funding Sources	Green Economy
Improve water system reliability by converting Beltz 8 and 12 wells into full-scale and permanent injection and retrieval sites	X			X			
Commence construction on two pipelines (Brackney Landslide Risk Reduction project and the Newell Creek Pipeline Felton to Graham Hill WTP project) to enhance resilience of water delivery	X						
Begin construction on an intertie between the City of Santa Cruz and Scotts Valley Water District to augment SCWD's water supply and to facilitate regional collaboration	X						
Secure WIFIA and DWSRF funding agreements			X			X	
Issue a Draft Environmental Impact Report for the project in the summer of 2023: an important GHWTP FIP milestone	X				X		
Initiate a process to adopt a new Enterprise Records Program to replace the Utility Billing System	X			X			
Complete federal and state endangered species act permitting processes	X			X	X		X
Enhance water system infrastructure at Laguna Street Water Main Replacement Project by replacing 350 linear feet of 4" asbestos cement water main with 6" PVC	X						
Upgrade Majors/Allegro Water Main by replacing 1100 linear feet of 4" cast iron with 6" PVC	X						
Optimize the new TESLA Power Pack at the Coast Pump Station to reduce electrical costs			X				

Workload Indicators and Performance Measures

Workload Indicators	Focus Area	FY 2020 Actual	FY 2021 Actual	FY 2022 Actual	FY 2023 Estimate	FY 2024 Goal
Drinking water consumed (billions of gallons)	Core Service	2.31	2.25	2.22	2.3	2.4
Number of phone calls, emails and lobby visits handled by SCMU Customer Service Unit	Core Service	63,653	64,000	49,664	50,000	50,000
Amount of dollars of new construction investments (in millions)	Infrastructure	$29.7	$46.0	$52.7	$63.4	$53.4

Performance Measures	Focus Area	FY 2020 Actual	FY 2021 Actual	FY 2022 Actual	FY 2023 Estimate	FY 2024 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	0	0	0	2	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	97%	91%	97%	97%	98%

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

Budget Summary - Water

		Fiscal Year* 2022 Actuals	Fiscal Year 2023 Adopted Budget	Fiscal Year 2023 Amended* Budget	Fiscal Year 2023 Year-End Estimate	Fiscal Year 2024 Proposed
EXPENDITURES BY CHARACTER:						
Personnel Services		14,449,468	17,691,832	17,911,780	15,865,111	17,721,968
Services, Supplies, and Other Charges		13,601,279	16,156,529	17,223,256	13,462,541	18,381,435
Capital Outlay		375,401	323,000	570,523	352,230	510,732
Debt Service		4,298,354	5,131,706	10,231,706	10,698,357	6,017,146
Total Expenditures		32,724,501	39,303,067	45,937,266	40,378,239	42,631,280
EXPENDITURES BY ACTIVITY:						
Water Administration	7101	6,181,308	6,952,880	7,339,231	6,260,166	7,736,667
Water Engineering	7102	2,143,153	2,929,364	3,057,536	2,739,337	3,076,409
Water Customer Services	7103	2,119,794	2,221,948	2,233,863	2,172,045	2,430,031
Water Conservation	7104	749,419	1,238,471	1,138,750	617,752	1,190,523
Water Resources	7105	1,515,018	2,104,695	2,498,932	1,096,191	2,713,228
Water Production	7106	6,978,055	8,315,225	8,748,102	7,435,136	8,271,435
Water Quality	7107	1,844,413	2,052,893	2,052,893	1,933,993	2,373,577
Water Distribution	7108	4,220,434	5,292,432	5,565,953	4,578,822	5,491,619
Water Recreation	7109	1,281,323	1,399,897	1,399,897	1,308,682	1,467,612
Water Operations	7110	416,866	635,719	635,719	344,036	749,488
Water Meter Shop	7113	803,338	1,027,837	1,027,837	1,168,652	1,293,546
Water Debt Service	7140	4,298,354	5,131,706	10,231,706	10,581,075	5,837,146
Drought Response 2014	7199	173,026	-	6,848	142,351	-
Subtotal Other Funds		32,724,501	39,303,067	45,937,266	40,378,239	42,631,280
Total Expenditures		32,724,501	39,303,067	45,937,266	40,378,239	42,631,280
RESOURCES BY FUND :						
Water	711	38,306,648	38,526,543	38,534,676	40,246,160	46,670,984
Water Rate Stabilization Fund	713	2,816,551	3,058,312	3,058,312	3,082,527	3,082,527
Water System Development Fees Fund	715	1,210,153	472,000	472,000	1,002,512	1,042,612
Total Resources		42,333,353	42,056,855	42,064,988	44,331,199	50,796,123

	FY 2022	FY 2023	FY 2024
TOTAL AUTHORIZED PERSONNEL:	118.25	121.25	121.25

*Sums may have discrepancies due to rounding

Staffing

Positions	2020-21 Revised*	2021-22 Revised*	2022-23 Revised*	2023-24 Proposed	FY 2024 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 Mgr	1.00	1.00	1.00	1.00	-
Deputy Water Director/Operations Mgr	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	3.00	3.00	-
Environmental Microbiologist I/II/III	2.00	2.00	2.00	2.00	-
Environmental Programs Analyst I/II	1.00	1.00	1.00	3.00	2.00
Laboratory Technician	2.00	2.00	2.00	2.00	-
Management Analyst	3.00	3.00	3.00	3.00	-
Principal Management Analyst	1.00	2.00	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 & 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	-
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	2.00	2.00	-

	2020-21 Revised*	2021-22 Revised*	2022-23 Revised*	2023-24 Proposed	FY 2024 Change
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 I/II	3.00	3.00	3.00	3.00	-
Water Meter Specialist Lead	-	-	-	1.00	1.00
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	1.00	1.00	1.00	1.00	-
Water SCADA Analyst	-	-	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	118.25	121.25	121.25	-

*Revised salary authorizations are Adopted staffing plus any Mid-year adjustments
** 1.00 FTE Community Relations Specialist will begin reporting to City Manager's Office

Organization Chart

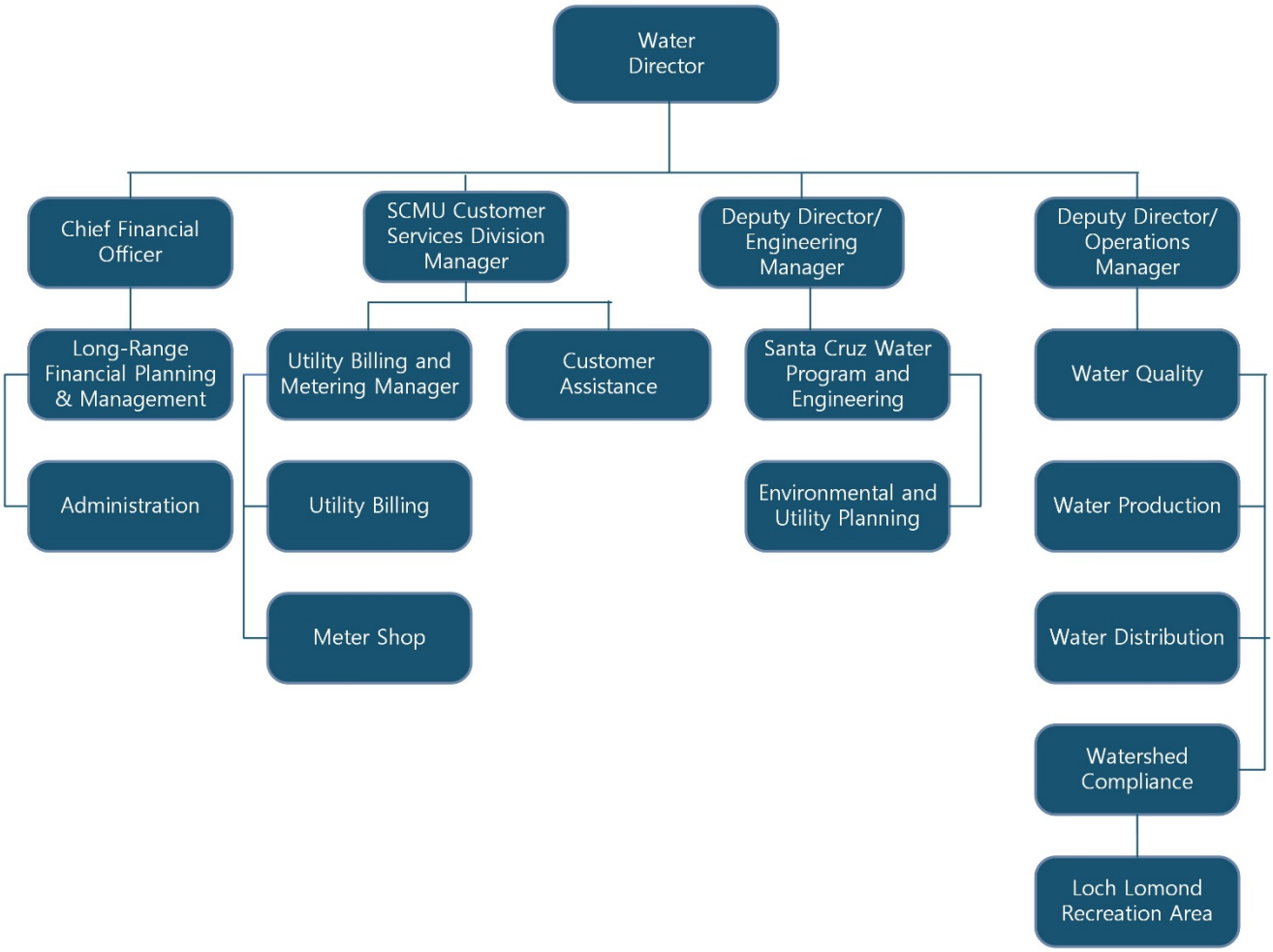


Table 1
Proposed FY 2024 Operating Budget: Fund 711, 713 & 715
BY CATEGORY OF EXPENSE

	FY 2019		FY 2020		FY 2021		FY 2022		FY 2023		FY 2024
	Adj. Budget	Actual	Adj. Budget	Actual	Adj. Budget	Actual	Adj. Budget	Actual	Adj. Budget	Est. Actual	Proposed
Personnel	14,724,425	14,174,510	15,686,336	13,520,355	16,020,609	13,774,554	16,714,151	14,449,468	17,911,780	15,865,111	17,721,968
Services, Supplies, & Other	14,903,530	12,553,247	15,936,598	12,742,073	18,258,645	13,504,675	16,402,854	13,601,279	17,223,256	13,462,541	18,427,029
Debt Service	2,535,842	2,247,613	2,492,786	3,060,716	3,536,295	3,686,655	4,098,626	4,298,354	10,231,706	10,698,357	6,017,146
Capital Equipment	604,034	212,510	775,246	601,675	573,335	383,593	762,898	375,401	570,523	352,230	510,732
TOTAL Adjusted Budget	**32,767,831**	**29,187,880**	**34,890,966**	**29,924,819**	**38,388,884**	**31,349,476**	**37,978,530**	**32,724,502**	**45,937,265**	**40,378,239**	**42,631,280**

