



**BOARD OF DIRECTORS  
EAST BAY MUNICIPAL UTILITY DISTRICT**

375 - 11th Street, Oakland, CA 94607

Office of the Secretary: (510) 287-0440


**Notice of Special Meeting**

**Budget Workshop #3  
Tuesday, April 11, 2017  
8:30 a.m.  
Training Resource Center  
375 Eleventh Street  
Oakland, California**

At the call of President Lesa R. McIntosh, the Board of Directors has scheduled a Budget Workshop for 8:30 a.m. on Tuesday, April 11, 2017. The workshop will be held in the Training Resource Center of the Administration Building, 375 - 11th Street, Oakland, California.

The Board will meet in workshop session to discuss the Proposed FY18 and FY19 Biennial Budget and Rates and Charges.

Dated: April 6, 2017

  
Rischa S. Cole  
Secretary of the District





**BOARD OF DIRECTORS  
EAST BAY MUNICIPAL UTILITY DISTRICT**

375 - 11th Street, Oakland, CA 94607

Office of the Secretary: (510) 287-0440

**AGENDA**  
**Special Meeting**  
**Budget Workshop #3**  
**8:30 a.m.**  
**Tuesday, April 11, 2017**  
**Training Resource Center**  
**375 Eleventh Street**  
**Oakland, California**

**ROLL CALL:**

**PUBLIC COMMENT:** The Board of Directors is limited by State law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.

**DISCUSSION:**

1. The Board will meet in workshop session to discuss the Proposed FY18 and FY19 Biennial Budget and Rates and Charges. (Skoda)

**ADJOURNMENT:**

**Disability Notice**

*If you require a disability-related modification or accommodation to participate in an EBMUD public meeting please call the Office of the Secretary (510) 287-0404. We will make reasonable arrangements to ensure accessibility. Some special equipment arrangements may require 48 hours advance notice.*

**Document Availability**

*Materials related to an item on this Agenda that have been submitted to the EBMUD Board of Directors within 72 hours prior to this meeting are available for public inspection in EBMUD's Office of the Secretary at 375 11th Street, Oakland, California, during normal business hours, and can be viewed on our website at [www.ebmud.com](http://www.ebmud.com).*

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## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: April 6, 2017

MEMO TO: Board of Directors

FROM: Alexander R. Coate, General Manager *ARC*

SUBJECT: Budget Workshop 3 – April 11, 2017

### SUMMARY

One of the District's six Strategic Plan goals is Long-Term Financial Stability. Staff has facilitated a series of budget workshops with a focus on long-term financial stability to support this goal and to prepare for the development of the FY18 and FY19 biennial budget. The workshops have enabled staff to receive Board guidance for budget development and respond to questions on a variety of topics, such as mitigating rate increases through use of Rate Stabilization Fund reserves and non-rate revenue opportunities. This memo provides an overview of completed workshops and describes the key topics for the final budget workshop to be held on April 11, 2017.

### DISCUSSION

The proposed FY18 and FY19 biennial budget, rates, fees and charges will be presented to the Board during Budget Workshop 3. A summary of the workshops is detailed below:

- Workshop 1 (January 24, 2017): Staff presented concepts from the December 13, 2016 Long-Term Financial Stability Workshop and provided information regarding changes in assumptions such as water sales, priorities for the FY18 and FY19 biennial budget, and a sensitivity analysis of rates.
- Workshop 2 (March 14, 2017): Staff provided responses to questions raised at the January workshop along with highlights of the proposed FY18 and FY19 biennial budget, Capital Improvement Program, staffing changes, and continued rate sensitivity analysis. Staff provided written responses on March 23, 2017 to questions raised at this workshop. A copy of the information memo is included in the attached materials.
- Workshop 3 (April 11, 2017): Staff will provide detailed information on the proposed FY18 and FY19 biennial budget including the Capital Improvement Program, staffing changes, and proposed rates. Attachments to this memo include the biennial budget document which is comprised of two volumes, the workshop presentation and a projected Long-Term Water Infrastructure Investment Needs figure. The figure illustrates historic and projected cash flows for rehabilitation and replacement of water infrastructure. Consistent with the District's increased commitment to infrastructure replacement, the figure shows an anticipated increase in funding greater than the rate of inflation.

ARC:SDS:JC

Attachments



## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: March 23, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Sophia D. Skoda, Director of Finance *SDS*

SUBJECT: Responses to Questions Raised at the March 14, 2017 Budget Workshop

This memo provides additional information on several topics requested at the March 14, 2017 Budget Workshop.

1. **Provide information on policy regarding sale of watershed land, Oursan Ridge and Pinole Valley, and potential revenue/expense offset associated with Freeport Regional Water Project.**

### Sale of Watershed Land

For the past several years the District has been evaluating options for future use of its 3,700 acres in the Pinole Valley. The land was originally purchased over 50 years ago with the intent to develop a new terminal drinking water reservoir, but long-range planning indicates that a reservoir in this location is no longer needed. In 2016, the District finalized all permitting for the 430-acre Oursan Ridge Conservation Bank (ORCB) within the Pinole Valley. This bank makes conservation credits available to address off-site mitigation needs of the District or for purchase by non-District project sponsors. Establishment of the ORCB required the recording of a permanent conservation easement on the property in order to protect biological and habitat values in perpetuity. In exchange, the District is permitted to sell conservation credits from ORCB. Credits are directly linked to the permanent conservation easement on the property, which imposes significant restrictions and obligations on land use, including extinguishing all development rights to the property; as such each conservation credit sales transaction is considered "revenue from the sale of watershed lands."

Under District Policy 4.21 Land Sales – Use of Funds (Attachment A), revenue from the sale of watershed lands owned by the District and managed under existing EBMUD watershed master plans "*shall be separately accounted for and used for the sole purpose of acquiring similar watershed lands necessary or desirable for the protection of water quality and biological diversity, or the preservation of open space and recreation values.*" Therefore,

revenue generated from the sale of conservation credits from ORCB is designated for the acquisition of additional watershed lands with value to the District, should they become available on the real estate market.

Under current conservation credit sales trends, the ORCB has the potential to generate \$8 to \$9 million in net revenue. This revenue has been earmarked in part to repay the \$4.5 million plus additional costs expended for the purchase of Carr Ranch and \$1 million to establish the conservation bank and the required long-term land management fund. Remaining revenue is currently planned for use as seed money to expand conservation/mitigation banking in the Pinole Valley and if appropriate to purchase other watershed properties.

#### Freeport Regional Water Project

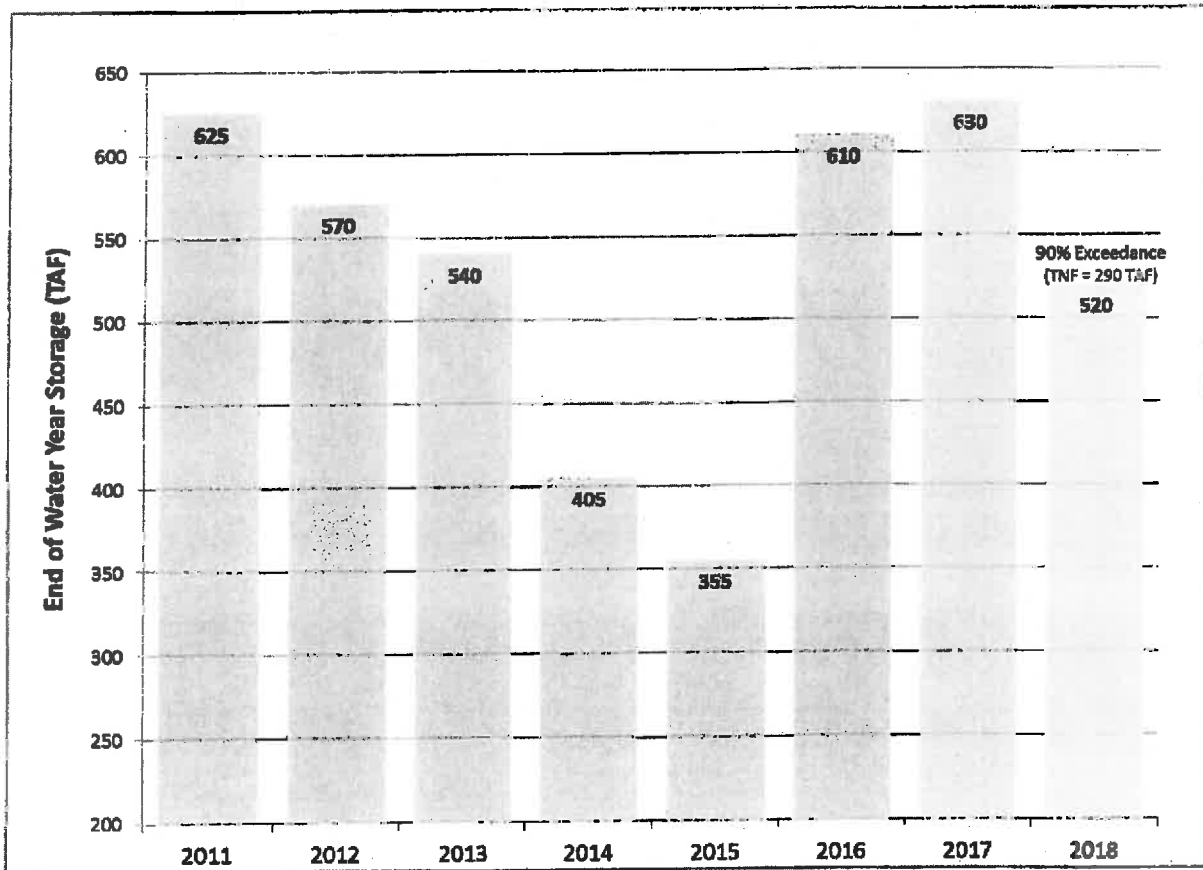
Opportunities for revenue generation at the Freeport Regional Water Project (FRWP) are limited, given use of the facility's available capacity can only occur when the facility is not needed by EBMUD, and when there is also available capacity in EBMUD conveyance facilities (i.e. Mokelumne Aqueducts). The wheeling of water through FRWP would only occur if it did not negatively impact EBMUD customers. Assuming that capacity is available in the FRWP and related facilities, and assuming EBMUD customer demands remain near current levels, in some years it may be feasible to operate FRWP at near full capacity for one to three months and produce net revenues of \$2 million to \$6 million. In addition, the District would receive compensation for conveyance through its distribution system if it is used.

- 2. Provide further information on water supply projections, to better support inclusion of a drought contingency in FY19 budget. Show graphically total system storage under various conditions.**

The current water supply projection for FY18 is that total system storage at the end of September 2017 will be 630 thousand acre feet (TAF), which essentially rules out the possibility that the District would declare a water shortage during FY18. If we were to experience very dry conditions during water year 2018 (90% Exceedance Assumption), the projected total system storage at the end of September 2018 would be 520 TAF. This would not trigger a water shortage at the start of FY19 using the current drought program management guidelines. However, under an extreme dry weather scenario for water year 2018 (driest on record), the projected total system storage at the end of September 2018 would be 360 TAF, which could trigger a Stage 3 severe drought at the start of FY19, July 2018. Given the potential for a water shortage condition in FY19, staff recommended that the Board include the drought contingency budget in the final FY19 budget. However, given the low probability and the Board's desire to avoid confusion given the flood conditions currently being experienced by customers, the drought contingency will be excluded from the

budget. However, staff is still evaluating the legal and rating agency considerations for including a discussion of water shortage emergency rates in the Proposition 218 notice.

2011-2018 End of September Total System Storage (TAF) – 90% Exceedance Assumption for 2018

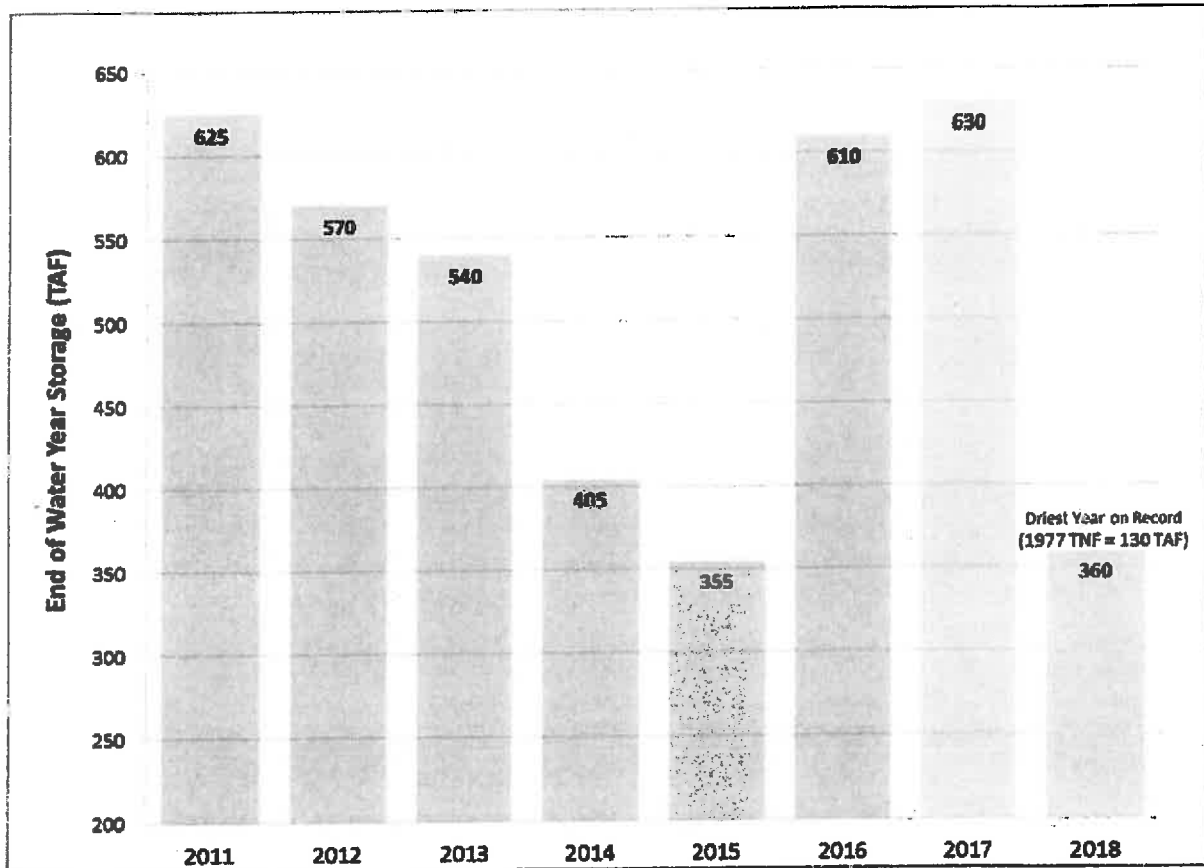


2017 projected to be 630 TAF

2018 projected to be 520 TAF under 90 percent exceedance dry scenario

True Natural Flow (TNF) = 290 TAF

2011-2018 End of September Total System Storage (TAF) – Driest on Record Assumption  
for 2018



2017 projected to be 630 TAF

2018 projected to be 360 TAF if we receive the same TNF as the driest year on record (driest on record is 1977 with 130 TAF)

**3. Provide breakdown of overtime in yards (planned vs. emergency/unplanned). Compare cost of additional staff with overtime savings.**

Distribution Maintenance and Construction (DMC) division had a 16 percent overtime rate for FY16.

For FY18 and FY19, the District plans to add 11 positions (18,300 annual work hours) to the DMC division to reduce overtime hours. Some of these additional positions will reduce the overtime in the DMC division (projections show overtime going from 16% down to 10%) and some will be used to increase preventative maintenance work. The cost of the 11 positions is approximately \$1.4 million per year, which includes direct salaries, vacation pay and benefits (overtime work does not add to the District's benefits costs or vacation pay) and the cost of the overtime in FY16 was about \$1 million. While the cost of the additional positions exceeds the savings in overtime, the current 16 percent overtime rate in the DMC division is unsustainable due to concerns of worker fatigue, and the increased preventative maintenance is a necessary ongoing work load.

Over the last 10 years, the average annual overtime in the DMC division was 46,000 hours, and emergency overtime represents approximately 20,000 of those hours (43%).

**4. Provide further information on District-wide staffing needs to support long-term infrastructure investment and the planned Capital Improvement Program.**

Increasing long-term infrastructure investment and the needed growth of the Capital Improvement Program will require additional staff across the District to support construction and maintenance activities.

In the immediate term, this impact can be seen in the increased pipeline replacement effort. In future fiscal years, additional staff for both direct pipeline labor (pipeline and paving crews) and support labor will be needed. Our current estimate is that in addition to 29 positions in direct pipeline labor, an additional 10 support positions will be needed to increase the pipeline replacement rate by five additional miles per year (up to 20 miles per year).

Direct Pipeline Labor Positions (29)	Support Positions (10)
Two pipeline crews (20)	Construction Maintenance Superintendent (1)
One paving crew (9)	Construction Inspectors (3)
	System Water Quality Inspectors (2)
	Pipeline Designer (1)
	Engineer (1)
	Materials Specialist (1)
	Public Affairs Representative (1)

This is an initial estimate and as we better understand and optimize the work flow, the estimate could change. As the Capital Improvement Program grows, additional staff will likely be needed to address increased design, construction, outreach and operational start-up compliance and testing.

**5. Provide further information on District staff time and effort required to complete recruitments.**

The District follows a rigorous recruiting and hiring process to ensure that the District has a highly qualified, diverse staff. The Human Resources (HR) Department has 13 staff positions for recruiting and hiring and performs over 100 recruitments per year. These recruitments were used to fill over 300 vacancies (including retirements and promotions) over the past year. The approximate hours of staff time, not including clerical support, to complete a recruitment can vary between 30 hours to 70 hours or longer depending on complexity. The approximate hours of staff time needed for onboarding, the process to integrate the new employee into the organization, is approximately 15 hours for HR staff. The hiring department has additional staff time needed to onboard new employees into their specific roles within the District. Attachment B shows a detailed breakdown of the estimated staff time for recruitment, hiring, and onboarding efforts for HR department staff.

**6. Explain what percentage of the capital budget is District labor.**

A large portion of the District's capital program is constructed with District labor. The percentage of the FY18 & FY19 Capital Improvement Program that is attributable to District labor, both direct and supporting labor, is approximately 46 percent for water and 33 percent for wastewater.

**7. Explain how decline in water use has impacted affordability looking at 25 and 50 percentile over time.**

Over the last 10 years, the District has raised rates on average 7.1 percent per year. At the same time, customer water use has dropped dramatically due to two droughts and the economic crisis. Reductions in customer water use have reduced the financial impact of these rate increases on customers.

By looking at the median single-family residential (SFR) water use and the lowest quartile SFR customer water use, we can provide a better picture of how customers are financially impacted by our rate increases over the last 10 years.



	<b>FY07 Monthly Use</b>	<b>FY07 Monthly Bill</b>	<b>FY17 Monthly Use</b>	<b>FY17 Monthly Bill</b>	<b>% Annual Increase over 10 Year Period</b>
50% Median SFR Customers	9 Ccf	\$25.90	6 Ccf	\$39.65	4.4%
Lowest 25% SFR Customers	5 Ccf	\$18.50	4 Ccf	\$33.33	6.1%
<b>Overall Rate Increase</b>	N/A	N/A	N/A	N/A	7.1%

The reduced consumption by SFR customers has partially offset the bill impact of the rate increases over the last 10 years for our median customer. However, as the fixed monthly charge is paid by all customers regardless of the level of consumption, the impact on lower use customers moves closer to the average rate increase over the period. For the median SFR customer, the effective annual increase in their water bill over the last 10 years has been 4.4 percent. For the lowest quartile SFR customer, the effective annual bill increase is slightly higher at 6.1 percent. Both of these effective annual bill increases are less than the actual annual rate increase of 7.1 percent over the last 10 years.

#### **8. Provide more information on additional staffing considerations.**

At the March 14th workshop, staff discussed the option of funding an additional 17.5 full-time equivalents (FTE's) to address capital projects and a variety of operations programs such as preventative maintenance, information systems security, diversity and inclusion outreach, intern programs and water treatment plant distributed control systems support. In response to the Board request for additional information, Attachment C shows explanations of what each position will accomplish and the impacts if these positions are not approved. In light of the need to have a complete proposed FY18 & FY19 budget ready for Board consideration at the April 11th workshop, all additional positions have been included in the proposed budget which will be presented at the next workshop. The hiring of these positions will be dependent upon the water sales during the peak summer months. Therefore, the FY18 budget includes only six months of funding. If water sales fall below this peak period projection, then recruitment for these positions may be delayed. The additional revenue generated by the quarter percent in the FY18 water rate covers the six months of expense.

#### **Attachments**





# Policy 4.21

EFFECTIVE 12 DEC 06

SUPERSEDES 14 NOV 06

## LAND SALES – USE OF FUNDS

### IT IS THE POLICY OF THE EAST BAY MUNICIPAL UTILITY DISTRICT TO:

- Offer the "surplus" real property to other qualified public agencies in accordance with State law.
- In the event no other qualified public agency expresses an interest in the District's "surplus" real property, notify adjacent property owners by certified mail of the District's intent to dispose of its "surplus" real property at least thirty days prior to the marketing of that District-owned "surplus" real property.
- Offer to sell the "surplus" real property to the public by a method that will generate the highest net revenue to the District.
- Allocate any funds realized from the sale of District-owned surplus real property as follows:

#### Watershed Land Sales

Funds received from the sale of any watershed lands included in the 1996 East Bay Watershed Master Plan, adopted by Resolution No. 32979-96, and any Mokelumne Area watershed land categorized by the District's 1970 Land Use Master Plan as "Watershed Management Preserves", "Recreation Management Areas", or "Unclassified" adopted by Resolution No. 25418, shall be separately accounted for and used for the sole purpose of acquiring similar watershed lands necessary or desirable for the protection of water quality and biological diversity, or the preservation of open space and recreational values.

#### Non-Watershed Land Sales

Funds received from the sale of any non-watershed lands, not included in the East Bay Watershed Master Plan or the 1970 Land Use Master Plan shall be separately accounted for and deposited into the District's general fund.

#### Authority

Resolution No. 30773-83, December 13, 1983  
 Amended by Resolution No. 33116-98, August 11, 1998  
 Amended by Resolution No. 33564-06, November 14, 2006  
 Amended by Resolution No. 33571-06, December 12, 2006



## Attachment B

### Recruitment and Classification

In every recruitment the following tasks occur. The time for each task varies depending upon the complexity of the recruitment.

Task	Who	time est.
PE-66 processing	HR Tech	15-30 minutes
Recruitment material assembly	HR Analyst	1 hour
Job analysis/class description review	HR Analyst	1 hour+
Job announcement development	HR Analyst	1-2 hours
Outreach strategy and materials	HR Analyst	3-4 hours+
Supplemental question & criteria development	HR Analyst	4-8 hours+
NEOGOV posting preparation	HR Tech	15 minutes to hours
Written Test Revision	HR Analyst	3-4 hours+
Written Test Development - New	HR Analyst	up to several months
Panel interview question & criteria development	HR Analyst	1-8 hours
Performance Test Revision	HR Analyst	3-4 hours+
Performance Test Development - New	HR Analyst	up to several months
Job announcement finalizing	Admin	1-3 hours +
Supplemental question & criteria finalizing	Admin	1-3 hours +
Written test finalizing	Admin	3 -15 hours +
Panel interview material finalizing	Admin	1-3 hours +
Performance test finalizing	Admin	1-5 hours+
Pass point analysis	Admin	15-20 minutes
List completion	Admin	2-4 hours
Certification	HR Tech	15-30 minutes

These estimates are for base document preparation. Doesn't include other tasks such as duplication, other processing (score entry, prepping and sending notification, schedule set-up, copying, administration, etc.)

### Employee Services

Task	Who	time est.
<i>Onboarding</i>		
Prepare hiring paperwork packets	HR Tech	10 minutes
Coordinate Livescan process	HR Tech	5-10 minutes
Contact new hire regarding what to bring, what to expect, filling out forms in advance, benefits memo, confirmation	HR Tech	20 minutes
Complete Treatment Authorization form which is emailed with information of testing location.	HR Tech	10 minutes

## Attachment B

Includes District DOT forms. Completed forms are passed on to HR Regulatory Coordinator to complete DOT clearance.

Security badge photo and Oath.	HR Tech	1 - 2 hours
Confirm receipt of results, contact US HealthWorks if results not received, and processing hearing memo if applicable. Provide copies to WHS and for scanning	HR Tech	10 minutes
Make copies of completed forms for HRIS to process loading prior to new hire's start date.	HR Tech	10 minutes
ES loads leave plans, retirement, and savings plan. HRIS loads demographics, job data, and salary.	HR Tech	5 minutes
Disburse all other forms to each appropriate department (Payroll, Retirement, HRIS, Employee Relations, Workplace Health & Safety, Security)	HR Tech	15 minutes
Assist new employees with benefits enrollment.	HR Tech	1 hour
Gather required dependent certification, verify eligible dependent, load dependents in PeopleSoft, scan documentation, audit, load, and provide payroll with any adjustment.	HR Tech	½ - 1 day
Audit and load payroll files containing benefit related deductions and earning. Provide Payroll list of adjustments	HR Tech	15-20 minutes
Set up new employee in Retirement System	HR Tech	30 minutes
Set up employee in HRIS	HR Tech	45 minutes
<i>New Hire Orientation</i>		
Presentation regarding benefits and DC/DB retirement plans.	2 HR Techs	1 hour

### **Employee and Organizational Development**

New Hire Orientation is a full day that includes many presenters from the District including the General Manager, Health and Safety, the Union leadership, HR employees, and more. Below is the time the HR staff spends on this process.

## Attachment B

Task	Who	time est.
Send memo to new employees	HR Tech	15 minutes
Enter into TMS	HR Tech	15 minutes
Rescheduling	HR Tech	15 minutes
Information binders	Sr. Admin	5 hours
Set up training room (equipment, coffee, Handouts, contact presenters)	HR Tech	1 hour
Coordination throughout day and Clean-up	HR Tech	3 hours
Welcome, Introductions, Facilitation	EOD Mgr or Analyst	3 hours

### Diversity and Inclusion

The DIO participates in the New Hire Orientation.

Task	Who	time est.
Presentation on Respect in the Workplace	DIO	30 minutes

### Employee Relations

The Employee Relations Division participates in the New Hire Orientation.

Task	Who	time est.
Presentation on Employee Relations	ER Manger or Analyst	30 minutes

The rest of the onboarding responsibilities occur in each individual department, including computer and telephone set up, getting keys, parking, and training set up.





## FY18 & FY19 Budget Additional Staffing Considerations Explanations

### **PREVENTATIVE MAINTENANCE - Utility Laborer (7 FTE: Total \$0.83M/yr)**

1. What will the position accomplish?
  - Support the ongoing maintenance of the water distribution pipelines and appurtenances.
  - Support field work to all for an increase in the maintenance of the water distribution system including leak detection and valve testing.
2. What is the impact if the request is not approved?
  - Reduce preventative maintenance work for the water distribution system.
  - Reduce leak detection and valve testing and ability to meet KPIs.

### **ACCELERATE IT SECURITY - Sr Systems Programmer (2 FTE: Total \$0.43M/yr)**

1. What will the position accomplish?
  - Staffing request in response to a vulnerability assessment for control systems that recommended a strategy for improving security. Positions will implement and operate new, isolated Windows server infrastructure that is necessary to improve security of the District's industrial control systems that are used for water treatment and distribution, security, and building controls.
2. What is the impact if the request is not approved?
  - Staff assigned to business network operations will attempt to incrementally implement as many of the recommended improvements as possible, at a slower pace.

### **GEOSPATIAL - Senior Civil Engineer (1 FTE: Total \$0.25M/yr)**

1. What will the position accomplish?
  - Support the advancement of key geospatial initiatives, such as Radio Frequency Identification (RFID), Geographic Positioning Systems (GPS), and Geographic Information Systems (GIS), which will enhance productivity across the organization. The immediate focus would be on planning and implementation of these initiatives in the FIS and MMIS replacement projects and the Pipeline Rebuild effort.
2. What is the impact if the request is not approved?
  - The pace of adoption of geospatial technologies would be delayed and possibly not incorporated into the initial rollout of the FIS and MMIS systems. Associated workflows would remain manual.

### **DIVERSITY/INCLUSION OUTREACH – Human Resources Analyst I/II (1 FTE: \$0.18M/yr + \$0.05M/yr outside services contract for a total cost of \$0.23M/yr)**

1. What will the position accomplish?
  - Primarily responsible for outreach and workforce development projects, assisting with overflow EEO consultations/investigations as needed.
2. What is the impact if the request is not approved?
  - The AAP workforce development action plans presented to the Board in 2016 (and aligned with the District Strategic Plan) are not being achieved. The workforce development action plans for 2017 and 2018 will not be accomplished. Specifically, an overall outreach event strategy has not been developed, a new classification system/AAP job groups is incomplete, Affinity Group research and guidelines have not been accomplished, and unable to facilitate the hosting of trade internships.

## FY18 & FY19 Budget Additional Staffing Considerations Explanations

### **PERFORM DESIGN WORK – LT Associate Engineer (1 FTE: Total \$0.22M/yr)**

1. What will the position accomplish?
  - Improvements totaling \$3.3M to the *Upcountry wastewater collection and treatment systems* to minimize risk to the environment, health and safety, and regulatory compliance based on the Upcountry Utilities Infrastructure Master Plan, operational experience, and collection system inspections.
  - Improvements totaling \$6.9M to security systems at District facilities to minimize risk to the workplace, District assets, and operations, based on the Security Vulnerability Assessment completed in 2017.
2. What is the impact if the request is not approved?
  - Work will be further delayed.

### **IT INTERN PROGRAM – Info Technology Intern I (2 FTE: Total \$0.21M/yr)**

1. What will the position accomplish?
  - From time to time, the District encounters difficulty recruiting qualified staff to fill vacant IT positions. The intern positions have been used successfully in the past to attract college students before they have accepted jobs in the private sector, improving the District's ability to hire those students into permanent positions upon graduation.
2. What is the impact if the request is not approved?
  - Will continue to encounter difficulty filling IT vacancies.

### **FURTHER DIVERSITY IN ENGINEERING – Engineering Aides (1.5 FTE - Part-time positions: Total \$0.16M/yr)**

1. What will the position accomplish?
  - Hiring Engineering Aides supports the District's outreach activities to attract potential future engineering candidates. Several current engineers from under-represented groups initially worked as Engineering Aides. In their roles as aides, they were able to gain valuable skills, and were extremely competitive for engineering positions after graduation.
  - Funding the positions will support capital projects. Examples include:
    - Supporting new developments by determining available flow and pressure in the water distribution system and reviewing development plans for impacts to the District's distribution system.
    - Supporting the Demand Study by researching historical water usage by demand management regions.
    - Supporting pipeline maintenance by identifying pipelines that are no longer necessary within the distribution system.
    - Supporting pipeline design including pipeline rebuild pilot initiatives and the review and design of pipeline system improvements and relocations.
2. What is the impact if the request is not approved?
  - The recruitment pool diversity for engineering positions will not be as rich as it could be, and the ability to attract and hire some very talented people as engineers would be diminished.

**FY18 & FY19 Budget  
Additional Staffing Considerations Explanations**

**DELIVERY OF CIP PROGRAM - Survey Tech I/II (1 FTE: Total \$0.16M/yr)**

1. What will the position accomplish?
  - Support the Construction Division in providing survey services that support work District-wide including the growing volume of infrastructure renewal work.
2. What is the impact if the request is not approved?
  - Schedules for design of infrastructure renewal and some real estate projects may be affected leading to delays or inefficiency.

**WTP DISTRIBUTED CONTROL SYS & ICS SUPPORT - Associate Electrical Engineer (1 FTE: Total \$0.22M starting in FY19)**

1. What will the position accomplish?
  - Support the water system control systems used to control and monitor the water treatment plants, distribution system, and water supply systems.
  - Support the new control systems at Orinda, Walnut Creek, Sbrante and USL water treatment plants.
  - Support the water system control systems cyber security network.
2. What is the impact if the request is not approved?
  - Unable to adequately maintain the control systems which will affect system integrity, reliability and security.
  - Increase cybersecurity vulnerabilities for the control systems used to operate the water system.



# Proposed Biennial Budget

*Fiscal Years 2018 & 2019*

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## ***District Overview*** ***Water System Budget*** ***Wastewater System Budget***



***East Bay Municipal Utility District***  
***Oakland, California***



# ***Fiscal Years 2018 & 2019***

## **Biennial Budget**

***Volume 1     District Overview  
Water System Budget  
Wastewater System Budget***

***Volume 2     Supplemental Material:  
Capital Project Summaries***

*Presented to the Board of Directors  
April 11, 2017*

***East Bay Municipal Utility District***

**EAST BAY MUNICIPAL UTILITY DISTRICT  
BIENNIAL BUDGET FY18 & FY19  
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**EAST BAY MUNICIPAL UTILITY DISTRICT  
BIENNIAL BUDGET FY18 & FY19  
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**SUPPLEMENTAL VOLUME**

Capital Project Summaries

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April 6, 2017

Honorable Members of the Board of Directors:

I am pleased to present the water and wastewater budgets for Fiscal Years 2018 and 2019. This budget continues our efforts to move forward with key goals of reinvesting in our infrastructure and expanding preventative maintenance. The budget does so while recognizing the need to recover from the financial and operational impacts of the most severe drought the District has experienced followed closely by significant regional storms producing an above average amount of rainfall.

The budget controls spending as we implement long-planned initiatives while considering the impact on our customers. We are grateful for the strong community response to our calls for wise water use which is supported by a rate structure with a large volume-based component which is one of our best conservation tools. However, all water and wastewater utilities, including the District, are essentially fixed-cost enterprises: few of our costs go down when we produce and treat less water. The District is experiencing record low water sales as a result of the long drought, followed by lower outdoor water use due to continued customer conservation and above average precipitation. The District therefore requires increases to our water rates to continue to maintain the high level of service which we are proud to provide.

The FY18 and FY19 water rates and customer bill impacts are higher than those projected two years ago because water sales are significantly below projections. The average user reduced water use in response to the drought and now consumes only 8 CCF per month (about 200 gallons per day) as compared to 10 CCF previously. The reduced consumption of the average user has partially offset the bill impact of recent rate increases. The average 8 CCF user will see an increase of \$4.34 per month in FY18 and an increase of \$4.63 per month in FY19, based on the proposed rate increases of 9.25 percent in FY18 and 9.0 percent in FY19. The budget draws upon Rate Stabilization Funds to lessen the rate impact on our customers as the District recovers from the multi-year drought.

Many customers who live in the western part of our service area also receive a wastewater treatment charge on their EBMUD bill. The wastewater rate increases will be exactly as projected as the Wastewater System is less affected than the Water System by the challenges associated with drought. The average single family residential bill for wastewater treatment based on the average of 6 CCF will increase by \$0.96 per month in FY18 and \$1.06 per month in FY19. This reflects proposed wastewater increases of 5.0 percent in FY18 and 5.0 percent in FY19. Wastewater customers also pay an annual Wet Weather Facilities Charge collected on the property tax bill. Depending on lot size, this charge will increase 5.0 percent in FY18 between \$4.70 to \$16.80 per year, and in FY19 an increase of 5.0 percent between \$4.94 to \$17.64 per year.

A potential challenge on the horizon for the Wastewater System is the need to reduce nutrient discharge (nitrogen and phosphorus) to the San Francisco Bay. The District is still working to understand the cost impacts and this budget includes an appropriation for nutrient management studies. The District will work to meet this evolving challenge as cost effectively as possible while doing our part to protect the environment.

With the proposed rate increases, EBMUD water rates will remain similar to rates for comparable northern California water agencies, in the lower third of agencies we survey. For the Wastewater System, as EBMUD provides only treatment and not collection of wastewater, we will maintain our current position in the top third of surveyed agencies, driven by the rates of the wastewater collection agencies in our service area. As part of our continued efforts towards ensuring greater understanding of District activities and what they cost, the bill impacts for a wide range of use levels and customer classes are presented in this budget book.

## **GENERAL MANAGER'S ADOPTED BUDGET HIGHLIGHTS**

The budget priorities for FY18 and FY19 emerged from a planning process that began with the adoption of the District's latest update of its Strategic Plan on June 14, 2016. The Strategic Plan outlines the goals, strategies, and objectives we will pursue to meet future challenges and fulfill the District's mission. Priorities were developed for the Strategic Plan goals, and are reflected in this budget.

### ***Increase Investments in and Maintenance of Aging Infrastructure***

EBMUD operates and maintains a vast network of pipelines, storage and treatment facilities to deliver water and provide wastewater services to customers. Reaching from the Sierra Nevada foothills to the San Francisco Bay, this network has an estimated replacement cost exceeding \$14.4 billion. Maintaining high-quality service requires ongoing reinvestment in reservoirs, aqueducts, pump stations, distribution pipelines, sewer interceptors, treatment plants, transmission pipelines, service laterals and buildings. Increases in sustained infrastructure funding are necessary to continue providing high quality and reliable service. The budget was developed after analyzing a portfolio of capital investments and determining the highest priority projects based on regulatory compliance, safety, cost-effectiveness and improving service to our customers.

We continue with our long-term goal of increasing investments in infrastructure. Capital investments typically represent about 65 percent of our budget and this budget reflects spending of nearly \$1.5 billion on water infrastructure and \$190 million on wastewater infrastructure. The two-year Capital Improvement Program (CIP) cash flow for both Water and Wastewater totals \$618.5 million, a 15 percent increase over the prior two-year budget.

This budget reflects a significant commitment in capital investments to replace aging infrastructure. In 2018 to 2022, projected Water System capital cash flow spending totals \$1.50 billion, an increase of \$126.0 million or 9 percent from the prior total. The projected Wastewater System capital cash flow spending from FY18-22 totals \$187.7 million, an increase of \$19.2 million or 11 percent from the prior total.

The largest share of projected cash flow spending on the Water System is for replacing deteriorated distribution pipelines, large diameter transmission pipelines and service laterals. These three capital projects account for over 25 percent of the cash flow. The rehabilitation and replacement of water transmission facilities such as water treatment plants, pumping plants, and reservoirs account for almost another 25 percent of the cash flow. Optimizing the performance of various pressure zones to improve water quality is another significant portion of our infrastructure investment.

The largest share, over 40 percent, of projected cash flow spending on the Wastewater System is for rehabilitating and making improvements to the infrastructure at the Main Wastewater Treatment Plant. The rehabilitation of interceptors and pumping plants accounts for over 20 percent of the cash flow. Rehabilitating digesters, controlling plant odors and studying nutrients are also a significant portion of our infrastructure investment.

***Managing the Financial and Operational Impacts of Severely Reduced Consumption***

The FY16 and FY17 budget was developed using prudent assumptions that dramatically reduced billed water consumption to 151 million gallons per day (MGD) for both years, a drop of 25 percent below the peak consumption level of just over 200 MGD in 2007. As ratepayers met and exceeded the call for conservation, the reality outpaced even these conservative assumptions: the District sold just 128 MGD in FY16. This remarkable response from customers led the District to again reset the projected billed water consumption in this budget.

The FY18 and FY19 budget is based on assumptions of 137 MGD for FY18 and a slight increase to 141 MGD for FY19. Despite the fact that the recent drought has ended and water use restrictions have been lifted, the budget assumes that customers will generally maintain their conservation habits.

Low water use affects system operations as well as finances. For example, the increased average age of water in our reservoirs may cause issues including taste and odor, challenging our water quality teams to manage these impacts. The effects of the drought are wide ranging and will continue to be felt for years.

The District does not anticipate any water shortage emergencies in FY18 and FY19 as a result of the very high levels of water currently in storage due to recent storms. Therefore, no drought contingency is included in this budget. If the District experiences a water shortage emergency, staff will develop a budget to bring to the Board for consideration.

In the FY16 and FY17 budget, the Board adopted a staged system of drought rates to recover drought-related costs. The District's 2015 Cost of Service study developed drought surcharges on volume use of up to 8 percent, 20 percent and 25 percent to be levied for drought Stages 2, 3 and 4, respectively. The District's Proposition 218 will continue to notice these surcharges so that they remain available to the Board to implement the next time the District is in a water shortage emergency.

***Negotiating Labor Agreements***

District employees are represented by AFSCME Local 2019, AFSCME Local 444, IFPTE Local 21, and IUOE Local 39. The labor agreements will expire in April 2017. The District is in the process of negotiating wage and benefit agreements with represented employees, and working with management and non-represented employees as well.

**ADOPTED BUDGET OVERVIEW**

The following charts summarize the budget for FY18 and FY19. The District-wide total appropriation is \$2.03 billion for Water System and Wastewater System operations, debt service and capital appropriations.

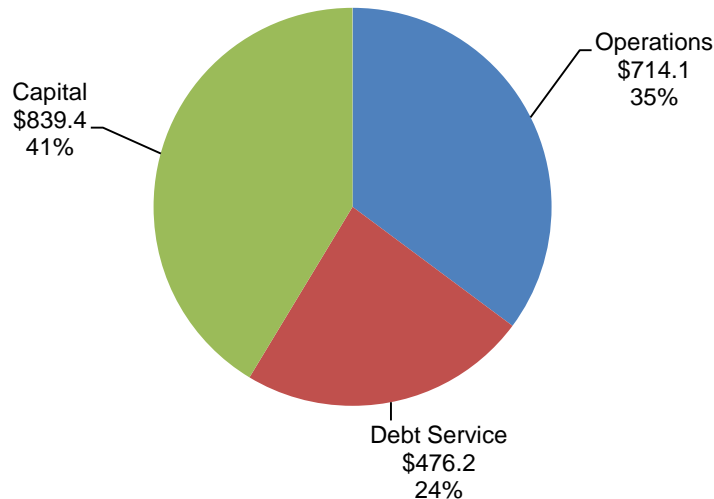
The Water and Wastewater System biennial budget is \$2.03 billion, a 19 percent increase over the previous two-year adopted budget that includes appropriations for operations (35 percent), debt service (24 percent), and the capital budget (41 percent).

<b>COMPARISON OF FY17, FY18, AND FY19 BUDGETS</b>					
(\$ Millions)					
	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 vs FY18</b>
<b>Water System</b>					
Operations	262.4	277.9	5.9%	292.5	5.2%
Debt Service	180.2	199.6	10.7%	210.0	5.3%
Capital Appropriation	<u>290.4</u>	<u>386.5</u>	33.1%	<u>367.5</u>	-4.9%
Total	733.0	863.9	17.9%	869.9	0.7%
<b>Wastewater System</b>					
Operations	70.7	70.6	-0.2%	73.1	3.7%
Debt Service	34.0	34.7	2.1%	31.9	-7.9%
Capital Appropriation	<u>32.6</u>	<u>34.4</u>	5.5%	<u>51.1</u>	48.7%
Total	137.3	139.6	1.7%	156.2	11.9%
<b>District</b>					
Operations	333.1	348.5	4.6%	365.6	4.9%
Debt Service	214.1	234.2	9.4%	242.0	3.3%
Capital Appropriation	<u>323.0</u>	<u>420.8</u>	30.3%	<u>418.6</u>	-0.5%
<b>District-wide Total</b>	<b>870.2</b>	<b>1,003.5</b>	<b>15.3%</b>	<b>1,026.1</b>	<b>2.3%</b>

Numbers in the table may be rounded.

### FY18 & FY19 Water and Wastewater Budgets

(\$ Millions)



Water System The total two-year budget is \$1.7 billion. In FY18, the budget is \$863.9 million, or \$130.9 million (17.9 percent) greater than the FY17 amended budget. In FY19, the total budget is \$869.9 million, or \$6.0 million (0.7 percent) greater than FY18. In both fiscal years combined, more than two-thirds of the budget is related to the Capital Improvement Program. The proposed FY18 and FY19 budget includes the additional staffing considerations of 17.5 full-time equivalents (FTEs) discussed at the March 14, 2017 workshop to address capital projects and a variety of operation programs such as preventative maintenance, information systems security, diversity and inclusion outreach, intern program, and water treatment plant distributed control systems support. Hiring for these positions is contingent upon planned water sales during the peak summer months. If water sales fall below the planned projection, then recruitment for these positions may be delayed.