Figure 1
Historical Budget Comparison with FY 2024 Proposed Budget
(BY CATEGORY OF EXPENSE)

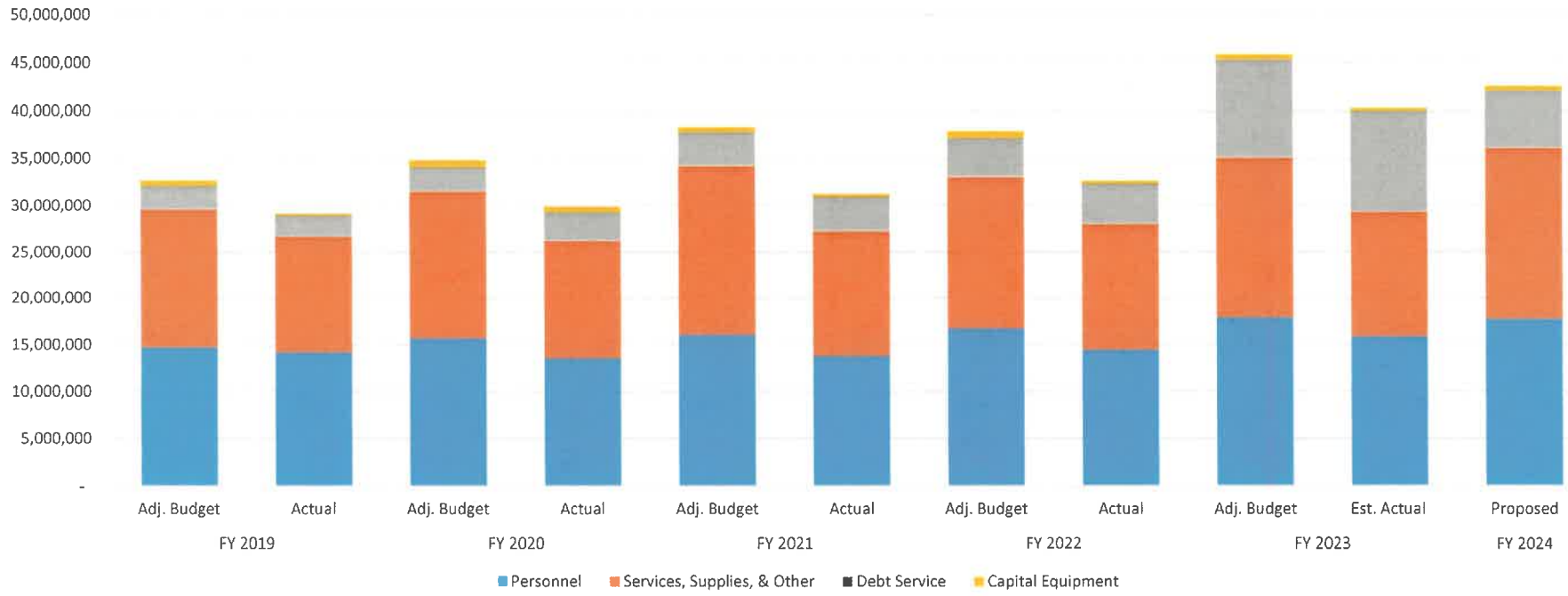


Table 2
Proposed FY 2024 Operating Budget: Fund 711, 713 & 715
BY SECTION

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2023 to FY 2024
	Actual	Actual	Actual	Actual	Est. Actual	Proposed	% Change
Administration	5,697,441	5,738,169	5,838,628	6,181,308	6,260,166	7,736,667	23.6%
Engineering	2,886,711	2,366,620	1,969,117	2,143,153	2,739,337	3,076,409	12.3%
Customer Service	1,974,229	1,875,267	1,985,247	2,119,794	2,172,045	2,430,031	11.9%
Meter Shop	1,248,169	719,815	861,595	803,338	1,168,652	1,293,546	10.7%
Conservation	913,474	788,015	726,902	749,419	617,752	1,190,523	92.7%
Operations	-	393,104	2,039,642	416,866	344,036	749,488	117.9%
Resources Management	1,581,505	1,780,480	500,959	1,515,018	1,096,191	2,713,228	147.5%
Production	6,002,756	6,122,369	6,641,345	6,978,056	7,435,136	8,271,435	11.2%
Quality Control	1,321,358	1,590,499	1,601,453	1,844,413	1,933,993	2,373,577	22.7%
Distribution	4,212,029	4,680,536	4,428,150	4,220,434	4,578,822	5,491,619	19.9%
Recreation	1,102,595	1,031,970	1,117,544	1,281,323	1,308,682	1,467,612	12.1%
Debt Service	2,247,613	2,837,975	3,604,550	4,298,354	10,581,075	5,837,146	-44.8%
Drought Response	-	-	30,890	173,027	142,351	-	
TOTAL	**29,187,880**	**29,924,819**	**31,346,021**	**32,724,501**	**40,378,239**	**42,631,280**	5.6%

FY 2024 Debt Service	**All Funds**
2014 Refinancing	$706,538
2016 IBank	$1,370,588
2019 Green Bonds	$1,380,000
2020-2021 State Revolving	$1,610,000
2021 Line of Credit	$770,020
2023 WIFIA Loan	$180,000
Total FY23 Debt Service	$6,017,146

Figure 2
Historical Budget Comparison with FY 2024 Proposed Budget
(BY DEPARTMENT SECTION)

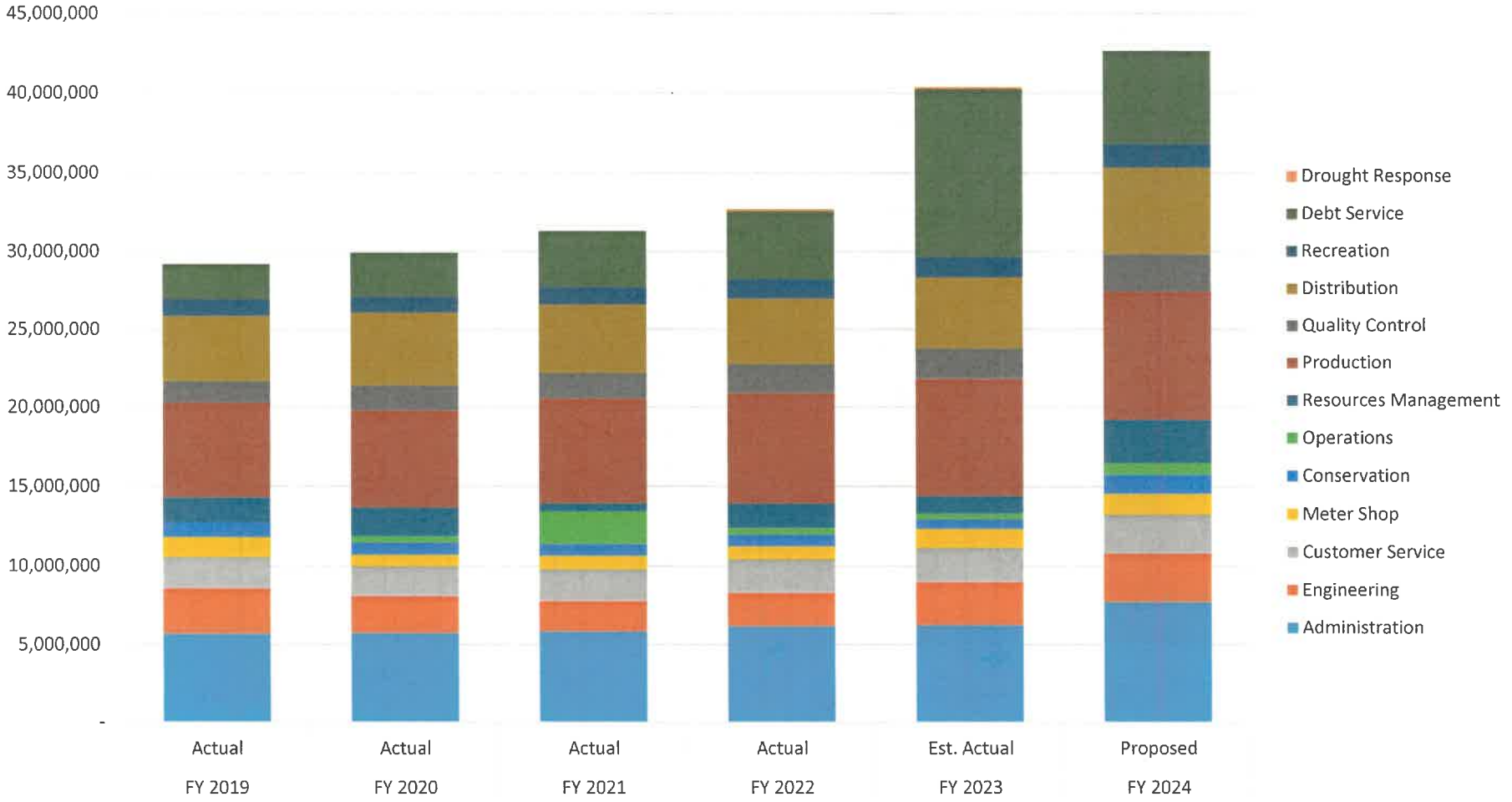


Table 3
Budget Trends by Percent

	% of Change Comparing Actuals Expenditures					
	FY 2019 to FY 2020	FY 2020 to FY 2021	FY 2021 to FY 2022	FY 2022 to FY 2023	Average	FY 2019 to 2023
Personnel	(4.6%)	1.9%	4.9%	9.8%	3.0%	11.9%
Services, Supplies, & Other	1.5%	6.0%	0.7%	(1.0%)	1.8%	7.2%
Debt Service	36.2%	20.5%	16.6%	148.9%	55.5%	376.0%
Capital Equipment	183.1%	(36.2%)	(2.1%)	(6.2%)	34.6%	65.7%
TOTAL (w/o transfers)	2.5%	4.8%	4.4%	23.4%	8.8%	38.3%

	% of Change Comparing Budgeted Amounts						
	FY 2019 to FY 2020	FY 2020 to FY 2021	FY 2021 to FY 2022	FY 2022 to FY 2023	FY 2023 to FY 2024	Average	FY 2019 to 2024
Personnel	6.5%	2.1%	4.3%	7.2%	(1.1%)	3.8%	20.4%
Services, Supplies, & Other	6.9%	14.6%	(10.2%)	5.0%	7.0%	4.7%	23.6%
Debt Service	(1.7%)	41.9%	15.9%	149.6%	(41.2%)	32.9%	137.3%
Capital Equipment	28.3%	(26.0%)	33.1%	(25.2%)	(10.5%)	(0.1%)	(15.4%)
TOTAL (w/o transfers)	6.5%	10.0%	(1.1%)	21.0%	(7.2%)	5.8%	30.1%

	Budget vs Actuals				
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Personnel	(3.7%)	(13.8%)	(14.0%)	(13.5%)	(11.4%)
Services, Supplies, & Other	(15.8%)	(20.0%)	(26.0%)	(17.1%)	(21.8%)
Debt Service	(11.4%)	22.8%	4.3%	4.9%	4.6%
Capital Equipment	(64.8%)	(22.4%)	(33.1%)	(50.8%)	(38.3%)
TOTAL (w/o transfers)	(10.9%)	(14.2%)	(18.3%)	(13.8%)	(12.1%)

	Percent of Total Budget					
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Administration	19.5%	19.2%	18.6%	18.9%	15.5%	18.1%
Engineering	9.9%	7.9%	6.3%	6.5%	6.8%	7.2%
Customer Service	6.8%	6.3%	6.3%	6.5%	5.4%	5.7%
Meter Shop	4.3%	2.4%	2.7%	2.5%	2.9%	3.0%
Conservation	3.1%	2.6%	2.3%	2.3%	1.5%	2.8%
Operations	-	1.3%	6.5%	1.3%	0.9%	1.8%
Resources Management	5.4%	5.9%	1.6%	4.6%	2.7%	6.4%
Production	20.6%	20.5%	21.2%	21.3%	18.4%	19.4%
Quality Control	4.5%	5.3%	5.1%	5.6%	4.8%	5.6%
Distribution	14.4%	15.6%	14.1%	12.9%	11.3%	12.9%
Recreation	3.8%	3.4%	3.6%	3.9%	3.2%	3.4%
Debt Service	7.7%	9.5%	11.5%	13.1%	26.2%	13.7%
Drought Response	0.0%	0.0%	0.1%	0.5%	0.4%	0.0%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

FY 2024-28 CIP Summary by Category

	FY 2024 Request	FY 2025 Estimate	FY 2026 Estimate	FY 2027 Estimate	FY 2028 Estimate	FY 2024 - FY 2028 Budget
Water Supply Resiliency & Climate Adaptation Projects						
Water Supply Augmentation Strategy	7,817,006	30,158,462	18,871,347	12,853,223	13,303,162	83,003,200
ASR Planning, ASR Mid County Existing Infrastructure, ASR Mid County New Wells, Santa Margarita Groundwater, Water Supply Augmentation, Recycled Water Feasibility Study, and Intertie 1: SVWD & SCWD						
Infrastructure Resiliency & Climate Adaptation Projects						
Raw Water Storage Projects	-	560,737	571,471	465,971	349,433	1,947,612
Newell Creek Dam Inlet/Outlet Replacement Project and Aerators at Loch Lomond						
Raw Water Diversion and Groundwater System Projects	-	59,106	583,516	1,523,694	3,581,672	5,747,988
Tait Diversion Retrofit and Felton Diversion Pump Station Improvements						
Raw Water Transmission	2,115,516	26,032,567	15,774,712	3,668,262	7,665,017	55,256,073
Newell Creek Pipeline Rehab/Replacement (Felton/GHWTP & Felton/Loch Lomond), Brackney Landslide Area Pipeline Risk Reduction, and North Coast Pipeline Repair/Replacement (Phase 4)						
Water Treatment	16,193,998	35,841,816	51,486,522	40,725,195	38,416,069	182,663,601
GHWTP Concrete Tanks Replacement, GHWTP Facilities Improvement Project, Facility & Infrastructure Improvements, and River Bank Filtration Study, Beltz 12 Ammonia Removal, and Beltz Water Treatment Plant Upgrades						
Distribution System Storage, Water Main, & Metering Projects	858,572	6,109,384	1,019,676	973,320	1,007,392	9,968,345
University Tank No. 4 Rehab/Replacement, Engineering and Distribution Main Replacement Projects, Distribution System Water Quality Improvements, and Facility & Infrastructure Improvements						
Other Risk Management & Risk Reduction Projects						
Site Safety & Security	12,036	200,790	-	-	-	212,826
Graham Hill WTP Entrance Improvements, Security Camera & Building Access Upgrades, GHWTP SCADA Radio System Replacement, GHWTP SCADA I/O Comm Replacement, CMMS Software Replacement (Water share)						
Staff Augmentation -Water Program Administration	1,695,840	2,614,352	2,607,524	2,601,461	2,583,750	12,102,926
Emergency Facility Improvements and System Repair	591,502	-	-	-	-	591,502
Union/Locust Admin Building Back Up Power Generator and Branciforte Streambank Restoration						
Contingency - Water Program Management Reserve	2,626,394	8,001,620	8,607,346	1,776,219	330,044	21,341,623
TOTAL	**31,910,865**	**109,578,835**	**99,522,114**	**64,587,345**	**67,236,538**	**372,835,696**

City of Santa Cruz Water Department Pro-Forma Projections						
Year	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Revenues						
Fixed Fee Revenue	$ 3,849,280	$ 4,474,198	$ 5,201,497	$ 5,562,041	$ 5,947,543	$ 6,179,256
Volumetric Revenue	$ 40,092,547	$ 46,116,668	$ 53,549,702	$ 56,572,432	$ 60,288,764	$ 62,637,577
Elevation Surcharges	$ 352,788	$ 352,788	$ 352,788	$ 352,788	$ 352,788	$ 352,788
Rate Stabilization Revenue	$ 3,163,368	$ 3,163,368	$ 3,163,368	$ 3,163,368	$ 3,163,368	$ 3,163,368
Manual Adjustment to approved water reveni	$ (5,188,829)	$ (5,372,944)	$ (6,261,317)	$ (5,780,174)	$ (5,275,368)	$ -
Total Rate Revenue	$ 42,269,155	$ 48,734,079	$ 56,726,468	$ 60,640,594	$ 64,824,795	$ 72,332,989
Non-Rate Revenue						
Other Income	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000
Investment Income	$ 562,044	$ 562,044	$ 562,044	$ 562,044	$ 562,044	$ 562,044
Total Non-Rate Revenue	$ 2,062,044	$ 2,062,044	$ 2,062,044	$ 2,062,044	$ 2,062,044	$ 2,062,044
Total Revenues	**$ 44,331,199**	**$ 50,796,123**	**$ 58,788,512**	**$ 62,702,638**	**$ 66,886,839**	**$ 74,395,033**
Operating Expenses						
Personnel	$ 16,582,877	$ 17,721,968	$ 18,734,656	$ 19,922,352	$ 21,192,020	$ 22,549,790
Services, Supplies & Other	$ 14,407,688	$ 18,381,435	$ 15,884,476	$ 16,678,700	$ 17,512,635	$ 18,388,267
Capital Outlay	$ 394,171	$ 352,230	$ 434,574	$ 456,302	$ 479,117	$ 503,073
Other Operating Expenses	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Expenses	$ 31,384,737	$ 33,165,204	$ 35,053,706	$ 37,057,355	$ 39,183,772	$ 41,441,131
Net Operating Revenues	$ 12,946,462	$ 17,630,919	$ 23,734,806	$ 25,645,284	$ 27,703,067	$ 32,953,902
Capital Expenditures	$ 63,437,941	$ 53,448,020	$ 109,578,833	$ 99,522,116	$ 64,587,345	$ 67,240,538
Grant Funded	$ 490,020	$ 5,043,995	$ 7,964,084	$ 1,030,000		$ -
SRF Funded	$ 36,150,813	$ 12,580,383	$ 6,295,419	$ 652,975	$ 465,971	$ 349,433
WIFIA Funded	$ 4,000,000	$ 16,491,999	$ 58,517,320	$ 54,898,833	$ 40,739,034	$ 2,565,960
Currently Funded	$ -	$ -	$ -	$ -	$ -	$ -
Pay-Go Funded	15,317,758	$ 9,307,518	$ 11,301,753	$ 13,153,009	$ 12,797,812	$ 12,952,329
Debt Funded (Bonds or Line of Credit)	$ 7,479,350	$ 10,024,125	$ 25,500,257	$ 29,787,299	$ 10,584,528	$ 51,372,816
Debt Service	$ 5,201,605	$ 7,463,169	$ 11,505,137	$ 11,507,574	$ 13,865,623	$ 18,892,181
Net Income	**$ (7,572,901)**	**$ 860,231**	**$ 927,916**	**$ 984,701**	**$ 1,039,632**	**$ 1,109,393**
Total Cash Balances						
Ending Cash Balances by Fund						
Fund 717 (Emergency Reserve)	$ 3,014,540	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 3,000,000
Fund 713 (Rate Stabilization)	$ 10,000,000	$ 10,000,000	$ 10,000,000	$ 10,000,000	$ 10,000,000	$ 10,000,000
Fund 716 (90 Day Operating Reserve)	$ 7,738,702	$ 8,177,722	$ 8,643,380	$ 9,137,430	$ 9,661,752	$ 10,218,361
Fund 711 (Water Operations)	$ 7,738,702	$ 8,174,454	$ 8,636,712	$ 9,127,362	$ 9,642,672	$ 10,195,455
Coverage and Targets						
Debt Service Coverage (W/Out Reserves)	2.49x	2.36x	2.06x	2.23x	2.00x	1.74x
Debt Service Coverage Target	1.50x	1.50x	1.50x	1.50x	1.50x	1.50x
Days' Cash (Includes only Funds 711 & 716)	180	180	180	180	180	180
Days' Cash Target	180	180	180	180	180	180

WATER COMMISSION

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

June 6, 2023

Mayor Fred Keeley
Vice Mayor Renee Golder
Councilmember Sandy Brown
Councilmember Sonja Brunner
Councilmember Shebreh Kalantari-Johnson
Councilmember Scott Newsome
Councilmember Martine Watkins

Dear Mayor Keeley, Vice Mayor Golder, Councilmembers Brown, Brunner, Kalantari-Johnson, Newsome and Watkins:

Re: Water Commission Recommendation on the Santa Cruz Water Department's Fiscal Year 2023-2024 Operating Budget and Capital Investment Program

The Santa Cruz Water Commission (Commission) is pleased to convey our recommendations regarding the Water Department's (Department's) Fiscal Year (FY) 2024 Recommended Operating Budget and Capital Investment Program (CIP). Based on our analysis, as summarized in the discussion below, we unanimously recommend the Council's approval of the proposed budget and CIP.

Before sharing more detail about the Commission's recommendations on the FY 2024 Operating Budget and CIP, I want to provide a few additional highlights on the Commission's other activities during the past 18 months.

- One major focus of the Commission's work in the last year was the development of the Securing Our Water Future Policy, which was unanimously approved by the City Council on November 29, 2022.

  The Commission has had a long-standing focus on water supply reliability including its active engagement in reviewing and participating in the Department's work to implement the Council-approved recommendations of the Water Supply Advisory Committee in November 2015. During 2022, the Commission was actively engaged in the Department's very robust modeling and analytical work that resulted in the Securing Our Water Future policy. The

Commission's collaborative work on this policy-development process is an example of how community engagement can build understanding and agreement on complex topics that are steeped in both technical and policy detail. We particularly appreciate the opportunity to work with the City of Santa Cruz (City) and its staff on such important topics critical to ensuring a safe, reliable water supply into the future.

- A second long-term Commission focus area is water-rate affordability.

  Starting in 2017 the Commission began receiving presentations and discussing the important issue of water affordability. A 2020 report on the affordability of water and wastewater services in Santa Cruz provided the first assessment looking at affordability within census block groups. A second presentation in December 2021 provided a forward-looking perspective on how water and wastewater affordability would change as the planned FY 2023 – FY 2027 rate increases were implemented over time.