Of the \$130.9 million increase in FY18, \$15.5 million is due to operations, \$19.4 million to debt service, and \$96.0 million for capital. Of the operations budget total increase, \$11.6 million is attributable to labor costs and \$3.9 million is driven by non-labor. The primary increase in the operations labor budget is to fund additional staff as shown in Chapters 2 and 3, but the cost is partially offset by a decrease in budgeted overtime. The additional staff will address the budget priority of infrastructure maintenance including water operations needs identified during the most recent drought. In Chapter 3, the major drivers for the increase in the operations non-labor budget are discussed. Many costs are rising, but a significant new driver is a requirement for lead sampling in schools and a voluntary customer tap lead sampling program costing \$1.5 million each year of this biennial budget. The rising expenses are partially offset by lower potable water production costs due to reduced water sales, and decreases for other costs such as petroleum and fees. Debt service in FY18 will increase \$19.4 million due to the issuance of new bonds for the Capital Improvement Program. The FY18 capital appropriation increase of approximately \$96.0 million will fund work such as water treatment plant upgrades, pumping plant rehabilitation, and large diameter pipeline replacements.

The FY19 increase of \$6.0 million reflects \$14.5 million for operations, \$10.5 million for debt service, and a decrease in the capital appropriation of \$19.0 million. Of the operations budget increase, \$9.9 million is attributable to labor costs and approximately \$4.6 million is driven by non-labor. As discussed in Chapter 3, the non-labor budget increase is primarily due to a variety of operations costs such as higher potable water production expenses as a result of price increases for chemicals, energy and disposal combined with a slight growth in water sales, fleet vehicle expenses, Board election fees, and other operating costs relative to FY18. Debt service will increase \$10.5 million due to the issuance of new bonds to fund the CIP. The \$19.0 million decrease in capital appropriation is the result of several multi-year projects being fully appropriated in FY18.

Wastewater System The total two-year budget is \$295.8 million. In FY18, the budget is \$139.6 million, or \$2.3 million (1.7 percent) greater than the FY17 amended budget. In FY19, the total budget is \$156.2 million, or \$16.6 million (11.9 percent) greater than FY18.

Of the \$2.3 million increase in FY18, a decrease of approximately \$0.2 million is attributable to operations, offset by an increase of \$0.7 million in debt service and \$1.8 million in the capital appropriation. As detailed in Chapter 2 and 4, additional positions are funded in FY18. Compared to the prior fiscal year, the operations labor budget increase is \$0.3 million and the non-labor budget will decrease \$0.5 million primarily due to favorable chemical pricing combined with operational efficiencies and lower reimbursable costs for services provided by the Water System. Debt service expenses in FY18 will increase \$0.7 million compared to the prior fiscal year. Of the increase to the capital appropriation, \$1.5 million will fund nutrient management studies.

The FY19 increase of \$16.6 million reflects \$2.6 million for operations, a decrease of \$2.7 million for debt service, and an increase of \$16.7 million in the capital appropriation. Of the operations budget total increase, \$1.8 million is attributable to labor costs and \$0.8 million for non-labor. The total operations non-labor budget increases are primarily for plant operating costs such as chemicals, disposal, fleet expenses and Water System reimbursable costs. Debt service will decrease a net of \$2.7 million due to the retirement of the General Obligation bond, but is offset by the issuance of new bonds. The \$16.7 million increase in the capital appropriation will fund work such as the rehabilitation of sections of the 3<sup>rd</sup> Street sewer interceptor, odor control improvements, and improving the infrastructure at the Main Wastewater Treatment Plant.

### **Five-Year Capital Improvement Program Budget**

The FY18-22 combined Water and Wastewater System CIP includes \$1.85 billion of appropriations. Of this total, the Board of Directors approves the first two years or \$839.4 million.

The following discussion focuses on the CIP cash flows as they establish the fiscal years' project spending and are a significant component of the rates. The FY18-22 combined Water and Wastewater System CIP planned cash flow spending will increase by 14 percent over the five year span, from \$309.1 million in FY18 to \$355.4 million in FY22.



Water System Top Programs EBMUD is continuing its focus on investments in infrastructure rehabilitation, repair and replacement. The following table shows the major Water System capital programs and the projected cash flow spending. The largest program spending over the next five years is for Pipelines and Regulators which includes replacing 15 to 20 miles of distribution pipelines per year, and replacing large transmission pipelines. The Pressure Zone Improvements program is the next largest area of spending and includes upgrading or replacing reservoirs, pumping plants and transmission systems throughout the District to optimize storage capacity and improve water quality. The Water Treatment Plant Upgrade program focuses on improvements to the operation, reliability and safety of plants and includes upgrading filter systems, chemical systems, and control systems. The other programs will make improvements to the Mokelumne aqueducts, storage reservoirs and pumping plants, and replace polybutylene and copper service laterals. The Water Recycling program will focus on expanding the San Ramon Valley recycled water project.

<b>Water System Major Capital Programs</b> <b>Five-Year CIP</b> (\$ Millions)	
Programs	FY18-FY22 Cash Flow
Pipelines and Regulators	458
Pressure Zone Improvements	150
Water Treatment Plant Upgrade	139
Raw Water Aqueducts	104
Reservoir Rehabilitation	103
Water Recycling	90
Pumping Plant Rehabilitation	79
Polybutylene Lateral Replacement	74

Wastewater System Top Projects The following table shows the continued focus on making improvements to the Main Wastewater Treatment Plant to maintain our strong record of complying with permit requirements. Work addresses various aspects of the facility including drains, clarifiers, digesters, grit handling and other equipment, concrete structures, and controlling odors. In addition, work on the 3<sup>rd</sup> Street sewer interceptor rehabilitation will continue. A new project is for nutrients management to identify cost-effective solutions as the discharge of nutrients to San Francisco Bay continues to be a key area of concern.

<b>Wastewater System Major Capital Projects</b> <b>Five-Year CIP</b> (\$ Millions)	
Projects	FY18-FY22 Cash Flow
Treatment Plant Infrastructure	44
3 <sup>rd</sup> Street Sewer Interceptor Rehabilitation	32
Odor Control Improvements	23
Digester Upgrades	21
Concrete Rehabilitation	19
Nutrient Management	15
Capital Equipment Replacement	13

## CUSTOMER BILL IMPACTS

As a community, our quality of life depends on reliable, environmentally-sound water and wastewater services. In this message, a summary of bill impacts for the average single family residential user is shown. The attachment provides detailed information for a wide range of use levels.

Customer bill impacts for FY18 and FY19 reflect the revenue requirement necessary to meet the proposed budget needs and low projected water sales. The proposed rates and charges are consistent with the District's 2015 Cost of Service study that allocates costs among customer classes based on usage characteristics. State law requires basing rates and charges on cost of service.

- An average single family residential customer now uses 8 centum cubic feet (CCF) per month or approximately 200 gallons per day (gpd). This customer's monthly water charges would increase \$4.34 in FY18 and an additional \$4.63 in FY19.
- An average single family residential customer discharges 6 CCF per month to the sewer system. This customer's monthly wastewater treatment charges collected on the water bill would increase \$0.96 in FY18 and an additional \$1.06 in FY19.
- An average single family residential customer receiving both EBMUD water and wastewater treatment services would see a combined monthly increase of \$5.30 in FY18 and an additional \$5.69 in FY19.
- The wastewater Wet Weather Facilities Charge, collected on the property tax bill, is based on a customer's lot size. For most single family residential customers the annual wastewater Wet Weather Facilities Charge will increase by \$4.70 in FY18 and an additional \$4.94 in FY19. For single family residential customers with the largest lot size, over 10,000 square feet, the annual increase would be \$16.80 in FY18 and an additional \$17.64 in FY19.

## USING THE BUDGET DOCUMENT

EBMUD's FY18 and FY19 biennial budget document is comprised of two volumes. This volume contains all of the key biennial budget information for both the Water and Wastewater Systems, including a District overview, detailed operating and capital budgets, and five-year financial forecasts. The supplemental volume provides



summaries for all projects in the Capital Improvement Program. Since 1996, the District's budget documents have consistently received the Government Finance Officers Association's coveted Distinguished Budget Presentation Award. In addition, the California Society of Municipal Finance Officers has given awards for the District's biennial budget documents.

## CONCLUSION

The FY18 and FY19 budget continues our commitment to providing high quality, reliable water and wastewater services for our customers. We will closely monitor our costs and continue to look for opportunities to maximize efficiency and productivity. We will also look for ways to restructure the workloads, and leveraging technology as employees retire or leave the District. With the ongoing support of the Board and the staff of the District, I am confident that we will meet our challenges well into the future.

In closing, I want to thank the staff who worked so diligently to develop the budget and in particular to acknowledge their work in preparing the budget document. Their collective efforts have enabled us to develop a budget that serves as an effective policy document, a financial plan, an operations guide, and an information resource that explains to ratepayers the benefits of necessary rate increases.

Respectfully submitted,

ALEXANDER R. COATE  
General Manager

ARC:SDS

Attachment

To enhance transparency, we are providing this attachment to the General Manager's message. The tables contain additional detail on bill impacts of the changes to water and wastewater rates and charges. The tables present FY18 and FY19 water and wastewater charges. To better demonstrate the full impacts of rate changes, they cover a range of customer classes and use levels.

#### Water Charge Bill: Monthly Impacts

The table titled **Single Family Residential Water Charges on Water Bill** addresses a broad cross-section of single family residential users which represent the majority of District accounts. The impact of rate increases is illustrated for users ranging from 4 CCF (25<sup>th</sup> percentile) to 22 CCF (95<sup>th</sup> percentile) per month. The impact is also provided for both the median single family user of 6 CCF and the recent average of 8 CCF. The tables present monthly impacts for ease of use, although residential single family customers receive bills covering two month periods.

**Multi-Family Residential and Non-Residential Water Charges on Water Bill** demonstrates the impact on adopted rate increases for two multi-family residential users: one with 4 units at 25 CCF monthly use, and one with 5+ units at 50 CCF monthly use. Information is also included for sample commercial users at 50 CCF per month and industrial users at 500 CCF per month.

#### Wastewater Treatment Charge Bill: Monthly Impacts and Wastewater Wet Weather Facilities Charge: Annual Impacts

Wastewater customers' charges appear in two separate places, their water bill and their property tax bill. The two tables presented in this section, **Wastewater Charges on Water Bill** and **Wet Weather Facilities Charge on Property Tax Bill**, address each of these bills.

Wastewater charges are based on volume, but are capped at a maximum of 9 CCF per month per single family residential user. The table titled **Wastewater Charges on Water Bill** shows bill impacts for both an average single family residential user discharging 6 CCF per month and a single family residential user discharging at the maximum, capped amount. In addition, impacts are shown for two multi-family residential users: one with 4 units at 25 CCF per month, and one with 5+ units at 50 CCF per month. Information is also included for sample commercial users at 50 CCF per month and industrial users at 500 CCF per month.

The table titled **Wet Weather Facilities Charge on Property Tax Bill** shows updated annual Wet Weather Facilities Charges based on lot size.

## Water Charge Bill: Monthly Impacts

<b>Single Family Residential Water Charges on Water Bill</b>								
	<b>Use (CCF)</b>	<b>FY17 Bill</b>	<b>FY18 Bill</b>	<b>Increase from FY17</b>	<b>Percent Change</b>	<b>FY19 Bill</b>	<b>Increase from FY18</b>	<b>Percent Change</b>
25 <sup>th</sup> Percentile	4	\$33.33	\$36.40	\$3.07	9.2%	\$39.67	\$3.27	9.0%
50 <sup>th</sup> Percentile (median use)	6	\$39.65	\$43.30	\$3.65	9.2%	\$47.19	\$3.89	9.0%
75 <sup>th</sup> Percentile	10	\$55.83	\$60.97	\$5.14	9.2%	\$66.46	\$5.49	9.0%
95 <sup>th</sup> Percentile	22	\$116.31	\$127.03	\$10.72	9.2%	\$138.46	\$11.43	9.0%
Average Single Family Residential Use*	8	\$47.15	\$51.49	\$4.34	9.2%	\$56.12	\$4.63	9.0%

\*8 CCF/month represents recent average single-family residential use. Previous comparisons used 10 CCF/month, which represented historic average single-family residential use prior to recent drought conditions.

<b>Multi-Family Residential and Non-Residential Water Charges on Water Bill</b>									
	<b>Meter (Inches)</b>	<b>Use (CCF)</b>	<b>FY17 Bill</b>	<b>FY18 Bill</b>	<b>Increase from FY17</b>	<b>Percent Change</b>	<b>FY19 Bill</b>	<b>Increase from FY18</b>	<b>Percent Change</b>
Multi-Family Residential 4 units	1	25	\$142.74	\$155.88	\$13.14	9.2%	\$169.95	\$14.07	9.0%
Multi-Family Residential 5+ units	1	50	\$254.24	\$277.63	\$23.39	9.2%	\$302.70	\$25.07	9.0%
Commercial	1	50	\$253.24	\$276.63	\$23.39	9.2%	\$301.70	\$25.07	9.1%
Industrial	2	500	\$2,309.32	\$2,522.58	\$213.26	9.2%	\$2,751.36	\$228.78	9.1%

### Wastewater Treatment Charge Bill: Monthly Impacts

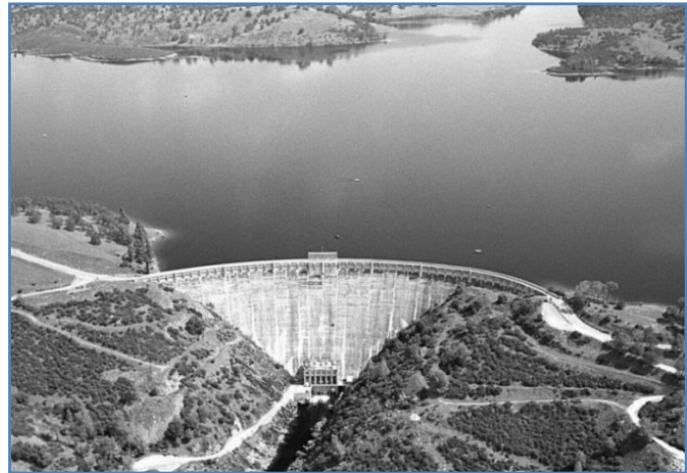
<b>Wastewater Charges on Water Bill</b>									
	<b>Meter (Inches)</b>	<b>Use (CCF)</b>	<b>FY17 Bill</b>	<b>FY18 Bill</b>	<b>Increase from FY17</b>	<b>Percent Change</b>	<b>FY19 Bill</b>	<b>Increase from FY18</b>	<b>Percent Change</b>
Average Single Family Residential	5/8	6	\$19.93	\$20.89	\$0.96	4.8%	\$21.95	\$1.06	5.1%
Single Family Residential	5/8	9	\$23.20	\$24.31	\$1.11	4.8%	\$25.55	\$1.24	5.1%
Multi-Family Residential 4 units	1	25	\$64.16	\$67.21	\$3.05	4.8%	\$70.64	\$3.43	5.1%
Multi-Family Residential 5+ units	1	50	\$130.55	\$136.33	\$5.78	4.4%	\$143.62	\$7.29	5.3%
Commercial	1	50	\$135.03	\$140.81	\$5.78	4.3%	\$148.10	\$7.29	5.2%
Industrial	2	500	\$7,261.03	\$7,621.31	\$360.28	5.0%	\$8,006.60	\$385.29	5.1%

### Wastewater Wet Weather Facilities Charge: Annual Impacts

<b>Wet Weather Facilities Charge on Property Tax Bill</b>							
	<b>FY17 Bill</b>	<b>FY18 Bill</b>	<b>Increase from FY17</b>	<b>Percent Change</b>	<b>FY19 Bill</b>	<b>Increase from FY18</b>	<b>Percent Change</b>
Small Lot 0-5,000 sq. ft.	\$94.10	\$98.80	\$4.70	5.0%	\$103.74	\$4.94	5.0%
Medium Lot 5,001 - 10,000 sq.ft.	\$147.00	\$154.34	\$7.34	5.0%	\$162.06	\$7.72	5.0%
Large Lot >10,000 sq. ft.	\$336.00	\$352.80	\$16.80	5.0%	\$370.44	\$17.64	5.0%

## INTRODUCTION: DISTRICT OVERVIEW

East Bay Municipal Utility District (EBMUD) supplies water and wastewater treatment for East Bay communities located within Alameda and Contra Costa Counties in California. It is a publicly owned utility formed under the Municipal Utility District (MUD) Act passed by the state legislature in 1921. The Act permits the formation of multi-purpose government agencies to provide needed public services on a regional basis.



The mission of the District is:

*“To manage the natural resources with which the District is entrusted; to provide reliable, high quality water and wastewater services at fair and reasonable rates for the people of the East Bay; and to preserve and protect the environment for future generations.”*

In 1923, voters in the eastern San Francisco Bay Area created EBMUD to provide water service. Ninety percent of the water used by EBMUD comes from rain and melted snow within the 627-square mile protected watershed of the Mokelumne River located on the western slope of the Sierra Nevada. Raw or untreated water from Pardee Reservoir is transported more than 90 miles west via three parallel aqueducts to East Bay water treatment plants or terminal reservoirs, and from there to 170 local reservoirs and 4,200 miles of distribution pipeline. To protect EBMUD’s customers from the effects of a severe drought, in 2002 the District created the Freeport Regional Water Project to convey up to 100 million gallons per day of supplemental Sacramento River water. The first water deliveries to the East Bay were in 2014 due to the drought that was being experienced at that time.

In 1944, voters in six of the East Bay cities served by EBMUD elected to form Special District No. 1 to treat wastewater before being released into San Francisco Bay. In 1951, EBMUD began to provide wastewater treatment. Laboratory services operate 365 days a year to constantly monitor water quality for drinking water and wastewater systems.

EBMUD is a California Special District and has a seven-member Board of Directors publically elected from wards within the service area. The Board is committed to governing through an open, public process, guided by the District’s Mission Statement. Policies are then implemented under the direction of the General Manager. The General Manager and General Counsel are appointed by and report directly to the Board. The Senior Management Team is responsible for managing the operations of the District. EBMUD employs over 1,800 people in service to its mission. The Water and Wastewater Systems are legally distinct entities managed by the same Board.

For a complete history of the East Bay Municipal Utility District, please visit the history page at [www.ebmud.com/about-us/who-we-are/mission-and-history/](http://www.ebmud.com/about-us/who-we-are/mission-and-history/).

## COMMUNITY

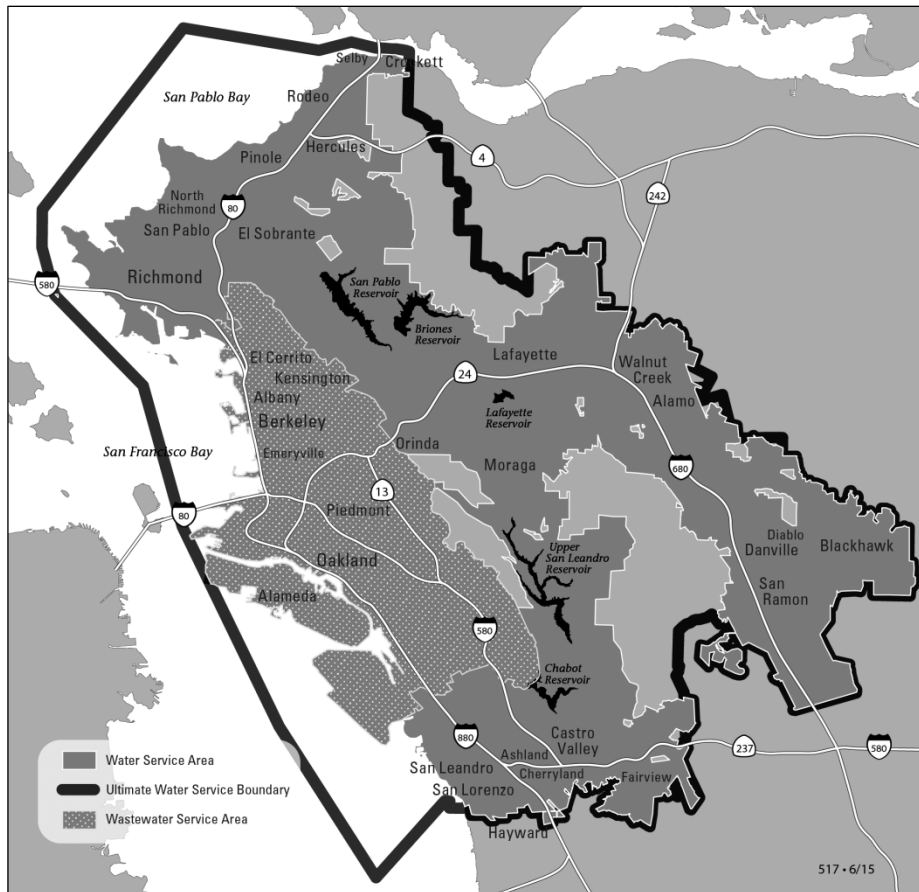
### Service Area Description

Since 1929, when EBMUD first delivered water from the Sierra Mountains to the East Bay, the population served has grown from approximately 0.5 million to 1.4 million. Today the service area includes many of the region's large employers. The District's vitality is inseparable from the \$667 billion Bay Area regional economy which is essential to the economic health of California and the nation. The gross domestic product (GDP) of the Bay Area is one of the highest in the United States. The District's infrastructure is diverse and extensive, with a replacement cost conservatively estimated at more than \$14.4 billion.

The EBMUD water service area includes a large part of urban and suburban development in Alameda and Contra Costa Counties. The service area includes 20 cities and 15 unincorporated communities located on the eastern shore of San Francisco Bay (the "East Bay"). It is a 332-square mile area extending from Crockett in the north to San Lorenzo in the south, and eastward from San Francisco Bay through the Oakland-Berkeley hills to Walnut Creek and south through the San Ramon Valley.

The wastewater service area is an 88-square mile area along the east shore of the bay extending from Richmond in the north to Oakland in the south.

#### EBMUD SERVICE AREA – WATER and WASTEWATER SYSTEMS





## Population

Approximately 1.4 million people are served by the Water System, 685,000 of whom are also served by the Wastewater System. Alameda County is the second fastest growing county in the state. Oakland is the eighth largest city in the state. The following table includes population data for the largest cities in the District's service area.

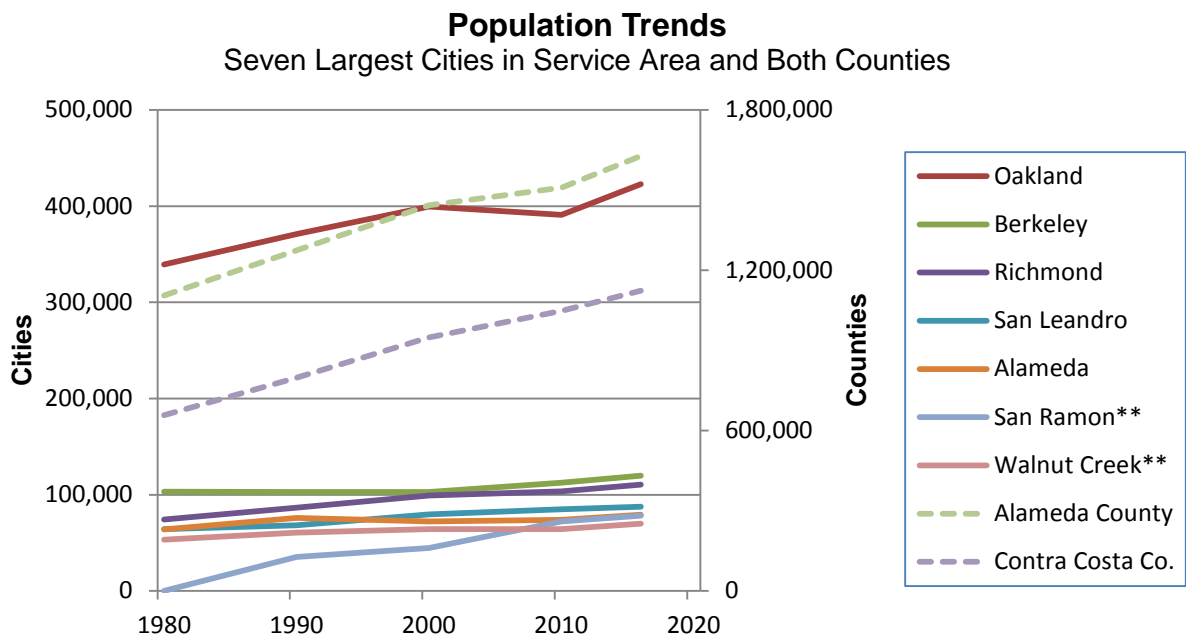
**Population Trends\***  
Seven Largest Cities in Service Area  
Alameda and Contra Costa Counties, and California

City/County	1/1/1980	1/1/1990	1/1/2000	1/1/2010	1/1/2016
Oakland	339,300	371,100	399,500	390,757	422,856
Berkeley	103,300	102,700	102,700	112,621	119,915
Richmond	74,300	86,600	99,200	103,661	110,378
San Leandro	64,200	68,100	79,500	84,977	87,700
Alameda	63,900	75,900	72,300	73,835	79,277
San Ramon**	***	35,300	44,800	72,148	78,363
Walnut Creek**	53,300	60,600	64,300	64,140	70,018
Alameda County	1,105,380	1,274,700	1,443,700	1,509,240	1,627,865
Contra Costa Co.	657,250	797,600	948,800	1,047,948	1,123,429
California	23,669,000	29,558,000	33,872,000	37,223,900	39,255,883

\* California Department of Finance, Demographic Research Unit. Population Estimates for California Cities – Released May 2016.

\*\* EBMUD does not serve all of San Ramon or Walnut Creek, but total population is shown for each.

\*\*\* San Ramon was unincorporated in 1980, data not available.



\*\* Total Population shown even though EBMUD does not serve the entire community.

# WATER AND WASTEWATER SYSTEMS

## Water Supply

This section describes how EBMUD delivers water from the Sierra Nevada foothills to the Bay Area and how the wastewater plant treats municipal wastewater. During its 90 years, the population has grown and the system has expanded to meet increasing needs.

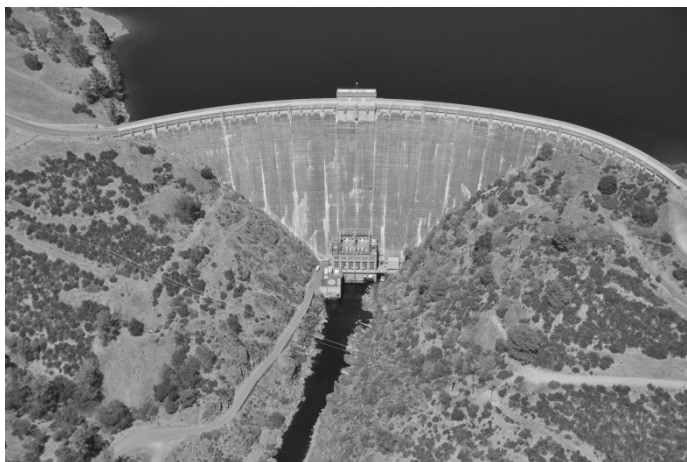
Ensuring a reliable, high quality water supply for today and the future is one of the District's highest priorities. Significant capital investments have been made to ensure a reliable water supply such as securing supplemental water supplies and expanding recycled water supply programs.



One of the most important factors in water quality is the source: the purer the source the better the water. Ninety percent of EBMUD's water comes from the 627-square mile watershed of the Mokelumne River located on the western slope of the Sierra Nevada. This area is mostly national forest, EBMUD-owned lands and other undeveloped lands little affected by human activity. The Mokelumne watershed collects snowmelt which flows into Pardee Reservoir near the town of Valley Springs.

Three large aqueducts carry this water more than 90 miles from Pardee Reservoir to the East Bay and protect it from pesticides, agricultural and urban runoff, municipal sewage and industrial discharges. When water demand is high or during times of operational need, EBMUD also draws water from protected local watersheds.

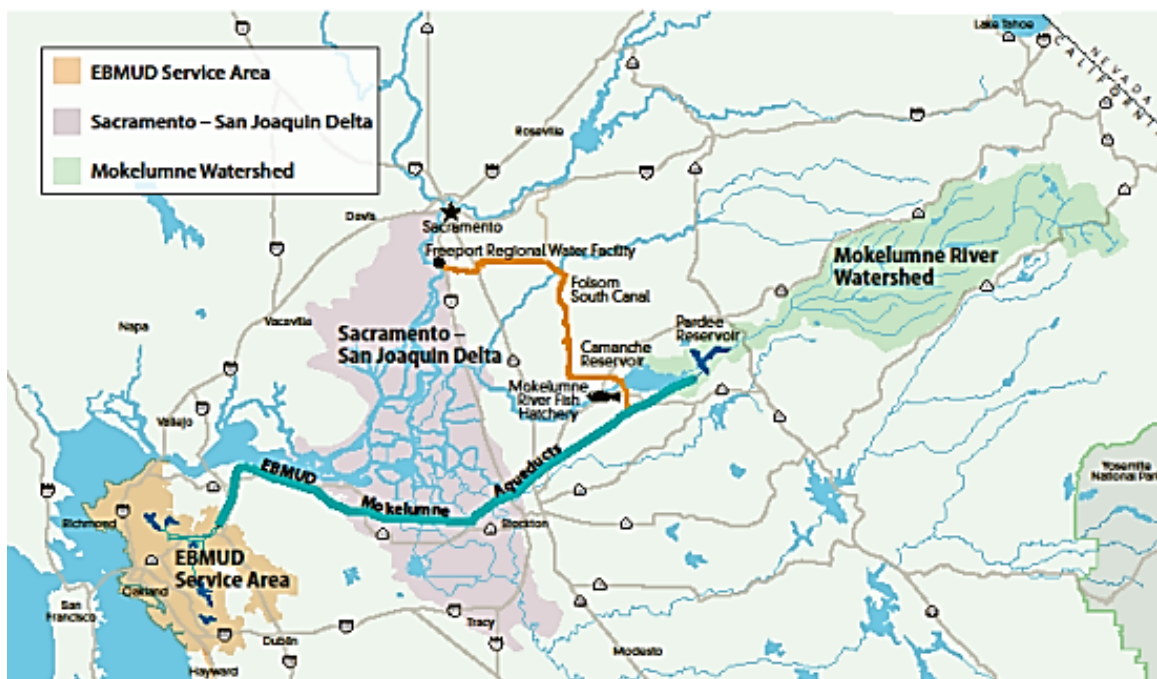
Before water reaches the tap, EBMUD takes many steps to ensure its quality. This includes carefully managing watershed lands and reservoirs; treating the water; maintaining water quality through a complex system of distribution pipes, pumping plants and reservoirs; testing water samples in our lab and in the field; and addressing consumer concerns. These efforts ensure that all customers receive high-quality drinking water that meets or surpasses all state and federal regulatory requirements.





Every five years, EBMUD updates its Urban Water Management Plan to ensure a reliable water supply for the next generation. This includes making the best use of limited supplies through water conservation and recycling and developing long-term projects to augment the water supply.

This map shows how the water travels from the Mokelumne River watershed into Pardee Reservoir, across the Central Valley in EBMUD's Mokelumne Aqueducts, and to the EBMUD Service Area.



The indoor water used by customers is discharged into the sewer system and makes its way to the Wastewater Treatment Plant for treatment, and finally to the San Francisco Bay.

## Wastewater Treatment

EBMUD's wastewater treatment plant provides service for 685,000 people along the eastern shore of the San Francisco Bay, and treats approximately 56 million gallons of municipal wastewater per day. Wastewater is collected from homes and businesses through privately owned sewer laterals that feed into a network of city and other regional sewers. EBMUD's sewer interceptors and pump stations carry the wastewater to its treatment plant located in Oakland.



Stormwater is collected through a separate community-owned system. The plant treats sewage to meet stringent state and federal standards before recycling it or releasing it to the Bay. Prior to its construction, raw sewage was discharged directly into the Bay. As a partner in the stewardship of the Bay, EBMUD works with residents and businesses to help them keep contaminants out of the sewer system.

EBMUD has been recycling and producing renewable energy at its wastewater plant since the mid-1980s. EBMUD's plant transforms sewage and other organic wastes into green energy, nutrient-rich soil conditioner and recycled water. EBMUD produces sufficient renewable energy to meet its onsite power demands. In addition, excess energy is sold to the neighboring Port of Oakland.

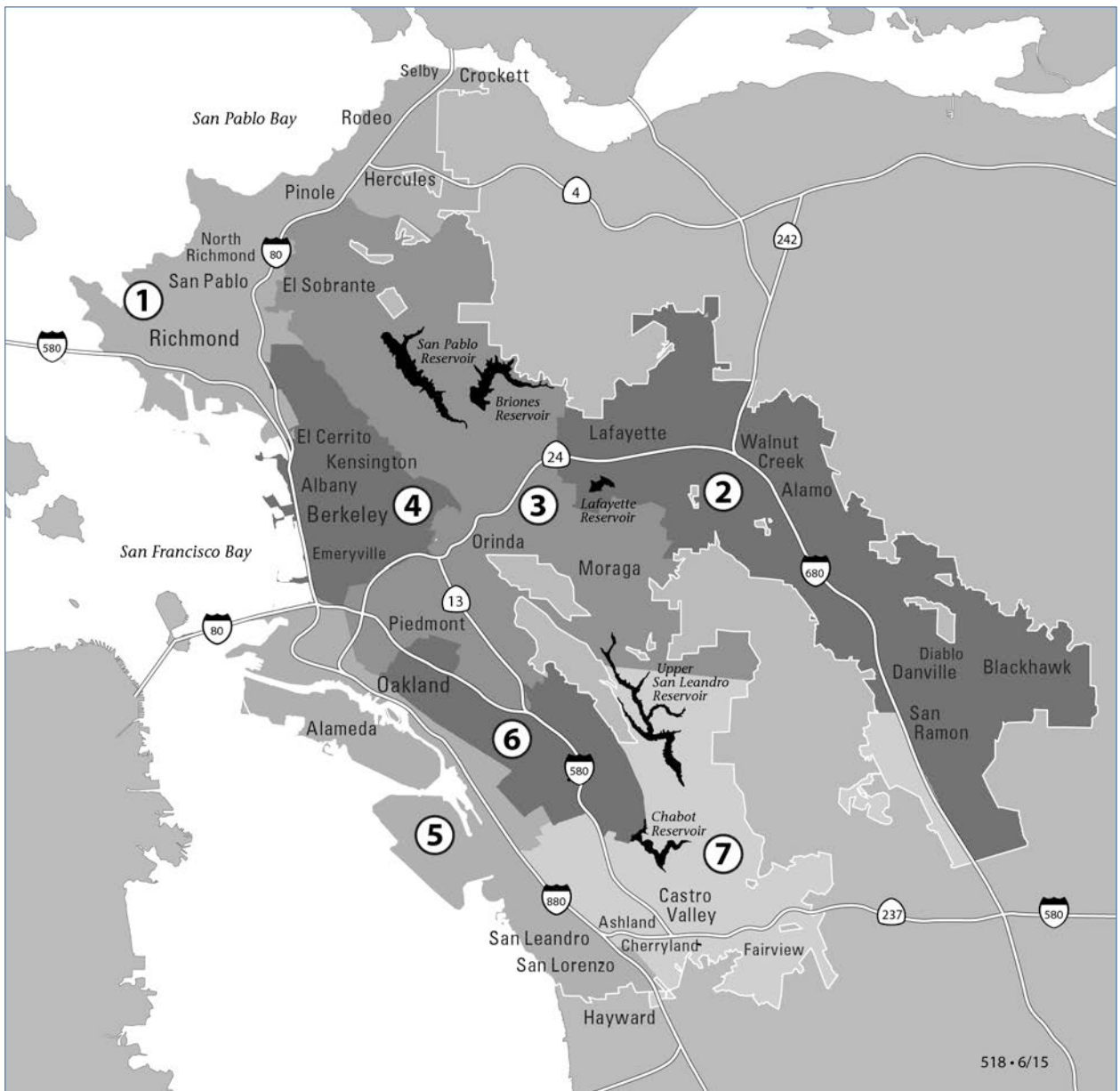


# DISTRICT ORGANIZATION

## BOARD OF DIRECTORS

EBMUD has a seven-member elected Board of Directors who determines overall policies, which are then implemented under the direction of the General Manager. The Board of Directors believes that EBMUD has a public responsibility to preserve the region's resources and set industry standards for water and wastewater utilities.

Directors are publicly elected to four-year terms from seven wards within the service area. The following map shows the areas included in each ward.



The current Board of Directors is shown below. More information on the Board of Directors can be found at: [www.ebmud.com/about-us/board-directors/your-board-members/](http://www.ebmud.com/about-us/board-directors/your-board-members/).

**WARD 1      Lesa R. McIntosh - President      Term expires 12/31/2020**

CONTRA COSTA COUNTY: Cities of Crockett, Hercules, Rodeo, and San Pablo; portions of Richmond and Pinole; and communities of North Richmond and Selby.

**WARD 2      John A. Coleman      Term expires 12/31/2018**

CONTRA COSTA COUNTY: Cities of Alamo, Lafayette, Walnut Creek, Town of Danville; portions of San Ramon and Pleasant Hill and communities of Blackhawk and Diablo.

**WARD 3      Marguerite Young      Term expires 12/31/2018**

ALAMEDA COUNTY: City of Piedmont, and a substantial portion of Oakland.  
CONTRA COSTA COUNTY: Cities of Orinda and El Sobrante; Town of Moraga, and portions of Pinole and Richmond.

**WARD 4      Andy Katz      Term expires 12/31/2018**

ALAMEDA COUNTY: Cities of Albany, Berkeley, and Emeryville; and a portion of Oakland.  
CONTRA COSTA COUNTY: Cities of El Cerrito and Kensington.

**WARD 5      Doug Linney      Term expires 12/31/2020**

ALAMEDA COUNTY: Cities of Alameda and San Lorenzo; West Oakland and Oakland Airport Area, and a portion of San Leandro.

**WARD 6      William B. Patterson - Vice-President      Term expires 12/31/2020**

ALAMEDA COUNTY: Portions of Oakland (East Oakland and south of Park Boulevard/5<sup>th</sup> Avenue) to the San Leandro City boundary.

**WARD 7      Frank Mellon      Term expires 12/31/2018**

ALAMEDA COUNTY: Castro Valley; portions of San Leandro and Hayward; communities of Cherryland and Fairview.  
CONTRA COSTA COUNTY: Portion of San Ramon.

Board meetings are open to the public and are held twice monthly on the second and fourth Tuesday of each month. The Board may also meet at other times as needed. The Board is committed to governing through an open, public process, guided by the EBMUD Mission Statement.

## SENIOR MANAGEMENT

The General Manager and General Counsel are appointed by and report directly to the Board of Directors.

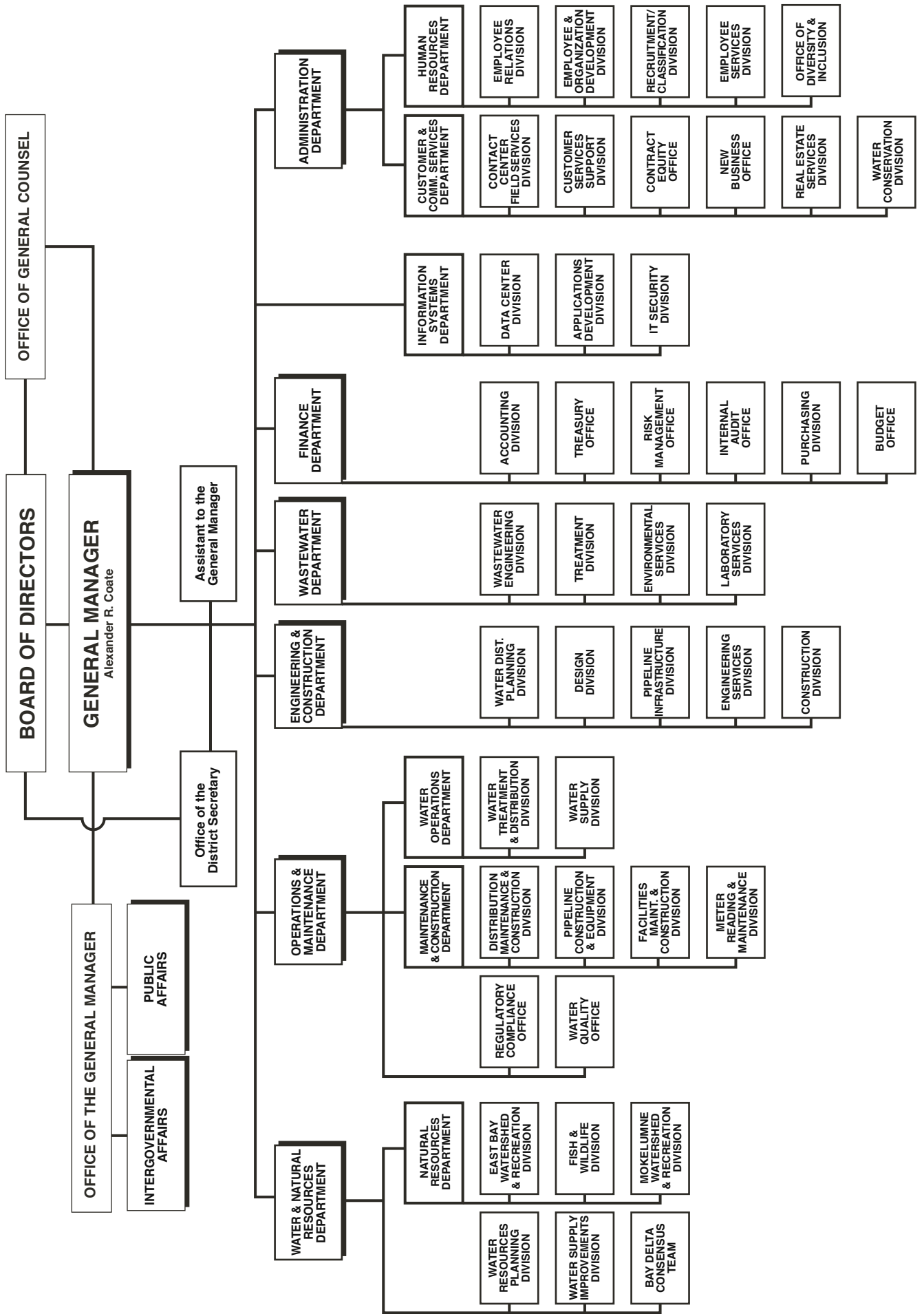
Alexander R. Coate	General Manager
Craig S. Spencer	General Counsel

The Senior Management Team listed below is responsible for managing the operations of the District.

Laura A. Brunson	Manager of Human Resources
Clifford C. Chan	Operations and Maintenance Department Manager
Rischa S. Cole	Secretary of the District
Vincent P. De Lange	Director of Wastewater (Acting)
Marlaigne K. Dumaine	Special Assistant to the General Manager – Governmental Affairs
Sherri A. Hong	Manager of Customer and Community Services
Nicholas J. Irias	Manager of Information Systems
Xavier J. Irias	Director of Engineering and Construction
Alison A. Kastama	Special Assistant to the General Manager – Communications
Sophia D. Skoda	Director of Finance
Richard G. Sykes	Director of Water and Natural Resources
Michael J. Wallis	Director of Operations and Maintenance
Eileen M. White	Operations and Maintenance Department Manager
Vacant	Director of Administration
Vacant	Manager of Natural Resources

The chart on the following page provides an overview of the organization and shows the relationships between different departments and divisions within the District. It can also be found at [www.ebmud.com/about-us/board-directors/management/](http://www.ebmud.com/about-us/board-directors/management/).