  These analyses show that roughly 20% of the Department's water service customers are paying more than 4.5% of their household disposable income on water and wastewater services. This metric has long been used as one means of assessing affordability of critical water and wastewater services. As is the case for other utilities making significant investments in their water infrastructure, rate increases necessary to fund these investments result in increasing affordability challenges for those customers least able to pay. As an example of one approach to addressing local affordability challenges, the Commission worked with Department staff to develop new customer assistance programs. The new programs both implement new regulations related to customer shutoffs for non-payment of utility charges and use newly available water-use data from the Department's recent investment in an advanced metering infrastructure (AMI).

  In addition to supporting more accurate and efficient meter reading, AMI supports enhanced leak detection programs that provide near real-time notices to customers experiencing leaks and thereby help customers manage their bills by promptly addressing leaks. According to the Environmental Protection Agency's WaterSense Program, fixing easily corrected household water leaks can save customers 10% on their water bills.

- A third topic that has been a continuing focus area for the Commission is long-term demand forecasting for water.

  This topic has been one that is carefully followed by many in the community as Santa Cruz and the surrounding areas served by the Santa Cruz water system respond to the need and the requirement to increase housing, with a particular focus on affordable and workforce housing. In March 2023, the Commission received a presentation of an updated forecast for water demand that incorporated significant increases in the

number of anticipated housing units to be served between now and 2045, with most units being multi-family units. By 2045, the anticipated additional water demand would increase by about 125 million gallons per year over the earlier forecast completed for use in the Department's 2020 Urban Water Management Plan. The new forecast's results are now being incorporated into the Department's ongoing water supply planning work.

RECOMMENDATIONS

The Commission is basing its recommendation regarding the Department's Operating Budget and CIP on its ongoing work focused on the Department's financial management and performance. This work is conducted in publicly-noticed Commission meetings that have covered ongoing operations, planning and implementation of capital projects, and detailed discussions of the Department's annual Operating Budget and CIP. Our reviews and discussions have included considerations of the Department's financial performance against the projections that underlie the 2021 Long-Range Financial Plan (LRFP), which is the key policy document upon which the Department's annual budget and capital planning are based. The 2021 LFRP was developed with the active engagement of the Commission, including being informed by the work of a Commission ad hoc subcommittee in mid-2019 to early 2020 that developed revenue requirements used in establishing the adopted FY 2024-FY 2027 Water Rates. The series of documents included as attachments to this letter were presented and discussed in detail during our review process and are summarized in the discussion presented below.

FY 2024 OPERATING BUDGET

The Water Department's Recommended FY 2024 Operating Budget was developed to support the Department's mission to provide a reliable and high-quality potable water supply 24 hours per day, 7 days a week, and 365 days per year to a population of approximately 100,000 people. The Commission's recommendations to the Council on the Department's FY 2024 Operating Budget are based on the Commission's ongoing engagement with staff to identify, understand, and effectively address the water system's challenges.

Attachment 1 is the Department's **Proposed FY 2024 Operating Budget**. Operating Budget highlights include:

- Projected revenues for FY 2024, including water rate revenues and other revenues, of $50.8 million.

- A proposed Operating Budget for FY 2024 of $42.6 million. This is 4% higher than the adopted FY 2023 Operating Budget, when a one-time principal payment of $5 million was made in FY 2023 that reduced the outstanding balance of the Department's Line of Credit from $21 million to $16 million is excluded.

Attachment 2 is the Department's annual comparative **Budget Analytics** prepared for use for the Commission in its annual review of the Department's Operating Budget and CIP.

Using these budget analytic 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. 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.

Another metric being tracked is highlighted in Figure 1 of **Attachment 2**. Figure 1 shows that the Department routinely underspends its adopted budget by about 15%. Over the last several budget cycles, the Department has taken steps to better align proposed operating budgets with anticipated spending levels. To this end, Department staff have worked with City Finance staff to integrate personnel cost savings that typically accrue due to routine staff vacancies into project personnel costs, which typically account for about 40% of the Operating Budget.

Another major goal of the Department's Budget Analytics work is to highlight trends and support greater understanding of financial changes at both the organization and section levels. 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 as well as projected spending for the next fiscal year and beyond.

The Budget Analytics and other analyses used by the Department's finance section and leadership team are helpful in annual budgeting and are also useful as part of ongoing financial planning and periodic work to update the cost-of-service analysis, water rate structure, and future water rates.

FY 2024-2028 CAPITAL INVESTMENT PROGRAM

The CIP budget for the five-year period FY 2024-2028 is $373 million. The focus of the CIP is on improving infrastructure resiliency, water supply reliability, and adaptability to climate change. **Attachment 3** is a **CIP Summary**, broken down by project category, for the five-year CIP period FY 2024-2028.

The proposed CIP budget for FY 2024 totals $31.9 million. The FY 2024 funding level will be supplemented by a significant, unspent amount carried over from FY 2023. The carryover is associated with slower-than-anticipated CIP project completion for several large projects, partly due to weather conditions this past winter. Despite these delays, major progress has been made on several key CIP projects during FY 2024 including:

- The Newell Creek Dam Inlet/Outlet Replacement project is a $99 million replacement of a major piece of water system infrastructure. The project was awarded to Obayashi Corporation in Spring 2020 and is nearing completion.

  Recent activities include tunnel backfill and tie-ins to both the new intake structures within the reservoir and to the Newell Creek Pipeline. Installation of Loch Lomond's new aeration system that helps manage and limit algae blooms in the lake was temporarily delayed while

the major construction of the new inlet/outlet structure was completed and is now also complete. Finally, required work is also proceeding on multiple restoration and mitigation projects that are part of this larger project.

- The Graham Hill Water Treatment Plant (GHWTP) Concrete Tanks Replacement project is a $45.9 million replacement of three original concrete tanks that were constructed when the now 62-year-old GHWTP was built. Pacific Hydrotech Corporation was awarded the construction contract for this work in February 2021. In FY 2023, the solids and reclaimed water tanks were completed, and the contractor also finished major electrical work and retaining walls. Once the two new tanks are in service, demolition of the final two original tanks and construction of the third new tank will commence. Project completion is expected in Fall 2024.

- The $157 million GHWTP Facility Improvements Project (FIP) is needed to renovate the Department's only surface water treatment plant, which was originally commissioned in 1960. The project includes treatment process upgrades and improvements to the site, infrastructure, and structural components to enhance reliability and to adapt this critical facility by addressing the impacts of climate change on source water quality. The project design-build team will complete the design phase in 2024 with a subsequent construction duration from November 2024 through May 2028.

- Newell Creek Pipeline (NCP) Replacement – NCP is a 9.5-mile pipeline and the Department's only means of delivering stored water from Loch Lomond to the GHWTP. The pipeline was constructed in the 1960's and is subject to a number of vulnerabilities and reliability issues that necessitate its replacement. The NCP will be replaced in three phases, with Phases 1 and 2 being prioritized in the near term. These projects are described below.

  Phase 1 will replace the 4.4-mile-long segment from Felton to GHWTP. This segment is in a narrow, difficult to access right-of-way through Henry Cowell State Park and has been the site of multiple failures creating emergency water supply conditions over the last six years. Considerable progress in FY 2023 includes finalizing the 100% design for Phase 1 and completing work needed to comply with the California Environmental Quality Act (CEQA). Easement negotiations and permitting are ongoing for this phase of the project. Construction is scheduled to commence in January 2024 and completion is expected in Spring 2026. The forecasted construction cost for Phase 1 is $41 million.

  Phase 2 will address the vulnerability of the NCP to landslide and earthquake activity in the vicinity of Brackney Road. This project has been under development since very wet conditions in Winter 2017, which demonstrated how vulnerable this pipeline is in that location, as well as how difficult and unsafe an emergency repair would be should the pipeline continue to fail in wet weather conditions.

  Phase 2 will relocate approximately 2,250 lineal feet of the pipeline using horizontal directional drilling to place the pipeline into bedrock so that it is protected from earthquake and landslide activity. This will increase the reliability of the Department's access to Loch Lomond supply during very wet weather conditions and other natural hazards. This project

is also at 100% design, has completed CEQA, and is expected to have a construction cost of $14.2 million. Construction will overlap with Phase 1 and is scheduled to be completed in the first quarter of 2025.

Phase 3 will replace the remaining segments from Loch Lomond to Brackney and from the new Brackney segment to Felton. It is scheduled to begin design in 2027.

- Water Supply Augmentation work in the CIP is focused on implementing the Council-approved Securing Our Water Future Policy and developing supplemental water supply to improve the reliability of Santa Cruz's water supply. The near-term focus is on the ongoing evaluation and implementation of Aquifer Storage and Recovery (ASR) in the Mid-County Groundwater Basin (MCGB) as well as completing technical and feasibility analyses on other supply options including water transfers with other agencies, use of recycled water, and desalination.

  In the MCGB underlying the eastern portion of the Department's water service area, ASR is being implemented with the design and construction of two permanent ASR wells scheduled for completion in 2025. In the interim, ASR is being implemented in a temporary fashion as testing and modeling continues to inform the full ASR program in the MCGB which may include up to 10 ASR wells and could provide up to half of the drought supply needed to address estimated worst-case deficits during prolonged droughts.

  The Department continues to evaluate the operational feasibility of interties with Soquel Creek Water District and Scotts Valley Water District. While a permanent connection exists with Soquel Creek, an intertie is currently being designed to connect the Department and Scotts Valley's service areas. This intertie is scheduled to be operational in 2025.

- The 2020 Council-authorized Meter Replacement project involves a full system meter replacement project; the advanced meters will be a critical resource for implementing the new customer assistance programs mentioned earlier in this letter. The $14-million-effort commenced in January 2022 and used a meter-installation contractor, Utility Partners of America (UPA), to expedite the work. UPA hired local labor for the project, installed 23,000 meters, and finished their work in early 2023 within budget. As planned, the most challenging installations involved obstructed meters and property-side plumbing connections found to be in disrepair, which are now being addressed by Department staff, with full project completion expected in Summer 2023.

CIP FUNDING

Given the scale of the Department's CIP, a major focus over the last several years has been on securing the lowest cost for financing projects. The Department has had considerable success with these efforts including low-interest, long-term financing that will benefit ratepayers both now and in the future; relevant details for a few of these are listed below.

Projects with **Existing Drinking Water State Revolving Loan (DWSRF)** funding:

- Both the Newell Creek Dam Inlet/Outlet Replacement project and the GHWTP Concrete Tanks project are being funded through the DWSRF program, with loan rates of 1.4%. Repayment for these loans commences once construction has been completed for the projects in 2024.

Projects included in a July 2022 federal **Water Infrastructure Finance and Innovation Act (WIFIA)** loan application for $164 million:

- Along with the GHWTP FIP project, the Department included the Newell Creek Pipeline Replacement project, ASR project, and the University Tank #4 Replacement project. The first loan in the amount of $127.7 million closed on May 4, 2023. A second loan for the remaining $36 million will be available, when needed.

Projects being developed for potential **Future DWSRF** loan funding:

The DWSRF funding application process is multi-stepped, requiring reviews and approvals as project elements are completed, such as basis-of-design reports and environmental assessments. DWSRF loans have lower interest rates than other financing options and the Department is working to obtain best-cost financing by pursuing all the options available.

- The GHWTP FIP is being developed in a manner that will allow it to be considered for funding with DWSRF funds to cover either the entire project or the additional portion of the project's cost beyond the 49% committed through the WIFIA loan.

- Phase 1 of the Newell Creek Pipeline Replacement project is also being submitted to the DWSRF for additional funding to cover either the entire project or the additional portion of the project's cost beyond the 49% committed through the WIFIA loan.

The Department continues to actively identify and pursue **Grant Funding** opportunities and has had some success and some disappointments. Highlights include:

- The Santa Cruz Mid-County Groundwater Agency (MCGA) received a $7.6 million grant from the California Department of Water Resources as part of the state's Groundwater Sustainability Plan Implementation Grant program.

  This grant is supporting additional project development work for both the Department's ASR program in the MCGB as well as for Soquel Creek Water District's (District's) Pure Water Soquel project. The City and the District are working collaboratively with the MCGA on the implementation of this work, which also includes funding for an additional well for each agency.

- Since 2017, the Department has been pursuing Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) funding for replacement of the Brackney Slide segment of the NCP Replacement as well as the additional segments between Felton and the GHWTP and the remaining segment of the Loch Lomond to Felton segment not being addressed by the Brackney slide repair.

The Brackney segment has received funding for design work and a commitment of funding for up to 25% of the anticipated construction cost. Additional funding for the Brackney segment is included in various requests for Congressional Directed Funding, but the HMGP funding for the Felton to GHWTP segment has been waitlisted by the program administrator for the California Office of Emergency Services. This means that funding for this project is likely not available in any near-term timeframe.

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 must 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 $50 million short-term line of credit that can be used as bridge funding over the coming several years while significant DWSRF projects are under construction.

FINANCIAL PRO FORMA

With respect to financial forecasting and being able to put the proposed Budgets in an appropriate and understandable context, Commissioners would like to especially commend the Department for the financial analysis and modeling tools that they have developed and applied. **Attachment 4** is the FY 2024-2028 Financial Pro Forma.

For the last five years, the Commission's budget review has focused heavily on how the Department's proposed Operating Budgets and CIP influence potential customer rate increases and achieve the financial metrics that the City Council set for the Department when it adopted the 2016 LRFP and the updated 2021 LRFP.

The Financial Pro Forma is a key part of the Department's financial planning work. It provides the Department with a model that supports providing the Commission and the Council with a comprehensive, five-year view of the Department's revenue requirements, expenditures, and projected use of debt funding as well as the resulting debt service for capital investments.

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, reserve levels, and performance on reserve targets and illustrates how assumptions about capital spending and operating costs (including salary, benefits, and pension obligations) will affect revenue requirements over time. Department staff have been transparent in describing the key assumptions driving the financial model, and Commissioners have received detailed and thoughtful answers to questions about various aspects of the results presented in the Financial Pro Forma.

QUARTERLY FINANCIAL REPORTS

As the Commission has worked with the Department on budget and financial planning over the last several years, the Commission has received regular updates on the Department's finances

such as more frequent dry conditions and opportunities such as those created by the City's participation in regional collaboration and local groundwater sustainability planning efforts.

In closing, the Water Commission unanimously approved a motion in support of the City Council adopting the Water Department's proposed FY 2024 Operating Budget and CIP at the meeting on June 5, 2023. 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,

Justin Burks
Chair, Santa Cruz Water Commission

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

Attachments:
Attachment 1 – Water Department FY 2024 Proposed Operating Budget
Attachment 2 – Water Department FY 2024 Budget Analytics
Attachment 3 – Water Department FY 2024-FY 2028 CIP Summary
Attachment 4 – Water Department FY 2024 Financial Pro Forma
Attachment 5 – Example of Quarterly Financial Reports prepared for and distributed to the Water Commission

WATER COMMISSION
INFORMATION REPORT

DATE: 06/01/2023

AGENDA OF: 06/05/2023

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Groundwater Sustainability Planning

RECOMMENDATION: That the Water Commission receive information and provide feedback to staff on the Sustainable Groundwater Management Act, provisions of the Santa Cruz Mid-County and Santa Margarita Groundwater Sustainability Plans, and the Water Department's water supply augmentation project work in both basins.

BACKGROUND and DISCUSSION:

At the May 2023 Water Commission meeting, the Commission received information on the City of Santa Cruz's involvement with the 2021 Sustainable Groundwater Management Grant Program; this item provides the broader context for and describes the work being performed by regional water agencies.

While the City of Santa Cruz (City) and neighboring water agencies have studied and managed groundwater for decades, the State of California enacted the Sustainable Groundwater Management Act (SGMA), effective January 1, 2015, as the first legislation in the state's history to mandate comprehensive sustainable groundwater resources management. The City has involvement in two groundwater basins as can be seen in the figure below. One of these is the Santa Cruz Mid-County Groundwater Basin (MCB); a portion of the City's water service area extends over this basin from which the City receives groundwater through four existing Beltz wells. The other is the Santa Margarita Groundwater Basin (SMB) which includes Loch Lomond Reservoir and the San Lorenzo River.

The Santa Cruz Mid-County Groundwater Agency (MGA) and the Santa Margarita Groundwater Agency (SMGWA) were formed under SGMA to develop Groundwater Sustainability Plans (GSPs) for the MCB and SMB.

The MGA was formed in March 2016 as a Joint Powers Authority (JPA) with four member agencies: City of Santa Cruz, Central and Soquel Creek Water Districts, and the County of Santa Cruz. The MCB is classified by the California Department of Water Resources (DWR) as a high-priority basin in a state of critical overdraft because of seawater intrusion.

Because of this critical overdraft designation, the MGA was required to submit a GSP to DWR by January 31, 2020. The MGA initiated development of its GSP in 2017; the GSP was submitted to DWR on January 30, 2020, and approved in June 2021.

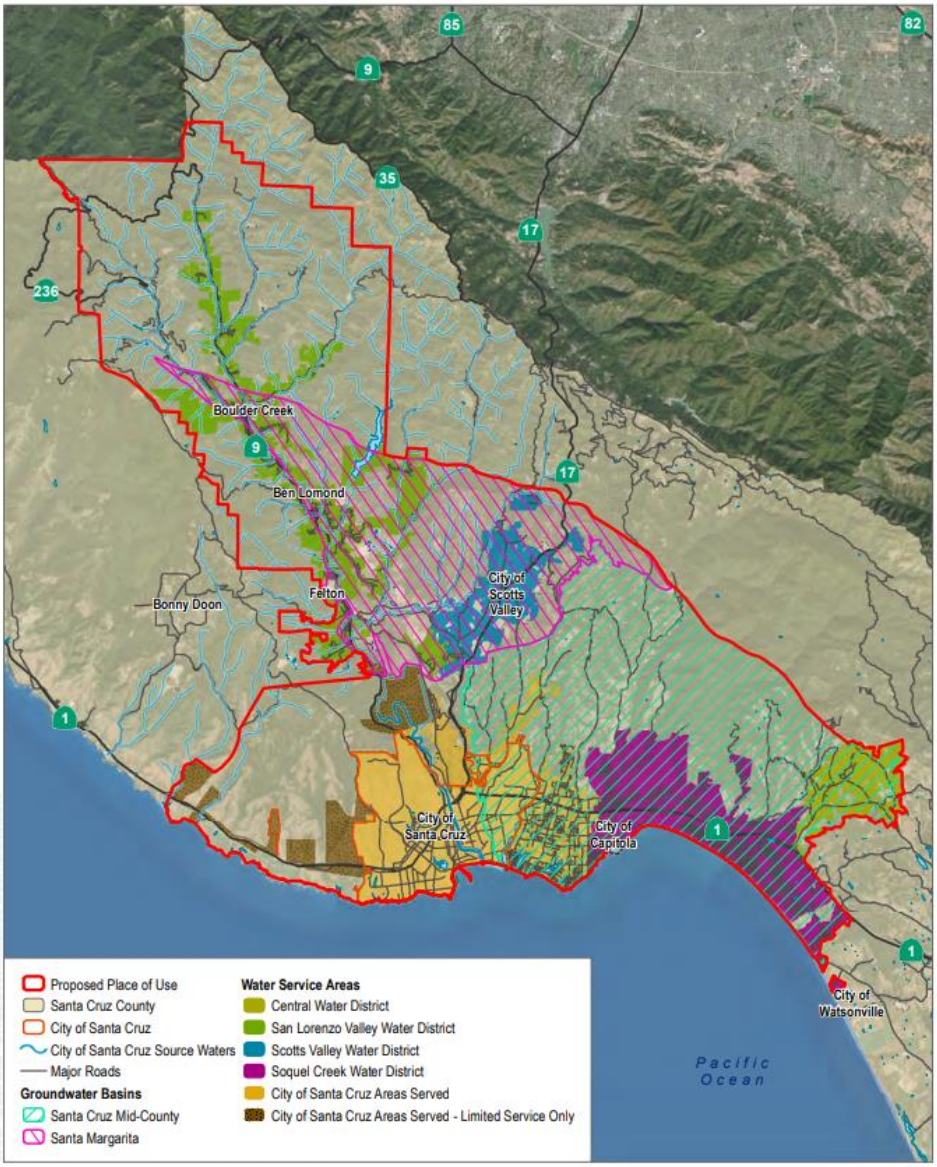


FIGURE 3-3
Potential Regional Partnering Water Districts
Santa Cruz Water Rights Project

Similarly, the SMGWA was formed in June 2017 by a JPA with three member agencies: Scotts Valley Water District (SVWD), San Lorenzo Valley Water District (SLVWD) and County of Santa Cruz. The City is a regional partner in the SMGWA. The SMB is designated as a medium priority basin.

Because of this medium-priority designation, the SMGWA was required to submit a GSP to DWR by January 31, 2022. The SMGWA initiated development of its GSP in 2017; the GSP was submitted to DWR on January 3, 2022, and approved in April 2023.

SGMA's requirements for establishing and maintaining sustainability are based on development of sustainable management criteria (SMC) for six sustainability indicators and Projects and Management Actions that facilitate achieving sustainability. More detail will be provided in the presentation, but in general:

The six sustainability indicators identified under SGMA are:

- Seawater Intrusion
- Degradation of Groundwater Quality
- Chronic Lowering of Groundwater Levels
- Depletion of Interconnected Surface Water
- Land Subsidence
- Reduction of Groundwater in Storage

SMC under SGMA include sustainability goals, undesirable results, minimum thresholds, measurable objectives, and interim milestones.

Projects and Management Actions (PMAs) are activities that would facilitate the GSA and its member agencies in meeting the basin's sustainability goals.

In the MCB and SMB, PMAs are categorized into three groups as follows:

- Group 1: Commitments already in place that are underway or imminent.
- Group 2: There are slight differences in the way that Group 2 PMAs are characterized in the two GSPs. In the MCB, these are activities and projects that have demonstrated high-level of feasibility and are advancing either in terms of planning, design, or construction. In the SMB, Group 2 PMAs represent then-current thinking regarding best options for achieving basin sustainability; there is not necessarily a commitment to advancing planning, design, and construction of all of these PMAs.
- Group 3: Require further analysis to establish feasibility.