## WORKFORCE

EBMUD has over 1,800 employees. Most are represented by the American Federation of State, County and Municipal Employees, Locals 444 and 2019; the International Federation of Professional and Technical Engineers, Local 21; and the International Union of Operating Engineers, Local 39. The majority of employees work in the East Bay, but employees also work in the Central Valley and Mokelumne watershed area.

EBMUD is an equal employment opportunity (EEO) employer, and a proud leader in taking legal, proactive steps that support a diverse, inclusive workforce. From Board policies that ensure equal employment opportunities for all persons based on job-related merit, the District uses inclusive and creative recruitment, professional development and placement methods to enhance the District's efforts to achieve a workforce reflective of the labor market in the communities we serve.

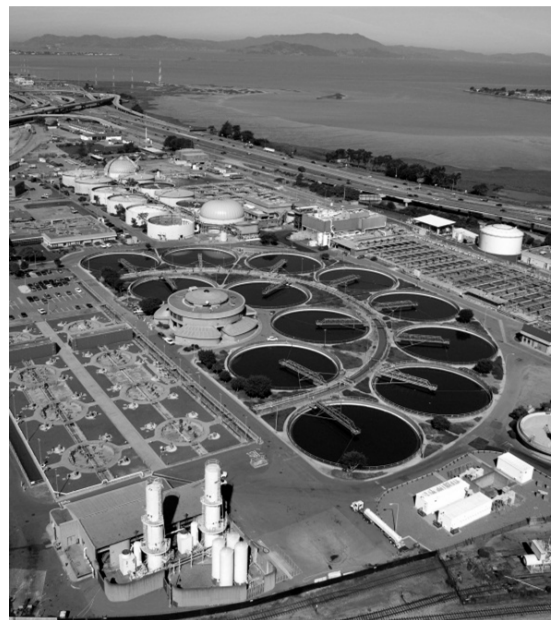


## EBMUD OFFICES



**Administration Building**  
375 Eleventh Street, Oakland, 94607

**Wastewater Treatment Plant**  
2020 Wake Ave, Oakland, 94607



## STRATEGIC PLAN SUMMARY

The District's Strategic Plan incorporates its mission and principles, and identifies its goals, strategies, objectives, and key performance indicators. The plan guides staff in the management and allocation of resources and assets. The Strategic Plan precedes and guides the development of the biennial budget and the five-year capital improvement program to ensure that necessary resources are provided to implement the strategies and objectives.

The District's current Strategic Plan was adopted by the Board of Directors in July 2016. It is a blueprint for how EBMUD will respond to and prioritize challenges and evolving priorities. The plan incorporates the principles of fiscal responsibility, sustainability and effective use of resources that minimize the District's environmental footprint.

The Strategic Plan includes the following elements:

- **Goals** that define what the District wants to achieve;
- **Strategies** that define which actions to take to reach each goal;
- **Objectives** that reflect what needs to be accomplished in the near term; and
- **Key Performance Indicators (KPIs)** that measure how well the District is doing in achieving its goals.

### Strategic Plan Goals

The District has established the following comprehensive set of goals integrating sustainability principles:

- **Long-Term Water Supply**  
Ensure a reliable high-quality water supply for the future.
- **Water Quality and Environmental Protection**  
Meet or surpass environmental and public health standards and protect public trust values.
- **Long-Term Infrastructure Investment**  
Maintain and improve the District's infrastructure in a cost-effective manner to ensure sustainable delivery of reliable, high quality service now and in the future, addressing economic, environmental, and social concerns.
- **Long-Term Financial Stability**  
Manage the District's finances to meet funding needs and maintain fair and reasonable water and wastewater rates.
- **Customer and Community Services**  
Maintain and enhance service excellence through continuous improvement.
- **Workforce Planning and Development**  
Create an environment that attracts, retains, and engages a high performing diverse workforce in support of the District's mission and core values.

## Implementing the Plan

The fundamental purpose of the strategic planning process is to define the actions in the next two to five years which are necessary to meet the District's mission now and well into the future. The General Manager and the Senior Management Team lead the implementation of the Strategic Plan, with input from various sources such as master plans and long-range plans, new initiatives, and employee and customer feedback.

The Strategic Plan is adopted by the Board of Directors. Upon adoption, development of actions to implement the Strategic Plan can begin. The Strategic Plan provides an overall high-level direction to prioritize resources to achieve future success, but it does not describe all of the specific actions. By developing actions that are linked to the Strategic Plan, the District can ensure that it focuses its resources on the District's highest priorities.

### Strategic Plan Process



Annual individual employee performance plans are prepared to establish and communicate responsibilities, accountabilities, and performance expectations for priorities contained in the Strategic Plan.

The plan includes a series of KPIs that are measurable, comprehensive, and reflect the various strategies contained within the six Strategic Plan goals. KPIs are measured against targets annually to enable the District to evaluate its progress. The latest KPI report was presented to the Finance Committee in September 2016.

Strategic Plan 2016 goals, strategies, objectives, and KPIs are contained in the Appendix to this volume.

For a complete copy of the 2016 Strategic Plan, go to [www.ebmud.com/about-us/who-we-are/](http://www.ebmud.com/about-us/who-we-are/).

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# CHAPTER 1: FINANCIAL ORGANIZATION & BUDGET PROCESS

The Introduction discussed the District's Strategic Plan which guides the development of the biennial budget and the five-year capital improvement program. This chapter describes the District's financial structure and organization, and budget development process. It provides the parameters under which the budget is created and a comprehensive financial overview.

## FINANCIAL ORGANIZATION

### Fund Structure and Descriptions

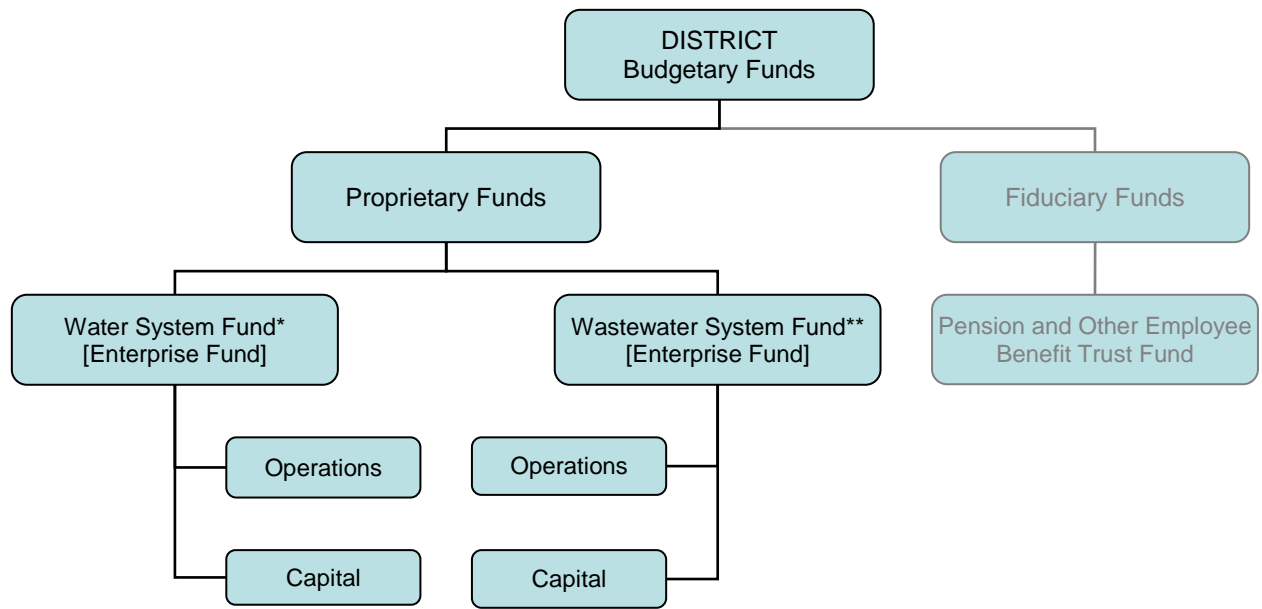
As illustrated in the graphic on the following page, the District's financial structure is composed of proprietary and fiduciary funds (see glossary for definitions of terms). The proprietary funds include two legally distinct and financially independent enterprise funds: the Water System and the Wastewater System. The two separate funds preserve the unique expenditure and revenue distinction between the two entities. When services are provided by one system for the benefit of the other, the appropriate fund is billed and cash transfers are made to the other.

- The Water System is engaged in the collection, transmission, and distribution of water to communities within Alameda and Contra Costa Counties of California. In addition, the Water System provides administrative, financial, and other support services to the Wastewater System. These costs are charged to the Wastewater System. The Water System consists of fourteen staffed departments.
- The Wastewater System is engaged in the interception and treatment of wastewater from residences and industries in the California communities of Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District. The Wastewater System consists of one staffed department.

Both systems are proprietary, enterprise funds. Enterprise funds are used to account for operations that are financed and operated in a manner similar to private business enterprises where the intent of the governing body is that the expense of providing goods or services to the general public on a continuing basis be financed or recovered primarily through user charges.

The Water System performs many support functions for the Wastewater System. These functions include but are not limited to financial services such as accounting, human resources services such as recruitment, information technology, customer services, legal services, and general oversight and governance. The Wastewater System reimburses the Water System directly for these services through a joint administrative and general annual expense.

Both systems are governed by the same elected Board of Directors, and share policies and procedures. Throughout this book, the 'District' refers to the East Bay Municipal Utility District and is understood to encompass both the Water and Wastewater Funds.



**\*Departments**

Operations and Maintenance Support  
 Maintenance & Construction  
 Water Operations  
 Water Resources  
 Natural Resources  
 Engineering & Construction  
 Office of the General Manager  
 Finance  
 Information Systems  
 Customer & Community Services  
 Human Resources  
 Office of the General Counsel  
 Water Recycling Program  
 Administration

**\*\*Department**

Wastewater

These funds are organized according to the Uniform System of Accounts for Water Utilities, as established by the California Public Utilities Commission, and adhere to the Government Finance Officers Association (GFOA) requirements for enterprise funds.

In addition to the District's proprietary funds, the District maintains a fiduciary fund used to account for resources held for the benefit of parties outside the government. The District's fiduciary fund consists of the Pension and Other Employee Benefit Trust fund, which is maintained to account for assets held by the Employees' Retirement System in a trustee capacity for vested and retired employees. This book does not address the District's fiduciary funds.

## Financial Reporting

The District prepares its financial reports in conformity with generally accepted accounting principles used in the United States of America. At the conclusion of each fiscal year, the Finance Department prepares the Comprehensive Annual Financial Report (CAFR) in compliance with principles and standards for financial reporting set forth by the Governmental Accounting Standards Board (GASB), and the guidelines recommended by the Government Finance Officers Association (GFOA) of the United States and Canada. An application has been submitted to GFOA for the Certificate of Achievement for Excellence in Financial Reporting for the Comprehensive Annual Financial Report for the fiscal year ending June 30, 2016. The Certificate of Achievement is a prestigious national award recognizing conformance with the highest standards for preparation of a state and local government financial report. To be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized CAFR that satisfies both generally accepted accounting principles and applicable legal requirements. This would be the twelfth consecutive year that EBMUD has received this award.

## Budgetary and Accounting Basis

The basis of budgeting and accounting refers to the method of recognition of revenue and expenses in financial and budgetary reporting.

EBMUD's budgets are prepared on a modified cash flow basis which projects the District's cash inflows and outflows over the course of a fiscal year (July 1 through June 30) excluding physical and intangible assets such as depreciation. Revenues are recognized as they are received and accounted for while obligations for expenditures are recognized when a commitment is made through an encumbered purchase order or actual expense.

EBMUD's accounts and transactions are tracked on an accrual basis, which is the basis of accounting under generally accepted accounting principles. Under this method, all assets and liabilities associated with operations are included on the balance sheet; and revenues are recorded when earned and expenses are recorded at the time commitments are incurred.

Depreciation and amortization are handled differently in budgetary reporting and in financial reporting. In budgetary reporting, depreciation and amortization are excluded, and the repayment of the principal on debt as expense is included. In financial reporting, depreciation and amortization are included, and the repayment of the principal on debt as expense is excluded.

This table illustrates the differences between the budget and accounting basis described above.

	<b>BUDGETARY Modified Cash Flow Basis</b>	<b>ACCOUNTING Accrual Basis</b>
<b>Revenue</b>	Recognized when received and accounted for	Recorded when earned
<b>Obligations</b>	Recognized when a commitment is made through encumbrance or expense	Recorded at the time commitments are incurred
<b>Depreciation and amortization</b>	Excluded	Included
<b>Repayment of principal on debt</b>	Included	Excluded

## Financial Planning

The District prepares a biennial strategic plan and annual financial forecasts that provide the basis for developing the budget. Long-term financial stability is a goal in the District's Strategic Plan, which includes managing the District's finances to support its needs and maintain reasonable water and wastewater rates.

Revenue requirements over a five-year planning horizon are evaluated to determine the level of rate adjustments required for the upcoming budget years. To the extent possible, increases in water and wastewater rates are adjusted to avoid large fluctuations.

## Financial Policies

The District establishes policies and resolutions to comply with the stipulations set forth in the MUD Act. The majority of District policies are reviewed biennially; some policies, such as the Investment Policy shown below, are reviewed annually. The adoption date changes only if revisions are made to the policy. The policies described below set forth key objectives for long-range financial planning and control.

The following policies are included in the Appendices as a reference:

Policy 4.02	Cash Reserves and Debt Management	Adopted October 2016
Policy 4.04	Financial Planning and Budgetary Control	Adopted April 2009
Policy 4.07	Investment Policy	Adopted April 2016
Policy 4.13	Establishing Water and Wastewater Rates	Adopted April 2016

**Policy 4.02: Cash Reserves and Debt Management:** identifies specific financial metric targets.

The District strives to maintain operating reserves at a level sufficient to meet working capital and unanticipated needs, specifically:

- Maintaining Working Capital Reserve of at least 3.0 times monthly net operating and maintenance expenses.
- Maintaining Self-Insured Liability Program Reserve based on the Actuarial Self-Insured Retention (SIR) funding recommendation.
- Maintaining Workers' Compensation Program Reserve based on the Actuarial SIR funding recommendation.
- Maintaining Rate Stabilization Reserve:
  - For Water System – a minimum of 20 percent of projected annual water volume revenues.
  - For Wastewater System – a minimum of 5 percent of operating and maintenance expenses.

The District strives to maintain a reasonably conservative ratio between current funding sources and debt financing:

- Maintaining an annual revenue bond debt service coverage ratio of at least 1.6 times.
- Limiting debt-funded capital to no more than 65 percent of the total capital program over each five-year planning period.
- Limiting commercial paper/variable rate debt to 25 percent of outstanding long-term debt.



**Policy 4.04: Financial Planning and Budgetary Control:** provides for the efficient use of District resources through financial planning and cost control; keeps total annual expenditures to the level of total annual revenue; provides periodic status reports on revenues, expenditures, and investments; and establishes the authority of the General Manager to transfer up to 5 percent of each fiscal years' budget between the capital and operating budgets within each System's funds, provided that the total budget for each System fund remains unchanged.

**Policy 4.07: Investment Policy:** guides the investment of District funds. The policy ensures that all investments are compliant with State law, and prioritizes the protection of the investments (safety), the availability of funds when needed (liquidity), earnings on the investment portfolio (yield), and reduces risk by investing in a variety of instruments (diversity). Among the key guidelines included in the policy are the types and characteristics of permitted investments, parameters for investment decisions, reporting requirements, and internal controls.

**Policy 4.13: Establishing Water and Wastewater Rates:** sets forth the rate methodology, rate design, and rate distribution that provide adequate revenues while keeping rates affordable, encouraging conservation and efficient use of water, and reflecting the cost of providing service to customers. Rates should provide sufficient revenue to support a safe, reliable, and sufficient water supply and wastewater treatment services to its customers over the long term.

## **BUDGET PROCESS**

During the budget process, the District makes decisions on the efficient use of its resources using the Strategic Plan for guidance. A financial plan and biennial budget are established for the Water and the Wastewater Systems that includes the operations and capital programs and sets levels of related operations, capital and debt service expenditures that may be made.

The budget reflects the costs necessary to provide customers with safe, reliable water and wastewater service over the long term while keeping rates fair and reasonable. The budget is also used to develop rates and charges that provide adequate revenues to meet the District's needs, and encourages the efficient use of water.

Decisions on allocating resources and addressing budget needs do not end when the Board adopts the budget. Throughout the year, departments are responsible for implementing the budget and monitoring budget performance, responding to unforeseen or emergency circumstances, and participating in long-range financial planning.

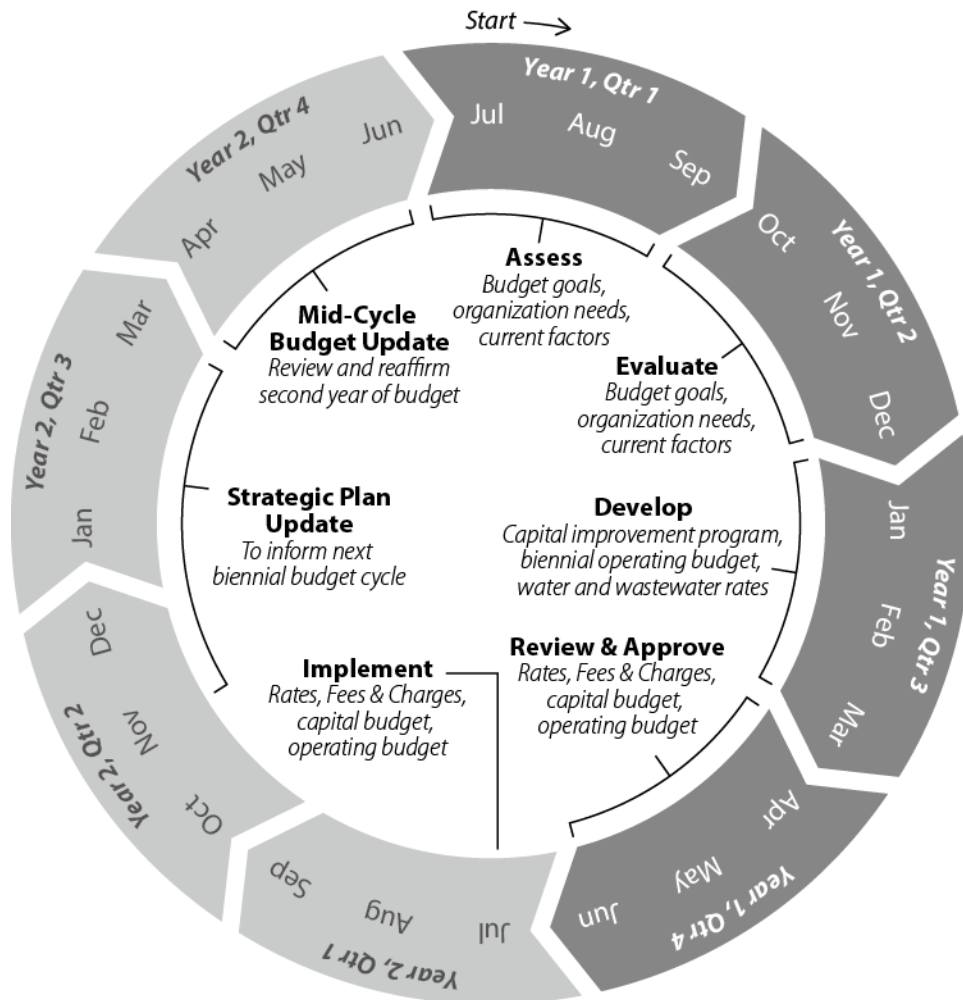
The District received the GFOA's Distinguished Budget Presentation Award for its FY16 and FY17 biennial budget document dated June 9, 2015. This is the fourteenth consecutive budget document for which the District has received the GFOA award. For the third time, the California Society of Municipal Finance Officers (CSMFO) has presented the Excellence in Budgeting Award to the District. To qualify for these awards, the budget document had to meet stringent guidelines and criteria.

### **Balanced Budget**

The District budget is balanced when operating revenues are equal to or greater than operating expenditures including debt service, and ending fund balances meet minimum policy levels. The District establishes its budget on the principle of overall revenue neutrality, as outlined in the American Water Works Association (AWWA) Principles of Water Rates, Fees and Charges recommendations for government-owned utilities. The District's rates and charges are set to ensure that revenues are sufficient to recover the total cash needs in a given fiscal year.

## Budget Development Calendar

The District has a biennial budget process which is represented in the graphic below and described more fully in the following text.



### Assess:

**Budget goals, organization needs, and current factors**

July  
August  
September

Strategic Plan adopted.  
Budget guidelines and assumptions prepared.  
Capital budget development starts.

### Evaluate:

**Budget goals, organization needs, and current factors**

October  
November  
December

Operating budget development starts.  
Review of capital budget requests begins.  
Review of operating budget requests begins.

**Develop:                      Biennial operating budget, capital improvement program, water and wastewater rates**

January / February    Operating budget and capital improvement program recommendations are developed by Senior Management with input from the Board of Directors.

Water and Wastewater rates to fund budget needs are proposed.

March                      Documents prepared to present proposed budget and rates to the Board and the public.  
The General Manager presents the proposed operating and capital budgets, and proposed rates, fees and charges to the Board at budget workshops.

**Review & Approve:      Rates, fees & charges, capital budget, operating budget**

April                      Another budget workshop occurs if needed to address any direction given by the Board at previous budget workshops.  
California Proposition 218 notices are distributed to property owners.

May                        The General Manager's recommendations on the proposed rates, charges, and fees are filed with the Board of Directors.

June                        Public hearing on rates is held.  
Board adopts operating and capital budgets; rates, fees and charges schedules; and positions authorization.

**Implement:                Adopted rates, fees & charges, capital and operating budgets**

July                        Adopted rates and budget implementation begins.

Adopted Budget, and rates and charges schedules, published.

**Strategic Plan Update**

The Strategic Plan is updated every other year. This plan provides the District with overall direction for the next two to five years, sets priorities, and guides the development of the operating and capital budgets with those priorities.

**Mid-Cycle Budget Update**

The Board of Directors approves the budget covering a two-year period. The Board reviews and reaffirms the second year of the two-year budget prior to the start of a new fiscal year in July. A Mid-Cycle Budget Update workshop given to the Board of Directors provides a budget status and any projected changes to revenues, expenditures and staffing.

**Annual and Semi-Annual Budget Performance Reports**

At the mid-point and conclusion of each fiscal year, the Board of Directors is provided with a comparative analysis of expenditures to budget.

## **Budget Responsibilities**

Budget decisions are made through a process that involves the Board of Directors, District staff and the public. The responsibilities for financial management planning and budget control are as follows:

### **Departmental Responsibilities**

- Prepare capital improvement program and biennial budget requests.
- Monitor financial performance and take prompt corrective action, as needed.
- Monitor key performance indicators and take corrective action, as appropriate.
- Inform the General Manager when unforeseen circumstances indicate that budget amounts may be exceeded or that expected revenues may be less than planned.

### **Finance Department Responsibilities**

#### Treasury Operations

- Monitor District's liquidity and ensure funds are available as needed, invest funds in accordance with Board policy, wire funds to pay approved demands, and take other actions associated with the prudent management of the District's financial resources.
- Provide for the issuance of debt to fund the capital improvement program.
- Prepare financial projections, schedules of rates and charges, tax rate proposals and other financial materials.

#### Accounting

- Produce monthly and annual expenditure and revenue reports.
- Prepare and present information on financial trends to facilitate evaluation of the District's financial position and identify conditions requiring management attention.
- Prepare periodic reports on the status of expenditures, revenues, investments and actions taken to ensure the financial stability of the District.

#### Budget Office

- Support the development of the Strategic Plan.
- Project short-range and long-range financial needs, and recommend methods for meeting those needs.
- Prepare the District's biennial operations and capital improvement program budgets.
- Prepare budget performance reports on a monthly, quarterly, semi-annual and annual basis.
- Prepare the mid-cycle budget update.
- Develop procedures and controls to monitor and ensure compliance with the budget.
- Assist departments throughout the year with their budgets and financial issues.

## **General Manager's Responsibilities**

- Review and present to the Board of Directors long range plans, budgets and revisions, schedules of rates and charges, payments of financial demands and other financial transactions, as necessary.
- Authorize budget transfers up to 5 percent of the fiscal years' budget between the operations and capital budgets in each of the Water and Wastewater System's budgets, provided that the total budget for each of the two systems remains unchanged.
- Authorize the allocation of budgeted funds from contingency.
- Implement emergency financial procedures within approved limits, when necessary.

## **Budgetary Controls**

Automated District-wide budgetary controls track spending to the amounts set in the budget. Budgetary controls function differently for operations and capital budget expenditures.

For the operations budget, each department is controlled within each expenditure category: personnel costs, contract services, and operations and maintenance. Departments are not allowed to exceed their authorized operations budget for each fiscal year.

For the capital budget, each capital project is controlled based on its appropriation. A project may not exceed its total appropriation. Unlike the operations budget, which expires on June 30 of each fiscal year, capital appropriations are multi-year and will last the life of the project.

## **Budget Adjustments**

Adjustments to the operations budget are reallocations of funds between organizational units, categories, and/or line items, which allow departments to have financial flexibility within established budgetary controls. Budget adjustments to the capital budget are reallocations of funds within or between projects. Approval from the affected department(s) and the Budget Office is required for all budget adjustments.

General Manager approval is required for the reallocation of funds from contingency, and the reallocation of funds between the operations and capital budgets in both the Water and Wastewater Systems. Approval from the Board of Directors is required for increases to the total adopted budget of the Water or Wastewater System.

## **Capital Improvement Program Preparation**

The Capital Improvement Program (CIP) budget communicates the capital priorities of the District for the next five years to enable the District to identify and prioritize its infrastructure needs and plan for infrastructure investments.

The CIP consists of three primary levels:

The highest level of the CIP is a strategy, which groups several programs representing key capital objectives as identified in the EBMUD's Strategic Plan. The nine Water System and three Wastewater System strategies are summarized in the Capital Expenditures sections of the Water System and Wastewater System chapters.

The second level in the CIP is a program, which represents a group of related projects combined to facilitate planning and decision-making. A discussion of the significant programs included in the CIP can be found in the CIP program highlights sections of the Water System and Wastewater System chapters.

The third level in the CIP is a project, which is a discrete set of capital improvement tasks, coordinated by a project manager. Appropriation requests and projected spending (cash flow) are authorized at the project level. A discussion of each project included in the CIP can be found in the supplemental volume of the budget document.

## **CIP Budget Preparation**

The CIP is prepared as part of the District's biennial budget process. The responsibilities for preparing and managing the CIP are shared among District staff as follows:

### **Project Management**

Project managers work together to meet the requirements of the biennial CIP budget process and to implement a specific program or project. During the budget process, the project managers update project appropriations and cash flows, and modify project descriptions and justifications to identify recent and anticipated major accomplishments. Managers also work together to identify the most effective ways to schedule, staff, and coordinate projects.

The steps used to budget for the CIP are:

- Propose and justify new capital projects needed to carry out the goals of the District;
- Identify how resources will be allocated to accomplish the work;
- Identify the required appropriation and estimated cash flow for each project; and
- Include direct costs (without overhead), contingency and an inflation factor in the recommended appropriations and cash flows for projects.

## **Capital Steering Committee (CSC)**

The CSC consists of Department Directors and Managers responsible for the overall management of the CIP during the budget preparation process.

Responsibilities include:

- Serve as an advisory group to the General Manager and the Budget Office;
- Review projects for opportunities to combine programs and projects, streamline costs, and determine the necessity for proposed new projects;
- Confirm the adequacy of District resources to complete proposed projects;
- Scrutinize proposed project cash flow amounts;
- Establish priorities and finalize the list of individual projects to be presented to the General Manager and Board of Directors based on available resources and project justification;
- Review the status of the CIP regularly;
- Work with project management staff to resolve administrative issues; and
- Authorize necessary changes to project scope, schedule and budget that are within staff's administrative authority.

## **Budget Office**

The office is responsible for the overall management of the budget process which includes:

- Manage the CIP budget preparation and planning process;
- Provide staff support to the CSC;
- Ensure that the decisions of the CSC and General Manager are reflected in the budget;
- Determine types and levels of funding necessary for the CIP;
- Report to the General Manager and CSC the status of capital project appropriations and cash flow spending; and
- Report CSC recommendations regarding adjustments to the CIP that require either General Manager or Board approval.



## CHAPTER 2: DISTRICT BUDGET SUMMARY

The District budget summary provides an overview of the District-wide biennial budget. Subsequent chapters describe the budgets for each of the two distinct funds: Water and Wastewater. This chapter includes the appropriations, a summary of operational priorities, and discussions of the following topics:

- Operations
- Debt service
- Capital expenditures
- Staffing
- Labor and benefits
- Sources of funds
- Fund summaries

### BUDGET APPROPRIATIONS

The FY18 and FY19 District-wide total appropriation is \$2.03 billion for water system and wastewater system operations, debt service, and capital appropriations.

The FY18 budget of \$1.00 billion is comprised of \$348.5 million or 35 percent for operations expense, \$234.2 million or 23 percent for debt service and \$420.8 million or 42 percent for capital appropriation. The FY19 budget of \$1.03 billion is comprised of \$365.6 million or approximately 35 percent for operations expense, \$242.0 million or 24 percent for debt service and \$418.6 million or 41 percent for capital appropriation.

The following table shows the major components and the total appropriation proposed to the Board of Directors for this biennial budget.

<b>FY18 &amp; FY19 APPROPRIATIONS</b>							
(\$ Millions)							
	<b>FY18</b>			<b>FY19</b>			<b>FY18 &amp; FY19</b>
	Water	Wastewater	Total	Water	Wastewater	Total	<b>Grand Total</b>
Operations	277.9	70.6	348.5	292.5	73.1	365.6	<b>714.1</b>
Debt Service	199.6	34.7	234.2	210.0	31.9	242.0	<b>476.2</b>
Capital Appropriation	<u>386.5</u>	<u>34.4</u>	<u>420.8</u>	<u>367.5</u>	<u>51.1</u>	<u>418.6</u>	<b><u>839.4</u></b>
<b>Total</b>	<b>863.9</b>	<b>139.6</b>	<b>1,003.5</b>	<b>869.9</b>	<b>156.2</b>	<b>1,026.1</b>	<b>2,029.7</b>

Numbers in the table may be rounded.

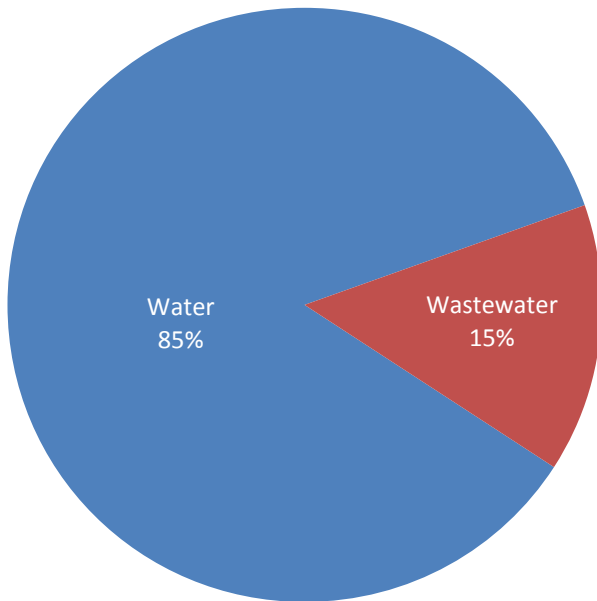
## USE OF FUNDS

The District's use of funds are divided into three major components in both the Water System and Wastewater System:

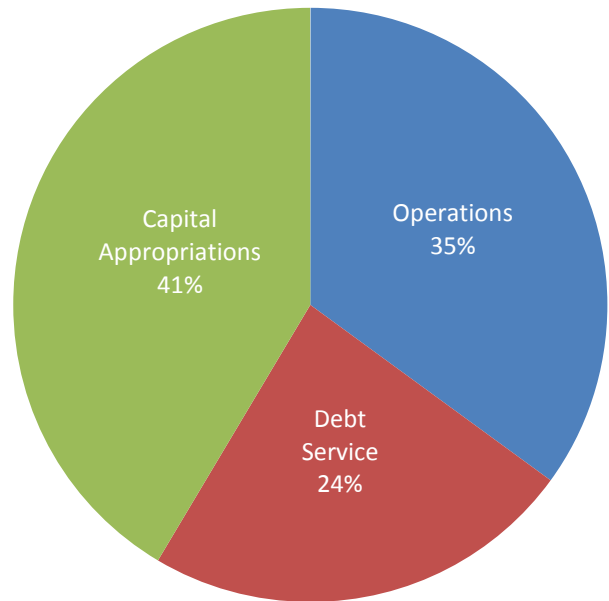
- Operations and maintenance of the District, including the annual cost of providing all water and wastewater services, labor and benefits;
- Debt Service on previously issued bonds to pay for the investments in infrastructure in the capital improvement program; and
- Capital Appropriation, which is for long-term projects to upgrade aging infrastructure, prepare for earthquakes, protect natural resources, ensure a future water supply, and, like operating expenses, includes equipment and salaries.

The following charts characterize the combined FY18 and FY19 budget in two aspects. First, the chart on the left compares the size of the Water System budget to the Wastewater System budget. The second chart depicts the three separate components of the budget (i.e., operations, debt service and capital appropriation). Financing, or debt service, is only incurred to support the capital program. The total capital and debt service appropriation when combined represent 65 percent of the budget dedicated to capital investment activities.

**Budget by Enterprise**



**Budget by Component**



## BUDGET ALLOCATED BY SERVICES PROVIDED

The following table provides a summary of the FY18 and FY19 appropriations grouped by services provided by the District. In addition to providing water and wastewater services, significant funds are used for making capital improvements and repaying bonds used to fund previous capital work. As shown, almost two-thirds of the total budget is spent on capital infrastructure investment, and almost one fourth will be spent on water and wastewater service.

Amounts shown below will not necessarily match the amounts shown in the department budget sections later in this volume.

FY18 & FY19 BUDGETS BY SERVICES PROVIDED (\$ Millions)		
SERVICES	FY18	FY19
<b>Capital Improvement Program</b> Long-term projects to upgrade aging infrastructure, protect natural resources, provide high quality water and wastewater services. Projects typically result in the construction of new facilities, or the rehabilitation or upgrade of existing facilities.	420.8	418.6
<b>Debt Service</b> Repayment of bonds that have been sold to pay for long-term investments in infrastructure.	234.2	242.0
<b>Water Service</b> Storage, treatment and delivery of high-quality water to 1.4 million customers; day-to-day maintenance of water supply and distribution systems; planning and engineering for future water supply; recycled water; and meter reading.	171.9	181.0
<b>Wastewater Service</b> Operation and engineering at wastewater treatment plant, laboratory and wet weather facilities that serve more than 685,000 customers; educational outreach to residences, businesses and communities for industrial discharge, source control, and sewer programs.	70.6	73.1
<b>Support Services</b> Human resources, finance, information technology and other internal support services.	68.6	72.6
<b>Customer Service</b> Water conservation programs, public information, school outreach, billing services, call center and additional services to customers.	21.2	22.1
<b>Natural Resource Management and Protection</b> Environmentally sound management of nearly 56,000 acres of watershed lands, operation of public recreation facilities and fisheries programs.	16.3	16.8
<b>TOTAL BUDGET</b>	<b>1,003.5</b>	<b>1,026.1</b>

Numbers in the table may be rounded.

## OPERATIONS

As shown in the FY18 & FY19 Appropriations table at the beginning of this chapter, the budget is categorized into three components: Operations, Debt Service and Capital Appropriations. This section will address the operations budget component which is 35 percent of the total District-wide budget.

The operations portion of each fund (i.e., Water or Wastewater) budget is categorized into various departments. The majority of these departments are referred to as *staffed departments* indicating employees are assigned to work in these areas. The staffed departments' budgets fund the day-to-day operations of the District and include funding for labor, benefits, outside contract services and other non-labor expenses such as electricity, chemicals, fuel, computer hardware, self-insured liability claims, workers compensation claims, etc. A detailed description of each staffed department is included in the corresponding Water and Wastewater System chapter of this document.

A small number of departments do not have personnel assigned to them. These departments are referred to as *non-staffed departments*. The impact on the budget by each of these departments varies:

**Contingency** - Funds budgeted each fiscal year to primarily cover projected labor-related expenses such as the employee cost of living adjustment which is based upon each year's February Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) in the San Francisco-Oakland-San Jose area. The index is published in March of each year. The contingency budget also includes funding for unanticipated needs which may arise before the next budget cycle.

**Intradistrict** - Certain internal service accounts are included in balance sheets to assure that internal expenses are not counted twice within the operations budget. Examples of these accounts include warehouse stores loading overhead and fleet vehicle expenses.

**Administration of Capital** - The administration of capital represents those costs that are not directly attributable to specific capital projects but are more generalized indirect support of the Capital Improvement Program (CIP). The administration of capital in the operations budget will decrease operating expenses by a like amount and reallocate the costs to the capital budget.

While contingency adds costs to the staffed departments, intradistrict and administration of capital subtracts costs at the Water System and Wastewater System Fund level as shown in the following table.

## FY18 & FY19 Budget

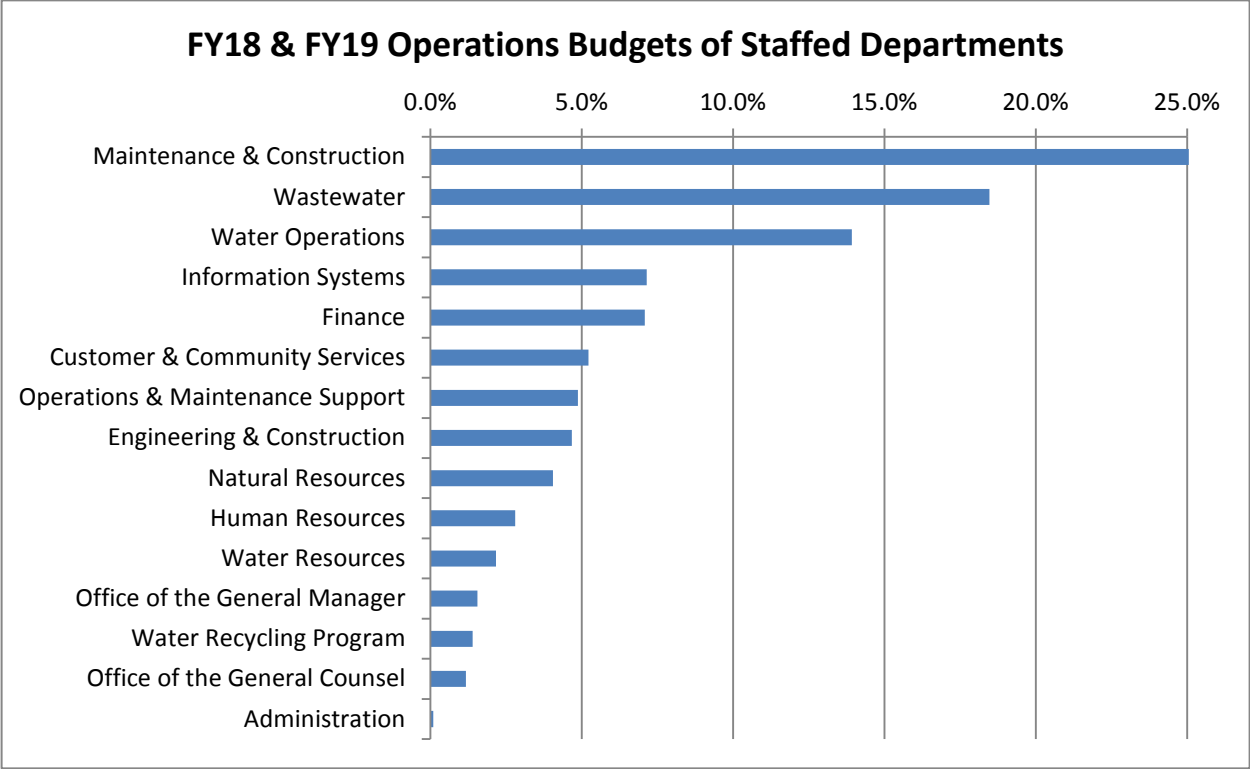
The table below illustrates each staffed and non-staffed department's portion of District-wide operations of \$348.5 million in FY18 and \$365.6 million in FY19, ordered by size within each system (Water and Wastewater). For the Water System, operations will be \$277.9 million in FY18 and \$292.5 million in FY19. For the Wastewater System, operations will be \$70.6 million in FY18 and \$73.1 million in FY19. The totals can be compared to the operations appropriation at the start of this chapter.

<b>FY18 &amp; FY19 DEPARTMENT OPERATIONS</b>		
(\$ Thousands)		
<b>WATER SYSTEM</b>	<b>FY18</b>	<b>FY19</b>
Maintenance & Construction	99,161.8	101,632.4
Water Operations	53,576.1	55,346.6
Information Systems	27,837.1	28,955.4
Finance	27,339.2	28,094.6
Customer & Community Services	20,194.1	20,634.1
Operations & Maintenance Support	18,842.7	19,479.6
Engineering & Construction	18,269.2	18,661.6
Natural Resources	15,690.3	15,997.0
Human Resources	11,067.6	11,213.0
Water Resources	8,486.9	8,471.3
Office of the General Manager	5,881.8	6,317.8
Water Recycling Program	5,418.6	5,509.9
Office of the General Counsel	4,576.2	4,592.4
Administration	376.2	376.9
<b>Subtotal Water Staffed Departments</b>	<b>316,717.6</b>	<b>325,282.5</b>
Contingency	12,905.7	18,871.5
Intradistrict	(11,700.0)	(11,700.0)
Administration of Capital	(40,000.0)	(40,000.0)
<b>Total Water Operations</b>	<b>277,923.4</b>	<b>292,454.0</b>
<b>WASTEWATER SYSTEM</b>		
Wastewater	71,479.8	72,981.5
<b>Subtotal Wastewater Staffed Departments</b>	<b>71,479.8</b>	<b>72,981.5</b>
Contingency	2,078.0	3,156.0
Administration of Capital	(3,000.0)	(3,000.0)
<b>Total Wastewater Operations</b>	<b>70,557.8</b>	<b>73,137.4</b>
<b>DISTRICT</b>		
<b>Total District Operations</b>	<b>348,481.2</b>	<b>365,591.4</b>

Numbers in the table may be rounded.

**Staffed Departments**

The chart below shows the share of the total operations budget of each staffed department. Maintenance and Construction is the largest staffed department and is responsible for services such as water distribution pipelines including installation of new services, repairing leaks, replacing meters, fleet operations and maintaining the water treatment infrastructure and other facilities located throughout the District. A detailed description of each department’s services is shown in the Water and Wastewater System chapters. The full cost of labor, including capital labor, is discussed in those chapters.



## **DEBT SERVICE**

As shown in the FY18 & FY19 Appropriations table at the beginning of this chapter, the budget is categorized into three components: Operations, Debt Service and Capital Appropriations. This section will address the debt service component which is 24 percent of the total District-wide budget.

Capital expenditures can either be funded through debt financing (bonds and loans), or on a “pay-as-you-go” basis, or in some cases, by reimbursements. Debt financing is generally more suited to large capital projects with long useful lives. If the capital expenditure is significant, debt financing may be a better option since large capital expenditures can be difficult to accommodate on a “pay-as-you-go” basis without spiking rates. Debt financing also creates a measure of intergenerational equity in that future ratepayers will participate in the financing of the capital projects over their useful life. The “pay-as-you-go” option is also referred to as revenue funded capital. It is a source of funding the District utilizes to reduce its reliance on debt, and is funded from current year revenues.