Table 1 below includes PMAs for both GSPs as defined within their respective groups.

Table 1: Groundwater Sustainability Plans – Projects and Management Actions

Santa Margarita Groundwater Basin	**Santa Cruz Mid-County Groundwater Basin**
Group 1 1. Existing Water Use Efficiency 2. SVWD Low-Impact Development 3. SLVWD Conjunctive Use 4. SVWD Recycled Water Program **Group 2** <u>Tier 1 (Existing Within Basin Water Sources)</u> 1. Additional Water Use Efficiency 2. SLVWD Existing Infrastructure Expanded Conjunctive Use (Phase 1) 3. SLVWD and SVWD Inter-District Conjunctive Use with Loch Lomond (Phase 2) <u>Tier 2 (Using Surface Water Sources Outside the Basin)</u>	**Group 1** 1. Water Conservation and Demand Management 2. Planning and Redistribution of Municipal Groundwater Pumping **Group 2** 1. Pure Water Soquel 2. Aquifer Storage and Recovery 3. Water Transfers / In Lieu Groundwater Recharge 4. Distributed Storm Water Managed Aquifer Recharge (DSWMAR)

Santa Margarita Groundwater Basin	Santa Cruz Mid-County Groundwater Basin
1. Transfer for Inter-District Conjunctive Use 2. Aquifer Storage & Recovery Project in Scotts Valley Area of the Basin	
<u>Tier 3 (Using Purified Wastewater Sources)</u> 1. Purified Wastewater Recharge in Scotts Valley Area of the Basin (710 – 1,500 AFY Treated at Existing Facility Outside of the Basin) 2. Purified Wastewater Recharge in Scotts Valley Area of the Basin (3,500 AFY Treated at New Facility inside the Basin) 3. Purified Wastewater Augmentation at Loch Lomond **Group 3** 1. SLVWD Olympia Groundwater Replenishment (Winter Direct Injection) 2. Public/Private Stormwater Recharge and Low Impact Development 3. Enhanced Santa Margarita Aquifer Conjunctive Use (*in lieu* in conjunction with Lompico Aquifer) 4. SLVWD Quail Hollow Pumping Redistribution 5. Santa Margarita Aquifer Private Pumpers Connect to Public Water System 6. Direct Potable Reuse 7. Groundwater Use Restrictions 8. Scotts Valley Non-Potable Reuse	**Group 3** 1. Recycled Water - Groundwater Replenishment and Reuse 2. Recycled Water – Surface Water (Reservoir) Augmentation 3. Recycled Water – Direct Potable Reuse 4. Groundwater Pumping Curtailment and/or Restrictions 5. Local Desalination 6. Regional Desalination

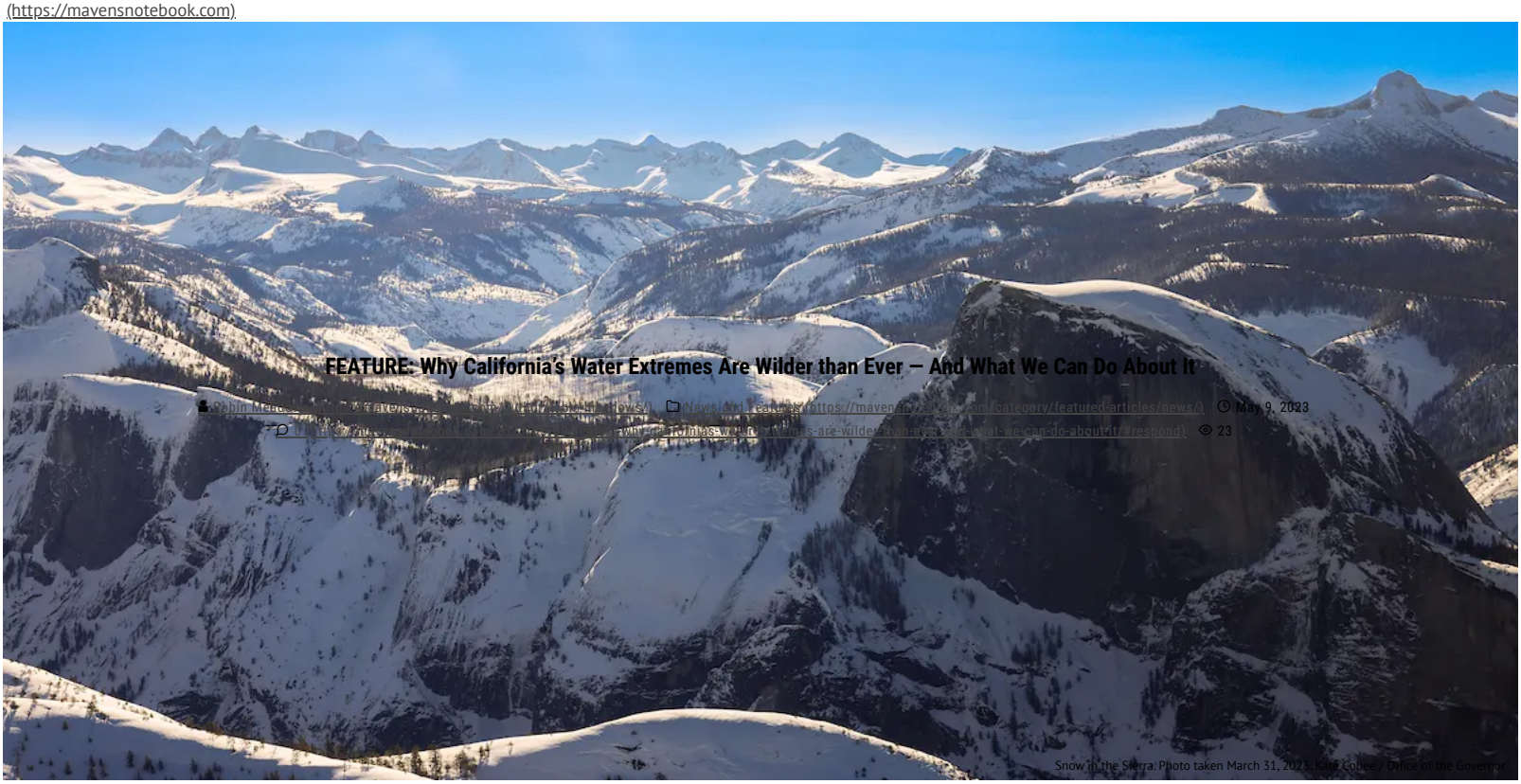
The presentation on this item will provide additional information on SGMA requirements, current activities of each GSA, more detail on SMC and PMAs, and a brief summary of the projects the City and neighboring water agencies are pursuing and how they expect to meet these SGMA requirements.

FISCAL IMPACT: None.

PROPOSED MOTION: No motion is required, and staff recommends the Commission receive information and provide feedback to staff on the material presented.

ATTACHMENT(S)/LINKS:

1. Santa Cruz Mid-County Groundwater Agency Groundwater Sustainability Plan Summary https://www.midcountygroundwater.org/sites/default/files/uploads/MGA2019-GSP-Public-final.pdf
2. Santa Margarita Groundwater Agency Groundwater Sustainability Plan Summary https://www.smgwa.org/media/GroundwaterSustainabilityPlan/SMGWA-GSP-2021Aug-v31.pdf



Snow in the Sierra. Photo taken March 31, 2023. Kate Cohee / Office of the Governor

Written by Robin Meadows

What a relief last winter is finally over. In late December, California was hit by the first in a series of powerful storms called atmospheric rivers (https://www.kneedeeptimes.org/how-rivers-in-the-sky-travel-across-the-ocean/). These ribbons of extraordinarily wet air rush across the ocean and can dump staggering amounts of rain and snow upon landfall. After the driest three year stretch on record, it seemed like a miracle: Water! Falling from the sky!

Then eight more atmospheric rivers (https://mavensnotebook.com/glossary/atmospheric-river/) arrived in January. And they kept coming (and coming) through February and March — so many I lost count. Soon I wished the torrential rains would just stop. I felt like a bad Californian.

It is wonderful to see brimming reservoirs and towering snowpacks. But unrelenting storms also left floods, mudslides, evacuations, highway closures, and power outages across much of the state.

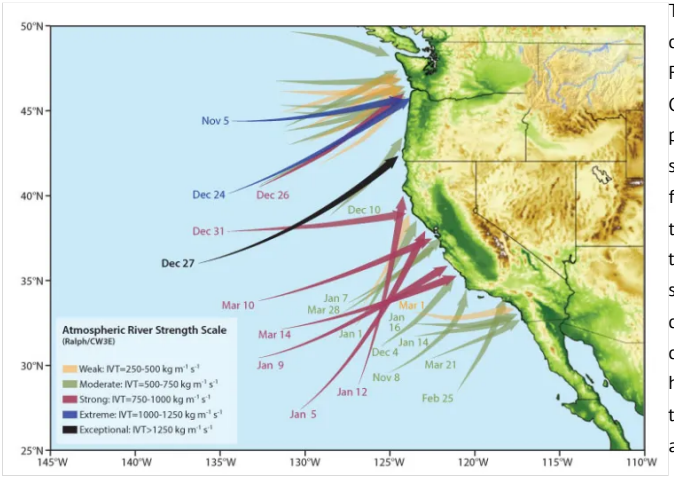
My elderly mom and her unhappy cat hunkered down in a hotel for days, waiting to see if her Monterey County neighborhood would flood. Friends with young children lost electricity and internet in their Santa Cruz Mountains home, and were trapped there by uprooted trees that fell across roads. A Bay Area friend was stranded in Santa Barbara and chronicled the many washed out roads, rock falls, and sinkholes that blocked her passage home in a series of ever more anxious Facebook posts.

While alternating between drought and deluge is nothing new for California, climate change is making these swings even more dramatic. New research will help the state prepare for future water extremes by tightening both long and short term forecasts, as well as optimizing water savings in the wettest years for use in the inevitable dry stretches. New policies could make water allocation more equitable during years like this one, when rivers are running high. And updates to the state's water system will help safeguard deliveries to cities and farms as the supply boom and bust cycle grows ever wilder.

WETTER STORMS

"Winter was weirdly wet," says Michael Wehner, a climate and extreme weather scientist at Lawrence Berkeley National Laboratory and a lead author on the latest Intergovernmental Panel on Climate Change report. Scientists can't say whether climate change caused the astonishing number of storms, he continues, but they can say it made them, "wetter and so that much worse."

Researchers have long known that atmospheric rivers carry more water as temperatures rise, simply because warmer air holds more moisture. Now, Wehner and colleagues have discovered another reason downpours are intensifying. Climate change can also make storms release more of their contents, the team reported in a 2022 study (https://www.sciencedirect.com/science/article/pii/S2212094722000275) of future precipitation in the San Francisco Bay Area. "Atmospheric rivers rain out more than expected — up to twice as much," Wehner says.



(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/05/2022-23-AR-storm-map.jpg?ssl=1)

California was hit by 31 atmospheric rivers last winter (1 extreme, 6 strong, 13 moderate, and 11 weak). The arrows show where each storm was most powerful along the coast, and an extreme storm in Oregon or Washington can be strong in California. Source: Scripps

(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/05/Downed-tree-DWR.jpg?ssl=1)

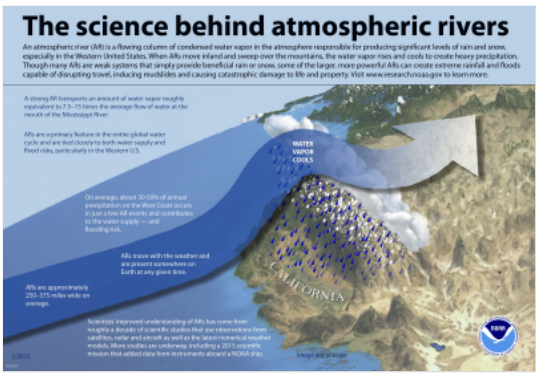
Treefall during the January storms in California. Photo: Kenneth James, DWR

This research was commissioned by the San Francisco Public Utilities Commission (SFPUC), which provides water, power and sewer services, and the findings will guide long-term infrastructure planning to protect the city from the stronger storms that are coming. "The study connected scientists on the hill with decision makers on the ground," Wehner says, adding that this type of collaboration is a first for him. "It's exciting."

Not all atmospheric rivers rain more than anticipated. "The big storms are atmospheric rivers connected with extratropical cyclones, many of which are the bomb cyclone kind of storm," Wehner says. A cyclone is an area of low pressure with wind sweeping around it. A bomb cyclone (https://www.kneedeeptimes.org/what-exactly-is-a-bomb-cyclone-anyway/) forms when the pressure falls precipitously, making the wind suddenly spin much faster.

Most atmospheric rivers in California coincide with extratropical cyclones. "They're the most common type of storm event in California and are the most affected by climate change," Wehner says. These combination storms are already at least 5% wetter than they would have been historically in the Bay Area, and his 2022 study showed that they could unleash up to 17% more rain by 2050 and up to 37% more by 2100.

Wehner wasn't entirely surprised that atmospheric rivers are getting so much rainier because he's seen a similar trend in hurricanes. A 2018 study (https://www.nature.com/articles/s41586-018-0673-2) he co-authored showed that in Katrina and other recent hurricanes, climate change increased rainfall as much as 10% compared to pre-industrial times. "The rain in the rainiest parts intensifies in both hurricanes and atmospheric rivers," he says.



(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2020/05/Atmospheric-Rivers-Infographic-NOAA.jpg?ssl=1)Wehner isn't exactly sure why climate change makes atmospheric rivers drop more of their moisture, but he has some ideas. For example, these storms typically rain hardest when winds lift them uphill, where the pressure is lower. The strong winds of extratropical cyclones can provide that lift.

Winter extratropical cyclones will likely strengthen with climate change, with the windiest parts growing up to 40% bigger by the end of the century, according to a recent study (https://wcd.copernicus.org/articles/3/337/2022/).

Whatever the underlying cause of Wehner's findings, the take homes for SFPUC are that rains in the San Francisco Bay Area will likely become even heavier than previously projected, and that rainfall in a changing climate is more complex than researchers had thought. "There's so much we don't know about how climate change affects extreme weather," Wehner says.

AI FORECASTS

While planners need to know what to expect over decades, emergency services providers need to know when and where storms will strike in real time. Anima Anandkumar, a computer scientist at the California Institute of Technology, is tapping artificial intelligence to speed weather forecasting.

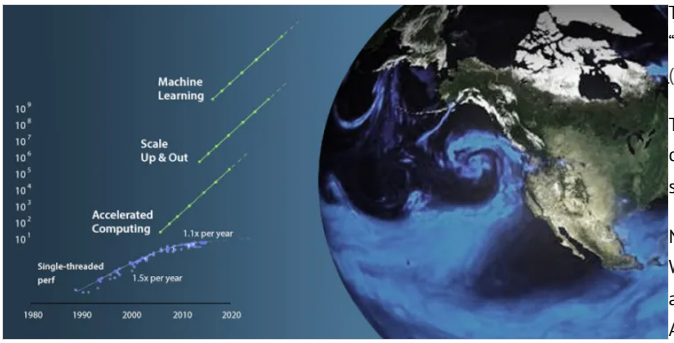
Weather is caused by air moving in the atmosphere, which is in constant flux (https://mavensnotebook.com/glossary/flux/). Anandkumar was already modeling fluid dynamics — which is the flow of liquids and air — with artificial intelligence. "I thought if it can do that, why can't it predict weather?," she recalls. "So we just tried and it succeeded beyond our expectations."

Today's weather models are numerical: they take massive amounts of current weather data — temperature, humidity, wind and so forth — and plug them into mathematical equations that predict how air will move. Crunching all those numbers involves trillions upon trillions of calculations, requires supercomputers, and takes hours.

Traditional computer programming is like cooking from a book. Just as recipes give directions for measuring and mixing ingredients, programs give computers step-by-step instructions to follow. The new weather model built by Anandkumar and her team uses a kind of artificial intelligence called machine learning, which is more like cooking from scratch and developing a recipe. Machine learning lets computers solve problems through experience, much as people do.

Machine learning excels at combing through reams of data to find patterns, and is widely used in everyday life. Examples include detecting fraud from spam emails to credit card theft. Hedge funds also use machine learning to gauge the success of companies based on how many cars are in their parking lots.

Unlike conventional weather models, the new AI weather model has the capacity to handle historical as well as current weather data. "It learns from the past to predict the future," Anandkumar explains. "There's a wealth of hourly data since the 1970s that we're barely making use of."



(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/05/3-6-image-v2.jpg?ssl=1)

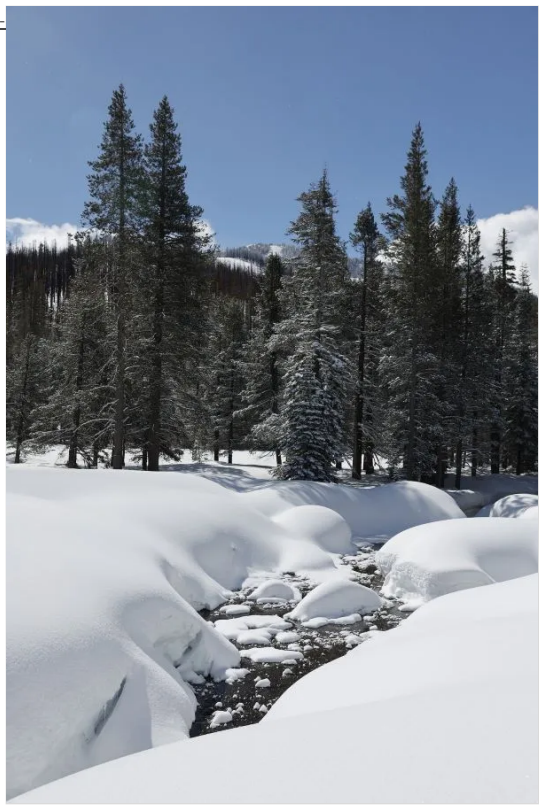
Image: Nvidia

The AI model rivals numerical models in accuracy, is cheaper because it doesn't require a supercomputer, and is "lightning fast — it only takes a second," Anandkumar says. Her team reported their findings in a study (https://arxiv.org/abs/2208.05419) submitted for publication.

The National Oceanographic and Atmospheric Administration, which includes the National Weather Service, is currently evaluating the team's AI weather model. "We're collaborating with them to help modernize their system," she says.

Now the team is extending their model to predict the impacts of climate change as well as near-term weather. While climate change models are global, the new AI model's affordability and astonishing speed lend it to local assessments of future risks. "The regional level is what matters for flooding and high temperatures," Anandkumar says. "How extreme will the extremes be?"

BANKING SNOWMELT

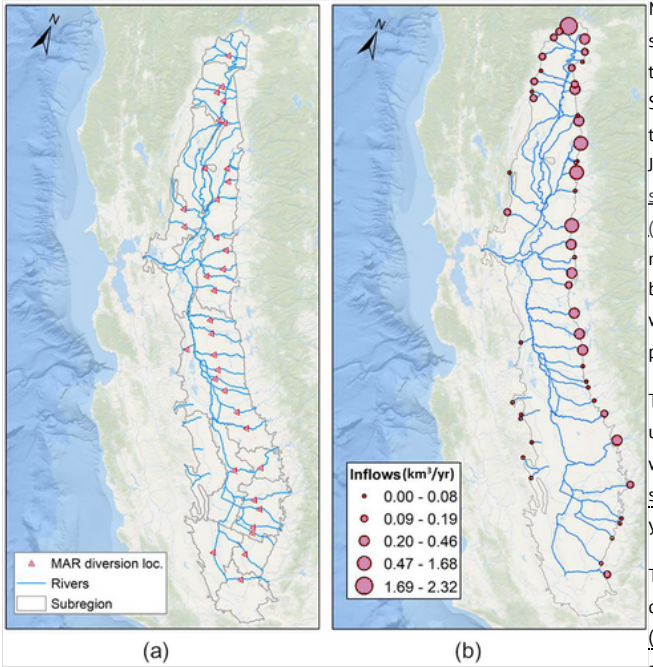


(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/04/Snow-Survey-April-3-2.jpg?ssl=1)Now that this year's barrage of storms has let up at last, all eyes are on the colossal mountain snowpack — one of the highest on record — they left behind. Will the state face another round of devastating floods as snow melts in a rush this spring? And can this gush of water refill the shockingly depleted aquifers (https://mavensnotebook.com/glossary/aquifer/) in the Central Valley, where farmers have over pumped groundwater for a century? Jeff Dozier, a UC Santa Barbara emeritus snow hydrologist, just wrapped up a three-year project called "Headwaters to Groundwater: Resources in a Changing Climate" that will help answer these questions.

"One of the biggest effects of climate change in California is on the Sierra Nevada," Dozier says. "That's where most of the agricultural water supply comes from, and agriculture is the biggest water user." Irrigating California's $50 billion worth of crops accounts for about four-fifths of water use statewide.

This year's impressive snowfall notwithstanding, the state Department of Water Resources projects that the Sierra Nevada snowpack will shrink up to 65% by 2100 as warming shifts the line between rain and snow. "We're transitioning to more rain at higher elevations than normal," Dozier says. "The problem is that there's no place to put it." The state's reservoirs only have room to capture the runoff from an average water year. "You have to worry about flood control," he continues.

Just about everybody's favorite solution is to put this "extra" water where it can do good instead of harm. Efforts are underway to inundate fields and bank floodwaters in the Central Valley's vast underground storage basins. Called managed aquifer recharge, this strategy would also help bring the basins back into balance by 2042 as required under the 2014 Sustainability Groundwater Management Act.



(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/05/3-9-reddots.png?ssl=1)

Both the Sacramento and San Joaquin River valleys have numerous sites that are suitable for managed aquifer recharge (left) but most of the water available for recharge is in the Sacramento Valley (right). Source: AGU

Managed aquifer recharge may sound straightforward but it's not. One challenge is that the bulk of the snowmelt flows into the Sacramento Valley, which is in the north, but the aquifers in direst straits are in the San Joaquin Valley, which is in the south. In a 2020 study (https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020WR027244), Dozier and colleagues found that managed aquifer recharge could basically solve groundwater troubles in the Sacramento Valley. But it would barely make a dent in the San Joaquin Valley's overdraft (https://mavensnotebook.com/glossary/overdraft/) unless water is imported from the north via the Sacramento-San Joaquin River Delta, and even that would only be a partial fix.