The District’s policy is that over any five-year planning period no more than 65 percent of the Capital Improvement Program (CIP) will be funded from debt. The prior biennial budget as well as this budget supports additional “pay-as-you-go” funding to reduce the debt-financed portion of the CIP. Although debt service payments are considered to be part of the operations budget, debt proceeds are used to finance capital investment activities.

### **FY18 & FY19 Debt Service**

Debt service will be \$199.6 million in FY18 and \$210.0 million in FY19 for the Water System, and \$34.7 million in FY18 and \$31.9 million in FY19 for the Wastewater System. Total outstanding debt on the Water System is projected to be \$2.59 billion as of June 30, 2017. Total outstanding debt on the Wastewater System is projected to be \$397.2 million as of June 30, 2017.

The Water System budget assumes issuance of \$179.5 million in new revenue bonds in FY18, and \$151.6 million in FY19. The Wastewater System budget assumes issuance of approximately \$20.5 million of new revenue bonds in FY18 and \$14.0 million in FY19.

## **CAPITAL EXPENDITURES**

As shown in the FY18 & FY19 Appropriations table at the beginning of this chapter, the budget is categorized into three components: Operations, Debt Service and Capital Appropriations. This section addresses the capital appropriations component which is 41 percent of the total District-wide budget and funds the District's Capital Improvement Program (CIP). The CIP is a set of projects approved by the Board of Directors that define the capital priorities of the District for the next five years.

### **Appropriations**

Appropriations are the amounts approved by the Board to be spent on capital projects. The Board adopts the appropriations for the first two years of the five-year CIP. The remaining years are for planning purposes only and are subject to revision. Appropriations may be expended over multiple years, and any unspent appropriations automatically carry forward to the next fiscal year. Appropriations vary from year-to-year depending upon the funding needs for the projected work.

Administration of capital is included in the capital appropriation, and consists of costs incurred by administrative support functions that are not directly charged to individual capital projects, such as work performed in support departments including Finance, Human Resources, and Information Systems. These costs support the CIP as a whole, and are deducted from the operating budget and included in the CIP budget.

### **FY18 – FY22 Capital Appropriation**

The FY18 capital appropriation, including administration of capital, is \$386.5 million for the Water System and \$34.4 million for the Wastewater System, for an approximate total of \$420.8 million. In FY19, the capital appropriation is \$367.5 million for the Water System and \$51.1 million for the Wastewater System, for a total of \$418.6 million. As in previous years, this CIP balances the need to continue to replace and rehabilitate system infrastructure to meet the needs of our customers at reasonable costs. Key programs and projects are discussed in Chapters 3 and 4 for the Water System and Wastewater System, respectively. In addition, a full description of each project can be found in the supplemental volume to this budget document.

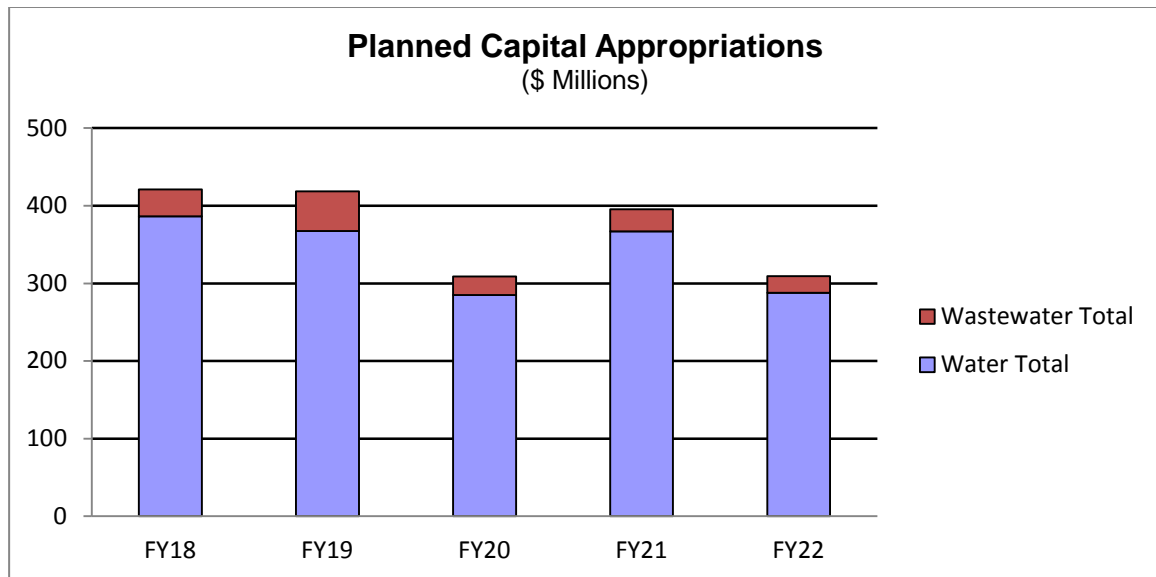
The following table presents the planned appropriations for the five-year CIP by fund, plus the administration of capital. The total planned FY18-22 capital appropriation is \$1.85 billion, which includes \$1.69 billion for the Water System and \$159.2 million for the Wastewater System.



<b>Capital Improvement Program</b> <b>Planned Appropriations within Fund</b> (\$ Millions)						
	FY18	FY19	FY20	FY21	FY22	Total
Water	346.5	327.5	243.8	324.7	244.2	1,486.6
Administration of Capital	<u>40.0</u>	<u>40.0</u>	<u>41.2</u>	<u>42.4</u>	<u>43.7</u>	<u>207.3</u>
<b>Water Total</b>	<b>386.5</b>	<b>367.5</b>	<b>285.0</b>	<b>367.1</b>	<b>287.9</b>	<b>1,693.9</b>
Wastewater	31.4	48.1	20.9	25.1	18.1	143.6
Administration of Capital	<u>3.0</u>	<u>3.0</u>	<u>3.1</u>	<u>3.2</u>	<u>3.3</u>	<u>15.6</u>
<b>Wastewater Total</b>	<b>34.4</b>	<b>51.1</b>	<b>24.0</b>	<b>28.3</b>	<b>21.4</b>	<b>159.2</b>
<b>District Total</b>	<b>420.8</b>	<b>418.6</b>	<b>309.0</b>	<b>395.5</b>	<b>309.3</b>	<b>1,853.2</b>

Numbers in the table may be rounded.

The relationship between the Water System and Wastewater System five-year planned appropriations can also be seen in the following chart:



Water System appropriations are increasing \$82.1 million in FY21 compared to FY20. In FY21, a large planned increase is needed for the Encinal Cascade and Leland pressure zone projects; one of the Alameda Crossing pipelines; Briones reservoir tower modifications; construction of 21,600 feet of pipeline in St. Mary's Road/Rohrer Drive in Moraga, Lafayette, and Walnut Creek to improve distribution system hydraulics; and improvements to the Camanche wastewater treatment plant.

Wastewater appropriations will increase \$16.7 million in FY19 compared to FY18. In FY19, a large planned increase is needed for the 3<sup>rd</sup> Street sewer interceptor rehabilitation; pump station M improvements; upgrades to the fats, oils and grease trucked waste receiving station; odor control improvements; grit handling equipment replacement; plant gallery drain improvements; and improvements to the Operations Center building.

## Capital Cash Flow

Cash flow is the amount projected to be spent each fiscal year on projects in the CIP. The cash flow varies each year as projects progress from one phase of the work to another, such as from planning to design and then construction. Cash flow includes spending on contracts, equipment and supplies, and District labor. Capital labor is budgeted by departments for the time staff will work on capital projects.

Administration of capital expenses are allocated to the capital program for costs not directly attributable to specific capital projects, but indirectly support the CIP. Therefore, the administration of capital is not allocated to each individual project's cash flow, but is applied to the CIP as a whole.

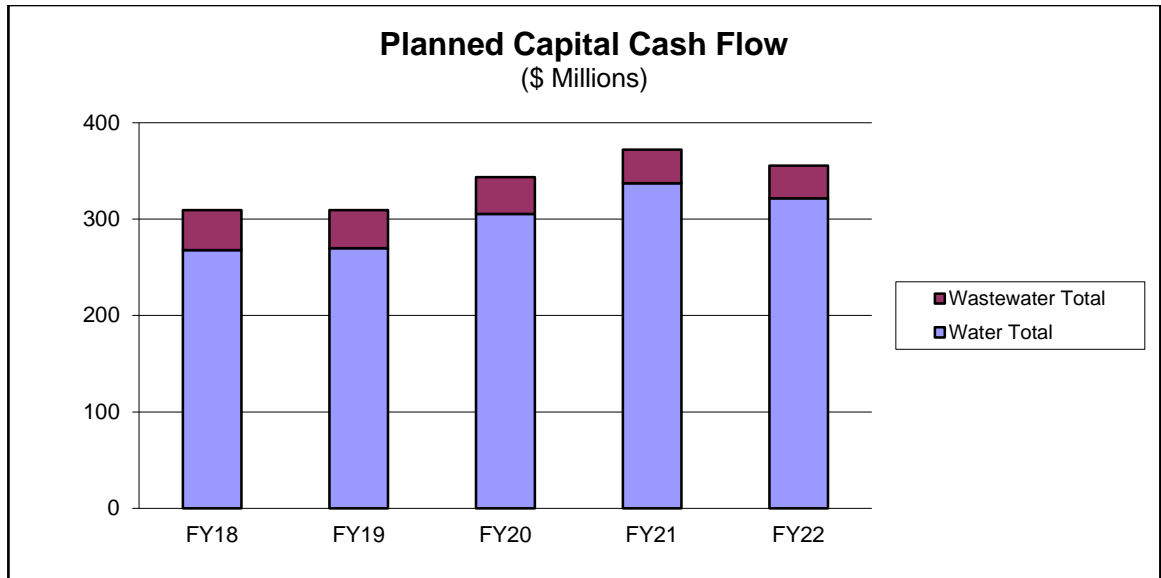
### FY18 - FY22 Capital Cash Flow

The FY18 capital cash flow, including administration of capital expenses is \$267.7 million for the Water System and \$41.4 million for the Wastewater System, for a total of \$309.1 million. In FY19, the capital cash flow is \$269.8 million for the Water System and \$39.5 million for the Wastewater System, for a total of \$309.4 million. The five-year planned cash flows can be seen in this table:

<b>Capital Improvement Program</b> <b>Planned Cash Flow within Fund</b> (\$ Millions)						
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Total</b>
Water	227.7	229.8	264.2	294.7	277.8	1,294.3
Administration of Capital	<u>40.0</u>	<u>40.0</u>	<u>41.2</u>	<u>42.4</u>	<u>43.7</u>	<u>207.3</u>
<b>Water Total</b>	<b>267.7</b>	<b>269.8</b>	<b>305.4</b>	<b>337.1</b>	<b>321.5</b>	<b>1,501.6</b>
Wastewater	38.4	36.5	34.9	31.7	30.6	172.1
Administration of Capital	<u>3.0</u>	<u>3.0</u>	<u>3.1</u>	<u>3.2</u>	<u>3.3</u>	<u>15.6</u>
<b>Wastewater Total</b>	<b>41.4</b>	<b>39.5</b>	<b>38.0</b>	<b>34.8</b>	<b>33.9</b>	<b>187.7</b>
<b>District Total</b>	<b>309.1</b>	<b>309.4</b>	<b>343.4</b>	<b>372.0</b>	<b>355.4</b>	<b>1,689.3</b>

Numbers in the table may be rounded.

The relationship between the Water System and Wastewater System five-year planned cash flows can also be seen in the following chart:



The most significant change over the five-year period is the planned increase in the Water System cash flow by \$35.6 million between FY19 and FY20, and an additional \$31.7 million between FY20 and FY21. The increase encompasses pressure zone improvements that will take place west of the hills, increased pipeline replacements, and temperature anchor retrofit and base isolator replacement on the Mokelumne Aqueducts.

## **STAFFING**

The District maintains a Staffing Plan that relates specifically to positions authorized by the Board of Directors. The Staffing Plan includes the job titles, positions and appointment types that have been authorized by the Board of Directors to carry out District functions. The Staffing Plan balances departmental efforts to allocate human resources effectively. Departments look for opportunities to restructure the workload as employees retire or leave the District and continue to evaluate staffing plans based on operational need. Staffing changes that require Board action are supported with a Position Resolution. Positions are only created by the Board of Directors.

The Staffing Plan and the Position Resolution do not address whether a position is funded in a particular fiscal year. Decisions regarding funding positions are made during the biennial budget process.

The District utilizes different position appointment types to meet its range of staffing needs. The appointment types include full-time civil service, full-time civil service exempt, limited-term, temporary construction, intermittent, part-time and temporary.

Staffing is shown by number of full-time equivalents (FTE). Depending upon the appointment type, the FTE value will be different. Civil service, non-civil service, limited-term, and temporary construction appointment types are full-time and equivalent to 1.0 FTE. Intermittent appointment types are equivalent to 0.75 FTE. Part-time and temporary appointment types count as 0.5 FTE.

### **Appointment Types**

The majority of the District's workforce is full-time civil service or full-time civil service exempt positions.

Limited-term positions are intended to augment regular District staff to accomplish extra work or other operational programs or activities of a limited duration, with appointments for a maximum of 4 years.

Temporary construction positions are also of a limited and specified duration typically associated with capital projects and facilities.

Intermittent positions represent the smallest number of positions of the appointment types. These positions typically work 32 hours per week, instead of 40 hours per week for full-time positions.

Part-time positions are normally restricted to 832 hours per year.

Temporary positions are limited to 6 month duration, and are full-time during that duration.

## FY18 & FY19 Budget

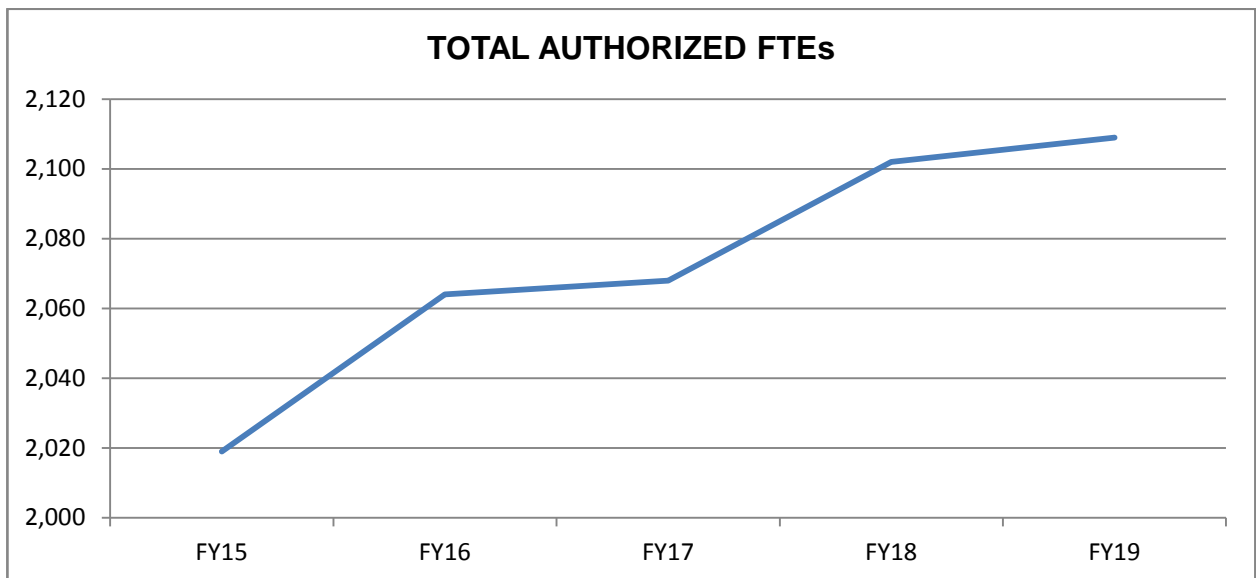
Staff will enable the District to address key priority areas such as the investment and maintenance of aging water and wastewater infrastructure. The majority of the staffing changes occur in the first year of the biennial budget.

The following pages show the District-wide authorized FTEs in the FY18 and FY19 biennial budget.

### Authorized Full-Time Equivalents (FTEs)

In FY18, the total number of authorized FTEs is 2,102, or 34 more FTEs than the prior fiscal year. In FY19, an additional 7 FTEs are included to bring the total FTEs to 2,109. The following table and graph show the number of authorized FTEs in the Staffing Plan for FY15 through FY19. Staffing for FY15 through FY17 represents adopted annual staffing as amended by Board actions.

<b>DISTRICT STAFFING</b> <b>(NUMBER OF AUTHORIZED FTEs)</b>					
<b>APPOINTMENT TYPE</b>	<b>FY15</b>	<b>FY16</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>
Full-Time Civil Service and C.S. Exempt	1,943	1,970	1,971	2,009	2,016
Limited-Term / Temporary Construction	36	53	56	53	53
Intermittent	3	3	3	3	3
Temporary / Part-Time	<u>37</u>	<u>38</u>	<u>38</u>	<u>37</u>	<u>37</u>
<b>TOTAL AUTHORIZED FTEs</b>	<b>2,019</b>	<b>2,064</b>	<b>2,068</b>	<b>2,102</b>	<b>2,109</b>
FTE Change From Previous FY	0	45	4	34	7



## Authorized FTE Detail

The number of District-wide authorized full-time equivalents is increasing 34.0 in FY18 and 7.0 in FY19 in comparison to the prior fiscal year, respectively. The net total increases are derived through the addition of 39.0 FTEs combined with the deletion of 5.0 FTEs in FY18. In FY19, 7.0 FTEs will be added. These staffing changes are attributable to each specific enterprise system and will amend the authorized number of FTEs as shown below.

### Water System

#### FY18

A net total of 33.0 FTEs are added in FY18. This total is derived through the addition of 35.0 FTEs and the deletion of 2.0 FTEs.

The 35.0 FTEs added are comprised of:

- *Infrastructure Maintenance / Pipeline Construction* – 20.0 FTEs added: 11.0 FTEs to support distribution system maintenance, and 9.0 FTEs to reduce reliance on contract services
- *Infrastructure Investment* – 9.0 FTEs to support the capital improvement program
- *Regulatory Compliance* – 1.0 FTE to support required lead testing in schools and a voluntary customer tap lead sampling program
- *Technology Infrastructure* – 3.0 FTEs to address the replacement of the aging human resources information system and accelerated security risk-reduction
- *Human Resources* – 2.0 FTEs to support an increase in employee recruitment and workforce development

The 2.0 deleted FTEs are comprised of:

- *Technology Infrastructure* – 2.0 FTEs, one vacant temporary construction FTE supporting the customer information system now fully implemented, and the responsibility of one vacant limited-term FTE supporting advanced meter infrastructure is transferred to another department

#### FY19

A net total of 6.0 additional FTEs are added in FY19 are comprised of:

- *Infrastructure Maintenance / Pipeline Construction* – 5.0 FTEs to further reduce reliance on contract services
- *Technology Infrastructure* - 1.0 FTE to support the water control systems which monitor and manage the water treatment plants, the distribution system, and the water supply systems

## **Wastewater System**

### FY18

A net total of 1.0 FTE is added in FY18. This total is derived through the addition of 4.0 FTEs and the deletion of 3.0 FTEs.

The 4.0 added FTEs are comprised of:

- *Infrastructure Investment* – 2.0 FTEs added to support the capital improvement program
- *Infrastructure Maintenance* – 1.0 FTE added to reduce reliance on outside services
- *Information Technology* – 1.0 FTE added to provide data systems supervision

The 3.0 deleted FTEs are comprised of:

- *Workload Efficiencies* – 1.0 FTE (two temporary positions) that are no longer needed since a full-time position has been filled
- *Inflow and Infiltration and Resource Recovery* – 2.0 vacant limited-term FTEs due to term completion

### FY19

One FTE is added in FY19, as follows:

- *Infrastructure Maintenance* – 1.0 FTE to address treatment plant electrical integrity

## LABOR and BENEFITS

This section provides a description of the District-wide labor and benefit costs for both the Water and Wastewater Systems. Labor includes all compensation such as wages, salaries, cost of living adjustment, and overtime. Benefits include payments to cover the employer costs associated with retirement, health care, Social Security, and other programs such as disability and unemployment insurance. The District does not pay for the employee share of retirement contributions.

### FY18 & FY19 Budget

#### Labor and Benefits

The table below summarizes the District-wide labor and benefits from FY16 through FY19. Of the District-wide total FY18 and FY19 labor and benefits budgets, the Water System represents 86 percent and the Wastewater System is 14 percent.

<b>Operations &amp; Capital Itemized by Labor and Benefits</b>						
(\$ Millions)						
	<b>FY16 Actual</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 vs FY18</b>
<b>Water</b>						
Labor	164.3	176.4	189.0	7.1%	198.1	4.8%
Benefits	107.5	115.8	118.9	2.7%	124.9	5.0%
<b>Wastewater</b>						
Labor	28.3	31.3	32.2	2.9%	33.7	4.7%
Benefits	18.1	19.9	19.5	-2.0%	20.4	4.5%
<b>District-wide</b>						
Labor	192.6	207.6	221.2	6.5%	231.9	4.8%
Benefits	125.6	135.7	138.4	2.0%	145.3	5.0%
<b>Grand Total</b>	<b>318.2</b>	<b>343.3</b>	<b>359.6</b>	<b>4.8%</b>	<b>377.2</b>	<b>4.9%</b>

Numbers in the table may be rounded.

Includes cost of living adjustment.

Excludes the Administration of Capital overhead allocated from Operations to Capital.

Total labor and benefits are projected to be \$359.6 million in FY18, an increase of \$16.3 million or 4.8 percent, and \$377.2 million in FY19, an increase of approximately \$17.5 million, or 4.9 percent in comparison with the prior fiscal years, respectively. Of the increase in FY18, labor costs will increase \$13.6 million, and \$2.7 million is attributable to benefits. In FY19, an increase of approximately \$10.6 million is attributable to labor costs and \$6.9 million to benefits.

The increase in labor and benefit costs are attributable to funding additional positions, rising costs primarily for health care, and a cost of living adjustment. The additional positions are principally funded in the Water System to support capital-related projects, infrastructure maintenance, pipeline construction, water operations, and other support functions such as human resources. A number of complex drivers impact the labor and benefits budget beyond funding additional positions. One of the major complex drivers is a slower than projected rise in benefit costs.



The FY18 and FY19 budget continues to build on past efforts to contain benefit costs. The benefits budget comprises several drivers, the largest is the employer pension contribution followed by the health care expense. In 2012, pursuant to State legislation referred to as the California Public Employees' Pension Reform Act (PEPRA), the Board of Directors implemented this change in the District's Employee Retirement System, referred to as the 2013 Plan. New employees receive a reduced pension benefit and fund a greater share of that benefit themselves. The assumption utilized for this budget projects a growth in the number of employees in the 2013 Plan thereby slowing the projected increase for this cost.

The following table shows the different employer pension contribution rates since FY16. Most new employees are part of the 2013 Plan and all other employees participate in the 1955/1980 Plan. The FY18 contribution rate is slightly higher than the prior year in large part due to lower earnings levels and the decrease in the assumed investment rate of return. The actual FY19 rate will not be available until it is calculated by the actuary and adopted by the Retirement Board in 2018.

<b>Employer Pension Contribution Rates</b>			
<b>Plan</b>	<b>FY16</b>	<b>FY17</b>	<b>FY18</b>
1955/1980 Plan	37.71%	37.71%	37.92%
2013 Plan	30.92%	30.92%	31.30%

In the District's continuing pursuit of cost containment, it offers employees traditional health care plans, and a consumer-driven health plan paired with a health savings account which is also available for non-represented employees. The premium rates are lower for a consumer-driven health plan than a traditional plan. The health benefit assumption utilized for this budget represents a cost increase range of 5 to 12 percent for FY18 and the same additional increase for FY19.

## Operations and Capital

Depending upon the work being performed, labor and benefit costs are allocated to either operations or capital. The majority of these costs are charged to the operations budget. Typical duties performed by employees that charge to the operations budget include pipeline system maintenance, meter maintenance, electrical / structural / mechanical maintenance, customer contact center support, managing watershed properties, human resources, information systems and treatment plant operations for both water and wastewater. Duties of employees that typically charge the capital budget include pipeline replacements, significant treatment plant upgrades or wastewater plant improvements.

The table below shows labor and benefits allocated between the operations and capital budgets. Of the total FY18 and FY19 budgets, 75 percent of the District's labor and benefits budget is attributable to operations. The remaining 25 percent is attributable to the capital budget.

<b>Labor and Benefits Itemized by Operations and Capital</b>						
(\$ Millions)						
	<b>FY16 Actual</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 vs FY18</b>
<b>Water</b>						
Operations	197.1	216.7	226.6	4.6%	237.6	4.9%
Capital	74.7	75.5	81.3	7.8%	85.5	5.1%
<b>Wastewater</b>						
Operations	36.2	41.4	41.5	0.2%	43.5	4.9%
Capital	10.2	9.7	10.2	5.1%	10.5	3.4%
<b>District-wide</b>						
Operations	233.3	258.1	268.1	3.9%	281.1	4.9%
Capital	84.9	85.2	91.5	7.5%	96.0	4.9%
<b>Grand Total</b>	<b>318.2</b>	<b>343.3</b>	<b>359.6</b>	<b>4.8%</b>	<b>377.2</b>	<b>4.9%</b>

Numbers in the table may be rounded.

Includes cost of living adjustment.

Excludes the Administration of Capital overhead allocated from Operations to Capital.

The District-wide total operations labor and benefits budget will increase \$10.0 million, or 3.9 percent in FY18 and the capital budget will increase \$6.3 million, or 7.5 percent. As mentioned earlier, these increases are primarily driven by funding additional positions, rising costs for health care, and a cost of living adjustment.

In FY19, the District-wide operations budget will increase \$13.0 million, or 4.9 percent and capital will increase \$4.5 million, or 4.9 percent primarily due to projected increases in labor costs such as scheduled salary step changes, an anticipated increase in health care cost, and a cost of living adjustment.

Please see the Water and Wastewater System chapters for more details.

## SOURCES OF FUNDS

Operating expenses are funded by a group of revenues approved by the Board of Directors. Capital expenses are funded primarily by bond proceeds, which results in annual debt service payments, and rate revenue. The complete discussion of the types of operating and capital funding sources is included in the subsequent chapters on the Water System and the Wastewater System.

A summary table below shows the amounts to be collected from revenue sources and the amounts that are expected to be received from the issuance of debt to fund a portion of the capital program for the Water and Wastewater Systems.

<b>TOTAL SOURCES OF FY18 &amp; FY19 FUNDS</b>				
(\$ Millions)				
	<b>Water System</b>		<b>Wastewater System</b>	
	<b>FY18</b>	<b>FY19</b>	<b>FY18</b>	<b>FY19</b>
<b>Operating Revenues:</b>				
Total Operating Revenues	552.2	607.2	127.0	129.9
Less Revenue Funded Capital	<u>(70.7)</u>	<u>(101.1)</u>	<u>(21.3)</u>	<u>(25.8)</u>
<b>Net Operating Revenues</b>	<b>481.5</b>	<b>506.2</b>	<b>105.7</b>	<b>104.1</b>
<b>Capital Funding Sources:</b>				
New Bond Proceeds	175.9	148.6	20.1	13.7
Revenue Funded Capital	70.7	101.1	21.3	25.8
Other	<u>21.1</u>	<u>20.2</u>	<u>0.0</u>	<u>0.0</u>
<b>Total Capital Funding Sources</b>	<b>267.7</b>	<b>269.8</b>	<b>41.4</b>	<b>39.5</b>
<b>TOTAL FUND SOURCES</b>	<b>749.2</b>	<b>776.0</b>	<b>147.1</b>	<b>143.6</b>

Numbers in the table may be rounded.

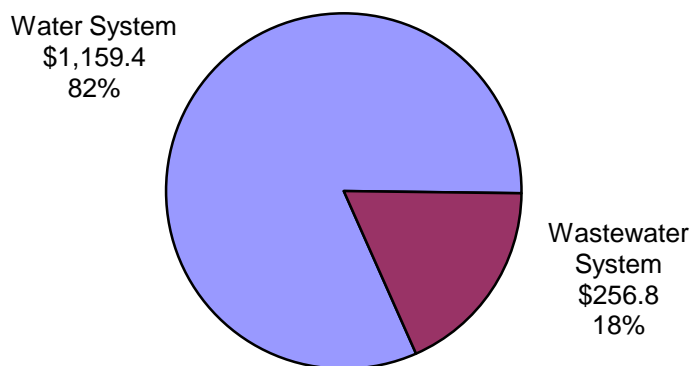
## Operating Revenue

The principal source of operating revenues is water sales and wastewater treatment charges. The budget includes rate increases for the Water System of 9.25 percent in FY18 and an additional 9.0 percent in FY19, and rate increases for the Wastewater System of 5.0 percent in FY18 and an additional 5.0 percent in FY19. The total operating revenue for the combined Water and Wastewater Systems is \$1.42 billion in this budget.

Water System and Wastewater System operating revenues totaling \$679.2 million are needed during FY18. Of this amount, \$552.2 million is for the Water System and approximately \$127.0 million is for the Wastewater System.

Water System and Wastewater System operating revenues totaling \$737.1 million are needed for FY19. Of this amount, \$607.2 million is for the Water System and approximately \$129.9 million is for the Wastewater System.

**FY18 & FY19 Sources of Operating Revenue**  
(\$ Millions)



## Capital Funding Sources

Funding for the projects in the CIP is drawn from multiple sources including bonds, commercial paper, grants, reimbursements from other agencies, and current reserves and revenues. In accordance with the District's financial policies, the maximum percentage of capital funded from debt is 65 percent. As a result, a substantial portion of capital expenditures are funded on a pay-as-you-go basis which uses current and accumulated revenues rather than debt.

The FY18 and FY19 CIP will be funded with bond proceeds, water and wastewater revenues, reimbursements, and grants and loans.

For the Water System, it is anticipated that the District will receive \$175.9 million in FY18 and \$148.6 million in FY19 in new revenue bond proceeds, combined with revenue funded capital of \$70.7 million in FY18 and \$101.1 million in FY19. Additional proceeds from grants, loans and reimbursements will make up the rest of the capital funding.

For the Wastewater System, it is anticipated that the District will receive \$20.1 million in FY18 and \$13.7 million in FY19 in new revenue bonds proceeds, combined with revenue funded capital of \$21.3 million in FY18 and \$25.8 million in FY19 to fund the CIP.

## WATER and WASTEWATER SYSTEM FUND SUMMARIES

The following tables summarize the fund balance, projected revenues and expenditures for the Water System and the Wastewater System. The tables include the information presented earlier in this chapter on the sources of funds and the use of funds for operations, debt, and capital expenses. Please refer to the chapters entitled Water System and Wastewater System for detailed fund summaries.

<b>Water System Fund Summary</b> <b>Operating and Capital Budgets</b> (\$ Millions)						
	FY18			FY19		
	Operating	Capital	Fund Balance	Operating	Capital	Fund Balance
<b>Beginning FY Fund Balance (Projected)</b>	<b>348.6</b>	<b>0.0</b>	<b>348.6</b>	<b>352.6</b>	<b>0.0</b>	<b>352.6</b>
<b>Sources of Funds</b>						
Operating Revenues	552.2		552.2	607.2		607.2
Capital Sources		197.0	197.0		168.8	168.8
Revenue Funded Capital	<u>(70.7)</u>	<u>70.7</u>	<u>0.0</u>	<u>(101.1)</u>	<u>101.1</u>	<u>0.0</u>
<b>Total Sources of Funds</b>	<b>481.5</b>	<b>267.7</b>	<b>749.2</b>	<b>506.2</b>	<b>269.8</b>	<b>776.0</b>
<b>Use of Funds</b>						
Operations	277.9		277.9	292.5		292.5
Debt Service	199.6		199.6	210.0		210.0
Capital Cash Flow		<u>267.7</u>	<u>267.7</u>		<u>269.8</u>	<u>269.8</u>
<b>Total Use of Funds</b>	<b>477.5</b>	<b>267.7</b>	<b>745.2</b>	<b>502.5</b>	<b>269.8</b>	<b>772.3</b>
<b>Ending Balance *</b>	<b>352.6</b>	<b>0.0</b>	<b>352.6</b>	<b>356.3</b>	<b>0.0</b>	<b>356.3</b>

Numbers in the table may be rounded.

\* Includes reserves for working capital, self-insurance, worker's compensation, contingency and rate stabilization, and for capital projects.

See Wastewater System Fund Summary on the next page.

**Wastewater System Fund Summary**  
**Operating and Capital Budgets**

(\$ Millions)

	FY18			FY19		
	Operating	Capital	Fund Balance	Operating	Capital	Fund Balance
<b>Beginning FY Fund Balance (Projected)</b>	<b>77.5</b>	<b>0.0</b>	<b>77.5</b>	<b>78.0</b>	<b>0.0</b>	<b>78.0</b>
<b>Sources of Funds</b>						
Operating Revenues	127.0		127.0	129.9		129.9
Capital Sources		20.1	20.1		13.7	13.7
Revenue Funded Capital	<u>(21.3)</u>	<u>21.3</u>	<u>0.0</u>	<u>(25.8)</u>	<u>25.8</u>	<u>(0.0)</u>
<b>Total Sources of Funds</b>	<b>105.7</b>	<b>41.4</b>	<b>147.1</b>	<b>104.1</b>	<b>39.5</b>	<b>143.6</b>
<b>Use of Funds</b>						
Operations	70.6		70.6	73.1		73.1
Debt Service	34.7		34.7	31.9		31.9
Capital Cash Flow		<u>41.4</u>	<u>41.4</u>		<u>39.5</u>	<u>39.5</u>
<b>Total Use of Funds</b>	<b>105.2</b>	<b>41.4</b>	<b>146.6</b>	<b>105.1</b>	<b>39.5</b>	<b>144.6</b>
<b>Ending Balance *</b>	<b>78.0</b>	<b>0.0</b>	<b>78.0</b>	<b>77.0</b>	<b>0.0</b>	<b>77.0</b>

Numbers in the table may be rounded.

\* Includes reserves for working capital, self-insurance, worker's compensation, contingency and rate stabilization, and for capital projects.

## CHAPTER 3: WATER SYSTEM

This chapter provides a detailed description of the Water System sources of funds, use of funds, department operations budgets including staffing, capital expenditures and a Five-Year Financial Forecast.

The Water System Fund is an enterprise fund consisting of an operating and a capital budget. The function of the Water System is the collection, transmission, and distribution of water to communities within Alameda and Contra Costa Counties. In addition, the Water System provides administrative, financial, and other support services to the Wastewater System. These costs are charged to the Wastewater System.

This chapter is organized into the following sections:

- Pages 63 - 153      A detailed description of the FY18 and FY19 budgets including sources of revenues and use of funds for operations, debt financing, and capital programs. This section also includes detailed department budgets.
- Pages 154 - 160      A five-year-forecast of the Water System projected revenues and expenditures for operations, debt financing, and capital programs.

### FUND SUMMARY

The following are key projections and assumptions utilized in the FY18 and FY19 budget.

WATER SYSTEM FUND – KEY ASSUMPTIONS		
	FY18	FY19
Sales Volume (mgd)	137.0	141.0
% Rate Increase	9.25%	9.00%
Average monthly single family residential bill based on 8 ccf/month	\$51.49	\$56.12

The fund summary illustrates the beginning and ending fund balances as well as revenues, expenditures, and other financing sources/uses. The following table shows the fund balance, and projected revenues and expenditures for the Water System for FY18 and FY19. The table is an expansion of the Water System Fund Summary table presented at the end of Chapter 2.

<b>Water System Fund Summary</b> <b>Operating and Capital Budgets</b> (\$ Millions)						
	FY18			FY19		
	Operating	Capital	Fund Balance	Operating	Capital	Fund Balance
<b>Beginning FY Fund Balance (Projected)</b>	<b>348.6</b>	<b>0.0</b>	<b>348.6</b>	<b>352.6</b>	<b>0.0</b>	<b>352.6</b>
<b>Sources of Funds</b>						
<b>Operating Revenues</b>						
Water Charges	454.7		454.7	507.5		507.5
Property Taxes	30.0		30.0	30.7		30.7
Power Sales	3.7		3.7	3.7		3.7
Interest Income	7.3		7.3	7.4		7.4
SCC Revenue	27.0		27.0	28.0		28.0
Reimbursements	11.6		11.6	11.9		11.9
All Other Revenue	<u>17.9</u>		<u>17.9</u>	<u>18.1</u>		<u>18.1</u>
<b>Total Operating Revenues</b>	<b>552.2</b>		<b>552.2</b>	<b>607.2</b>		<b>607.2</b>
<b>Capital Funding Sources</b>						
New Bond Proceeds		175.9	175.9		148.6	148.6
Loans Proceeds		0.0	0.0		0.0	0.0
Grants		0.5	0.5		0.3	0.3
Reimbursements		20.6	20.6		19.9	19.9
Commercial Paper		<u>0.0</u>	<u>0.0</u>		<u>0.0</u>	<u>0.0</u>
<b>Total Capital Sources</b>		<b>197.0</b>	<b>197.0</b>		<b>168.8</b>	<b>168.8</b>
Revenue Funded Capital	<u>(70.7)</u>	<u>70.7</u>	<u>0.0</u>	<u>(101.1)</u>	<u>101.1</u>	<u>0.0</u>
<b>Total Sources of Funds</b>	<b>481.5</b>	<b>267.7</b>	<b>749.2</b>	<b>506.2</b>	<b>269.8</b>	<b>776.0</b>
<b>Use of Funds</b>						
Operations	277.9		277.9	292.5		292.5
Debt Service	199.6		199.6	210.0		210.0
Capital Cash Flow		<u>267.7</u>	<u>267.7</u>		<u>269.8</u>	<u>269.8</u>
<b>Total Use of Funds</b>	<b>477.5</b>	<b>267.7</b>	<b>745.2</b>	<b>502.5</b>	<b>269.8</b>	<b>772.3</b>
<b>Ending Balance *</b>	<b>352.6</b>	<b>0.0</b>	<b>352.6</b>	<b>356.3</b>	<b>0.0</b>	<b>356.3</b>

Numbers in the table may be rounded.

\* Includes reserves for working capital, self-insurance, worker's compensation, contingency and rate stabilization, and for capital projects.



## FY 2018 & FY 2019 BUDGET

### SOURCES OF FUNDS

Operating expenses are funded by a group of revenue sources approved by the Board of Directors. Capital expenses are funded primarily by a combination of bond issues, which results in annual debt service payments, and operating revenue.

The table below displays the amounts to be collected from revenue sources and shows the amounts that are expected to be received to fund the capital program for the Water System.

<b>WATER SYSTEM SOURCES OF FUNDS</b>				
(\$ Millions)				
	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY19 Proposed Budget</b>
<b>Operating Revenues:</b>				
Water Charges	369.9	453.0	454.7	507.5
Property Taxes	29.9	25.1	30.0	30.7
Power Sales	3.2	3.5	3.7	3.7
Interest Income	2.1	3.3	7.3	7.4
SCC Revenue	39.3	26.0	27.0	28.0
Reimbursements	11.3	11.2	11.6	11.9
All Other Revenue	<u>18.7</u>	<u>17.4</u>	<u>17.9</u>	<u>18.1</u>
<b>Total Operating Revenues</b>	<b>474.4</b>	<b>539.5</b>	<b>552.2</b>	<b>607.2</b>
Revenue Funded Capital	(207.6)	(100.5)	(70.7)	(101.1)
<b>Capital Funding Sources:</b>				
Revenue Funded Capital	207.6	100.5	70.7	101.1
New Bond Proceeds	0.0	108.9	175.9	148.6
Loans Proceeds	0.0	0.0	0.0	0.0
Grants	4.4	1.8	0.5	0.3
Reimbursements	17.0	24.9	20.6	19.9
Commercial Paper	0.0	0.0	0.0	0.0
Construction Fund	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
<b>Total Capital Funding Sources</b>	<b>229.0</b>	<b>236.1</b>	<b>267.7</b>	<b>269.8</b>
<b>Total Water Sources</b>	<b>495.8</b>	<b>675.1</b>	<b>749.2</b>	<b>776.0</b>

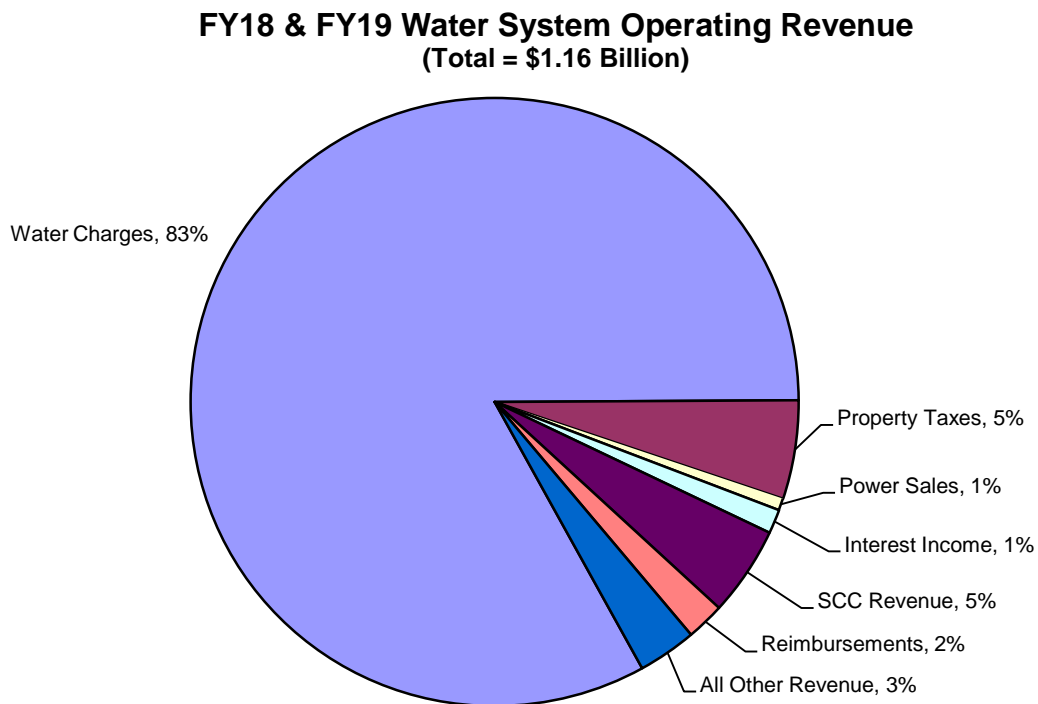
Numbers in the table may be rounded.

## Operating Revenue

Water System operating revenues for FY18 are increasing \$12.7 million, or 2.4 percent compared to FY17 for a total of \$552.2 million. This increase reflects the net impact of lower water sales than budgeted in FY17 and the proposed rate increase of 9.25 percent. The FY18 budget also includes a rise in property tax receipts of \$4.9 million and interest income of \$4.0 million compared to the FY17 budgeted revenue.

In FY19, Water System operating revenues will increase \$55.0 million, or approximately 9.9 percent for a total of \$607.2 million. This increase is comprised primarily of \$52.8 million from water charges due to higher projected consumption and an increase in the water rates.

The figure below illustrates the various sources of revenue and the relative percentage each contributes to the total. Water charges revenue is the largest source of revenue for EBMUD comprising 83 percent of FY18 and FY19 total revenues.



The following pages provide more detail on each of the revenue categories.

## Source Descriptions

### Operating Revenue

The following are descriptions of the seven sources of operating revenue, including information about the projected revenues for FY18 and FY19.

#### Water Charges

Water charges consist of a monthly service charge, a volume charge for the amount of water used and an elevation charge for those customers located at higher elevations that require pumping and additional storage facilities. The overall water charges will increase by 9.25 percent in FY18 and an additional 9.0 percent in FY19.