The idea of transferring snowmelt from north to south brings up another barrier to managed aquifer recharge: uncertainty over the water rights. "The unpleasant surprise we're coping with right now is that the governance of water management in California is not suited to expediting decisions," Dozier says. "When we have a lot of extra surface water (https://mavensnotebook.com/glossary/surface-water/), the question is who owns it and where can you divert it?"

The state wants to own that water itself. The Department of Water Resources and the State Water Board plan to develop a more "equitable approach for allocation of water rights for groundwater recharge (https://mavensnotebook.com/glossary/groundwater-recharge/)" with an initial focus on the state "securing all reasonably available future flood flows in the Central Valley," according to a 2022 state report called California's Water Supply Strategy.

WATER AS A WAY OF LIFE

L'Eaux Stewart, Chairperson of the Big Pine Paiute Tribe, is all for more equitable groundwater recharge. She lives in the Owens Valley, high desert just east of the Sierra Nevada. This arid land gets only a few inches of rainfall each year because the soaring peaks cast a rain shadow over it. But the mountains also provide snowmelt that once kept the valley's water table high and streams flowing through the hot, dry summers.

(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/05/Lower-Owens-River.jpg?ssl=1)"We're a land of little rain but not of little water," Stewart says.

But, as warming diminishes the snowpack and melts it earlier and faster, the Owens Valley is becoming a land of little water too. "The snowpack is erratic and our springs are drying out," Stewart says.

Wet years like this one aren't much help. "We never get to heal and recover our landscape," Stewart says. "When the snowpack is high, the water goes to the Los Angeles Department of Water and Power." The agency has pumped Owens Valley groundwater and piped it the 200 miles to Los Angeles since the early 1900s.

Climate change on top of groundwater export threatens Stewart's way of life. "I grew up in an incredibly traditional household, surrounded by the language, stories and practices," she says. "About half of our cultural activities depend on water — losing it is crippling us."

Stewart learned to build houses out of tall rushes called tules, and to tend willow patches so they bore the long stems needed for weaving baskets. Now the disappearance of spring-fed wet meadows and marshes has made these water-loving plants scarce where she lives.

Lack of water also hampers preparation of traditional foods such as acorns, which Owens Valley tribes once gathered in great quantities in the fall to help sustain themselves through the winter. They then buried baskets full of acorns in creek beds, where the cold, flowing water leached out the toxic, bitter tannins while keeping the acorns fresh.

"Water is more than precious," Stewart says. "Without it, how can we keep our traditional activities alive and carry our culture into the future?"

MANAGING EXTREMES

Just as water rights were set long ago and may be due for a rethink, California's water supply system could use modernizing to get ready for a future with both super wet and super dry years. The state has long had the most varied weather conditions in the country. "It's always been a roll of the dice from year to year; so the system is geared to variability," says John Leahigh, a civil engineer and water manager with the Department of Water Resources' State Water Project (https://mavensnotebook.com/the-notebook-file-cabinet/californias-water-systems/state-water-project/), which was built in the 1960s to manage flood risks and to deliver water from Northern California to the San Joaquin Valley and Southern California. "But with climate change we're expecting to see even more extremes."

These extremes have already begun. "There's even more variation than we'd seen historically," says Leahigh, who has worked in State Water Project (https://mavensnotebook.com/the-notebook-file-cabinet/californias-water-systems/state-water-project/) operations and management for three decades. "There's more of the whiplash effect." This winter's abrupt switch from bone dry to overflowing is a perfect example of whiplash weather.

(https://i0.wp.com/mavensnotebook.com/wp-content/uploads/2023/05/Snowy-Mammoth-Mountains-Sierra-Aerial-DWR.jpg?ssl=1)

Snow in the Sierra. Photo taken March 31, 2023. Kate Cohee / Office of the Governor

Water system updates underway or in the works include a mix of new technology, new infrastructure, and new ways of managing the infrastructure in place. Examples include the recently launched Airborne Snow Observatory program, which uses aircraft equipped with lidar to measure snow depths from a height of 23,000 feet.

"The Airborne Snow Observatory gives us a much better snowpack forecast," Leahigh says, explaining that the traditional method relied on surveying snow manually at fixed points while the lidar scans entire watersheds. Accurate snowpack estimates are essential to forecasting the snowmelt that provides much of California's water.

As warming shrinks snowpacks, however, the state will rely more on rainfall. However, current infrastructure is designed to collect snowmelt, which comes gradually, rather than storm runoff, which comes all at once. To take advantage of the higher river flows from intensifying storms, the state proposes building a 45-mile tunnel under the Delta. Called the Delta Conveyance (https://mavensnotebook.com/glossary/conveyance/), the tunnel would divert water from the Sacramento River and deliver it to the California Aqueduct, which runs nearly 450 miles from the Delta to Los Angeles. "When water is available through direct runoff, we need a way to capture it," Leahigh says.

Another key climate adaptation uses recent advances in atmospheric river forecasting to optimize reservoir management, an approach aptly called Forecast-Informed Reservoir Operations (FIRO). Currently, water is released from reservoirs to make room for stormwater according to a federally-mandated schedule. This is a set timetable that is based on historical weather patterns rather than actual conditions, so releases are made whether or not a storm is incoming.

In dry winters, this can mean needlessly losing water that never gets restored. In contrast, FIRO tells reservoir operators when to "fill or spill," Leahigh says. "Rather than drawing down blindly, they can hold onto water."

These are just some of the ways big and small that the state can reshape water management. Others include boosting local supplies by, for instance, recycling wastewater and storing more groundwater near cities. Realizing how much can be done to prepare gives me hope that, even as the dice become loaded toward wetter wet and drier dry periods, California can roll with the uncertainty.

This post, Why California's Water Extremes are Wilder than Ever, and What we Can Do about It (https://www.kneedeeptimes.org/why-californias-water-extremes-are-wilder-than-ever-and-what-we-can-do-about-it/), first appeared in KneeDeep Times (https://www.kneedeeptimes.org/), a regional climate resilience magazine, as part of its Extremes-in-3D (https://www.kneedeeptimes.org/extremes-in-3d/)series.

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Robin Meadows (https://mavensnotebook.com/author/robin-meadows/)

Robin Meadows is an independent science journalist who covers water, climate and environmental policy for Maven's Notebook. Her work has also appeared in the Bay Area Monitor, bioGraphic, High Country News, San Francisco Estuary magazine, Scientific American, and elsewhere. Robin lives in the San Francisco Bay Area near Suisun Marsh, the largest brackish wetland on the West Coast.

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Ocean water to fresh: First-of-its-kind wave-powered pilot project in Fort Bragg set to test

Assuming it's successful, Fort Bragg's desalination unit could provide a replicable model for coastal communities around the North Coast and on other U.S. coastlines, water officials said. |

The city of Fort Bragg has received $1.5 million in state funding to launch a pilot project using wave-powered desalination technology aboard a floating raft-like unit anchored a mile offshore to supplement local drinking

supplies. This photograph features the type of unit expected to be deployed later this year off the Mendocino Coast. (Well Good Productions/Oneka Technologies)

MARY CALLAHAN
THE PRESS DEMOCRAT
May 3, 2023, 11:07AM

Fort Bragg is embarking on an innovative pilot project to desalt ocean water for the Mendocino Coast community using carbon-free wave action to power an energy-intensive process that in other cases generates climate changing greenhouse gases.

The design comes from a young Quebec-based company called Oneka Technologies that makes floating, raft-like units containing the equipment needed to draw in water, pressurize and force it through reverse-osmosis membranes, then send it back to shore in a flexible pipe on the ocean floor.

Fort Bragg will start with a single, 16-foot by 26-foot unit, anchored about a mile off shore of the Noyo Headlands, Public Works Director John Smith said.

It could be deployed in perhaps six or eight months, once a variety of tests are completed to determine the best location for it. Permits also must be acquired to ensure the project complies with California Ocean Plan water quality provisions for desalination facilities and meets other regulatory requirements.

The project is to be covered by a $1.5 million state grant through the Department of Water Resources, which includes permitting and regulatory expenses, Smith said. The grant was announced last month in a new round of funding totaling $5 million for three desalination efforts under the state's strategic plan to expand water supplies, increase storage capacity and generally improve drought resilience.

Assuming it's successful, Fort Bragg's desalination unit could provide a replicable model for coastal communities around the North Coast and on other U.S. coastlines, as well, water officials said.

The equipment also is modular by design and can be scaled up using an array of floating units spaced apart in the ocean.

"It's a very small version of what it could be in the future," Smith said. "It's pretty fantastic."

Very fine mesh across the unit's water intake is designed to prevent aquatic wildlife from getting sucked in and being harmed. The vertical line to the anchor and any surface lines connecting floating rafts to each other are under high tension and very taut, so they aren't subject to entanglement, Oneka co-founder the Chief Executive Officer Dragan Tutic told The Press Democrat.

Using wave energy to mechanically pressurize the water means the process doesn't contribute to the atmospheric changes that are contributing to water scarcity in the first place. There is no electricity, no connection to the grid, no chemical use.

And only 25% of a given batch of ocean water is treated. The resulting concentrated brine is then diluted by the remaining 75% of the batch before it's discharged back to the ocean. That water will be about 30% more saline than the existing ocean water, addressing another typical concern with desalination. Sensors on the rafts monitor the salinity of the incoming and outgoing water, he said, but the discharged water dilutes so quickly in the ocean, it's difficult to measure any increased salinity around the raft.

"It's an amazing and innovative project," Fort Bragg Mayor Bernie Norvell said. "It addresses both of the main obstacles to desal: the amount of energy needed to produce the desalinated water and what to do with the salt. The energy is produced by the wave action, and the salt is filtered and returned directly to the ocean. Win, win.

"We hope it is highly successful, and we end up with several more," Norvell said.

Water scarcity is a growing concern around the globe, as rising temperatures cause increased evaporation and more extreme swings between drought and severe storms and flooding.

During California's recent, three-year drought, the Mendocino Coast faced particular challenges, given its dependence on shallow groundwater wells, which began running dry. Many communities and individual residents elsewhere on the coast turned to Fort Bragg to purchase water.

But they eventually were cut off, as the city, its surface water sources running low, struggled to meet the needs of its own 7,000-plus residents.

The water shortage was so severe in towns like Mendocino that the County of Mendocino and the state Department of Water Resources arranged to purchase water from the city of Ukiah and truck it over the hill to the coast in late summer of 2021 to supply minimal needs there.

Fort Bragg, meanwhile, obtained emergency state funding for a mobile desalination unit set up that same fall to remove the salt from brackish water at an intake in the Noyo River 4½ miles upstream from Noyo Harbor.

The river was running at such a low ebb that tidewaters pushing upstream had made the water there unusable. But the city could only rely on about half the mobile unit's capacity because of limits on how much dense brine it was authorized to dispose of through its waste water treatment facility.