FY18 Revenue (\$ Millions)			FY19 Revenue (\$ Millions)		
	<u>Amount</u>	<u>% of Total</u>		<u>Amount</u>	<u>% of Total</u>
Monthly Service Charge	137.0	30.1	Monthly Service Charge	149.7	29.5
Volume Charge	294.1	64.7	Volume Charge	331.2	65.3
Elevation Charge	<u>23.6</u>	<u>5.2</u>	Elevation Charge	<u>26.6</u>	<u>5.2</u>
<b>Total</b>	<b>454.7</b>	100.0	<b>Total</b>	<b>507.5</b>	100.0

FY18 water charges are projected to increase by \$1.7 million, for a total of \$454.7 million, or 0.4 percent over the FY17 budgeted revenue of \$453.0 million, due to reduced customer demand and the 9.25 percent rate increase. FY19 water charges are projected to increase by \$52.8 million, for a total of \$507.5 million, or 11.6 percent over the FY18 water charges revenue as projected consumption increases slightly from 137 MGD to 141 MGD.

#### Property Taxes

The District receives a portion of the 1 percent county tax levy on properties within District boundaries. The percentage of the county levy received varies, depending on the number of other agencies participating in the distribution. The District's share averages 1.25 percent of the total monies collected. For FY18, property tax revenue of \$30.0 million is based upon FY16 actual property tax receipts. Revenues for FY19 are projected to be \$30.7 million or a 2.3 percent increase over FY18.

#### Power Sales

The District operates power generation facilities at the Pardee and Camanche Dams. For FY18 and FY19, projected as years of normal precipitation, the District expects to earn approximately \$3.7 million for each year, primarily from sales of power to other agencies.

#### Interest Income

The District places funds not needed for current expenditures in short-term investments in accordance with the District's investment policy and may include money market funds, commercial paper, medium term corporate notes, bankers' acceptances and short-term U.S. government securities. Interest earned on these funds in FY18 is projected to be \$7.3 million, a \$4.0 million increase from FY17 due to significantly higher interest rates than assumed for the FY17 budget. For FY19 interest income is projected to be \$7.4 million, a \$0.1 million increase compared to the prior year. Interest earned is assumed to be 2 percent in FY18 and FY19.

**SCC Revenue**

System Capacity Charges (SCC) are collections from customers requesting new water service. The charges are designed to recover costs of facilities necessary to serve new customers. These costs include distribution facilities, treatment facilities, facilities that serve the system as a whole such as Pardee and Camanche Reservoirs, terminal storage reservoirs, administrative facilities, and a portion of the costs of supplemental water supply. The purpose of the SCC is to assure that existing customers do not bear the cost of customer growth and that new customers pay for their appropriate share of the existing water system facilities. Funds collected from the SCC are held either in dedicated reserves or accounted for as a capital contribution from developers. Funds held in the dedicated reserve account are used to pay the debt service for the bonds issued to build supplemental water supply projects.

SCC revenue for FY18 is projected at \$27.0 million which is a \$1.0 million increase from the amount budgeted for FY17. FY19 SCC revenue is projected at \$28.0 million, a \$1.0 million increase from FY18. This is based on the assumption that the number of new connections for FY18 and FY19 will continue at the average rate of connections over the last five years, plus a 3.5 percent increase in SCC rates. The 3.5 percent increase is based on the increase in the Engineering News Record Construction cost index.

**Reimbursements**

The Water System receives reimbursement for services provided to other agencies. The Wastewater System reimburses the Water System for administrative costs, space rental in the Administration building and for providing billing and collection services. The Water System also receives reimbursements from several cities for providing billing and collection services for the cities' sewer charges. Total reimbursements for FY18 and FY19 are projected at \$11.6 million and \$11.9 million respectively.

**All Other Revenue**

Included in this category are receipts from property sales, rental of District properties, fees for use of District recreational lands and facilities, insurance and property damage reimbursements, sales of surplus District equipment and vehicles, sales of District publications, reimbursements from the U.S. Treasury under the Build America Bond program, reimbursement of operating expenses from the Richmond Advanced Recycled Expansion (RARE) project and other miscellaneous revenues. All other revenues are projected at \$17.9 million for FY18 and \$18.1 million for FY19.

## **Capital Funding**

The following are descriptions of the five sources of capital funding. The FY18 and FY19 Capital Improvement Program will be funded with bond proceeds, water revenues, reimbursements, and grants. It is anticipated that the District will receive \$175.9 million in new revenue bond proceeds in FY18 and \$148.6 million in FY19, combined with revenue funded capital of \$70.7 million in FY18 and \$101.1 million in FY19.

Please refer to the section on Debt Service and Financing for additional details on debt funding of capital projects.

### **New Bond Proceeds**

The District has the ability to issue long-term bonds to fund its capital program. The proceeds of the bond sales can be used to pay for capital expenses over several years. The repayment of the bonds is generally over 30 years and is paid from water rate revenues.

### **Commercial Paper Issues**

In addition to issuing long-term bonds to fund its capital program, the District has used short-term borrowing in the form of commercial paper to raise revenues for capital expenses. The term of commercial paper can be up to 270 days. The repayment of commercial paper is paid from water rate revenues.

### **Grants and Loans Proceeds**

The District pursues federal and state grants and low-interest loans to fund some of its capital projects when they meet the conditions of the grant and loan programs.

### **Reimbursements**

Some of the capital projects in the Water System are done at the request of other agencies, and the District is reimbursed for its expenses. An example would be the relocation of a water main at the request of a city or state agency. Also, work to expand the distribution system to meet new connections that is not covered by the System Capacity Charge is paid directly by the applicants.

### **Revenue Funded Capital**

Annual capital expenses that are not paid from debt funding, grants, loans or reimbursements are paid from operating revenues, either from current year revenues or from reserves.

## USE OF FUNDS

The Water System has three types of expenditures:

**Operations**, or the annual costs of providing all water services;

**Debt service**, or the repayment of bonds for making capital investments in the water system; and

**Capital cash flow**, or the annual costs of the Capital Improvement Program for long-term projects.

The following table shows the breakdown of expenses for operations, debt service, and capital cash flow.

<b>USE OF FUNDS</b> (\$ Millions)				
<b>Expenditure Type</b>	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY19 Proposed Budget</b>
Operations	234.9	262.4	277.9	292.5
Debt Service	166.2	180.2	199.6	210.0
Capital Cash Flow	<u>218.5</u>	<u>236.1</u>	<u>267.7</u>	<u>269.8</u>
<b>Total Expenditures</b>	<b>619.6</b>	<b>678.7</b>	<b>745.2</b>	<b>772.3</b>

Numbers in the table may be rounded.

## Operations

This section contains charts and tables which explain the major components of the Water System operations budget. Typical operations expenditures include, but are not limited to labor, benefits, chemicals, energy, parts and materials, insurance, District vehicle fleet costs, and computer hardware and software.

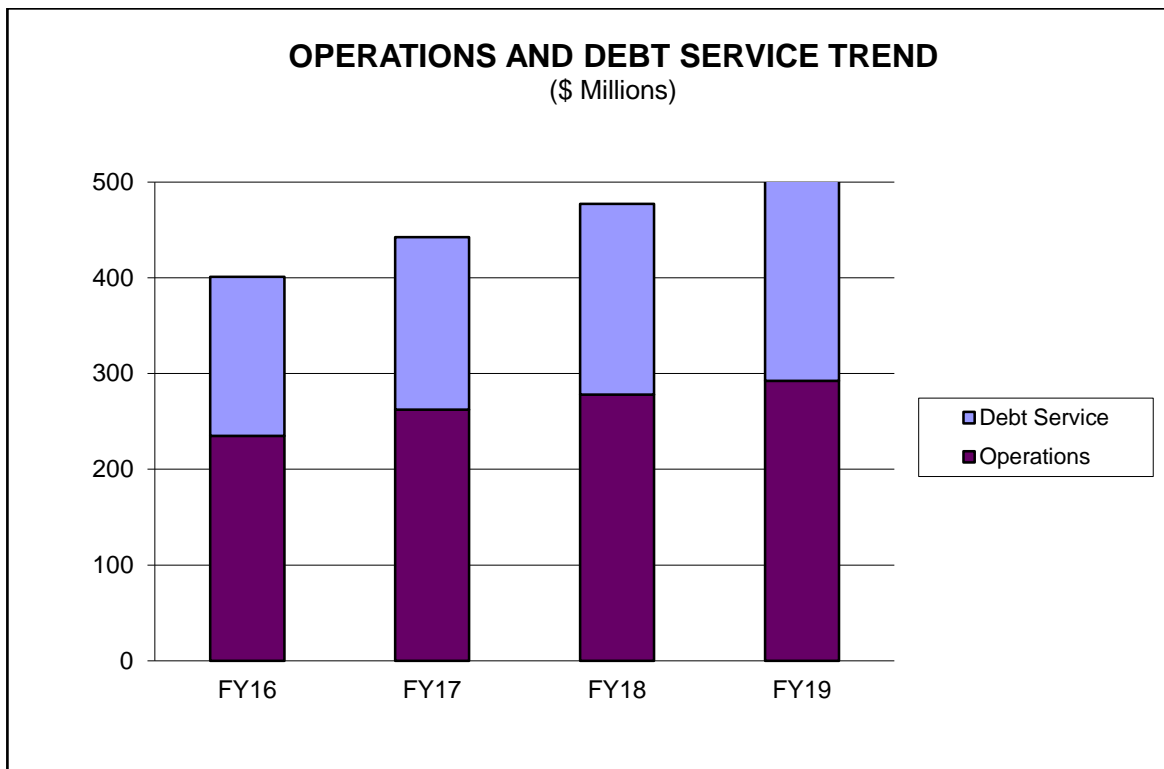
The operations budget is also shown by department. The details of each staffed department include a discussion of services provided, significant budget changes, and staffing and position changes.

The table below details the operations and debt service budget for FY18 and FY19.

<b>Operations and Debt Service</b> (\$ Millions)						
	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
Operations	234.9	262.4	277.9	5.9%	292.5	5.2%
Debt Service	<u>166.2</u>	<u>180.2</u>	<u>199.6</u>	10.7%	<u>210.0</u>	5.3%
<b>Total</b>	<b>401.1</b>	<b>442.6</b>	<b>477.5</b>	7.9%	<b>502.5</b>	5.2%

Numbers in the table may be rounded.

In FY18, the operations and debt service budget is increasing \$34.9 million or 7.9 percent over the FY17 amended budget, and in FY19 will increase \$25.0 million or 5.2 percent compared to FY18.



## Department Operations Budgets

The operations portion of the Water System budget is divided into various departments. The majority of these departments are referred to as staffed departments indicating employees are assigned to work in these areas. The staffed department budget funds the day-to-day operations of the District, and include funding for labor, benefits, outside contract services and other non-labor expenses such as electricity, chemicals, fuel, computer hardware, self-insured liability claims, and workers compensation claims. A detailed description of each staffed department is included later in this chapter.

A small number of departments do not have personnel assigned to them and are referred to as non-staffed departments. The impact on the budget by each of the following departments varies:

**Contingency** - Funds budgeted each fiscal year to primarily cover projected labor-related expenses such as the employee cost of living adjustment which is based upon each year's February Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) in the San Francisco-Oakland-San Jose area. The index is published in March of each year. The contingency budget also includes funding for unanticipated needs which may arise before the next budget cycle.

**Intradistrict** - Certain internal service accounts are included in balance sheets to assure that internal expenses are not counted twice within the operations budget. Examples of these accounts include warehouse stores loading overhead and fleet vehicle expenses.

**Administration of Capital** - The administration of capital represents those costs that are not directly attributable to specific capital projects but are more generalized indirect support of the Capital Improvement Program (CIP). The administration of capital in the operations budget will decrease operating expense by a like amount and reallocate the costs to the capital budget.

The following table presents the total FY18 and FY19 Water System operations budget by department.



Operations Budget by Department						
(\$ Thousands)						
DEPARTMENTS	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Operations & Maintenance Support	17,231	18,113	18,843	4.0%	19,480	3.4%
Maintenance and Construction	92,583	96,692	99,162	2.6%	101,632	2.5%
Water Operations	48,400	53,793	53,576	-0.4%	55,347	3.3%
Water Resources	6,748	8,259	8,487	2.8%	8,471	-0.2%
Natural Resources	14,545	15,490	15,690	1.3%	15,997	2.0%
Engineering & Construction	15,484	17,608	18,269	3.8%	18,662	2.1%
Office of the General Manager	5,398	6,474	5,882	-9.2%	6,318	7.4%
Finance	24,699	26,584	27,339	2.8%	28,095	2.8%
Information Systems	26,191	27,566	27,837	1.0%	28,955	4.0%
Customer & Community Services	18,482	20,269	20,194	-0.4%	20,634	2.2%
Human Resources	9,731	10,157	11,068	9.0%	11,213	1.3%
Office of the General Counsel	3,970	4,764	4,576	-3.9%	4,592	0.4%
Water Recycling Program	4,875	5,367	5,419	1.0%	5,510	1.7%
Administration	344	356	376	5.5%	377	0.2%
<b>Subtotal Staffed Departments</b>	<b>288,681</b>	<b>311,493</b>	<b>316,718</b>	<b>1.7%</b>	<b>325,282</b>	<b>2.7%</b>
Contingency	1,439	2,613	12,906		18,872	
Intradistrict	(11,600)	(11,700)	(11,700)	0.0%	(11,700)	0.0%
Administration of Capital	(43,627)	(40,000)	(40,000)	0.0%	(40,000)	0.0%
<b>Subtotal Operations Expenses</b>	<b>234,893</b>	<b>262,407</b>	<b>277,923</b>	<b>5.9%</b>	<b>292,454</b>	<b>5.2%</b>
Debt Service	166,245	180,191	199,551	10.7%	210,036	5.3%
<b>TOTAL</b>	<b>401,138</b>	<b>442,598</b>	<b>477,474</b>	<b>7.9%</b>	<b>502,490</b>	<b>5.2%</b>

Numbers in the table may be rounded.

The FY17 amended staffed department budgets include a cost of living adjustment.

The FY17 amended budget includes a carry forward of approximately \$0.2 million from FY16 which is within the total two-year appropriations approved by the Board.

## Department Operations Budget Highlights

The Water System is comprised of 14 staffed departments that perform and provide operations and support functions to the Wastewater System. This section details the various departments including the labor and non-labor budgets, department goals and staffing.

The below table is a summary of the Water System departments' budgets, which excludes the administration of capital overhead allocated from operations to capital.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	270,376	288,881	295,367	2.2%	300,849	1.9%
Less: Capital Labor and Benefits	<u>(74,670)</u>	<u>(75,392)</u>	<u>(78,529)</u>	4.2%	<u>(80,118)</u>	2.0%
Operating Labor and Benefits	195,706	213,489	216,838	1.6%	220,731	1.8%
Contract Services	14,766	14,683	18,911	28.8%	19,281	2.0%
All Other Costs	<u>78,209</u>	<u>83,321</u>	<u>80,969</u>	-2.8%	<u>85,271</u>	5.3%
<b>Operating Total</b>	288,681	311,493	316,718	1.7%	325,282	2.7%

### Labor and Benefits

Labor and benefits are allocated between the staffed department and contingency for cost of living adjustments. Cost of living adjustments are not shown in the staffed departments' FY18 and FY19 labor and benefits budgets since it is based on the CPI-W index and the amount is not known until the index is published annually. Once the index is published, and if funds are needed, contingency would be transferred to departments. The details of the departments' labor and benefits budget are shown later in this chapter.

Labor and benefits will increase as a result of funding additional positions primarily in FY18 compared to the prior fiscal year, and a smaller number of additional positions in FY19. These additional positions support capital projects and operations work such as infrastructure maintenance, pipeline construction, water operations and support functions such as human resources. A number of complex drivers impact the labor and benefits budget beyond funding additional positions. One of the major complex drivers is a slower than projected rise in benefit costs which result in a lower fringe benefit rate compared to the prior fiscal year.

Total labor and benefits in FY18 will increase approximately \$6.4 million compared to the prior fiscal year. Of the increase, approximately \$3.1 million is for capital labor and is attributable to funding additional positions to support capital projects, as well as an increase in overtime to support a ramp-up of pipeline construction and construction inspections that must take place after normal work hours. The remaining amount of \$3.3 million is for additional positions to support operations work such as water operations, replacement of aging financial and human resources information systems, infrastructure maintenance and other support functions such as human resources. Operating overtime is reduced as a result of these additional positions.

In FY19, total labor and benefits will increase \$5.5 million compared to FY18. This increase is attributable to funding additional positions, scheduled salary step increases, and an anticipated increase in health care costs. The operations budget will increase \$3.9 million primarily attributable to the addition of staff to support baseline work in the maintenance and pipeline construction crews to replace outside contract services. The remaining amount of \$1.6 million is for work associated with capital projects.

## Non-labor

In FY18, staffed department non-labor budgets are increasing a net of \$1.9 million or 1.9 percent compared to the prior fiscal year. The major drivers accounting for the changes include:

- Professional services are increasing \$2.7 million with the largest portion, \$1.5 million, to address a new requirement for lead sampling in schools, and a voluntary customer tap lead sampling program; other increases are to meet equal employment opportunity requirements, benefit consultant services to advise on plan design, cost analysis and regulatory requirements, new leak-detection services, and information technology contracts associated with data warehousing, training and firewall maintenance;
- Maintenance and operations supplies and services are increasing \$1.9 million primarily for building and equipment maintenance contracts, vehicle and construction equipment rentals, and pipeline maintenance supplies such as pipes, backfill, and paving;
- Vehicle use charges are increasing \$1.0 million to fund vehicle replacements which were deferred in prior years as a temporary cost savings strategy;
- Security contract services are increasing \$0.5 million for scheduled annual contract increases, and a new radar-based perimeter detection and integrated video assessment systems;
- Allowance for self-insured liability claims will increase by \$0.5 million;
- California State Drinking Water fees are increasing \$0.4 million based on a new fee schedule;
- Equipment is increasing \$0.3 million to replace aging equipment; and
- Mokelumne River Fish Hatchery operations are increasing of \$0.2 million for contract fees.

Planned reductions of \$5.7 million offset these anticipated increases in FY18.

- Chemicals, energy, and sludge disposal will decrease \$4.0 million associated with potable water production due to lower anticipated water sales; and
- Other drivers of the planned reductions include lower petroleum costs, Board of Director election fees which occur in the second year of the budget, and completion of the FY16 and FY17 budget priority to replace deferred aging computer equipment.

In FY19, staffed department non-labor budgets will increase a net of \$4.7 million or 4.7 percent compared to FY18. The major drivers accounting for the changes include:

- Potable water production costs will increase \$1.1 million for chemicals, energy, and sludge disposal due to an anticipated increase in energy prices, slight growth in water sales and liquid oxygen for new ozone systems at water treatment plants;
- Vehicle use charges will increase \$1.0 million to continue replacing deferred purchases;
- Fees for the Board of Director elections will be incurred for \$0.5 million;
- Computer hardware and equipment will increase \$0.4 million for software, ongoing maintenance and equipment replacement needs;
- Allowance for self-insured liability and workers' compensation claims will increase by \$0.3 million;
- Security contracts will increase \$0.3 million due to scheduled annual contract increases; and
- Other operating expenditures of \$0.8 million will increase such as maintenance and operations supplies and services, District laboratory services, mailing costs, telephone expense, and Mokelumne Fish Hatchery operations.

## Department Operations by Budget Category

The table below depicts the Water System staffed departments operations by expense category. It does not include capital labor; however, capital labor by department is shown later in this chapter.

<b>FY18 &amp; FY19 DEPARTMENT OPERATIONS BY CATEGORIES</b>								
(\$ Thousands)								
<b>Department</b>	<b>FY18</b>				<b>FY19</b>			
	<b>Labor</b>	<b>Contract Services</b>	<b>All Other</b>	<b>Total Budget</b>	<b>Labor</b>	<b>Contract Services</b>	<b>All Other</b>	<b>Total Budget</b>
Operations & Maintenance Supt	10,060	3,667	5,116	<b>18,843</b>	10,222	3,977	5,280	<b>19,480</b>
Maintenance and Construction	71,404	3,202	24,556	<b>99,162</b>	73,110	3,157	25,365	<b>101,632</b>
Water Operations	31,337	2,700	19,539	<b>53,576</b>	31,688	2,767	20,892	<b>55,347</b>
Water Resources	6,536	385	1,566	<b>8,487</b>	6,588	200	1,684	<b>8,471</b>
Natural Resources	9,337	2,970	3,383	<b>15,690</b>	9,406	3,020	3,570	<b>15,997</b>
Engineering & Construction	16,990	184	1,095	<b>18,269</b>	17,349	160	1,153	<b>18,662</b>
Office of the General Manager	5,083	221	577	<b>5,882</b>	5,116	125	1,077	<b>6,318</b>
Finance	16,506	1,301	9,532	<b>27,339</b>	16,721	1,466	9,908	<b>28,095</b>
Information Systems	19,445	1,329	7,063	<b>27,837</b>	19,899	1,470	7,586	<b>28,955</b>
Customer & Community Svcs	16,452	349	3,393	<b>20,194</b>	16,744	349	3,541	<b>20,634</b>
Human Resources	8,531	1,762	775	<b>11,068</b>	8,698	1,757	758	<b>11,213</b>
Office of the General Counsel	3,591	750	235	<b>4,576</b>	3,607	750	235	<b>4,592</b>
Water Recycling Program	1,566	91	3,762	<b>5,419</b>	1,582	83	3,845	<b>5,510</b>
Administration	0	0	376	<b>376</b>	0	0	377	<b>377</b>
<b>TOTAL</b>	<b>216,838</b>	<b>18,911</b>	<b>80,969</b>	<b>316,718</b>	<b>220,731</b>	<b>19,281</b>	<b>85,271</b>	<b>325,282</b>

Numbers in the table may be rounded.

## Staffed Department Descriptions

The next section describes each of the staffed departments and includes the following topics:

Overview provides an overall statement about the key responsibilities of the department within the larger mission of the District as a whole.

Description of Services Provided describes the responsibilities of the department, by unit (division) or by function, including services required to meet regulatory or legal requirements.

FY18 & FY19 Goals highlights the highest priority tasks or projects related to the budget, and places these within the context of the overall District Strategic Plan.

Department Budget Summary is a reference table that shows the Department's operating budget expenditures by category (Labor and Benefits, Contract Services, All Other Costs). It also includes capital labor to give a more complete picture of departmental budget.

Budget Highlights shows changes in cost relative to the previous fiscal year and describes reasons for those changes. This section focuses on the significant budget change.

Staffing Summary is a reference table that shows the Full-Time Equivalent (FTE) for the department by appointment type (full-time, part-time, etc.).

Staffing Changes is a section included only for departments that have position changes that require Board approval. It includes a table that enumerates position changes, followed by a brief description of the changes. The change in cost is determined by comparing the annual cost of the salaries and benefits of the current classification with the annual cost of the new classification at the top salary step.

The following guide lists each department by name, the divisions within each department, and includes the page number to locate each department in this chapter.

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## **OPERATIONS AND MAINTENANCE SUPPORT DEPARTMENT**

### **OVERVIEW**

The Operations and Maintenance Support Department is responsible for managing and improving the water system infrastructure, processes and assets, and providing District-wide support and leadership in regulatory compliance, emergency preparedness and facility security.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of the Water Quality program and the Asset Management program which develops and maintains work management systems for field operations and staff. It also contains the Regulatory Compliance Office which provides security services, environmental compliance guidance and assistance, emergency preparedness support and workplace health and safety support to the entire District, and is also responsible for physical plant engineering services.

### **FY18 & FY19 GOALS**

The department has primary responsibility for leading the Water Quality and Environmental Protection Strategic Plan goal. Key department goals include:

- Improving distribution system water quality;
- Implementing lead program, including customer tap sampling, school sampling, and lead service inventory;
- Investigating and reducing disinfection by products; and
- Implementing enhanced compliance activity for pipeline creek crossings.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	10,098	10,262	10,661	3.9%	10,855	1.8%
Less: Capital Labor and Benefits	(777)	(427)	(601)	40.8%	(632)	5.3%
Operating Labor and Benefits	9,321	9,835	10,060	2.3%	10,222	1.6%
Contract Services	3,138	3,218	3,667	13.9%	3,977	8.5%
All Other Costs	4,773	5,059	5,116	1.1%	5,280	3.2%
<b>Operating Total</b>	<b>17,231</b>	<b>18,113</b>	<b>18,843</b>	<b>4.0%</b>	<b>19,480</b>	<b>3.4%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.7 million or 4.0 percent compared to FY17. In FY19, the budget will increase by \$0.6 million or 3.4 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits costs are increasing \$0.4 million, while operating labor and benefits are increasing by a smaller amount, primarily due to funding an additional position, scheduled salary step increases, and a higher portion allocated to capital primarily for vulnerability assessment security measures. Contract services are increasing \$0.4 million primarily due to an increase in security contracts that serve the entire District. All other costs are increasing \$0.06 million primarily due to an increase in District laboratory services cost.

### FY19

Total labor and benefits costs will increase \$0.2 million primarily due to scheduled salary step increases. Contract services will increase \$0.3 million primarily due to increases in security contracts. All other costs will increase \$0.2 million primarily due to an increase in District laboratory services cost.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	49.0	49.0	51.0	2.0	51.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total FTE</b>	<b>49.0</b>	<b>49.0</b>	<b>51.0</b>	<b>2.0</b>	<b>51.0</b>	<b>0.0</b>

In FY18, the increase of one full-time FTE reflects a transfer into the department.



## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Add		(LT) Associate Civil Engineer	219,822	1.0	Security Systems, Raw Water Studies, and Upcountry Wastewater Treatment Projects
<b>FY18 TOTAL</b>				<b>219,822</b>	<b>1.0</b>	

In FY18, the department is adding one limited-term FTE to perform design work on selected capital projects. The Upcountry Wastewater Collection and Treatment Systems project will address improvements that minimize risk to the environment, health and safety and regulatory compliance based on the master plan; operational experience; and collection system inspections. Another capital project this position will support is improvements to the security systems at District facilities to minimize risk to the workplace, assets, and operations. These improvements are based on the Security Vulnerability Assessment completed in 2017.

## **MAINTENANCE AND CONSTRUCTION DEPARTMENT**

### **OVERVIEW**

The Maintenance and Construction Department is responsible for maintaining the local water system infrastructure and facilities, performing preventative and corrective maintenance, replacing and rehabilitating the District's infrastructure, reading and maintaining the nearly 400,000 water meters, and maintaining all District owned vehicles and heavy equipment.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of the Distribution Maintenance and Construction (DMC), Facilities Maintenance and Construction (FMC), Pipeline Construction and Equipment (PCE), and Meter Reading and Maintenance (MRM) divisions. DMC installs new services and pipelines and supports the maintenance, replacement, and installation of the water distribution system by repairing leaks, and replacing pipeline appurtenances. FMC provides support for the water treatment and distribution infrastructure and other facilities located throughout the Water System including the computer systems used to operate the water system. PCE installs replacement pipelines, provides District-wide construction support, and is responsible for vehicle and equipment maintenance and replacement. MRM is responsible for the maintenance, repair, and reading of meters, and backflow prevention.

### **FY18 & FY19 GOALS**

The department has a key role in the Long-Term Infrastructure Investment Strategic Plan goal. Key department goals include:

- Meeting Key Performance Indicators for critical meter repair backlog, exercising water system valves, and recording asset maintenance activities for analysis;
- Implementing OP/NET system improvements and cyber security controls for the industrial control systems and centralized security systems; and
- Leading the industry in water loss control through using new and innovative technology, effective maintenance practices, and efficient operations.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	99,000	106,452	109,005	2.4%	111,752	2.5%
Less: Capital Labor and Benefits	(34,820)	(35,551)	(37,601)	5.8%	(38,642)	2.8%
Operating Labor and Benefits	64,180	70,901	71,404	0.7%	73,110	2.4%
Contract Services	3,513	2,435	3,202	31.5%	3,157	-1.4%
All Other Costs	24,891	23,355	24,556	5.1%	25,365	3.3%
<b>Operating Total</b>	<b>92,583</b>	<b>96,692</b>	<b>99,162</b>	<b>2.6%</b>	<b>101,632</b>	<b>2.5%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$2.5 million or 2.6 percent compared to FY17. In FY19, the budget will increase \$2.5 million or 2.5 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits costs are increasing \$2.6 million primarily due to funding additional positions to reduce reliance on fully-manned and operated (FM&O) contract services and increase maintenance on the distribution system. Operating labor and benefits are increasing \$0.5 million primarily due to scheduled salary step increases. Contract services are increasing \$0.8 million primarily due to satellite leak detection (\$0.2 million), increased vegetation management (\$0.2 million), and to meet the goal of less than 30-day turnaround for concrete work during peak workload periods (\$0.2 million). All other costs are increasing by \$1.2 million primarily due to construction materials and services for increased pipeline repair work (\$1.0 million), and the cost of repairing and maintaining the District's fleet of vehicles and equipment (\$0.1 million).

### FY19

Total labor and benefits costs will increase by \$2.7 million compared to the prior year primarily due to funding additional positions to further reduce reliance on full-manned and operated contract services, and scheduled salary step increases. All other costs will increase by \$0.8 million related to the District's vehicle and equipment fleet operating expenses.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	682.0	686.0	713.0	27.0	719.0	6.0
Limited-Term / Temp Construction	22.0	22.0	14.0	(8.0)	14.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	7.0	7.0	7.0	0.0	7.0	0.0
<b>Total FTE</b>	<b>711.0</b>	<b>715.0</b>	<b>734.0</b>	<b>19.0</b>	<b>740.0</b>	<b>6.0</b>

In FY18, one full-time FTE is transferred to another department.

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Water Distribution Plumber I / II / III	25,974	0.0	Stabilize Pipeline Rebuild Crew
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Water Distribution Plumber I / II / III	25,974	0.0	
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Water Distribution Plumber I / II / III	25,974	0.0	
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Utility Laborer / Water Distribution Plumber I / II / III	25,974	0.0	Increased Maintenance on Distribution System
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Utility Laborer / Water Distribution Plumber I / II / III	25,974	0.0	
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Utility Laborer / Water Distribution Plumber I / II / III	25,974	0.0	
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Utility Laborer / Water Distribution Plumber I / II / III	25,974	0.0	
2018	Flex Class & Character	(TC) Water Distribution Plumber I	Utility Laborer / Water Distribution Plumber I / II / III	25,974	0.0	

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FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Add		Utility Laborer	118,497	1.0	Increased Maintenance on Distribution System
2018	Add		Utility Laborer	118,497	1.0	
2018	Add		Utility Laborer	118,497	1.0	
2018	Add		Utility Laborer	118,497	1.0	
2018	Add		Utility Laborer	118,497	1.0	
2018	Add		Utility Laborer	118,497	1.0	
2018	Add		Utility Laborer	118,497	1.0	
2018	Add		Maintenance Shift Supervisor	184,917	1.0	Reduce Overtime
2018	Add		Maintenance Shift Supervisor	184,917	1.0	
2018	Add		Maintenance Shift Supervisor	184,917	1.0	
2018	Add		Maintenance Shift Supervisor	184,917	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	Reduce Reliance on FM&O Contract Services
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
2018	Add		Heavy Transport Operator	140,944	1.0	
<b>FY18 TOTAL</b>				<b>3,045,470</b>	<b>20.0</b>	

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FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2019	Add		Heavy Equipment Operator	148,103	1.0	Reduce Reliance on FM&O Contract Services
2019	Add		Truck Driver II	137,584	1.0	
2019	Add		Heavy Transport Operator	141,037	1.0	
2019	Add		Heavy Transport Operator	141,037	1.0	
2019	Add		Heavy Equipment Operator	148,103	1.0	
2019	Add		Associate Electrical Engineer	219,822	1.0	Water Treatment Plant Control Systems
<b>FY19 TOTAL</b>				<b>935,687</b>	<b>6.0</b>	

In FY18, the department is converting eight temporary construction FTEs in the Pipeline Rebuild Program to full-time FTEs, and adding 20 full-time FTEs to increase maintenance on the distribution system, reduce overtime, and reduce reliance on contract services for fully manned and operated (FM&O) equipment. Of the 20 FTEs, seven Utility Laborers are added to increase the support of ongoing maintenance of the water distribution pipelines and appurtenances including leak detection and valve testing.

In FY19, the department is adding six full-time FTEs. Five FTEs will further reduce reliance on contract services for FM&O equipment. One FTE will support the water system control systems used to monitor the water treatment plants, distribution system and water supply systems. In addition, this position will support the cyber security of the network and the new control systems at Orinda, Walnut Creek, Sobrante, and Upper San Leandro water treatment plants.

## **WATER OPERATIONS DEPARTMENT**

### **OVERVIEW**

The Water Operations Department is responsible for operating Pardee and Camanche Reservoirs as an integrated system to achieve multiple objectives including providing high quality water to District customers, stream flow regulation, environmental protection, flood control, hydropower, and releases for downstream requirements. The department delivers water from Pardee Reservoir or the local reservoirs to the water treatment plants, from where it flows into the distribution system and to the District's customers.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of the Water Supply and Water Treatment and Distribution divisions. The Water Supply Division operates and maintains Pardee and Camanche Reservoirs, raw water aqueducts, pumping plants, hydropower facilities, local reservoirs, and the Folsom South Canal Connection system, in compliance with all water rights, contractual requirements, and environmental regulations, and maintenance of the recreation areas. The Water Treatment and Distribution Division operates the potable water treatment plants and distribution facilities, and is responsible for investigating water quality, pressure and flow inquiries, and implementing a comprehensive energy management program.

### **FY18 & FY19 GOALS**

The department has a key role in implementing the Water Quality and Environmental Protection Strategic Plan goal. Key department goals include:

- Operating the water system to meet multiple objectives including municipal water supply, stream flow regulation, environmental protection, flood control, and releases for downstream requirements;
- Meeting Joint Settlement Agreement Mokelumne River minimum flow releases 100% of the time;
- Meeting water quality regulations and water quality goals 100% of the time;
- Managing Freeport operations and supplemental supply evaluations and recommendations;
- Operating the water system to maximize hydropower revenue and minimize chemical, energy, and sludge disposal costs; and
- Leading the District's energy strategy.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	30,341	31,320	32,546	3.9%	32,910	1.1%
Less: Capital Labor and Benefits	(2,298)	(1,212)	(1,209)	-0.2%	(1,221)	1.0%
Operating Labor and Benefits	28,043	30,108	31,337	4.1%	31,688	1.1%
Contract Services	862	865	2,700	212.0%	2,767	2.5%
All Other Costs	19,495	22,820	19,539	-14.4%	20,892	6.9%
<b>Operating Total</b>	<b>48,400</b>	<b>53,793</b>	<b>53,576</b>	<b>-0.4%</b>	<b>55,347</b>	<b>3.3%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is decreasing \$0.2 million or 0.4 percent compared to FY17. In FY19, the budget will increase \$1.8 million or 3.3 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Operating labor and benefits costs are increasing \$1.2 million primarily due to a greater number of funded FTEs to support water treatment and water quality. Contract services are increasing \$1.8 million due to a new requirement for lead sampling in schools and a voluntary customer tap lead sampling program (\$1.5 million), and required disinfection for additional new pipes being put into service (\$0.3 million). All other costs are decreasing a net of \$3.3 million; chemicals, energy, and sludge disposal from water production are decreasing \$4.0 million as a result of reduced water consumption following the recent Stage 4 drought emergency, offset by rising operational costs such as state drinking water fees.

### FY19

Operating labor and benefits will increase by \$0.4 million due to scheduled salary step increases. All other costs will increase \$1.4 million primarily driven by the unit cost of energy and chemicals compared to the prior year as water demand gradually increases.



## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	187.0	185.0	185.0	0.0	185.0	0.0
Limited-Term / Temp Construction	0.0	0.0	1.0	1.0	1.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	2.0	2.0	2.0	0.0	2.0	0.0
<b>Total FTE</b>	<b>189.0</b>	<b>187.0</b>	<b>188.0</b>	<b>1.0</b>	<b>188.0</b>	<b>0.0</b>

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Add		(LT) Water Distribution Supervisor	219,822	1.0	Lead Sampling in Schools and Voluntary Customer Tap Lead Sampling Program
<b>FY18 TOTAL</b>				<b>219,822</b>	<b>1.0</b>	

In FY18, the department is adding one limited-term FTE Water Distribution Supervisor to oversee the new requirement for lead sampling in schools and the District's voluntary customer tap lead sampling program.

## **WATER RESOURCES DEPARTMENT**

### **OVERVIEW**

The Water Resources Department develops and administers the plans, policies and programs necessary to protect existing District water resources, develops additional water supplies to meet future needs, and assures the availability of adequate physical facilities to meet those needs.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of the Bay Delta Section, the Water Resources Planning and the Water Supply Improvements divisions. The Bay-Delta Section provides the District's technical and policy evaluation and advocacy efforts related to the State and Federal plans to restore the San Francisco Bay-Delta ecosystem. Water Resources Planning Division administers the District's licenses, permits and agreements for current water supplies, conducts water resource analyses to support operations and long-range planning, and prepares reports and implements plans needed to comply with state and federal regulations related to water supply management. Water Supply Improvements Division plans and implements supplemental supply and recycling projects needed to meet current and future needs.

### **FY18 & FY19 GOALS**

The department has primary responsibility for the Long-Term Water Supply Strategic Plan goal. Key department goals include:

- Continuing collaborative partnerships for ensuring dry year water supply with emphasis on a long-term water transfer agreement with Placer County Water Agency, development of a Groundwater Banking Demonstration project with San Joaquin County, and water supply reliability partnerships in the Bay Area;
- Preparing a Recycled Water Master Plan and expanding the current projects to increase total recycled water deliveries;
- Reducing demand on Mokelumne River and East Bay water supplies through expansion of recycled water service along the I-80 corridor, San Ramon Valley, Richmond and the Chevron Refinery;
- Participating in State Water Resources Control Board hearings on the California Water Fix and the Water Quality Control Plan;
- Convening the Mokelumne River Stakeholders forum to coordinate long-term water supply planning;
- Publishing the Water Management Plan for submission to the US Bureau of Reclamation; and
- Amending the District's license with the Federal Energy Regulatory Commission to facilitate construction activities near Pardee and Camanche Dam.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	7,513	7,878	8,058	2.3%	8,122	0.8%
Less: Capital Labor and Benefits	(2,242)	(1,328)	(1,522)	14.6%	(1,534)	0.8%
Operating Labor and Benefits	5,272	6,551	6,536	-0.2%	6,588	0.8%
Contract Services	160	195	385	97.9%	200	-48.1%
All Other Costs	1,316	1,514	1,566	3.4%	1,684	7.5%
<b>Operating Total</b>	<b>6,748</b>	<b>8,259</b>	<b>8,487</b>	<b>2.8%</b>	<b>8,471</b>	<b>-0.2%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.2 million or 2.8 percent compared to FY17. In FY19, the budget will decrease \$0.02 million or 0.2 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits costs are increasing \$0.2 million primarily due to a higher portion of labor allocated to capital for recycled water projects. Contract services costs are increasing \$0.2 million to develop a Historical Properties Management Plan (HPMP), and to inspect hydroelectric projects required every five years by the Federal Energy Regulatory Commission (FERC). All other costs are increasing \$0.05 million primarily for water rights fees required by the State Water Resources Control Board.

### FY19

Total labor and benefits costs will increase \$0.06 million due to scheduled salary step increases. Contract services costs will decrease \$0.2 million due to work completed on the HPMP and FERC project inspection. All other costs will increase \$0.1 million primarily due to the District's share of the Upper Mokelumne River Watershed Authority's work focused on forest health issues.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	39.0	38.0	37.0	(1.0)	37.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.0	0.5	0.5	0.0	0.5	0.0
<b>Total FTE</b>	<b>39.0</b>	<b>38.5</b>	<b>37.5</b>	<b>(1.0)</b>	<b>37.5</b>	<b>0.0</b>

In FY18, one full-time FTE is transferred to another department.

## **NATURAL RESOURCES DEPARTMENT**

### **OVERVIEW**

The Natural Resources Department develops and implements plans, policies, and programs necessary to manage over 50,000 acres of water, watershed lands and related facilities. The department develops and implements programs for water quality, environmental protection and public recreation on these lands, and the reservoirs, rivers and streams within them.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of the East Bay Watershed and Recreation, the Mokelumne Watershed and Recreation, and the Fisheries and Wildlife divisions. Both Watershed and Recreation divisions, East Bay and Mokelumne, manage and protect the local and upcountry watershed lands owned by EBMUD, including overseeing environmental, recreation, and public education programs. The Fisheries and Wildlife Division develops and maintains the scientific information necessary to manage and protect wildlife and fisheries on EBMUD-owned lands and the Lower Mokelumne River fishery, conducts monitoring to comply with water right agreements, provides biological support for capital projects, and responds to service area incidents.

### **FY18 & FY19 GOALS**

The department has a key role in the Water Quality and Environmental Protection Strategic Plan goals. Key department goals include:

- Implementing the water quality protection, environmental stewardship and recreation and public use programs consistent with the East Bay and Mokelumne Watershed Master Plans;
- Updating the East Bay Watershed Master Plan;
- Continuing to build on the successful fishery program for the Mokelumne River including expansion of the science programs on outmigration survival, juvenile barging and hatchery genetics management;
- Providing support for Chabot Dam Seismic Upgrade Project;
- Assisting in protocol development for the new National Pollutant Discharge Elimination System permit for drinking water discharges;
- Establishing and operating the Oursan Ridge Conservation Bank; and
- Developing the San Leandro Creek Management Plan.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	9,324	9,557	9,351	-2.2%	9,420	0.7%
Less: Capital Labor and Benefits	(191)	0	(13)	0	(14)	2.2%
Operating Labor and Benefits	9,132	9,557	9,337	-2.3%	9,406	0.7%
Contract Services	2,510	2,870	2,970	3.5%	3,020	1.7%
All Other Costs	2,902	3,063	3,383	10.5%	3,570	5.5%
<b>Operating Total</b>	<b>14,545</b>	<b>15,490</b>	<b>15,690</b>	<b>1.3%</b>	<b>15,997</b>	<b>2.0%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.2 million or 1.3 percent compared to FY17. In FY19, the budget will increase \$0.3 million or 2.0 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits are decreasing \$0.2 million primarily due to a lower fringe benefit rate. Contract services costs are increasing \$0.1 million primarily due to public safety services provided by the East Bay Regional Park District Police and Amador and Calaveras County Sheriff's Department. All other costs are increasing \$0.3 million primarily due to increased costs for the California Department of Fish and Game to operate the Mokelumne River Fish Hatchery, and the continuation of the juvenile salmon outmigration barging study.

### FY19

Total labor and benefits costs will increase \$0.07 million due to scheduled salary step increases. Contract services cost will increase \$0.05 million due to anticipated increases for watershed security contracts. All other costs will increase \$0.2 million due to the hatchery operations agreement with the California Department of Fish and Game, and District vehicle fleet cost.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	67.0	66.0	66.0	0.0	66.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	2.5	2.5	2.5	0.0	2.5	0.0
<b>Total FTE</b>	<b>69.5</b>	<b>68.5</b>	<b>68.5</b>	<b>0.0</b>	<b>68.5</b>	<b>0.0</b>

## **ENGINEERING AND CONSTRUCTION DEPARTMENT**

### **OVERVIEW**

The Engineering and Construction Department is responsible for developing plans, policies and programs that assure the availability of physical facilities to meet current and future water service needs; and capital program implementation, including infrastructure management, system expansions, and facility improvements. The department provides technical leadership and innovation in engineering, construction, research and development, and operational efficiency improvements.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of Water Distribution Planning, Design, Construction, Pipeline Infrastructure, and Engineering Services. Direct services include planning, design, and construction management and inspection of water system capital projects. Support services include cost estimating, contract specifications preparation, bid and award management, surveying, mapping, graphic design, hydraulic modeling, geotechnical engineering, materials testing, engineering records storage and engineering support to other departments.

### **FY18 & FY19 GOALS**

The department is primarily responsible for leading the Long-Term Infrastructure Investment goal and providing support to all other goals identified in the District's Strategic Plan. Key department goals include:

- Developing and maintaining coordinated master plans;
- Implementing the Capital Improvement Program based on priorities identified in the plans;
- Continuing support for the ramp-up of planned pipeline infrastructure renewals;
- Planning, designing and overseeing the construction of improvements at the District's water treatment plants identified in a recent comprehensive assessment to ensure high quality water continues to be delivered to customers; and
- Supporting the implementation and use of information technologies that improve the efficiency and effectiveness of business processes, such as geospatial tools and radio frequency identification.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	46,065	48,957	52,139	6.5%	53,097	1.8%
Less: Capital Labor and Benefits	(31,735)	(32,436)	(35,149)	8.4%	(35,748)	1.7%
Operating Labor and Benefits	14,330	16,521	16,990	2.8%	17,349	2.1%
Contract Services	188	125	184	48.0%	160	-13.5%
All Other Costs	966	963	1,095	13.8%	1,153	5.3%
<b>Operating Total</b>	<b>15,484</b>	<b>17,608</b>	<b>18,269</b>	<b>3.8%</b>	<b>18,662</b>	<b>2.1%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.7 million or 3.8 percent compared to FY17. In FY19, the budget will increase \$0.4 million or 2.1 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefit costs are increasing \$3.2 million due to additional staff associated with applicant pipeline extension work, construction and materials inspections, and support on the Alameda Crossings and the Wildcat Aqueduct Replacement projects. Capital labor and benefits is increasing \$2.7 million due to a higher portion of labor allocated to capital projects, and funding for Engineering Aides. The Engineering Aides is an outreach effort to attract potential future engineering candidates. Contract services are increasing \$0.06 million primarily due to technical training for new hires and engineering professional services. All other costs are increasing \$0.1 million primarily to replace a format scanner, printer, and survey equipment.

### FY19

Total labor and benefit costs will increase \$1.0 million primarily due to scheduled salary step increases and to account for a fully staffed department. All other costs will increase \$0.06 million primarily due to higher fees for California State Department of Safety of Dams.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	254.0	255.0	257.0	2.0	257.0	0.0
Limited-Term / Temp Construction	8.0	9.0	15.0	6.0	15.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	2.0	3.5	3.5	0.0	3.5	0.0
<b>Total FTE</b>	<b>264.0</b>	<b>267.5</b>	<b>275.5</b>	<b>8.0</b>	<b>275.5</b>	<b>0.0</b>



## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Add		(LT) Engineering Designer I / II / Drafter I / II / III	140,944	1.0	Applicant Pipeline Extension
2018	Add		(TC) Senior Construction Inspector / Construction Inspector	194,205	1.0	Alameda Crossings and Wildcat Aqueduct Replacement projects
2018	Add		(LT) Senior Construction Inspector / Construction Inspector	194,205	1.0	Applicant Pipeline Extension and Pipeline Relocation
2018	Add		Assistant Surveying Supervisor	209,210	1.0	Facility, Pipeline, and Construction Surveying
2018	Add		(LT) Materials Inspector / Senior Construction Inspector / Construction Inspector	194,205	1.0	Pipe, Valve, Materials Inspections
2018	Add		(LT) Materials Inspector / Senior Construction Inspector / Construction Inspector	194,205	1.0	Pipe, Valve, Materials Inspections
2018	Add		(LT) Senior Construction Inspector / Construction Inspector	194,205	1.0	Applicant Pipeline Extension and Pipeline Relocation
2018	Add		Survey Technician I / II	155,568	1.0	District-wide Survey Services
2018	Reallocate	Management Analyst I / II	Senior Civil Engineer	69,890	0.0	Geospatial Initiatives
<b>FY18 TOTAL</b>				<b>1,546,637</b>	<b>8.0</b>	

In FY18, three limited-term FTEs are needed due to an anticipated increase in applicant pipeline extension work (one Designer/Drafter and two Senior Construction Inspectors). Two limited-term FTEs (Materials Inspectors) are needed to support pipe, valve, and materials inspections, and one full-time FTE (Assistant Surveying Supervisor) is needed due to an increase in baseline surveying work. One temporary construction FTE Senior Construction Inspector is needed to support the Alameda Crossings and the Wildcat Aqueduct Replacement projects. One full-time FTE (Survey Technician I/II) is needed to provide District-wide survey services including the growing volume of infrastructure renewal work. The reallocation of a Management Analyst I/II position to a Senior Civil Engineer is needed to support the advancement of geospatial initiatives such as Radio Frequency Identification (RFID), Geographic Positioning Systems (GPS), and Geographic Information Systems (GIS) which will enhance productivity across the District.

## **OFFICE OF THE GENERAL MANAGER**

### **OVERVIEW**

The Office of the General Manager manages the overall operations of the District and implements the policies and priority programs of the Board of Directors with an emphasis on effectively communicating with all stakeholders and advancing EBMUD's policy objectives with the state and federal legislatures.

### **DESCRIPTION OF SERVICES PROVIDED**

The department includes the Office of the General Manager, Inter-Governmental Affairs, Public Affairs and the Office of the Secretary of the District. The Office of the General Manager provides several District-wide functions including: legislative and intergovernmental agency advocacy; public and community education and outreach; support to the Board of Directors and District-wide records management, including managing responses to public records requests.

### **FY18 & FY19 GOALS**

The department supports all six Strategic Plan goals. Key department goals include:

- Supporting EBMUD's water and wastewater program goals through engaging and communicating with the public about District operations and infrastructure, Board policy proposals and decisions, and stewardship of the District's natural, financial and human resources;
- Educating stakeholders on the need for a generational investment in infrastructure and on other District priorities as expressed through the District's Strategic Plan; and
- Supporting EBMUD's water and wastewater program goals through legislative efforts to advance EBMUD's policy objectives and acquire state and federal funding and to proactively support legislation through active outreach and customer education.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	4,881	5,168	5,083	-1.6%	5,116	0.6%
Less: Capital Labor and Benefits	(2)	0	0	0	0	0
Operating Labor and Benefits	4,879	5,168	5,083	-1.6%	5,116	0.6%
Contract Services	126	241	221	-8.3%	125	-43.5%
All Other Costs	392	1,065	577	-45.8%	1,077	86.6%
<b>Operating Total</b>	<b>5,398</b>	<b>6,474</b>	<b>5,882</b>	<b>-9.2%</b>	<b>6,318</b>	<b>7.4%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is decreasing \$0.6 million or 9.2 percent compared to FY17. In FY19, the budget will increase \$0.4 million or 7.4 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits are decreasing \$0.09 million primarily due to a lower fringe benefit rate and new employees with salaries lower than the employees they replaced. All other costs are decreasing \$0.5 million primarily due to Board election fees charged by the counties to participate in the ballot process which occurs in the second year of the biennial budget.

### FY19

Total labor and benefits will increase \$0.03 million due to scheduled salary step increases. Contract services costs will decrease \$0.1 million due to the District-wide customer survey expense which occurred in the prior fiscal period. All other costs will increase \$0.5 million due to the Board election fees mentioned above which occur in the second year of the budget.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	25.0	25.0	25.0	0.0	25.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.5	0.5	0.5	0.0	0.5	0.0
<b>Total FTE</b>	<b>25.5</b>	<b>25.5</b>	<b>25.5</b>	<b>0.0</b>	<b>25.5</b>	<b>0.0</b>

## **FINANCE DEPARTMENT**

### **OVERVIEW**

The Finance Department is responsible for providing proactive and strategic management of District finances and ensuring the long-term financial stability of the District. These responsibilities include managing the finances to meet funding needs, ensuring adequate internal financial controls, reporting financials timely and accurately, managing the budget efficiently, implementing reasonable rates and charges, optimizing investment of cash funds, maintaining good standing in the credit markets, and engaging actively with external stakeholders to promote fiscal transparency and accountability.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of Accounting, Budget Office, Internal Audit, Treasury Operations, Purchasing, and Risk Management divisions. It provides a range of financial services including accounts payable and payroll, financial reporting, biennial budget management, grant administration, strategic planning coordination, debt management, credit rating agency and investor relations, rates and charges, investment of funds, procurement and supply chain management, liability and workers compensation claim management, insurance procurement, and internal controls. The department also supports the District's Employee Retirement System with respect to investment management.

### **FY18 & FY19 GOALS**

The department supports all six Strategic Plan goals but is primarily responsible for leading the Long-Term Financial Stability Strategic Plan goal. Key department goals include:

- Developing a long-range financing plan;
- Increasing fiscal transparency and accountability in financial reporting; and
- Replacing aging financial, materials management, and human resources information systems.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	14,376	16,511	16,506	0.0%	16,721	1.3%
Less: Capital Labor and Benefits	(198)	(969)	0	-100.0%	0	0
Operating Labor and Benefits	14,178	15,542	16,506	6.2%	16,721	1.3%
Contract Services	1,142	1,336	1,301	-2.6%	1,466	12.7%
All Other Costs	9,379	9,706	9,532	-1.8%	9,908	3.9%
<b>Operating Total</b>	<b>24,699</b>	<b>26,584</b>	<b>27,339</b>	<b>2.8%</b>	<b>28,095</b>	<b>2.8%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.8 million or 2.8 percent compared to FY17. In FY19, the budget will increase \$0.8 million or 2.8 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Operating labor and benefits are increasing \$1.0 million primarily due to an increase in funded FTEs for the replacement of three critical computer systems that support financial, materials management, and human resources information. All other costs are decreasing \$0.2 million primarily due to a one-time print shop expenditure in the prior fiscal year for new production equipment.

### FY19

Total labor and benefit costs will increase \$0.2 million primarily due to scheduled salary step increases. Contract services will increase \$0.2 million primarily due to a rates and charges study, worker's compensation administrative costs, and office and print shop equipment maintenance costs. All other costs will increase \$0.4 million consistent with prior years' trends for cost associated with self-insured liability claims.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	97.0	98.0	99.0	1.0	99.0	0.0
Limited-Term / Temp Construction	0.0	1.0	0.0	(1.0)	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.5	0.5	0.5	0.0	0.5	0.0
<b>Total FTE</b>	<b>97.5</b>	<b>99.5</b>	<b>99.5</b>	<b>0.0</b>	<b>99.5</b>	<b>0.0</b>

In FY18, one full-time FTE is transfer into the department.

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Flex Class & Character	Senior Wastewater Control Inspector	(TC) Accounting & Financial Systems Analyst / (Reg) Senior Wastewater Control Inspector	32,398	0.0	HRIS Project
2018	Flex Class & Character	Admin Clerk / Information Systems Support Analyst I / II	Admin Clerk / (LT) Information Systems Specialist I / II / III	(52,057)	0.0	MMIS Project
2018	Flex Class & Character	Senior Accounting & Financial Systems Analyst / Management Analyst I / II	(Reg/LT) Senior Accounting & Financial Systems Analyst / (Reg) Management Analyst I / II	0	0.0	FIS Project
2018	Delete	(TC) Information System Support Analyst II		(189,551)	(1.0)	CIS Project Completed
<b>FY18 TOTAL</b>				<b>(209,210)</b>	<b>(1.0)</b>	

In FY18, three existing FTEs are temporarily reallocated to the Human Resources Information System (HRIS), Materials Management Information System (MMIS), and Financial Information System (FIS) replacement capital projects currently underway. These FTEs are required to support short-term implementation and streamline business processes that will change as a result of the new computer systems. The department is deleting one temporary construction FTE due to the completion of the Customer Information System (CIS) Project.

## **INFORMATION SYSTEMS DEPARTMENT**

### **OVERVIEW**

The Information Systems Department is responsible for planning, deploying, operating and maintaining information technology and services in support of District functions. These responsibilities include providing security and recoverability for business systems and data critical to the operations of the District.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of the Data Center, Applications Development, and Information Technology Security divisions. These divisions support the lifecycle of the District's technology and communication needs including initial planning, acquisition, development, deployment, and ongoing maintenance. Areas supported include: desktop and mobile computing; remote access; network connectivity; telephone, radio, and microwave communications; application development and integration for a wide range of business functions; risk identification in the computing and network environments; guidance to ensure District systems and data are properly secured and available; and planning to ensure business continuity of District computing resources.

### **FY18 & FY19 GOALS**

The department has a key role in the Long-Term Financial Stability Strategic Plan goal. Key department goals include:

- Ensuring that maintenance and project work is performed in a manner that supports the achievement of goals outlined in the Information Technology (IT) Master Plan;
- Completing planning and beginning implementation of projects to replace the Human Resource Information System and Work Management System;
- Completing planning to replace the Laboratory Information System;
- Implementing a new Materials Management Information Management System and Financial Information System; and
- Implementing the IT Governance FY18-19 Project Portfolio.



## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	18,730	19,604	19,584	-0.1%	20,046	2.4%
Less: Capital Labor and Benefits	(253)	(803)	(139)	-82.6%	(147)	5.6%
Operating Labor and Benefits	18,477	18,801	19,445	3.4%	19,899	2.3%
Contract Services	854	994	1,329	33.6%	1,470	10.7%
All Other Costs	6,859	7,771	7,063	-9.1%	7,586	7.4%
<b>Operating Total</b>	<b>26,191</b>	<b>27,566</b>	<b>27,837</b>	<b>1.0%</b>	<b>28,955</b>	<b>4.0%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.3 million or 1.0 percent compared to FY17. In FY19, the budget will increase \$1.1 million or 4.0 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefit costs are decreasing \$0.02 million. Capital labor and benefits are decreasing \$0.7 million due a lower portion of labor allocated to capital projects. Operating labor and benefits are increasing \$0.6 million primarily due to higher portion of labor allocated to operating compared to FY17, funding the IT intern program, and scheduled salary step increases. The IT intern program is an outreach effort to attract college students for potential future IT candidates. Contract services are increasing \$0.3 million primarily due to a data warehouse consulting contract, project management training, and firewall maintenance costs. All other costs are decreasing by \$0.7 million due to the completion of the FY16 and FY17 budget priority to replace deferred aging equipment. This budget continues to include funding to the equipment replacement fund for ongoing equipment replacement needs.

### FY19

Total labor and benefit costs will increase \$0.5 million primarily due to scheduled salary step increases and to account for a fully staffed department. Contract services will increase \$0.1 million primarily due to a cloud service for the Contact Center. All other costs will increase \$0.5 million for computer hardware, software, and communications equipment.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	92.0	92.0	94.0	2.0	94.0	0.0
Limited-Term / Temp Construction	4.0	2.0	2.0	0.0	2.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total FTE</b>	<b>96.0</b>	<b>94.0</b>	<b>96.0</b>	<b>2.0</b>	<b>96.0</b>	<b>0.0</b>

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Add		Senior Systems Programmer	214,385	1.0	Industrial Control Systems Security
2018	Add		Senior Systems Programmer	214,385	1.0	
<b>FY18 TOTAL</b>				<b>428,771</b>	<b>2.0</b>	

In FY18, based on a vulnerability assessment, two full-time FTEs (Senior Systems Programmers) will support the implementation and operation of a new, isolated server infrastructure that is necessary to improve security of the District's industrial control systems used for water treatment and distribution, security, and building controls.

## **CUSTOMER AND COMMUNITY SERVICES DEPARTMENT**

### **OVERVIEW**

The Customer and Community Service Department provides quality, responsive customer service through the use of efficient business practices, technology, and value added programs and services to District customers and stakeholders guided by fairness, consistency, efficiency, and high standards of professionalism and fiscal responsibility.

### **DESCRIPTION OF SERVICES**

The department's operations include the Contact Center, Field Services, Customer Services Support, New Business, Water Conservation, Real Estate Services, and Contract Equity divisions. These divisions are the direct interface to customers and internal and external stakeholders to support billing, payment, and service inquiries; field service operation requests; customer programs and services; Customer Information System administration, maintenance, systems integration and support; water conservation services and assistance; new service and development requests; property management and land acquisitions; mail distribution and payment processing; and enhance equal opportunities for business owners who are interested in doing business with the District.

### **FY18 & FY19 GOALS**

The department is primarily responsible for the Customer and Community Services Strategic Plan goal. Key department goals include:

- Providing responsive, quality service to meet and/or exceed customer expectations;
- Implementing new customer and community programs and services to increase customer engagement opportunities;
- Evaluating processes and business operations to enhance the customer experience;
- Promoting water use efficiency and conservation services;
- Completing the expansion of the Automated Metering Infrastructure technology pilot and water loss initiatives;
- Expanding opportunities to utilize land assets more effectively; and
- Promoting contract education and increasing contract equity opportunities.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	17,373	19,450	18,746	-3.6%	18,924	0.9%
Less: Capital Labor and Benefits	(2,113)	(2,648)	(2,293)	-13.4%	(2,179)	-5.0%
Operating Labor and Benefits	15,260	16,802	16,452	-2.1%	16,744	1.8%
Contract Services	172	327	349	6.7%	349	0.0%
All Other Costs	3,049	3,140	3,393	8.0%	3,541	4.4%
<b>Operating Total</b>	<b>18,482</b>	<b>20,269</b>	<b>20,194</b>	<b>-0.4%</b>	<b>20,634</b>	<b>2.2%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is decreasing \$0.08 million or 0.4 percent compared to FY17. In FY19, the budget will increase \$0.4 million or 2.2 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits are decreasing \$0.7 million. Operating labor and benefits are decreasing by approximately \$0.4 million due to a lower fringe benefit rate and a reduction in the number of funded positions. Capital labor and benefits are decreasing \$0.4 million primarily due to a lower portion of labor allocated to capital projects. All other costs are increasing \$0.3 million primarily for electronic bill payment and presentment services, District vehicle fleet costs, and U.S. postage costs.

### FY19

Total labor and benefits will increase \$0.2 million. Operating labor and benefits will increase \$0.3 million primarily due to scheduled salary step increases and a reallocation of a portion of labor from capital to operating. All other costs will increase \$0.1 million primarily for the printing and distribution costs of the Proposition 218 notices for the FY20 and FY21 biennial budget.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	121.0	121.0	125.0	4.0	125.0	0.0
Limited-Term / Temp Construction	1.0	1.0	0.0	(1.0)	0.0	0.0
Intermittent	3.0	3.0	3.0	0.0	3.0	0.0
Temporary / Part-Time	13.5	13.5	13.5	0.0	13.5	0.0
<b>Total FTE</b>	<b>138.5</b>	<b>138.5</b>	<b>141.5</b>	<b>3.0</b>	<b>141.5</b>	<b>0.0</b>

In FY18, four full-time FTEs are returned to the department.

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Delete	(LT) Associate Civil Engineer		(219,822)	(1.0)	Automated Metering Infrastructure
<b>FY18 TOTAL</b>				<b>(219,822)</b>	<b>(1.0)</b>	

In FY18, the department is deleting one limited-term FTE for program management of Automated Metering Infrastructure. The Operations and Maintenance Support Department will assume program management.

## **HUMAN RESOURCES DEPARTMENT**

### **OVERVIEW**

The Human Resources Department recruits, develops, and retains a diverse, well-qualified and professional workforce that reflects the values of EBMUD. It supports the District's core mission, and leads the organization in positive employee relations, talent management, succession planning and employee engagement.

### **DESCRIPTION OF SERVICES PROVIDED**

The department consists of Diversity and Inclusion, Employee Relations, Employee Services, Recruitment and Classification, and Employee Development divisions. These divisions administer the District's retirement system, deferred compensation programs and employee benefits; provide guidance to effectively resolve grievances and facilitate labor contract negotiations; implement training and development opportunities to support leadership and managerial skill enhancement; develop a performance recognition program that acknowledges employee contributions toward meeting Districts goals; steward a "grow our own" strategy to address skills shortages by developing employees to meet workforce demands; respond to discrimination and harassment complaints; work with the community on outreach efforts to attract a diverse applicant pool; and recruit and onboard a highly qualified, diverse employee population.

### **FY18 & FY19 GOALS**

The department is primarily responsible for leading the Workforce Planning and Development Strategic Plan goal. Key department goals include:

- Implementing workforce development plans to identify future employees to fill anticipated vacancies resulting from retirements;
- Completing the labor negotiations process for successor Memoranda of Understanding;
- Implementing a health care strategy that provides a competitive benefit package while recognizing the potential increase in forecasted health care costs;
- Completing recruitments in a timely manner to fill vacancies created by the large number of retirements; and
- Continuing to work with the Values and Organizational Improvements teams to imbed the District's values and implement organizational changes as identified by the teams.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	7,712	8,210	8,531	3.9%	8,698	2.0%
Less: Capital Labor and Benefits	(10)	(18)	0	-100.0%	0	0
Operating Labor and Benefits	7,703	8,192	8,531	4.1%	8,698	2.0%
Contract Services	1,430	1,276	1,762	38.1%	1,757	-0.3%
All Other Costs	598	690	775	12.3%	758	-2.1%
<b>Operating Total</b>	<b>9,731</b>	<b>10,157</b>	<b>11,068</b>	<b>9.0%</b>	<b>11,213</b>	<b>1.3%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is increasing \$0.9 million or 9.0 percent compared to FY17. In FY19, the operating budget will increase \$0.1 million or 1.3 percent. Significant budget changes include:

### FY18

Operating labor and benefits are increasing \$0.3 million due to an increase in funded positions to meet workload needs. Contract services costs are increasing \$0.5 million to meet equal employment opportunity requirements; outreach and workforce development projects; benefit consultant services to advise on plan design, cost analysis and regulatory requirements; and District values and organizational improvement activities. All other costs are increasing \$0.09 million primarily due to the tuition reimbursement program, new employee recognition program, software for eLearning platform, and curriculum development.

### FY19

Total labor and benefits costs will increase \$0.2 million due to scheduled salary step increases and to account for a fully staffed department.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	47.0	47.0	49.0	2.0	49.0	0.0
Limited-Term / Temp Construction	5.0	4.0	5.0	1.0	5.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	7.5	5.5	5.5	0.0	5.5	0.0
<b>Total FTE</b>	<b>59.5</b>	<b>56.5</b>	<b>59.5</b>	<b>3.0</b>	<b>59.5</b>	<b>0.0</b>

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Add		Senior Human Resources Analyst	204,095	1.0	Increase in Ongoing Workload
2018	Add		Human Resources Analyst I / II	184,917	1.0	Outreach and Workforce Development Projects
2018	Add		(TC) Information System Support Analyst II	189,551	1.0	HRIS Project
<b>FY18 TOTAL</b>				<b>578,562</b>	<b>3.0</b>	

In FY18, the department is adding one full-time FTE to support Recruitment and Classification ongoing workload, one full-time FTE to support outreach and workforce development projects including assisting with overflow EEO consultants/investigations, and a temporary construction FTE to support the implementation of the Human Resources Information System (HRIS) project.



## **OFFICE OF THE GENERAL COUNSEL**

### **OVERVIEW**

The Office of the General Counsel (OGC) provides the legal advice and assistance necessary to implement the District's mission, policies, and programs in a manner consistent with the law and to take charge of litigation and other legal matters in which the District is a party or in which it is legally interested.

### **DESCRIPTION OF SERVICES PROVIDED**

The department provides legal assistance and litigation support to the Board of Directors, General Manager and staff in such areas as: resources law; municipal and public law; environmental law; public works contracting; construction and real estate law; personnel, benefits, retirement and labor law; risk management and insurance; public finance and governmental law; tort law; and rates, regulations, and public policy matters.

### **FY18 & FY19 GOALS**

Key department goals include:

- Providing the District, its officers, and its employees with competent, responsible, and effective representation in all proceedings in which the District is a party or has an interest and obtain the best results possible given the facts and law applicable to the specific case;
- Assuring that all documents with legal significance presented to the OGC for review, or are originally prepared by the OGC, accomplish the purpose for which they are intended, protect the District from legal risk to the full extent administrative staff considers appropriate for the transaction, and are written in clear and understandable language in an appropriate legal form;
- Providing accurate, clear, and practical oral legal advice that is responsible to the questions and facts presented;
- Providing accurate, clear, and practical written legal memoranda and opinions that are thoroughly researched, timely, and in an appropriately professional form;
- Providing forceful and persuasive advocacy on behalf of the District in non-judicial settings when requested to do so;
- Assuring that all legal services provided to the District are cost-effective, responsive to the directions of the Board, and professionally competent; and
- Adhering to the highest standards of professional conduct and legal ethics including those standards set forth in the Rules of Professional Conduct.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	3,209	3,778	3,591	-5.0%	3,607	0.5%
Less: Capital Labor and Benefits	(20)	0	0	0	0	0
Operating Labor and Benefits	3,189	3,778	3,591	-5.0%	3,607	0.5%
Contract Services	664	750	750	0.0%	750	0.0%
All Other Costs	117	236	235	-0.1%	235	0.0%
<b>Operating Total</b>	<b>3,970</b>	<b>4,764</b>	<b>4,576</b>	<b>-3.9%</b>	<b>4,592</b>	<b>0.4%</b>

## BUDGET HIGHLIGHTS

The department's operating budget in FY18 is decreasing \$0.2 million or 3.9 percent compared to FY17. In FY19, the budget will increase \$0.02 million or 0.4 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits are decreasing \$0.2 million primarily due to a lower fringe benefit rate and new employees with salaries lower than the employees they replaced.

### FY19

Total labor and benefits will increase \$0.02 million due to scheduled salary step increases.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	16.0	16.0	16.0	0.0	16.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	1.0	1.0	1.0	0.0	1.0	0.0
<b>Total FTE</b>	<b>17.0</b>	<b>17.0</b>	<b>17.0</b>	<b>0.0</b>	<b>17.0</b>	<b>0.0</b>

## **WATER RECYCLING PROGRAM**

### **OVERVIEW**

The Water Recycling Department develops and implements projects that provide recycled water for appropriate uses by the District and its customers to reduce the demand on high quality drinking water supplies.

### **DESCRIPTION OF SERVICES PROVIDED**

The department operates and maintains the North Richmond Water Reclamation Plant and the Richmond Advance Recycled Expansion (RARE) facility that provide recycled water for use in the Chevron refinery and the East Bayshore Recycled Water treatment facility that provides recycled water to customers for irrigation applications. While this program is managed and budgeted under the Water System, the Wastewater Department is responsible for the ongoing operations and maintenance of the recycled water treatment plants.

### **FY18 & FY19 GOALS**

The department supports the Long-Term Water Supply Strategic Plan goal. Key department goals include:

- Continuing to operate and maintain the three recycled water treatment facilities (RARE, North Richmond, East Bayshore) to meet regulatory standards for recycled water and maximize the production from these facilities;
- Maintaining contractual obligations with Chevron; and
- Continuing to offset the use of drinking water for nonpotable applications as part of the District's water recycling goal.

## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	1,754	1,732	1,566	-9.6%	1,582	1.1%
Less: Capital Labor and Benefits	(13)	0	0	0	0	0
Operating Labor and Benefits	1,741	1,732	1,566	-9.6%	1,582	1.1%
Contract Services	7	52	91	76.0%	83	-9.0%
All Other Costs	3,126	3,583	3,762	5.0%	3,845	2.2%
<b>Operating Total</b>	<b>4,875</b>	<b>5,367</b>	<b>5,419</b>	<b>1.0%</b>	<b>5,510</b>	<b>1.7%</b>

## BUDGET HIGHLIGHTS

The department's FY18 operating budget is increasing \$0.05 million or 1.0 percent compared to FY17. In FY19, the operating budget will increase \$0.09 million or 1.7 percent. Significant budget changes include:

### FY18

Operating labor costs are decreasing \$0.2 million primarily due to a lower fringe benefit rate and new employees with salaries lower than the employees they replaced. All other costs are increasing \$0.2 million primarily due to chemical and energy costs, and repair work by Wastewater Department staff who maintain the recycling facilities.

### FY19

All other costs will increase \$0.08 million primarily due to chemical and energy costs, and anticipated repair work by Wastewater Department staff.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	8.0	8.0	8.0	0.0	8.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total FTE</b>	<b>8.0</b>	<b>8.0</b>	<b>8.0</b>	<b>0.0</b>	<b>8.0</b>	<b>0.0</b>

## ADMINISTRATION DEPARTMENT

### OVERVIEW

The Administration Department is currently unstaffed and the functions of the department have been distributed to the Customer and Community Services Department and the Human Resources Department.

### DESCRIPTION OF SERVICES PROVIDED

The department has the budget for District memberships in professional and trade organizations.

### FY18 & FY19 GOALS

The department does not lead any Strategic Plan goals in FY18 and FY19.

### DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	0	0	0	0	0	0
Less: Capital Labor and Benefits	0	0	0	0	0	0
Operating Labor and Benefits	0	0	0	0	0	0
Contract Services	0	0	0	0	0	0
All Other Costs	344	356	376	5.5%	377	0.2%
<b>Operating Total</b>	<b>344</b>	<b>356</b>	<b>376</b>	<b>5.5%</b>	<b>377</b>	<b>0.2%</b>

### BUDGET HIGHLIGHTS

#### FY18

The department has no personnel or contract budget due to transferring services to other departments. All other costs are increasing due to new memberships and an anticipated rise in professional dues.

#### FY19

The District membership budget remains flat.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	2.0	2.0	2.0	0.0	2.0	0.0
Limited-Term / Temp Construction	0.0	0.0	0.0	0.0	0.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total FTE</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>0.0</b>	<b>2.0</b>	<b>0.0</b>

## Staffing

The table below provides the full-time equivalent (FTE) by department and compares the changes from year-to-year. Depending upon the appointment type, the FTE value will be different. Full-time, limited-term and temporary construction appointment types are equivalent to 1.0 FTE; intermittent appointment types are equivalent to 0.75 FTE; part-time and temporary appointment types are equivalent to 0.5 FTE.

<b>FY18 &amp; FY19 STAFFING BY DEPARTMENT</b>					
By Full-Time Equivalent (FTE)					
<b>Department</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
Operations & Maintenance Support	49.0	51.0	2.0	51.0	0.0
Maintenance and Construction	715.0	734.0	19.0	740.0	6.0
Water Operations	187.0	188.0	1.0	188.0	0.0
Water Resources	38.5	37.5	(1.0)	37.5	0.0
Natural Resources	68.5	68.5	0.0	68.5	0.0
Engineering & Construction	267.5	275.5	8.0	275.5	0.0
Office of the General Manager	25.5	25.5	0.0	25.5	0.0
Finance	99.5	99.5	0.0	99.5	0.0
Information Systems	94.0	96.0	2.0	96.0	0.0
Customer & Community Services	138.5	141.5	3.0	141.5	0.0
Human Resources	56.5	59.5	3.0	59.5	0.0
Office of the General Counsel	17.0	17.0	0.0	17.0	0.0
Water Recycling Program	8.0	8.0	0.0	8.0	0.0
Administration	<u>2.0</u>	<u>2.0</u>	<u>0.0</u>	<u>2.0</u>	<u>0.0</u>
<b>WATER SYSTEM TOTAL</b>	<b>1,766.5</b>	<b>1,803.5</b>	<b>37.0</b>	<b>1,809.5</b>	<b>6.0</b>

In FY18, a total of 37.0 FTEs are shown as the Water System change from FY17. Chapter 2 shows a net 33.0 FTEs added to the Water System. One additional FTE is being transferred from the Wastewater Department to the Finance Department, and three FTEs are being transferred from the Drought department back to Customer and Community Services. In FY19, six full-time FTEs will be added to the Maintenance and Construction Department.

For a more detailed description of staffing changes, please see the specific department section in this chapter or the Staffing section in the District Budget Summary Chapter 2 of this book.

## Bargaining Unit Changes

The following tables show the net change in bargaining unit status of authorized FTEs represented by AFSCME Local 2019, AFSCME Local 444, IFPTE Local 21, and IUOE Local 39; or included in Management/Confidential, non-represented groups, and civil service exempt positions. The tables reflect all staffing changes for FY18 and FY19.

<b>FY 18 vs. FY 17 Net Change in Bargaining Unit Status (by FTE)</b>							
<b>Department</b>	<b>Local 2019</b>	<b>Local 444</b>	<b>Local 21</b>	<b>Local 39</b>	<b>MGMT / Confidential</b>	<b>Non-Rep</b>	<b>Civil Service Exempt</b>
Operations & Maintenance Support	1						
Maintenance and Construction		16	4				
Water Operations			1				
Water Resources							
Natural Resources							
Engineering & Construction	7		1				
Office of the General Manager							
Finance	(1)						
Information Systems	2						
Customer & Community Services	(1)						
Human Resources	1				2		
Office of the General Counsel							
Water Recycling Program							
Administration							
<b>Total Net Change</b>	<b>9</b>	<b>16</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>

<b>FY 19 vs. FY 18 Net Change in Bargaining Unit Status (by FTE)</b>							
<b>Department</b>	<b>Local 2019</b>	<b>Local 444</b>	<b>Local 21</b>	<b>Local 39</b>	<b>MGMT / Confidential</b>	<b>Non-Rep</b>	<b>Civil Service Exempt</b>
Operations & Maintenance Support							
Maintenance and Construction	1	5					
Water Operations							
Water Resources							
Natural Resources							
Engineering & Construction							
Office of the General Manager							
Finance							
Information Systems							
Customer & Community Services							
Human Resources							
Office of the General Counsel							
Water Recycling Program							
Administration							
<b>Total Net Change</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



## **Debt Service and Financing**

This section describes the Water System's current and projected debt obligations, current credit ratings, and adherence to the District's debt financing policies.

The District incurs debt to finance projects or purchase, repair or replace assets which will have useful lives equal to or greater than the related debt. Issuance of revenue supported debt is authorized by the District's Board of Directors, subject to a referendum process. Individual revenue bond issues are authorized by the District's Board of Directors.

The annual debt service principal and interest payments are charged to the operating budget. However, debt is only issued to finance capital investment activities.

## **Outstanding Debt**

The Water System will have a total outstanding debt of \$2.59 billion as of June 30, 2017. The District's debt issues are summarized on the following page and discussed in detail thereafter.

<b>OUTSTANDING DEBT</b> <b>As of June 30, 2017</b> (\$ Thousands)				
<b>Issue</b>	<b>Date of Issue</b>	<b>Last Maturity</b>	<b>Amount Issued</b>	<b>Debt Outstanding</b>
<b>LONG-TERM DEBT</b>				
<b>Revenue Bonds:</b>				
Series 2007B	5/23/2007	6/1/2019	54,790	13,080
Series 2008A	3/20/2008	6/1/2038	322,525	105,250
Series 2010A	2/3/2010	6/1/2036	192,830	180,945
Series 2010B (Build America Bonds)	2/23/2010	6/1/2040	400,000	400,000
Series 2012A	10/10/2012	6/1/2037	191,750	191,750
Series 2012B	11/13/2012	6/1/2026	358,620	249,450
Series 2013A	3/5/2013	6/1/2021	48,670	28,065
Series 2014A	6/11/2014	6/1/2035	128,315	128,315
Series 2014B	6/11/2014	6/1/2030	242,730	233,450
Series 2014C	6/26/2014	6/1/2044	75,000	75,000
Series 2015A	3/3/2015	6/1/2037	429,360	429,360
Series 2015B	6/2/2015	6/1/2045	74,335	74,335
Series 2015C	6/2/2015	6/1/2045	110,715	110,715
<b>Total Revenue Bonds</b>	-	-	<b>\$2,629,640</b>	<b>\$2,219,715</b>
<b>General Obligations Bonds</b>	-	-	<b>\$0</b>	<b>\$0</b>
<b>Loans:</b>				
State Loans (Parity)	1/1/2003	1/1/2024	2,188	893
State Loans (Parity)	5/22/2008	4/1/2028	20,100	12,058
<b>Total Loans</b>			<b>\$22,288</b>	<b>\$12,951</b>
<b>Total Long-Term Debt</b>			<b>\$2,651,928</b>	<b>\$2,232,666</b>
<b>SHORT-TERM DEBT</b>				
<b>Commercial Paper</b>	Various	Various	<b>N/A</b>	<b>\$359,800</b>
<b>TOTAL OUTSTANDING DEBT</b>				<b>\$2,592,466</b>

The District may issue Water System revenue refunding bonds in FY17 to take advantage of market interest rates. Refunding debt at lower interest rates can save the District a substantial amount of money if market conditions allow. In addition, not included in the above table, the District also plans to issue approximately \$129 million of new Water System revenue bond debt in FY17. The budget assumes issuance of \$179.5 million in additional new Water System revenue bonds in FY18, and \$151.6 million in FY19.

## Debt Service

The Water System total outstanding debt of \$2.59 billion as of June 30, 2017 is projected to cost the District \$1.8 billion in interest payments over the next 28 years, as detailed in the table below. The table does not include additional debt expected to be issued before the end of FY17. The principal payments below do not include the payments of commercial paper principal, as there is no final maturity associated with those notes.

Interest payments on synthetic fixed-rate debt were calculated at their associated swap rates plus a spread (if applicable). Interest on commercial paper (CP) was calculated at 2.5 percent.

<b>Projected Debt Service on Current Outstanding Debt</b>			
<b>Fiscal Year</b>	<b>Principal</b>	<b>Interest</b>	<b>Debt Service</b>
2018	59,114,024	118,733,971	177,847,995
2019	61,560,313	116,125,682	177,685,995
2020	64,307,237	113,195,259	177,502,496
2021	67,139,811	110,109,135	177,248,946
2022	69,968,050	107,001,545	176,969,595
2023	73,226,972	103,672,673	176,899,645
2024	76,521,592	100,130,503	176,652,095
2025	80,041,189	96,467,397	176,508,586
2026	81,683,697	92,615,538	174,299,235
2027	78,806,866	88,585,319	167,392,185
2028	82,645,711	84,680,725	167,326,436
2029	85,405,000	80,581,938	165,986,938
2030	90,825,000	76,351,388	167,176,388
2031	96,520,000	71,819,638	168,339,638
2032	101,155,000	67,213,711	168,368,711
2033	106,020,000	62,384,138	168,404,138
2034	110,845,000	57,596,985	168,441,985
2035	115,840,000	52,619,425	168,459,425
2036	127,445,000	47,172,933	174,617,933
2037	132,995,000	40,774,295	173,769,295
2038	142,520,000	33,911,948	176,431,948
2039	147,855,000	26,121,651	173,976,651
2040	45,580,000	17,618,520	63,198,520
2041	28,415,000	15,130,800	43,545,800
2042	29,720,000	13,820,200	43,540,200
2043	31,095,000	12,448,700	43,543,700
2044	32,530,000	11,013,050	43,543,050
2045	12,885,000	9,510,400	22,395,400
<b>Total</b>	<b>2,232,665,462</b>	<b>1,827,407,467</b>	<b>4,060,072,929</b>

The difference in the debt service from the budgeted amount results from two factors. First, the figures in the table on the prior page include only debt service on currently outstanding bonds while budgeted debt service includes interest and principal on new bonds expected to be issued in FY17, FY18, and FY19 to fund the Capital Improvement Program. Second, budgeted figures include additional costs associated with the debt portfolio including liquidity fees, re-marketing fees, basis spread, and debt service administration.

## Debt Ratings

Credit risk is the risk that the issuer of an investment, such as a revenue bond, will not fulfill its obligation to the holder of the investment. Credit ratings are assigned to bonds by nationally recognized statistical credit rating organizations based on published methodologies. The ratings reflect the organizations' opinions about the issuer's ability and willingness to meet its financial obligations. All investment grade ratings presume the obligation will be paid, in full and on time, currently and in the future.

Strong credit ratings provide tangible benefits to ratepayers in the form of reduced debt service cost. A strong credit rating provides better access to capital markets, lower interest rates, better terms on debt, and access to a greater variety of debt products. Prudent financial management policies have contributed to the District's strong ratings shown in the tables below.

As of January 1, 2017, ratings on the Water System's debt were as follows:

<b>Water System Debt Ratings</b>			
<b>Debt by Type</b>	<b>Standard &amp; Poor's</b>	<b>Moody's Investors Service</b>	<b>Fitch</b>
Fixed Rate Revenue Bonds	AAA	Aa1	AA+
Variable Rate Revenue Bonds			
Long-term Underlying Rating	AAA	Aa1	--
Short-term Rating	A-1+	VMIG-1	--
Commercial Paper	A-1+	P-1	F1+

## **Debt Management Policy and Debt Service Coverage**

The District is subject to legal debt limits prescribed in the Municipal Utility District (MUD) Act. The MUD Act describes three types of legal limitations: general debt limits, revenue bond limits, and short-term borrowing limits.

The District's general debt indebtedness cannot exceed the ordinary annual income and revenue of the District without a two-thirds approval of the voters. However, revenue bonds are not included in general debt limits.

The District is authorized to issue revenue bonds with the approval of a resolution from the Board of Directors, subject to a 60-day referendum period. The resolution specifies the maximum principal amount of bonds that may be issued pursuant to the authorization. The District's Board of Directors also approves individual series of revenue bonds issued under the broader authorization.

The MUD Act authorizes the District to issue short-term indebtedness without an election of the voters. The amount of short-term borrowing cannot exceed the lesser of 1) the annual average total revenue of the three preceding years or 2) twenty-five percent of the District's total outstanding bonds. This provision is substantially the same as the District's internal policy discussed below.

The District has also established its own policy regarding debt management (Policy 4.02: Cash Reserves and Debt Management – see Appendix). The purpose of the debt policy is to maintain a balance between current funding sources and debt financing over each five-year plan horizon in order to retain the District's financing flexibility and achieve the lowest cost of financing.

The District's debt management policy is to:

- a) maintain an annual revenue bond debt service coverage ratio of at least 1.6 times;
- b) limit debt-funded capital to no more than 65 percent of the total capital program over each five-year planning period; and
- c) limit commercial paper / variable rate debt to 25 percent of outstanding long-term debt.

### **Debt Service Coverage Ratio**

The debt service coverage policy ensures that the District has sufficient annual operating revenues to pay its operating expenses and meet its debt service obligations on its revenue bonds and other parity debt. The revenue bond debt service coverage ratio is defined as the District's net operating revenue (current year's operating revenue less the current year's operating expenses) divided by the current year's debt service on all revenue bonds and other parity debt. In FY18 and FY19, the projected debt coverage ratios are 1.60 and 1.60 respectively.

### Debt-Funded Capital

The percentage of the capital program that is funded by debt over the five year planning period FY18-22 is projected to average 52.1 percent, which is lower than the financial policy maximum target of 65 percent. The debt percentage funding for FY18 and FY19 is shown in the below table.

<b>Projected Debt Percentage of Funding</b>		
(\$ Millions)		
	<b><u>FY18</u></b>	<b><u>FY19</u></b>
<b>Expenditures:</b>		
Capital Cash Flow	227.7	229.8
Administration of Capital	<u>40.0</u>	<u>40.0</u>
<b>Total Expenditures</b>	<b>267.7</b>	<b>269.8</b>
<b>Project Funding:</b>		
New Bond Proceeds	175.9	148.6
Loans Proceeds	0.0	0.0
Commercial Paper	0.0	0.0
Construction Fund	<u>0.0</u>	<u>0.0</u>
<b>Total Resources</b>	<b>175.9</b>	<b>148.6</b>
<b>Debt Percentage of Funding</b>	65.7%	55.1%

### Commercial Paper and Variable Rate Debt Ratio

The District has authorized a short-term commercial paper (CP) borrowing program consistent with the MUD Act and the District's debt management policy. Under this program, the District may issue commercial paper notes at prevailing interest rates for periods of not more than 120 days from the date of issuance. The program is supported by liquidity agreements. The Water System CP is secured by a pledge of the Water System's net revenues, subordinate to the respective System's revenue bonds.

On June 30, 2017, \$359.8 million of Water System CP is projected to be outstanding under the program. Water System CP will comprise less than 14 percent of the \$2.59 billion in total outstanding debt.

Water System outstanding variable rate debt projected as of June 30, 2017 will be approximately \$105.3 million. Since the beginning of FY14, the District has converted over \$340.0 million of its variable rate debt into fixed rate debt by paying off existing interest rate swap contracts and replacing the underlying variable rate bonds with fixed rate bonds. Going forward, the District expects to finance its construction program through a combination of fixed-rate debt and CP.

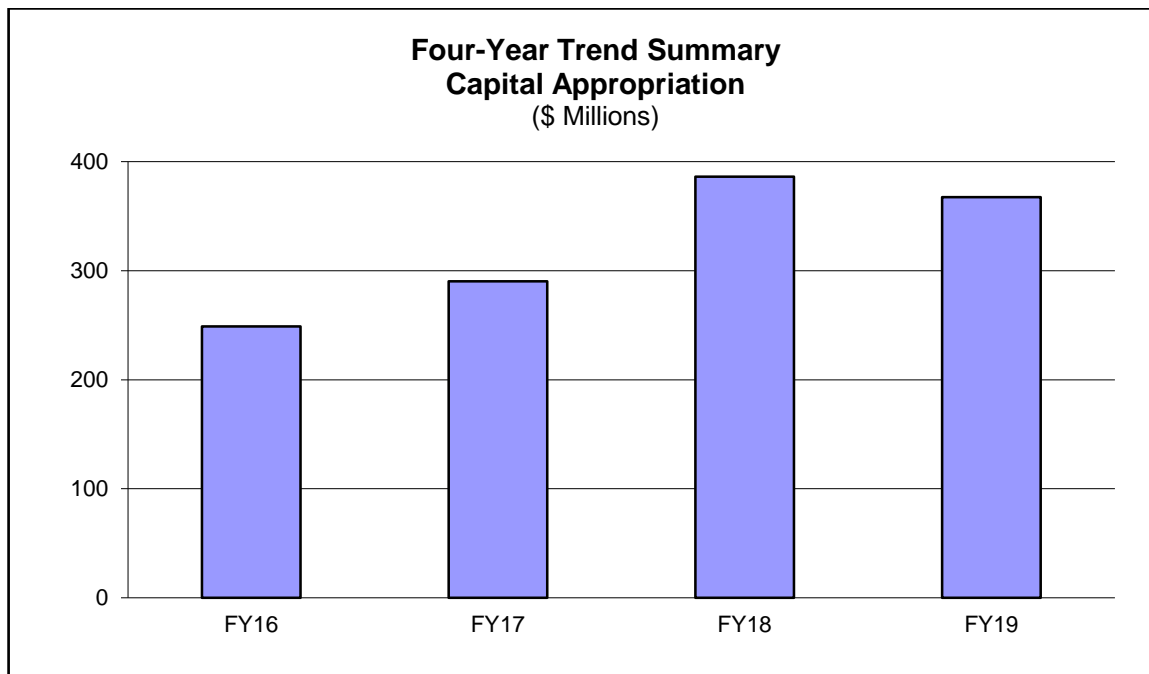
## Capital Expenditures

The Capital Improvement Program (CIP) consists of projects that typically result in the construction of new facilities, or the rehabilitation or upgrade of existing facilities. Project costs include all expenditures required to study, plan, design, purchase, construct, or upgrade new or existing facilities. In addition, projects can include large equipment purchases and the creation or replacement of computer systems infrastructure.

## Capital Appropriation

Capital appropriations represent the amounts approved by the Board to be spent on projects in the CIP. Since these appropriations are often spent over multiple years, the amounts appropriated for each fiscal year will vary depending upon project scope and timing, and any unspent appropriation a project may have.

The Water System's FY18 appropriation totals \$386.5 million, an increase of \$96.1 million from FY17. In FY19, the appropriation totals \$367.5 million, a decrease of \$19.0 million from FY18. The FY18 and FY19 appropriations reflect the District's continued commitment to maintaining and improving the infrastructure, especially distribution pipelines, large diameter pipelines, and water treatment plants.



<b>Capital Appropriation</b> (\$ Millions)						
	<b>FY16 Adopted Budget</b>	<b>FY17 Adopted Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
<b>Capital Appropriation</b>	<b>249.0</b>	<b>290.4</b>	<b>386.5</b>	<b>33.1%</b>	<b>367.5</b>	<b>-4.9%</b>

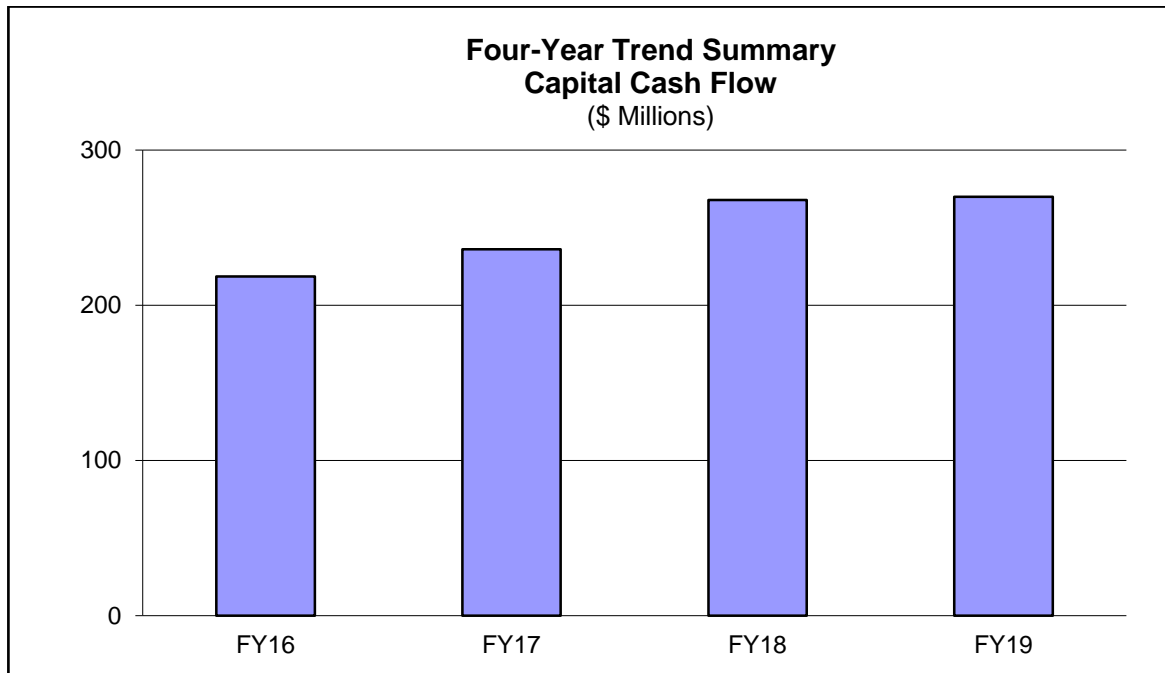
Includes Administration of Capital



## Capital Cash Flow

Capital cash flows represent the amounts projected to be spent each fiscal year on projects in the CIP. The amount of cash flow each year varies as projects progress from one phase to another, such as from planning to design and then construction, and as projects are completed and new ones started.

The Water System's FY18 cash flow totals \$267.7 million, an increase of \$31.6 million from FY17. In FY19, the cash flow totals \$269.8 million, an increase of \$2.1 million from FY18. Key projects in the FY18 and FY19 cash flows include replacement of distribution pipelines, large diameter transmission pipelines, and service laterals; water treatment plant upgrades; improvements to various pressure zones; and reservoir rehabilitation.



Capital Cash Flow						
(\$ Millions)						
	FY16	FY17	FY18	FY18	FY19	FY19
	Actual	Adopted Budget	Proposed Budget	Change vs FY17	Proposed Budget	Change vs FY18
<b>Capital Cash Flow</b>	<b>218.5</b>	<b>236.1</b>	<b>267.7</b>	<b>13.4%</b>	<b>269.8</b>	<b>0.8%</b>

Includes Administration of Capital

## Capital Labor

The following table shows the capital labor and benefits budget by department for capital project work.

<b>Capital Labor By Department</b>						
(\$ Thousands)						
<b>DEPARTMENTS</b>	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
Operations & Maintenance Support	777	427	601	40.8%	632	5.3%
Maintenance and Construction	34,820	35,551	37,601	5.8%	38,642	2.8%
Water Operations	2,298	1,212	1,209	-0.2%	1,221	1.0%
Water Resources	2,242	1,328	1,522	14.6%	1,534	0.8%
Natural Resources	191	0	13	0.0%	14	2.2%
Engineering & Construction	31,735	32,436	35,149	8.4%	35,748	1.7%
Office of the General Manager	2	0	0	0.0%	0	0.0%
Finance	198	969	0	-100.0%	0	0.0%
Information Systems	253	803	139	-82.6%	147	5.6%
Customer & Community Services	2,113	2,648	2,293	-13.4%	2,179	-5.0%
Human Resources	10	18	0	-100.0%	0	0.0%
Office of the General Counsel	20	0	0	0.0%	0	0.0%
Water Recycling Program	13	0	0	0.0%	0	0.0%
Administration	0	0	0	0.0%	0	0.0%
<b>Departments Total</b>	<b>74,670</b>	<b>75,392</b>	<b>78,529</b>	<b>4.2%</b>	<b>80,118</b>	<b>2.0%</b>

Numbers in the table may be rounded.

The Water System capital labor budget is increasing approximately \$3.2 million in FY18 and \$1.6 million in FY19 compared to the prior fiscal year to reflect the funding associated with additional FTEs supporting capital work. The total labor increase in FY18 is offset due to a lower fringe benefit rate compared to FY17. In FY19, total capital labor increase is primarily attributable to scheduled salary step increases.

## Capital Program Highlights

The FY18-22 Water System Capital Improvement Program (CIP) requires \$1.69 billion in project appropriations, an increase of \$77.1 million or 5 percent from the FY16-20 CIP. The increase is primarily due to increased appropriation needs of the Maintaining Infrastructure Strategy for replacing deteriorated water distribution pipelines, service laterals, and large diameter transmission pipelines; and pumping plant rehabilitation. Under the Water Quality Strategy, increases are for water treatment plant upgrades. Under the Water Supply Strategy, decreases are associated with moving out the Mokelumne Aqueduct relining project.

In accordance with the District's ten-year capital budget planning horizon, approximately \$1.9 billion of work has been tentatively identified for FY23-27. Key aspects of this future work are discussed in the program and project summaries in the following pages. These future year estimates will be revised as studies are completed, priorities are redefined, and new needs emerge. Therefore, the focus is on the first five years of the CIP.

The Water System appropriations focus on the Maintaining Infrastructure Strategy which comprises 53 percent of the CIP appropriations. All Water System appropriations by strategy are summarized below.

<b>FY16-20 vs. FY18-22 Appropriation</b> <b>Capital Improvement Program by Strategy</b> (\$ Thousands)					
Strategy	Appropriation		Change		% of FY18-22
	FY16-20	FY18-22	\$	%	
Emergency Preparedness*	0	0	0	0%	0%
Extensions & Improvements	237,302	194,672	(42,630)	-18%	13%
Facilities, Services & Equipment	64,024	89,269	25,245	39%	6%
Maintaining Infrastructure	615,707	790,748	175,041	28%	53%
Regulatory Compliance	62,707	40,068	(22,639)	-36%	3%
Resource Management	4,813	12,016	7,203	150%	1%
Water Quality	48,627	147,023	98,396	202%	10%
Water Supply	362,139	186,345	(175,794)	-49%	13%
Non-Program Specific	14,200	26,500	12,300	87%	2%
<b>Water Subtotal</b>	<b>1,409,519</b>	<b>1,486,641</b>	<b>77,122</b>	<b>5%</b>	<b>100%</b>
Administration of Capital	207,345	207,345	0	0%	
<b>Water Total</b>	<b>1,616,864</b>	<b>1,693,986</b>	<b>77,122</b>	<b>5%</b>	

Numbers in the table may be rounded.

\* No new appropriation is required.

The FY18-22 CIP identifies \$1.50 billion in projected cash flow spending, an increase of \$126.0 million or 9 percent compared to the FY16-20 CIP. The increase is primarily attributable to the Maintaining Infrastructure Strategy for replacing deteriorated water distribution pipelines, service laterals and large diameter transmission pipelines; and continuing to retrofit the temperature anchors on Mokelumne Aqueduct #1. Under the Water Quality Strategy, new work was identified regarding water treatment plant upgrades. Under the Water Supply Strategy, decreases are associated with moving out the Mokelumne Aqueduct relining project.

All Water System cash flows by strategy are summarized below, with select programs and projects discussed in more detail.

<b>FY16-20 vs. FY18-22 Cash Flows</b> <b>Capital Improvement Program by Strategy</b> (\$ Thousands)					
Strategy	Cash Flows		Change		% of FY18-22
	FY16-20	FY18-22	\$	%	
Emergency Preparedness	1,268	0	(1,268)	0%	0%
Extensions & Improvements	208,605	188,805	(19,800)	-9%	15%
Facilities, Services & Equipment	60,568	85,410	24,842	41%	7%
Maintaining Infrastructure	514,023	623,807	109,784	21%	48%
Regulatory Compliance	73,329	70,808	(2,521)	-3%	5%
Resource Management	7,306	11,331	4,025	55%	1%
Water Quality	39,625	116,811	77,186	195%	9%
Water Supply	263,559	197,309	(66,250)	-25%	15%
Non-Program Specific	0	0	0	0%	0%
<b>Water Sub-total</b>	<b>1,168,283</b>	<b>1,294,281</b>	<b>125,998</b>	<b>11%</b>	<b>100%</b>
Administration of Capital	207,345	207,345	0	0%	
<b>Water Total</b>	<b>1,375,628</b>	<b>1,501,626</b>	<b>125,998</b>	<b>9%</b>	

Numbers in the table may be rounded.

## **EMERGENCY PREPAREDNESS STRATEGY**

This strategy furthers the District's objectives to maintain and improve the infrastructure to ensure delivery of reliable, high quality service now and in the future. In 1994, the Seismic Improvement Program (SIP) was adopted to take a comprehensive approach to mitigate earthquake risk to the water system. The program has been completed and any additional seismic work will take place as part of other programs.

### **Seismic Improvement Program**

The objective of this program was to strengthen and upgrade the water treatment and distribution systems to ensure post-earthquake water service. The program included upgrades to critical facilities including reservoirs, pipelines, pumping plants, water treatment plants, etc. The Southern Loop Pipeline was constructed to connect the water systems between San Ramon and Castro Valley to provide operational redundancy, and improvements were made to the Claremont Tunnel which crosses the Hayward Fault.

## EXTENSIONS & IMPROVEMENTS TO THE SYSTEM STRATEGY

This strategy furthers the District's objectives to improve the infrastructure to ensure reliable, high quality service, and update and enhance the District's system modeling capabilities. Work under this strategy focuses on making improvements to various components of pressure zones such as pipelines, reservoirs, pumping plants and water treatment plants to improve system reliability for existing customers, and to provide service to new customers. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Mapping Program	1,211	1,458	1,706	1,757	1,810	7,942
OP/NET Program	2,909	2,712	3,108	1,123	1,057	10,909
Pressure Zone Improvements Program	22,666	46,964	15,298	47,946	17,192	150,066
Walnut Creek - San Ramon Valley In-Zone Improvements Program	0	0	1,980	0	0	1,980
Water Treatment and Transmission Improvements Program	3,306	2,200	1,303	16,966	0	23,775
<b>Total</b>	<b>30,092</b>	<b>53,334</b>	<b>23,395</b>	<b>67,792</b>	<b>20,059</b>	<b>194,672</b>

### Pressure Zone Improvements Program

The Pressure Zone Improvements Program addresses issues with the District's pressure zones. It includes studying individual pressure zones and compiling the studies into the Distribution System Master Plan. Improvements include upgrading or replacing reservoirs, pumping plants and transmission systems to optimize storage capacity and improve water quality. The following significant pressure zone work is planned:

- Almond/Fire Trail in Castro Valley – replace the 6.6 million gallon (MG) open-cut Almond Reservoir with two smaller tanks and demolish the 3.1 MG Cull Creek Reservoir in FY19-23;
- Encinal Cascade in Orinda – construct a new Encinal Regulator and demolish the old redwood Encinal Reservoir in FY18-21; replace the Westside Pumping Plant (PP) and associated pipelines in FY18-22; and replace Dos Osos Reservoir with dual tanks at a higher elevation and rehabilitate the Dos Osos Pumping PP in FY21-24;
- Leland in Lafayette/Walnut Creek – replace the 18 MG reservoir and associated pipelines with two 8 MG concrete reservoirs in FY21-25;
- Faria in San Ramon – is a new pressure zone needed to serve the Faria Preserve Development and includes two new 0.5 MG reservoirs, a new 1.6 million gallon per day (MGD) pumping plant, and related inlet-outlet pipeline;
- Maloney in El Sobrante/Pinole/Crockett – increase the capacity of the Maloney PP by 12.5 MGD in FY18-21, make improvements to the Crockett PP in FY21-25, and begin planning for a new 3 to 5 MG Selby Reservoir in FY23;
- Summit in Berkeley – complete the replacement of the 37 MG open-cut Summit Reservoir and associated Woods and Shasta PPs in FY18, and begin planning for a new Lawrence Reservoir in FY22; and

- West of Hills Transmission Improvements – to increase transmission capacity to the Wildcat Aqueduct, new pipeline will be constructed in Berkeley and El Cerrito in FY18-21; to increase transmission capacity to the South 30 Aqueduct, new pipeline will be constructed in Oakland in FY20-24; a new Fontaine PP in Oakland will be constructed in FY20-24; to increase transmission capacity associated with North Reservoir in Richmond, new pipeline will be constructed in FY20-23; to operate the Genoa Rate Control Station in Oakland at higher flow rates, new pipeline will be constructed in FY23-25; construction of a new 32 MGD Wildcat PP is scheduled for FY23-26; and to increase transmission capacity to the Sequoia Aqueduct, new pipeline will be constructed in Oakland in FY24-27.

### **Water Treatment and Transmission Improvements Program**

The Water Treatment and Transmission Improvements Program (WTTIP) calls for new and upgraded facilities to meet current and projected water demands in the Lafayette, Orinda, Moraga and western Walnut Creek area.

The program includes a new 3.2 MGD Happy Valley Pumping Plant in Orinda in FY20-21; a new 1.5 MGD Sunnyside Pumping Plant in Lafayette in FY20-21; a new 2 MG Ardith Reservoir and 1.2 MGD Donald Pumping Plant in Orinda in FY20-22; upgrading the Fay Hill PP in Moraga from 1.6 MGD to 2.6 MGD in FY18-21; constructing 21,600 feet of 20-inch pipeline in St. Mary's Road/Rohrer Drive from Moraga Reservoir to Grizzly Reservoir in FY22-25; and constructing a new 3 MGD Withers PP in Lafayette in FY25-28.

The program also includes completing the conversion of the air feed ozone generator to a liquid oxygen feed system with a larger capacity at Sobrante WTP in El Sobrante and Upper San Leandro WTP in Oakland in FY19; and constructing a new 10 MGD Tice PP in Walnut Creek in FY23-25.

## FACILITIES, SERVICES & EQUIPMENT STRATEGY

This strategy furthers the District's objectives to ensure the security of the water supply and the water system; to evaluate facilities and implement corrective maintenance programs; to implement changes in technology; and to maintain a safe, well equipped workplace. Work associated with this strategy includes making security improvements at various facilities, implementing new computer systems and replacing vehicles and equipment as needed. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Area Service Center / Building Program	7,474	10,567	2,065	8,512	365	28,983
Communications Program	1,659	6,430	7,300	1,400	1,000	17,789
Security Program	0	1,265	2,050	6,600	100	10,015
Vehicle / Equipment Program	11,243	9,994	5,000	3,371	2,875	32,483
<b>Total</b>	<b>20,376</b>	<b>28,256</b>	<b>16,415</b>	<b>19,883</b>	<b>4,340</b>	<b>89,270</b>

### Area Service Center / Building Program

The Area Service Center/Building Program is comprised of various projects to upgrade District buildings. In FY18-22, the focus will be on the Oakland Administration Building. Work includes HVAC improvements to increase energy efficiency and occupant comfort, and improve equipment reliability to reach an Energy Star rating of 75 or better; overhauling the elevator operating system and mechanical equipment; and new roofing for the 4th, 8th, 9th and 10th floor terraces.

Other work includes replacing the deteriorated Oakport warehouse roof; upgrading facilities at Walnut Creek Pumping Plant No. 1 & 2, Bixler Maintenance Center, and Stockton Center to comply with ADA requirements; and completing the conversion of a property purchased in Walnut Creek into the new Fleet Maintenance East facility.

### Communications Program

The Communications Program is comprised of projects that replace and upgrade computer and communication systems. The Materials Management Information System (MMIS) that is used for purchasing and accounting purposes is over 25 years old and will be replaced in FY18-20, along with the Financial Information System (FIS). The two systems share data and must be integrated. Various modules of the Human Resources Information System (HRIS) will be replaced in FY18-20. Replacement of various work management systems including general work orders, concrete orders and paving orders will take place in FY19-22.

### Vehicles & Equipment Program

The Vehicle Replacements Project is ongoing and involves the periodic replacement of vehicles and construction equipment as needed. In FY18-19, the necessary equipment will be purchased to outfit additional staff and decrease the reliance on fully manned and operated contracts, and new vacuum excavators and equipment.



## MAINTAINING INFRASTRUCTURE STRATEGY

This strategy furthers the District's objectives to improve, rehabilitate and replace aging infrastructure in a cost effective manner to ensure sustainable delivery of reliable, high quality water service now and in the future. Work under this strategy focuses on pipeline projects to improve system reliability for existing customers and to provide service to new customers. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Corrosion Program	2,847	1,492	1,748	2,036	2,275	10,398
Electrical Hazard Prevention Program	70	213	220	236	234	973
Pipelines / Appurtenances Program	17,973	10,665	9,534	9,825	10,130	58,127
Pipelines / Regulators Program	96,872	58,427	80,728	112,603	114,377	463,007
Polybutylene Lateral Replacement Program	13,753	13,779	15,161	15,443	15,479	73,615
Pumping Plant Rehabilitation Program	30,511	15,107	13,943	19,721	16,881	96,163
Reservoir Rehabilitation Program	21,229	17,317	20,198	14,304	15,416	88,464
<b>Total</b>	<b>183,255</b>	<b>117,000</b>	<b>141,532</b>	<b>174,168</b>	<b>174,792</b>	<b>790,747</b>

### Pipelines/Appurtenances Program

This program maintains efficient pipeline operations by replacing appurtenances such as valves, hydrants and meters at the end of their useful life. The New Service Installations Project installs taps on the main, laterals, and meter sets for new customers. The need for new services is expected to increase as housing starts rise. In FY16 and FY17, 450 new services per year were installed. In FY18-19, work is estimated at 500 new services per year, increasing to 550 in FY20-22.

Water meters are routinely replaced at the end of their useful life, as are meters that are believed to be reading inaccurately. In addition, meters that were difficult or dangerous to read were replaced with automated electronic meters under a meter reading mitigation program. In FY18 and FY19, an estimated 5,000 meters in each of the two years will be replaced with an integrated system of smart meters under the new Advanced Metering Infrastructure pilot project for which the District has received grant funds.

### Pipelines/Regulators Program

Pipelines/Regulators is an ongoing program to replace deteriorated pipelines, and expand the distribution system. This is the District's largest capital program.

Pipeline Infrastructure Renewals is an ongoing project to replace deteriorating water distribution pipelines, identified primarily through the evaluation of maintenance histories. In FY16 and FY17, pipeline replacements totaled 13.5 and 15 miles per year. In FY18-22, work includes a total of 15 miles in FY18, ramping up to 20 miles per year by FY22. An increase in production is expected as the Pipeline Rebuild program implements more efficient replacement processes and installation methods.

Large Diameter Pipelines is an ongoing project to replace the large transmission pipes that form the backbone of the distribution system. FY18-19 projects include completing construction of MacArthur/Davenport, Grand Avenue, and International Boulevard in Oakland, and updating the

Large Diameter Pipeline Master Plan. In FY20-27, planned work includes completing construction of Summit Pressure Zone Transmission in Berkeley; Berryman South Reservoir Pipeline Improvements in Oakland; D Street in Hayward; East 15th Street in Oakland; and Alameda Crossings #2 and #3.

Pipeline System Extensions is an ongoing project to serve new customers. The workload is estimated from projections of development activity and recent trends in water service estimates in the District's New Business Office. In FY16-17, roughly 6 miles per year were installed. In FY18-22, roughly 8 miles per year is anticipated.

#### **Polybutylene Lateral Replacement Program**

This program previously focused on the replacement of defective polybutylene service laterals, but has been restructured to encompass all types of laterals. Crews respond to 4 to 5 service lateral failures each day (emergency replacements). While the majority involves replacing defective polybutylene laterals, a significant percentage also involves corroding copper laterals. This project will also continue the practice of identifying and replacing service laterals within areas that have suffered high failure rates (planned replacements) at a rate of 400 replacements per year.

#### **Pumping Plant Rehabilitation Program**

The District updated the Distribution Pumping Plant Infrastructure Rehabilitation Plan in 2016 which identifies the highest priority pumping plants for rehabilitation, replacement, or demolition. In FY18-22, work is planned at 31 of the District's 130 distribution pumping plants.

#### **Reservoir Rehabilitation Program**

This program includes the rehabilitation, replacement and demolition of distribution reservoirs. The Reservoir Rehabilitation and Maintenance Project maintains and extends the service lives of the steel and reinforced concrete distribution tanks by replacing coating systems; installing or repairing cathodic protection systems; repairing or replacing roofs; and performing structural upgrades to improve water quality and enhance worker safety.

In FY18-22, three to four steel reservoirs per year will continue to be rehabilitated. Other plans include completion of the new Carisbrook Reservoir and the rehabilitation of Montclair Reservoir in Oakland. Also, completion of the reservoir roof safety program to improve reservoir roofs and ladders is planned.

The Open Cut Reservoir Rehabilitation project includes the rehabilitation and replacement of open-cut reservoirs. Plans for FY18-22 include completion of the South Reservoir replacement in Castro Valley with a 9 MG concrete reservoir; completion of the San Pablo Clearwell replacement in Kensington with two 2.7-MG concrete tanks; completion of the environmental review documents to replace North Reservoir in Richmond; and demolition of the Seneca Reservoir in Oakland. Replacing Central Reservoir in Oakland is planned beyond FY22.

## REGULATORY COMPLIANCE STRATEGY

This strategy furthers the District's objectives to operate and maintain facilities to meet all air, land and water discharge requirements; implement preventative and corrective maintenance programs; and improve the infrastructure to ensure delivery of reliable, high quality service. The work under this strategy focuses on dam safety improvements and modifications to reservoir towers. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Dam Safety Program	3,500	918	2,725	10,565	1,145	18,853
Penn Mine Program	0	0	0	0	0	0
Remediation Program	0	0	0	1,140	1,260	2,400
Trench Spoils Program	15,101	812	836	861	1,205	18,815
<b>Total</b>	<b>18,601</b>	<b>1,730</b>	<b>3,561</b>	<b>12,566</b>	<b>3,610</b>	<b>40,068</b>

### Dam Safety Program

This program upgrades dams, reservoir outlet towers, clearwells and spillways to meet flood and earthquake safety requirements. The Dam Seismic Upgrades Project includes safety evaluations and dam freeboard increases to improve seismic safety. Evaluations have been completed at all of the District's Dams. The seismic upgrade at Chabot Dam in San Leandro is expected to be completed in FY18. Upgrades at Camanche Dam are dependent on Federal Energy Regulatory Commission (FERC) review and approval, and is planned to begin in FY18.

The Reservoir Tower Modifications Project encompasses the seismic retrofit of six reservoir towers. Retrofits to Chabot Tower were undertaken as part of the seismic upgrades made to Chabot Dam. The Briones Tower in Orinda will require upgrades and construction is planned for FY20-21. Lafayette Reservoir Tower modifications include seismic and gate control upgrades, and modification of the tower to act as a spillway. Construction is planned for FY22.

A seismic evaluation of the Pardee Reservoir Outlet Tower included the seepage from Pardee Tunnel in the vicinity of the West Portal (Campo Seco). The tunnel is scheduled to be repaired in FY21. A stability analysis was conducted for the Upper San Leandro Reservoir Tower in Oakland and construction is planned for FY18-19. As the need for the San Pablo Filter Plant is uncertain, the San Pablo Tower in Richmond will undergo only minor seismic rehabilitation. Sobrante Tower was evaluated and found to be capable to withstand seismic loads.

### Trench Spoils Program

Trench spoils material is generated from pipeline installations and repairs. The excavated trench spoils are temporarily stockpiled at three disposal sites for future reuse or disposal: Miller Road in Castro Valley, Briones in Orinda and Amador in San Ramon. The project includes site management in accordance with regulatory requirements, periodic removal of the trench spoils, and evaluation of potential spoils reduction and disposal alternatives. In FY18-22, work includes updating the Five-Year Master Plan and off-haul of the Briones site.

## RESOURCE MANAGEMENT STRATEGY

This strategy furthers the District's objectives to manage the Mokelumne and East Bay watersheds to ensure a high quality water supply; protect natural resources; provide public access and recreational opportunities compatible with water quality and natural resource protection; and prepare plans to protect natural resources and ensure drinking water quality. Work under this strategy focuses on making improvements to recreational facilities at Camanche, Pardee and East Bay Reservoirs, and updating habitat and watershed management plans. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Recreation Areas Program	500	775	0	0	0	1,275
Watershed Recreation Program	1,176	1,500	2,935	1,375	3,755	10,741
<b>Total</b>	<b>1,676</b>	<b>2,275</b>	<b>2,935</b>	<b>1,375</b>	<b>3,755</b>	<b>12,016</b>

### Recreation Areas Program

The Pardee and Camanche Recreation Area facilities require periodic replacements and upgrades to the roads, parking lots, fuel docks, launch ramps, docks, boat berths, stores, campgrounds, and bathroom and shower buildings.

In FY18-20, the Camanche South Shore general store will be evaluated for replacement due to settling issues, and the piping and delivery equipment will be replaced between the fuel tanks and floating fuel dock at Camanche North Shore. The Pardee Recreation Area coffee shop will be evaluated for replacement, and the restroom at Camanche South Shore Oaks Campground will be evaluated for renovation including the addition of shower facilities.

### Watershed Recreation Program

This program provides for protecting and enhancing the District's watershed lands including trails and recreation facilities in accordance with master plans and regulatory requirements.

In FY18-22, projects at the San Pablo and Lafayette Recreation Areas include picnic area, parking lot and trail staging area improvements; visitor center and cafe upgrades; marina improvements; water and sewer system upgrades; and repaving primary roadways. Watershed projects include trail staging area upgrades; habitat and pond restoration; hazardous tree removal; replacement of old fire pumps; boundary fence replacement; upgrades at the Orinda Watershed Headquarters; and Division of Safety of Dams required upgrades at Upper San Leandro and San Pablo Reservoirs.

In FY20-22, work at the Mokelumne Watershed Headquarters includes a new fuel station, a back-up generator, construction of a modular warehouse/shop building, and vehicle access and circulation improvements.

## WATER QUALITY STRATEGY

This strategy furthers the District's objectives to operate and maintain facilities to surpass federal and state drinking water regulations, and to make system improvements that meet or surpass regulatory requirements. Work under this strategy focuses on making improvements to water treatment plants to improve water quality. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Water Quality Improvement Program	1,500	1,500	1,500	1,500	1,500	7,500
Water Treatment Upgrade Program	52,367	82,727	3,451	476	502	139,523
<b>Total</b>	<b>53,867</b>	<b>84,227</b>	<b>4,951</b>	<b>1,976</b>	<b>2,002</b>	<b>147,023</b>

### Water Treatment Upgrade Program

The Treatment Plant Upgrades Project addresses the need to comply with water quality regulations and to improve the operation, reliability and safety of the water treatment plants (WTPs).

In FY18-22, work is planned at five water treatment plants: (1) Orinda WTP - filter renovation, sodium hypochlorite system replacement, and adding a filter air scour system; (2) Upper San Leandro (USL) WTP - renovations to the solids removal, backwash water reclamation, and solids handling systems; (3) Sobrante WTP - installing an oxygenation/mixing system in the San Pablo Reservoir to improve water quality, and new wash water reclamation and solids handling systems; (4) Walnut Creek WTP - rehabilitating the old filters, improving the solids handling, and designing a new pretreatment system; and (5) Lafayette WTP - conducting interim safety and reliability upgrades. Additional work in FY18-22 includes improving the chemical system safety at five WTPs and upgrading the controls systems at USL and Sobrante WTPs.

Planned work in FY23-27 includes completion of Phase I of the Walnut Creek WTP pretreatment system construction, and design of Phase II of the pretreatment system.

## WATER SUPPLY STRATEGY

This strategy furthers the District's objectives to ensure a reliable, high quality water supply for the future; to preserve current entitlements and augment the District's water supply; and reduce the demand for potable water through conservation and recycling. The immediate focus of this strategy is on maintaining the raw water aqueducts and water recycling projects. The programs included in this strategy are:

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Aqueduct Program	9,284	17,286	18,266	10,347	16,374	71,557
Supply Reservoirs Program	2,776	1,069	738	8,574	527	13,684
Water Conservation Program	3,800	3,918	4,030	4,155	4,280	20,183
Water Recycling Program	16,724	9,866	23,958	19,907	10,468	80,923
Water Supply Management Program	0	0	0	0	0	0
<b>Total</b>	<b>32,584</b>	<b>32,139</b>	<b>46,992</b>	<b>42,983</b>	<b>31,649</b>	<b>186,347</b>

### Aqueduct Program

This program evaluates and makes improvements to the raw water aqueduct system. In FY18-22, various portions of Mokelumne Aqueduct No.1 will be recoated to provide protection from the corrosive Delta environment.

The program also includes replacing the deteriorated cement lining in the Mokelumne Aqueducts that protects the steel pipeline from internal corrosion. FY18-22 planned work includes water treatment improvements, pilot testing of lining materials, and a comprehensive internal inspection of the below-ground segment of Mokelumne #2 (65 miles) and the above-ground section of Mokelumne #3 (10 miles). Starting in FY23, work includes design and construction of the aqueduct relining.

The Raw Water Studies and Improvements Project evaluates and makes improvements to the raw water system. In FY18-22, work includes continuing to monitor and retrofit the temperature anchors on Mokelumne Aqueduct #1; construction of the Briones Center upgrades; construction of the Walnut Creek Raw Water PP upgrades; completion of the Mokelumne Aqueduct wasteways facility plan, and design and construction of identified upgrades; and selective demolition of the Bixler PP. Beyond FY22, planned work includes installing a liner in Lafayette Aqueduct #1 and completing the preliminary design for the Delta Tunnel.

### Water Conservation Program

In 2016, the District adopted an updated Urban Water Management Plan that included water conservation programs to reduce potable water demand. In FY16-17, customers achieved substantial water savings through their response to the drought including participation in District indoor and outdoor conservation incentives, water use and leak detection surveys, and education programs.

Going forward, the focus will be on services that allow customers to manage their water use and outdoor landscape water budgets. Incentives for toilet and clothes washer rebates have come to an end as they no longer provide the incentive they once did as state efficiency codes have raised standards. Other areas of focus include water loss control programs and Advanced Metering Infrastructure.

### **Water Recycling Program**

The Water Supply Management Program (WSMP) helps to guide decisions for providing a reliable, high quality water supply and meet growing demand through the year 2040, and includes recycled water as a key element to offset demand for potable water.

The East Bayshore Phase 1A Project is projected to provide 0.5 MGD of recycled water to the cities of Albany, Berkeley, Emeryville, and Oakland. Construction of pipeline extensions and customer connections could be completed by FY26. The Phase 1B project, estimated at 1.2 MGD, will be implemented from FY21-29 and provide recycled water to Alameda. Implementation of the estuary crossing pipeline is anticipated in FY21-22 pending federal funding assistance.

The San Ramon Valley (SRV) Recycled Water Program is a joint program with the Dublin San Ramon Services District to supply recycled water to portions of San Ramon, Danville, Blackhawk and surrounding areas. Expansion of the tertiary treatment facilities from 9.7 MGD to 16.5 MGD will be completed in FY19 to provide capacity as the distribution system is expanded and customers are connected. Also, additional supplemental supplies will need to be secured over the next few years to meet peak demands.

EBMUD's portion of the SRV Recycled Water Program includes connecting customers to the distribution system; implementing distribution systems in San Ramon, Danville and Blackhawk; and property purchase of Pump Stations 3 and 4. Phase 2 distribution pipelines have been completed, and customer retrofits will be completed in FY18.

The Phase 3 pump station on the border between San Ramon and Danville will be completed in FY20 with distribution pipelines to be implemented in FY20-22, and site retrofits to be completed in FY21-23. The Phase 4 pump station in Blackhawk is expected to be completed in FY24 with distribution pipelines and site retrofits to be implemented by FY25. Phase 5 (Blackhawk West) and Phase 6 (Danville West) are anticipated to be completed beyond FY25.

The Richmond Advanced Recycled Expansion (RARE) Water Project could be expanded incrementally by an additional 0.5 MGD in FY24, and an additional 1.0 MGD in FY26-29. Expansion of the North Richmond Water Recycling Plant by an additional 1 MGD is expected by FY27 pending supply availability. The plants serve the Chevron refinery in Richmond. It is anticipated that the cost of these expansions will be borne by Chevron through reimbursements paid to the District.

## NON-PROGRAM SPECIFIC STRATEGY

This strategy furthers the District's objective to maintain a strong financial position to meet short-term and long-term needs. The contingency program focuses on making funds available for unanticipated needs, and for projects that are seeking grants to pay for a substantial portion of the project's cost.

Appropriations (\$ Thousands)						
Programs	FY18	FY19	FY20	FY21	FY22	Total
Contingency Program	6,000	8,500	4,000	4,000	4,000	26,500
<b>Total</b>	<b>6,000</b>	<b>8,500</b>	<b>4,000</b>	<b>4,000</b>	<b>4,000</b>	<b>26,500</b>

### Contingency Program

The Contingency Project provides funding for unanticipated needs that may arise before the next budget preparation cycle, such as replacement or repairs to facilities and equipment as a result of failures or safety deficiencies, and new projects or the acceleration of planned projects requiring funding before the next budget cycle. Funds may also be set aside for projects where grants are being sought in the event that the grant application is successful. Most grants require the District to fund the project and then apply for reimbursement of allowable costs.

In FY19, funds have been set aside for possible costs related to the implementation of new computer systems.



## **Capital Appropriation Summary**

This section provides a summary of the five-year appropriation for the Water System projects listed in the Capital Improvement Program, sorted by strategy and program. When the CIP is presented to the Board of Directors, the Board approves the overall five-year plan, but adopts just the first two years of the plan. The remaining three years are for planning purposes only and are subject to revision.

### **Department Abbreviations**

The abbreviation for the Lead Department responsible for each capital project is as follows:

CUS	–	Customer and Community Services Department
ENG	–	Engineering Department
FIN	–	Finance Department
ISD	–	Information Systems Department
MCD	–	Maintenance & Construction Department
NRD	–	Natural Resources Department
OSD	–	Operations & Maintenance Support Department
WOD	–	Water Operations Department
WRD	–	Water Resources Department
WRP	–	Water Recycling Program

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
EXTENSIONS AND IMPROVEMENTS								
Mapping								
CAD/CAM Mapping, Documentation	ENG	32,913	1,211	1,458	1,706	1,757	1,810	7,941
Mapping Total		32,913	1,211	1,458	1,706	1,757	1,810	7,941
OP/NET								
OP/NET System	MCD	25,757	2,909	2,712	3,108	1,123	1,057	10,910
OP/NET Total		25,757	2,909	2,712	3,108	1,123	1,057	10,910
Pressure Zone Improvements								
Almond/Fire Trail PZI	ENG	11,860	200	4,000	0	0	0	4,200
Cent Oakland Hills Cascade PZI	ENG	26,046	0	5,153	0	0	0	5,153
Colorados Pressure Zone Imprv	ENG	955	3	0	0	2,848	0	2,851
Distribution System Upgrades	ENG	5,927	600	539	546	552	558	2,795
Encinal Cascade PZI	ENG	0	6,602	0	0	7,035	0	13,637
Enterprise Hyd WQ & Op Modl	ENG	520	265	0	0	0	0	265
Faria PZI (formerly Purdue)	ENG	14,342	0	0	0	0	0	0
Leland Pressure Zone Impr	ENG	8,121	0	0	0	31,261	0	31,261
Maloney Pressure Zone Facility	ENG	10,389	9,300	0	0	450	0	9,750
Pressure Zone Planning Program	ENG	2,684	581	0	0	0	0	581
So Oakland Hills Cascades PZI	ENG	2,411	1,088	0	0	0	0	1,088
Summit Pressure Zone Improve	ENG	40,259	0	0	0	1,260	0	1,260
USL Pressure Zone Impr	ENG	672	50	0	250	0	0	300
Water Demand Projection Update	ENG	550	390	0	0	0	0	390
West of Hills Master Plan	ENG	52,114	3,587	37,272	14,502	4,540	16,634	76,535
Pressure Zone Improvements Total		176,851	22,666	46,964	15,298	47,946	17,192	150,066
WC-SRV In Zone Improvements								
Diablo PZ Improvements	ENG	13,555	0	0	1,980	0	0	1,980
WC-SRV In Zone Improvements Total		13,555	0	0	1,980	0	0	1,980
Water Trmt and Trans Impr								
Tice Pumping Plant	ENG	889	0	0	0	0	0	0
WTTIP Distribution Improvs	ENG	36,186	3,306	0	1,303	16,966	0	21,574
WTTIP WTP Improvements	ENG	60,051	0	2,200	0	0	0	2,200
Water Trmt and Trans Impr Total		97,127	3,306	2,200	1,303	16,966	0	23,774
EXTENSIONS AND IMPROVEMENTS TOTAL		346,203	30,092	53,333	23,395	67,792	20,059	194,672

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
FACILITIES, SERVC AND EQUIP								
Area Service Center/Bldg Prog								
Adm Bldg Modifications	ENG	20,376	5,997	5,355	337	0	0	11,689
Buildings Assessment & Improve	ENG	10,328	655	4,132	945	4,045	0	9,777
East Area Service Center	ENG	9,440	0	0	0	0	0	0
Meter Test Facility	MCD	750	0	0	0	0	0	0
Minor Facility Improvements	OSD	3,798	822	1,079	783	4,467	365	7,516
Area Service Center/Bldg Prog Total		44,693	7,474	10,567	2,065	8,512	365	28,982
Communications								
Data & Telecom Infrastructure	ISD	3,473	50	80	100	0	0	230
FIS Replacement	ISD	2,500	526	1,850	2,600	0	0	4,976
HRIS Replacement	ISD	3,200	1,000	3,000	600	0	0	4,600
MMIS Replacement	ISD	4,000	83	0	2,500	0	0	2,583
Work Mgmt Systems Replacement	ISD	200	0	1,500	1,500	1,400	1,000	5,400
Communications Total		13,373	1,659	6,430	7,300	1,400	1,000	17,789
Security								
VA Security System Imprmts	OSD	25,432	0	1,265	2,050	6,600	100	10,015
Security Total		25,432	0	1,265	2,050	6,600	100	10,015
Vehicle/Equipment								
Veh & Hvy Equip Additions, Wtr	MCD	13,520	4,543	3,094	0	0	0	7,637
Vehicle Replacements	MCD	84,749	5,000	5,000	5,000	3,371	2,875	21,245
Diesel Engine Retrofit	OSD	14,228	1,700	1,900	0	0	0	3,600
Fueling Facility Upgrades	OSD	6,370	0	0	0	0	0	0
Vehicle/Equipment Total		118,866	11,243	9,994	5,000	3,371	2,875	32,482
FACILITIES, SERVC AND EQUIP TOTAL		202,364	20,376	28,256	16,415	19,882	4,340	89,269

Capital Improvement Projects	Dept.	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
MAINTAINING INFRASTRUCTURE								
Corrosion								
Aqueduct Cathodic Protection	ENG	3,392	0	0	211	454	646	1,311
Dist Sys Corrosion Protection	ENG	8,593	2,732	724	746	768	791	5,761
Trans Main Cathodic Protection	ENG	2,551	115	768	791	814	838	3,326
Corrosion Total		14,536	2,847	1,492	1,748	2,036	2,275	10,398
Electrical Hazard Prevent Pgm								
Electrical Hazard Prevention	ENG	2,393	70	213	220	236	234	973
Electrical Hazard Prevent Pgm Total		2,393	70	213	220	236	234	973
Pipelines/Appurtenances								
Hydrants Installed by DF	ENG	19,750	1,210	1,310	1,420	1,460	1,510	6,910
New Service Installations	ENG	171,510	8,950	4,610	4,750	4,890	5,030	28,230
Meter Replacements	MCD	36,038	6,446	3,544	2,126	2,200	2,277	16,593
Pipeline Appurtenances	MCD	13,209	1,367	1,201	1,238	1,275	1,313	6,394
Pipelines/Appurtenances Total		240,507	17,973	10,665	9,534	9,825	10,130	58,127
Pipelines/Regulators								
Large Diameter Pipelines	ENG	86,828	41,652	0	16,360	29,940	17,654	105,606
Pipeline Infrastruct Renewals	ENG	267,993	42,080	43,337	44,605	60,814	70,283	261,119
Pipeline Relocations	ENG	50,833	4,200	4,326	6,127	6,311	6,499	27,463
Pipeline System Extensions	ENG	56,490	8,940	9,207	9,530	9,864	10,209	47,750
Pipeline System Improvements	ENG	32,157	0	1,170	3,677	3,787	3,901	12,535
Rate Control Station Rehab	ENG	8,897	0	387	419	1,887	5,437	8,130
Regulator Rehabilitation	ENG	22,414	0	0	10	0	394	404
Pipelines/Regulators Total		525,613	96,872	58,427	80,728	112,603	114,377	463,007
Polybutylene Lateral Replcmt								
Service Lateral Replacements	ENG	186,766	13,753	13,779	15,161	15,443	15,479	73,615
Polybutylene Lateral Replcmt Total		186,766	13,753	13,779	15,161	15,443	15,479	73,615
Pumping Plant Rehabilitation								
Pumping Plant Rehabilitation	ENG	98,988	28,491	12,487	11,237	16,780	13,826	82,821
Small Capital Improvements	MCD	10,280	2,020	2,620	2,706	2,941	3,055	13,342
Pumping Plant Rehabilitation Total		109,268	30,511	15,107	13,943	19,721	16,881	96,163
Reservoir Rehab Program								
Open Cut Reservoir Rehab	ENG	57,326	8,767	0	0	0	2,234	11,001
Reservoir Rehab/Maintenance	ENG	133,633	12,395	17,248	20,127	14,231	13,107	77,108
Reservoir Access Roads	WOD	2,389	67	69	71	73	75	355
Reservoir Rehab Program Total		193,348	21,229	17,317	20,198	14,304	15,416	88,464
MAINTAINING INFRASTRUCTURE TOTAL		1,272,431	183,255	117,000	141,532	174,169	174,793	790,748

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
NON-PROGRAM SPECIFIC								
Non-Program Specific								
Contingency Project Water	FIN	39,700	6,000	8,500	4,000	4,000	4,000	26,500
Non-Program Specific Total		39,700	6,000	8,500	4,000	4,000	4,000	26,500
NON-PROGRAM SPECIFIC TOTAL		39,700	6,000	8,500	4,000	4,000	4,000	26,500
REGULATORY COMPLIANCE								
Dam Safety								
Dam Operational Upgrades	ENG	5,885	2,780	578	1,500	0	0	4,858
Dam Seismic Upgrades	ENG	40,841	0	0	0	0	0	0
Dam Surveillance Improvements	ENG	7,153	570	340	1,225	965	1,145	4,245
Reservoir Tower Modifications	ENG	33,732	150	0	0	9,600	0	9,750
San Pablo Dam Seismic Mods	ENG	82,588	0	0	0	0	0	0
Dam Safety Total		170,199	3,500	918	2,725	10,565	1,145	18,853
Penn Mine								
Penn Mine Remediation	OSD	18,221	0	0	0	0	0	0
Penn Mine Total		18,221	0	0	0	0	0	0
Remediation								
Upcountry WW Trmt Imprvmts	OSD	23,953	0	0	0	1,140	1,260	2,400
Remediation Total		23,953	0	0	0	1,140	1,260	2,400
Trench Spoils								
Trench Spoils Disposal Sites	ENG	17,495	15,101	812	836	861	1,205	18,815
Trench Spoils Total		17,495	15,101	812	836	861	1,205	18,815
REGULATORY COMPLIANCE TOTAL		229,869	18,601	1,730	3,561	12,566	3,610	40,068

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
RESOURCE MANAGEMENT								
Recreation Areas								
Camanche Rec Area Upgrades	ENG	6,176	0	0	0	0	0	0
Pardee/Cam Rec Areas Impr Plan	NRD	8,929	500	775	0	0	0	1,275
Recreation Areas Total		15,105	500	775	0	0	0	1,275
Watershed Recreation								
East Bay Watershed Rec Projs	NRD	10,667	706	1,110	770	980	910	4,476
F&W Projects and Mok Hatchery	NRD	3,771	200	190	245	195	345	1,175
Mokelumne Watershed Rec HQ	NRD	4,160	0	0	1,695	0	0	1,695
Mokelumne Watershed Rec Projs	NRD	5,371	270	200	225	200	200	1,095
Pinole Valley Miti. Bank Plan	NRD	1,055	0	0	0	0	2,300	2,300
Watershed Property Purchases	NRD	17,613	0	0	0	0	0	0
Watershed Recreation Total		42,637	1,176	1,500	2,935	1,375	3,755	10,741
RESOURCE MANAGEMENT TOTAL		57,742	1,676	2,275	2,935	1,375	3,755	12,016
WATER QUALITY								
Water Quality Improvement								
Distrib Sys Wtr Quality Imprv	WOD	18,200	1,500	1,500	1,500	1,500	1,500	7,500
Water Quality Improvement Total		18,200	1,500	1,500	1,500	1,500	1,500	7,500
Water Treatment Upgrade								
Treatment Plant Upgrades	ENG	98,585	51,962	82,300	3,000	0	0	137,262
Minor WTP Capital Work	WOD	3,710	405	427	451	476	502	2,261
Water Treatment Upgrade Total		102,295	52,367	82,727	3,451	476	502	139,523
WATER QUALITY TOTAL		120,495	53,867	84,227	4,951	1,976	2,002	147,023

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
WATER SUPPLY								
Aqueduct Program								
Mok Aqu No 2 & 3 Relining Proj	ENG	65,422	0	0	0	0	0	0
Mokelumne Aqueduct Recoating	ENG	43,315	0	0	0	0	1,335	1,335
Raw Water Studies and Improves	ENG	53,089	6,739	16,588	16,660	8,687	13,369	62,043
Raw Wtr Aq O&M Imprvmnts	WOD	41,531	2,545	698	1,606	1,660	1,670	8,179
Aqueduct Program Total		203,358	9,284	17,286	18,266	10,347	16,374	71,557
Supply Reservoirs								
Cam So Shore WTP Replacement	WOD	6,234	735	0	0	0	0	735
Camanche Area WWTP Improvement	WOD	0	0	0	0	6,000	0	6,000
Enhanced Power Revenue	WOD	9,588	1,420	370	20	1,500	0	3,310
Pardee Ctr Cap Maint & Imprvmt	WOD	1,630	106	109	112	145	88	560
Powerhouse Improvements	WOD	9,076	290	300	300	603	105	1,598
Rec Area Cap Maint & Imprvmt	WOD	3,281	155	260	268	276	284	1,243
Wtr Supply Monitoring System	WOD	1,757	70	30	38	50	50	238
Supply Reservoirs Total		31,565	2,776	1,069	738	8,574	527	13,684
Water Conservation								
Water Conservation Project	CUS	63,632	3,800	3,918	4,030	4,155	4,280	20,183
Water Conservation Total		63,632	3,800	3,918	4,030	4,155	4,280	20,183
Water Recycling								
East Bayshore	WRD	55,408	2,573	2,094	5,170	7,500	5,730	23,067
RARE Water Project	WRD	64,802	0	0	104	280	0	384
SRV Recycled Water Program	WRD	69,171	12,724	6,497	17,634	10,552	1,948	49,355
Water Recycling WSMF	WRD	16,098	500	0	601	1,113	2,315	4,529
No Richmond Recy Wtr Fac Impr	WRP	12,858	927	1,275	449	462	475	3,587
Water Recycling Total		218,337	16,724	9,866	23,958	19,907	10,468	80,922
Water Supply Mgmt Program								
Addl Supplemental Supply Projs	WRD	103,157	0	0	0	0	0	0
Bayside Groundwater Project	WRD	58,164	0	0	0	0	0	0
Freeport Regional Wtr Project	WRD	251,140	0	0	0	0	0	0
Water Supply Mgmt Program Total		412,461	0	0	0	0	0	0
WATER SUPPLY TOTAL		929,353	32,584	32,138	46,992	42,983	31,649	186,345
APPROPRIATIONS SUMMARY (IN 000'S)								
Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	5 YR TOTAL		
3,198,156	346,450	327,459	243,781	324,743	244,208	1,486,641		

## **Operating Budget Impact of Capital Investments**

The FY18-22 Capital Improvement Program includes various significant nonrecurring capital projects that will affect the operating budget and the services that the District provides. Such projects and their potential impacts include:

### **Administration Building HVAC Upgrades**

Replace aging equipment and increase energy efficiency. Improvements to the Data Center include installation of an automatic transfer switch for emergency power during outages. Energy efficiency upgrades include lighting, window, solar gain reductions, HVAC controls, and replacing the aging central plant equipment (boilers, chillers, cooling towers) to reach an Energy Star rating of 75 or better.

This project is estimated to save \$0.4 million per year in energy cost and \$0.1 million per year in maintenance cost. It is also expected to reduce greenhouse gas emissions by roughly 700 metric tons of carbon dioxide equivalent per year.

### **Briones / Lafayette Tower Modifications**

The Briones Tower requires upgrades to safely resist seismic loads. Design of the upgrades started in FY16, and will be followed by construction. The project also includes Lafayette Reservoir Tower modifications which include seismic and gate control upgrades, and modification of the tower to act as a spillway capable of handling the revised Probable Maximum Flood.

These tower modifications will not result in any significant costs or revenues, but will increase public safety in the event of an earthquake.

### **Financial / Materials Management / Human Resource Info System (FIS/MMIS/HRIS)**

This project will replace the 25-year-old MMIS that is supported by a one person consulting firm with a new procurement and vendor management system. Accounts Payable functionality is handled in MMIS so its replacement will be evaluated along with the FIS replacement to ensure such functionality is addressed. The project will also use the best of breed replacement approach which allows for selection and implementation of HRIS modules rather than the entire system in one effort.

A new purchasing/accounting/inventory system will reduce the risk of system failure, reduce vendor dependence, and improve system integration with other applications. New Human Resource modules will make it easier to implement tax and regulatory updates that are required to comply with tax law. Replacement of these systems requires funding 8 new positions on a limited term basis (three to four years) to assess needs, select a vendor(s), implement the new systems and conduct extensive testing.

### **Faria Pressure Zone**

A new pressure zone will be created to serve the Faria Preserve Development in San Ramon that includes 618 dwelling units, a school site and community facilities. The pressure zone includes a new 1.6 million gallons per day (MGD) pumping plant, two new 0.5 MG (million gallon) storage reservoirs, and related pipelines on property provided by the developer. Construction commenced in FY17 under a System Capacity Charge Agreement.



Operating and maintenance costs are expected to increase as a result of these new facilities. The maintenance cost of the Faria Pumping Plant is estimated to be \$0.03 million per year, and the Faria Reservoirs to be \$0.04 million year. The annual cost of power to operate the Faria Pumping Plant is estimated to be \$0.02 million. Revenues will be generated by the new dwelling units and will depend on each owner's water use and the rates at the time the units are occupied. The Development is expected to build an educational facility which may help lower class sizes in the neighborhood schools.

### **Happy Valley/Sunnyside Pumping Plants**

Work includes a new 3.2 MGD Happy Valley Pumping Plant (PP) in Orinda, and 3,300 feet of 16-inch pipeline. The Las Aromas Pressure Zone (PZ) has a deficit of 2.9 MGD in pumping capacity. This project will resolve the deficiency and can be expanded to 4.2 MGD to meet future demands. The project also includes a new 1.5 MGD Sunnyside PP in Lafayette to resolve an existing 0.7 MGD pumping capacity deficit and improve hydraulic connectivity in the Valley View PZ.

Annual maintenance costs are estimated to be \$0.04 million for Happy Valley PP and \$0.03 million for Sunnyside PP. Annual electricity costs are estimated to be \$0.05 million for each PP.

### **Maloney Pumping Plant & Sobrante Water Treatment Plant Improvements**

Pumping capacity in the Maloney Pressure Zone is deficient and inefficient. The Maloney PP capacity is 30 MGD, but pumps frequently run during peak times when energy costs are higher as more than 30 MGD is often needed to supply the cascade. The project will increase pumping capacity to 42.5 MGD with standard electric pumps, and add a standby generator. Electrical improvements at Sobrante WTP are needed to address reliability issues at this critical treatment facility.

Overall operating and maintenance costs for these facilities are expected to decrease. While costs for increased pumping may rise in the future, maintenance costs will decrease significantly as the diesel driven pump, which historically required a high level of effort to maintain will be removed from service.

### **Mokelumne Aqueduct Lining Studies & Improvements**

Work includes pilot testing of lining technologies and materials; comprehensive inspection of the entire Mokelumne Aqueduct No. 2 (MA2) and above-ground section of Mokelumne Aqueduct No. 3 (MA3); and raw water treatment improvements to minimize corrosion. The deteriorated cement mortar lining in the aqueducts will be replaced to protect the steel pipeline from internal corrosion. Previous inspections revealed that 10 miles of the lining in MA3, and 65 miles in MA2 needs replacement.

Increased operating and maintenance costs are expected with the raw water treatment improvements project. Chemical costs are expected to increase by \$0.8 million per year and other costs for labor, energy, materials and equipment replacement are expected to increase by \$0.2 million per year. These expenses were considered in the total life cycle cost analysis which concluded that the cost to provide chemical treatment to minimize corrosion of the aqueducts would be offset by extending the life of the cement motor linings as well as extending the life of future relining work. The project will also reduce future aqueduct failures. There are expected to be short-term costs of approximately \$2 million per year to cover the outage cost of one aqueduct to install new aqueduct linings (approximately 10 miles per year for seven years).

### **Mokelumne Aqueduct No. 3 / Briones Center Upgrades**

This work addresses problems with the above-ground portions of the three Mokelumne Aqueducts across the Delta. Work includes repairing the levee at aqueduct crossings; repairing the Mokelumne Aqueduct No. 3 (MA3) base isolators; and continuing to repair the Mokelumne Aqueduct No. 1 temperature anchors. Planned work also includes completing the Briones Aqueduct slide repair; upgrades to the Briones Center; repairs of the Lafayette Aqueduct No. 2; upgrades to the Walnut Creek Raw Water Pumping Plant; and decommission of the Bixler Pumping Plant.

Operating impacts are likely to be insignificant as a result of the Briones Center Upgrade project, but water system reliability will be improved.

### **San Ramon Valley Recycled (SRV) Water Program**

Expansion of the tertiary treatment facilities from 9.7 MGD to 16.5 MGD is expected to be completed in FY19 and will provide additional recycled water as the distribution system is expanded and customers connected in San Ramon, Danville and Blackhawk. The project also includes planning/property purchase for two pump stations.

Operating costs associated with the expansion have yet to be determined as they are the responsibility of a separate entity, the Dublin San Ramon Services District / EBMUD Recycled Water Authority (DERWA). The project will contribute towards the District's Strategic Plan goal to supply 20 MGD of recycled water by the year 2040, and reduce the need for potable water. A slight reduction in revenue is possible as the current rate for nonpotable/recycled water (\$3.46 per 100 cubic feet) is often less than the tiered system of rates for potable water that ranges from \$3.16 in the first tier to \$5.74 in the third tier for single family residential customers, or \$4.46 for multi-family customers.

### **San Pablo Clearwell Replacement**

San Pablo Clearwell, a 5.4 MG open-cut reservoir located in Kensington, will be demolished and replaced with two 3.5 MG concrete reservoirs, along with replacement of the rate control station, pipelines, and chlorine contact baffles. The pre-cast concrete roof of the San Pablo Reservoir is structurally unsafe and has roof access restrictions. Also, the lining, outlet tower structure, valves, and extension stems require replacement.

Operational costs are anticipated to decrease incrementally as the new facilities will improve access for maintenance activities and require less emergency maintenance.

### **Seneca Reservoir Demolition**

Seneca Reservoir, a 30 MG open-cut reservoir located in Oakland, will be demolished and the property offered for sale. The District expects to receive approximately \$3.7 million from the sale of the property.

### **Sobrante / Upper San Leandro / Walnut Creek Water Treatment Plants (WTPs)**

Sobrante WTP projects include the replacement of the reclaim and solids clarifier systems. In addition, a mixing/oxygenation system will be installed at San Pablo Reservoir to reduce manganese and address taste and odor water quality issues.

Improvements to the Upper San Leandro WTP include: replacement of the unreliable cable-vac solids collection system; rehabilitation of the reclaim and solids handling systems; installation of a filter-to-waste basin; replacement of the seismically deficient clearwell roof; rehabilitation of

Filter No. 15 and capping of media on all filters; and installation of a 5th flocculation stage and replacement of the failing flocculation baffles.

Walnut Creek WTP projects will increase the robustness of the treatment train by installing a pretreatment system and rehabilitating Filters 1 through 4 with a modern underdrain system and updating the filter controls. The pretreatment system includes both a solids removal process and a system to address taste & odor issues for 80 MGD of WTP capacity. In addition, new solids handling improvements will be made to better thicken the sludge and reduce the number of truck loads required.

Changes to the operating costs at USL and Sobrante WTPs are uncertain. The volume and thus the cost of sewer waste discharge will be reduced, but the overall operating and maintenance impact has yet to be determined as the system has not been designed. The operating costs for the Walnut Creek WTP are expected to increase with the addition of pretreatment, as this is an added treatment process that will require energy and additional chemicals, but will improve water quality.

### **Sobrante and USL Water Treatment Plants (WTPs) Ozone**

The existing ozone systems at Sobrante and USL WTPs use air to generate ozone with high operation and maintenance costs due to unreliable and obsolete ozone generators. The new ozone equipment will use oxygen to generate ozone and are much more reliable and energy efficient than the existing systems. Moreover, the new system will have a greater capacity to generate ozone to remove higher concentrations of taste and odor causing compounds that have been observed in the Sobrante and USL WTPs raw water in the past several years.

The total annual operational cost savings for the new ozone systems at these plants is estimated to be \$0.2 million, and the total annual maintenance cost savings is estimated to be \$0.5 million. Also, taste and odor issues will be reduced.

### **South Reservoir Replacement**

South Reservoir, a 50 MG open-cut reservoir located in Castro Valley, was demolished and is being replaced with a new 9 MG concrete reservoir. The reservoir is being replaced due to water quality concerns, and pre-cast concrete roof panels that were structurally damaged.

Operational costs are expected to decrease slightly from when the 50 MG reservoir was in service. The new, smaller facility is anticipated to reduce the need for frequent reservoir treatments for water quality, and roof maintenance activities. In addition, the new facility will reduce staff travel time due to the improved access for District employees who use the South Reservoir site as a remote reporting location.

### **Summit Reservoir Replacement**

The project replaces the 37 MG open cut reservoir with a 3.5 MG concrete tank, a new flow control valve, and replacement of Woods and Shasta Pumping Plants at the same site. Construction will be completed in FY18.

The smaller, appropriately sized reservoir will improve turnover and thus water quality, which will reduce or eliminate the need to manually chlorinate some reservoirs in the Berkeley hills. The project will also replace two aging pumping plants with new pumping plants, and the need for pumping plant maintenance. The new landscape plan includes a larger landscaped area, removal of existing trees, and planting additional trees and shrubs, which may affect landscaping maintenance.

# **FIVE-YEAR FINANCIAL FORECAST**

## **SUMMARY**

The five-year financial forecast presents the estimated impact of operations, debt service requirements and reserve balances on rate projections over the five-year period.

This forecast is built upon:

- Adopted District financial policies
- Capital investments in the FY18-FY22 Capital Improvement Program

This forecast identifies a series of rate increases for the Water System based on estimated increases in operating and capital expenditures to maintain current service levels, meet mandated program requirements, and fund increased debt service due to capital expenditures.

On average over the five-year period, revenues are forecast to increase 8.0 percent per year to cover the increases in operating expenses and debt service, and maintain a minimum of 1.6 times coverage on revenue bond debt service. Forecasted operating expenses are expected to grow by 4.1 percent per year over the five-year period, while debt service grows 5.2 percent per year.

The key factors driving the need for increased Water System revenues are:

- Inflation
- Increasing labor and benefits costs
- Impact of lower customer demand and revenue
- Increasing capital program.

For all five years, the cash reserves exceed the cash reserve targets. Reserves in excess of those needed to meet financial reserve targets are available to pay for a portion of the capital program expenses funded with cash, a positive financial metric.

Capital cash flow spending, including the administration of capital, is projected at \$1.5 billion over the five-year period. Major programs or projects to be undertaken during this period include the: Pipelines, Regulators and Appurtenances programs; Raw Water Aqueduct Improvements; Pressure Zone Improvements program; Water Recycling; Reservoir Rehabilitation program; Water Treatment and Transmission.

The projected average percentage of capital funded from debt will be 52.1 percent over the five-year period, lower than the financial policy target maximum of 65 percent. In FY18 and FY19, the debt coverage ratio is projected to be 1.60 and 1.60, respectively, and for all five years the ratio meets or exceeds the target coverage ratio of 1.60.

## OPERATIONS

The following table shows the financial forecast for the Water System operating budget based on projected operations and maintenance expenses and debt service requirements.

<b>WATER SYSTEM FUND – OPERATING BUDGET</b> <b>FIVE-YEAR FINANCIAL FORECAST</b> (\$ Millions)							
	Actuals	Budget	Forecast				
	FY16	FY17	FY18	FY19	FY20	FY21	FY22
<b>Beginning Balance</b>	-	-	<b>348.6</b>	<b>352.6</b>	<b>356.3</b>	<b>350.1</b>	<b>363.6</b>
Water Charges	369.9	453.0	454.7	507.5	552.6	601.0	642.4
Property Taxes	29.9	25.1	30.0	30.7	31.4	32.2	33.0
Power Sales	3.2	3.5	3.7	3.7	3.7	3.7	3.7
Interest Income	2.1	3.3	7.3	7.4	9.2	9.3	9.5
SCC Revenue	39.3	26.0	27.0	28.0	28.9	29.9	31.0
Reimbursements	11.3	11.2	11.6	11.9	12.3	12.6	13.0
All Other Revenue	<u>18.7</u>	<u>17.4</u>	<u>17.9</u>	<u>18.1</u>	<u>18.2</u>	<u>18.4</u>	<u>18.6</u>
<b>Total Operating Revenues</b>	<b>474.4</b>	<b>539.5</b>	<b>552.2</b>	<b>607.2</b>	<b>656.4</b>	<b>707.2</b>	<b>751.2</b>
Revenue Funded Capital	207.6	100.5	70.7	101.1	135.6	143.1	173.7
Operations	234.9	262.4	277.9	292.5	302.9	315.1	326.4
Debt Service	<u>166.2</u>	<u>180.2</u>	<u>199.6</u>	<u>210.0</u>	<u>224.0</u>	<u>235.5</u>	<u>244.0</u>
<b>Total Expenses</b>	<b>608.7</b>	<b>543.1</b>	<b>548.2</b>	<b>603.6</b>	<b>662.5</b>	<b>693.7</b>	<b>744.0</b>
<b>Ending Balance</b>	-	-	<b>352.6</b>	<b>356.3</b>	<b>350.1</b>	<b>363.6</b>	<b>370.7</b>
Policy Reserves	-	-	148.8	150.1	162.3	181.9	202.7

Numbers in the table may be rounded.

The following table shows the key assumptions used to create the revenue forecast.

<b>WATER SYSTEM FUND – KEY ASSUMPTIONS</b> <b>FIVE-YEAR FINANCIAL FORECAST</b>							
	Actuals	Budget	Forecast				
	FY16	FY17	FY18	FY19	FY20	FY21	FY22
Sales Volume (mgd)	128.1	151	137	141	144	147	150
% Rate Increase	8.00%	7.00%	9.25%	9.00%	7.00%	7.00%	5.00%
Average monthly single family residential bill based on 8 ccf/month	\$44.05	\$47.15	\$51.49	\$56.12	\$60.02	\$64.21	\$67.46
Debt Service Coverage Ratio	1.65	1.67	1.60	1.60	1.64	1.70	1.77

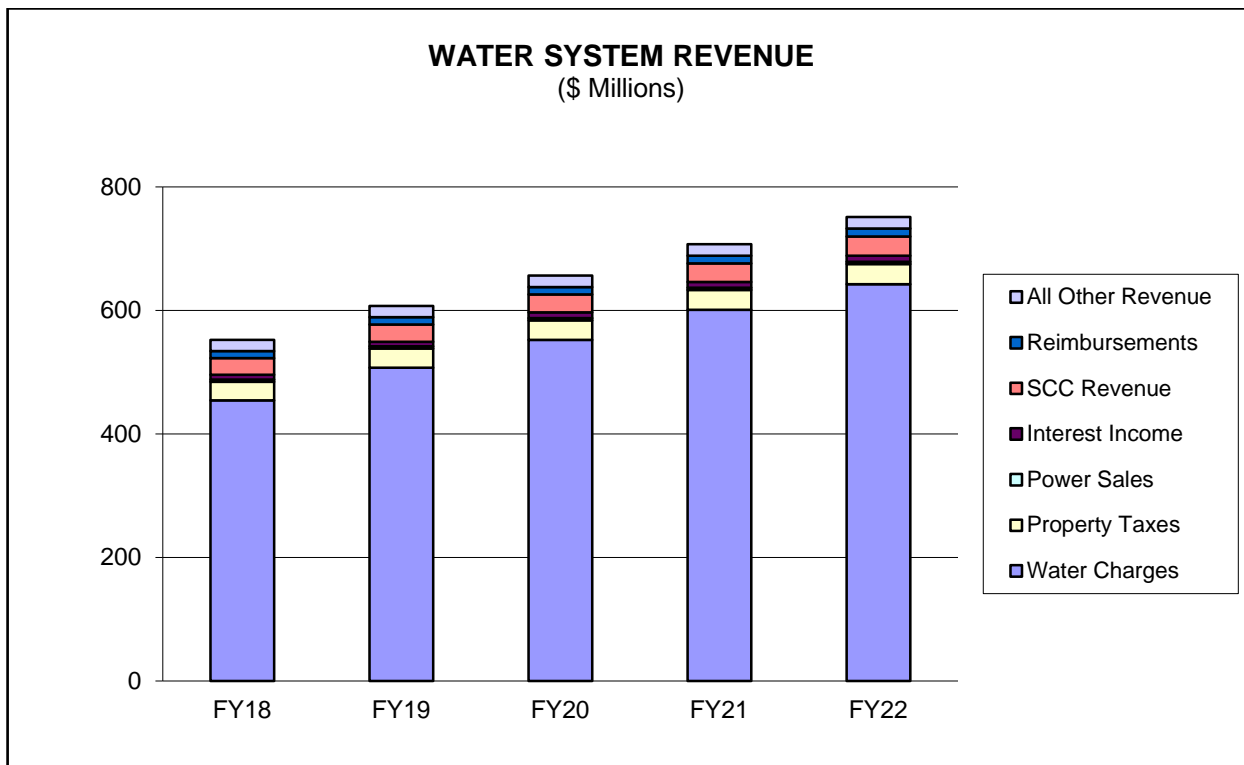
## Five-Year Projection of Revenue

The key factors driving the need for increased Water System revenues are: inflation, increasing labor and benefit costs, the impact of the lower customer water use, and an increase in funding the capital program from revenue rather than debt. Water System revenues will be used to pay for an increasing amount of capital expenditures on a pay-as-you-go basis.

Projected annual operating revenues are expected to increase from \$552.2 million in FY18 to \$751.2 million by FY22, an increase of \$199.0 million or 8.0 percent per year. The increase in revenue over the five-year period is to cover increased costs in operations and maintenance, debt service requirements, and revenue funding for capital projects.

The major components of the increase in operating revenue over the five-year period are revenue from water charges which is projected to increase from \$454.7 million in FY18 to \$642.4 million in FY22 based on water rate increases; interest rate increases as they recover from historic lows; and increased SCC revenues from \$27.0 million in FY18 to \$31 million in FY22 due to slight increases in new connections and in the charge.

The following charts show projected Water System operating revenue by category for the next five years.



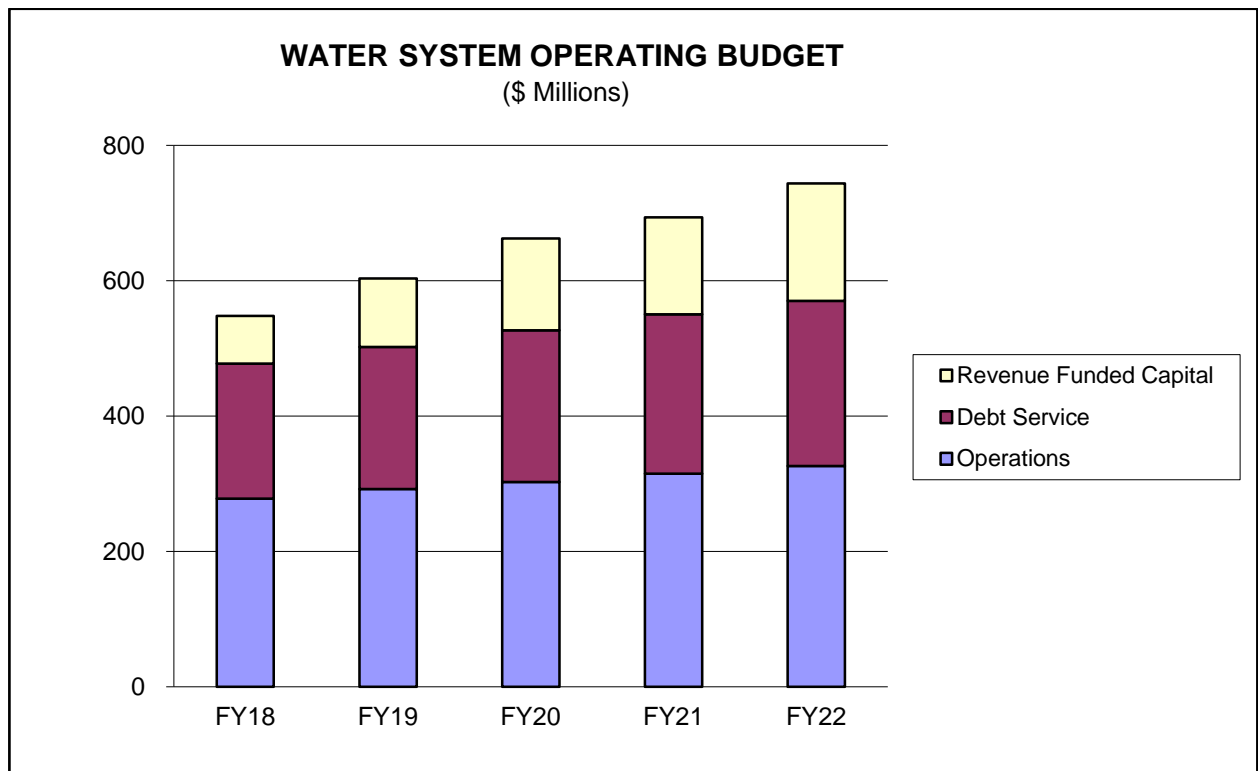
## Five-Year Projection of Operating Budget

The Water System operations expenses are projected to increase from \$277.9 million in FY18 to \$326.4 million in FY22, an increase of 4.1 percent per year.

Debt service requirements are expected to increase from \$199.6 million in FY18 to \$244.0 million by FY22, an increase of 5.2 percent per year. The five-year increase results in \$798.6 million of new debt that will be issued to finance the Water System Capital Improvement Program.

The District uses rate revenue to cash fund a portion of its annual capital improvement expenses. The amount of revenue funded capital will increase from \$70.7 million in FY18 to \$173.7 million in FY22, an increase of 146 percent.

This chart summarizes projected Water System budget by category for the next five years.



## Five-Year Projection of Reserves

The operating reserves consist of:

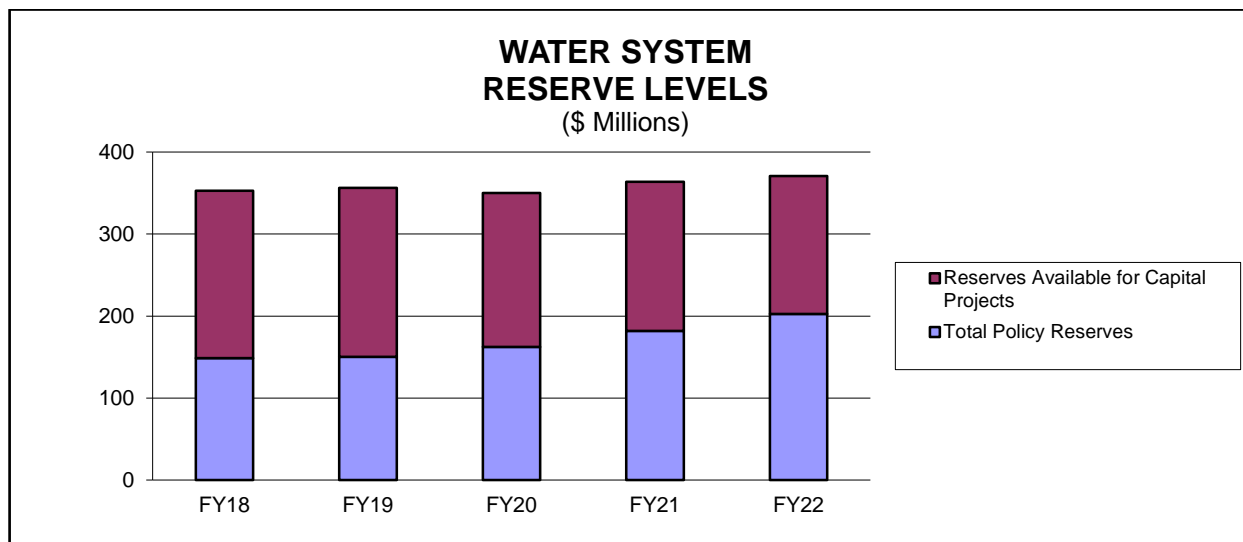
- Working capital reserves equal to three months operating and maintenance expenses
- Self-Insured Liability reserve based on the Actuarial Self-Insured Retention (SIR) funding recommendation
- Workers' Compensation reserve based on the Actuarial SIR funding recommendation
- Rate stabilization reserve of a minimum of 20 percent of projected annual water volume revenues

The table below shows the changes to reserve components over the five-year period. Reserve balances meet or exceed the policy reserve levels for the entire period.

<b>WATER SYSTEM RESERVE COMPONENTS</b> (\$ Millions)					
	<b>Forecast</b>				
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>
<b>Projected Operating Budget Reserves</b>	<b>352.6</b>	<b>356.3</b>	<b>350.1</b>	<b>363.6</b>	<b>370.7</b>
<b>Policy Reserves</b>					
Working Capital	69.1	72.4	74.6	77.2	80.0
Self-Insured Liability Reserve	6.6	6.6	6.6	6.6	6.6
Workers' Compensation Reserves	6.1	6.1	6.1	6.1	6.1
Rate Stabilization Reserve	<u>67.0</u>	<u>65.0</u>	<u>75.0</u>	<u>92.0</u>	<u>110.0</u>
<b>Total Policy Reserves</b>	<b>148.8</b>	<b>150.1</b>	<b>162.3</b>	<b>181.9</b>	<b>202.7</b>
<b>Reserves Available for Capital Projects</b>	<b>203.8</b>	<b>206.2</b>	<b>187.8</b>	<b>181.7</b>	<b>168.0</b>

Numbers in the table may be rounded.

The following chart shows Water System reserve levels projected at the end of each fiscal year.





## **CAPITAL INVESTMENTS AND FINANCING**

The Five-Year Capital Improvement Program (CIP) outlines Water System capital investment plans, the estimated cost of these investments, and the sources of funds. Appropriations reflect the amount that is authorized and budgeted over a multi-year period for each program. Cash flows are the amounts estimated to be spent on each program in a given year. The five-year program for the Water System includes \$1.7 billion in capital project appropriations, including administration of capital expenses, and \$1.5 billion in projected cash flow spending.

The focus of the CIP is the five-year period from FY18-22. Capital needs have been estimated for a second five-year period from FY23-27, but given the long-term nature of these capital improvement plans, by necessity they are preliminary estimates only and will be revised as studies are completed, priorities are redefined, and as new needs emerge. Therefore, the budget focuses on the first five years of the CIP.

In the FY18-22 CIP, 53% of the Water System's project appropriations will focus on the Maintaining the Infrastructure Strategy. This strategy furthers the District's objectives to improve, rehabilitate and replace aging infrastructure in a cost effective manner to ensure sustainable delivery of reliable, high quality water service now and in the future. Work under this strategy focuses on pipeline projects to improve system reliability for existing customers and to provide service to new customers.

Funding for these projects is drawn from the proceeds of revenue bond issues, commercial paper, grants, reimbursements from developers and other agencies, and current reserves and revenues.

For the FY18-22 CIP, an increasing amount of capital expenditures will be funded on a pay-as-you-go basis in accordance with the District's financial policies. Over the five-year period, the percentage of capital funded from debt will average 52.1 percent, which is under the target maximum of 65 percent contained in the District's debt policy, and debt service will grow by 5.2 percent per year. Water System total outstanding debt will increase by \$366.9 million during the period. Total debt outstanding at the end of the five-year period will total \$3.1 billion.

In FY18 and FY19, the debt coverage ratio will be 1.60 and 1.60, respectively, and for all five years the ratio meets or exceeds the target coverage ratio of 1.60.

The following table shows the cash flow spending on capital improvements anticipated for the next five years, along with the financial resources anticipated to fund the capital program.

<b>WATER SYSTEM FUND - CAPITAL BUDGET</b>						
<b>FIVE-YEAR FINANCIAL FORECAST</b>						
(\$ Millions)						
	<b>Forecast</b>					
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Totals</b>
<b>Beginning Balance</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>
<b>Resources:</b>						
Revenue Funded Capital	70.7	101.1	135.6	143.1	173.7	624.2
New Bond Proceeds	175.9	148.6	151.4	176.4	130.3	782.6
Loans Proceeds	0.0	0.0	0.0	0.0	0.0	0.0
Grants	0.5	0.3	0.2	0.4	0.2	1.5
Reimbursements	20.6	19.9	18.2	17.2	17.4	93.3
Commercial Paper	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
<b>Total Resources</b>	<b>267.7</b>	<b>269.8</b>	<b>305.4</b>	<b>337.2</b>	<b>321.5</b>	<b>1,501.6</b>
<b>Expenditures:</b>						
Capital Cash Flow	227.7	229.8	264.2	294.7	277.8	1,294.3
Administration of Capital	<u>40.0</u>	<u>40.0</u>	<u>41.2</u>	<u>42.4</u>	<u>43.7</u>	<u>207.3</u>
<b>Total Expenditures</b>	<b>267.7</b>	<b>269.8</b>	<b>305.4</b>	<b>337.1</b>	<b>321.5</b>	<b>1,501.6</b>
<b>Ending Balance</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>
<b>Debt Percentage of Funding</b>	<b>65.7%</b>	<b>55.1%</b>	<b>49.6%</b>	<b>52.3%</b>	<b>40.5%</b>	<b>52.1%</b>

Numbers in the table may be rounded.

Projected new bond issues, outstanding debt, and debt service are shown in the following table.

<b>OUTSTANDING DEBT AND DEBT SERVICE AT END OF FISCAL YEAR</b>					
(\$ Millions)					
	<b>Forecast</b>				
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>
Beginning of Year Outstanding Debt	2,592.5	2,706.3	2,815.3	2,923.3	3,025.4
Debt Retired	60.8	65.8	68.8	74.5	80.3
New Bond Issues and Commercial Paper	<u>179.5</u>	<u>151.6</u>	<u>154.5</u>	<u>180.0</u>	<u>133.0</u>
<b>Total Outstanding Debt</b>	<b>2,711.2</b>	<b>2,792.1</b>	<b>2,901.0</b>	<b>3,028.8</b>	<b>3,078.1</b>
Debt Service, Existing Debt	185.9	186.0	189.8	189.5	189.2
Debt Service, New Debt	11.7	21.5	31.6	43.3	52.0
Debt Servicing Costs	<u>2.0</u>	<u>2.5</u>	<u>2.6</u>	<u>2.7</u>	<u>2.8</u>
<b>Total Debt Service</b>	<b>199.6</b>	<b>210.0</b>	<b>224.0</b>	<b>235.5</b>	<b>244.0</b>

Numbers in the table may be rounded.

## CHAPTER 4: WASTEWATER SYSTEM

This chapter provides a detailed description of the Wastewater System sources of funds, use of funds, department operations budgets including staffing, capital expenditures and a Five-Year Financial Forecast.

The Wastewater System Fund is an enterprise fund consisting of an operating and a capital budget. The function of the Wastewater System is the interception and treatment of wastewater from residences and industries in the communities of Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District. The Wastewater System receives administrative, financial, and other support services from the Water System.

This chapter is organized into the following sections:

- Pages 163 - 196     A detailed description of the FY18 and FY19 budgets including sources of revenues and use of funds for operations, debt financing, and capital programs. This section also includes a detailed department budget.
- Pages 197 - 203     A five-year forecast of the Wastewater System projected revenues and expenditures for operations, debt financing, and capital programs

### FUND SUMMARY

The following are key projections and assumptions utilized in the FY18 and FY19 budget.

WASTEWATER SYSTEM FUND – KEY ASSUMPTIONS		
	FY18	FY19
% Rate Increase	5.0%	5.0%
Average monthly single family residential bill based on 6 ccf/month	\$20.89	\$21.95

The fund summary illustrates the beginning and ending fund balances as well as revenues, expenditures, and other financing sources/uses. The following table shows the fund balance, and projected revenues and expenditures for the Wastewater System for FY18 and FY19. The table is an expansion of the Wastewater System Fund Summary table presented at the end of Chapter 2.

**Wastewater System Fund Summary**  
**Operating and Capital Budgets**

(\$ Millions)

	FY18			FY19		
	Operating	Capital	Fund Balance	Operating	Capital	Fund Balance
<b>Beginning FY Fund Balance (Projected)</b>	<b>77.5</b>	<b>0.0</b>	<b>77.5</b>	<b>78.0</b>	<b>0.0</b>	<b>78.0</b>
<b>Sources of Funds</b>						
<b>Operating Revenues</b>						
Treatment Charges	71.7		71.7	75.3		75.3
Resource Recovery	8.0		8.0	8.0		8.0
Wet Weather Facilities Charge	24.0		24.0	25.2		25.2
Property Taxes	4.8		4.8	4.9		4.9
Ad Valorem Bond Levy	2.2		2.2	0.0		0.0
Interest Income	1.5		1.5	1.5		1.5
Laboratory Services	4.1		4.1	4.3		4.3
Reimbursements	1.4		1.4	1.4		1.4
Permit Fees	1.6		1.6	1.6		1.6
Capacity Charges	1.8		1.8	1.9		1.9
All Other Revenue	<u>5.7</u>		<u>5.7</u>	<u>5.7</u>		<u>5.7</u>
<b>Total Operating Revenues</b>	<b>127.0</b>		<b>127.0</b>	<b>129.9</b>		<b>129.9</b>
<b>Capital Funding Sources</b>						
New Bond Proceeds		20.1	20.1		13.7	13.7
Loans Proceeds		0.0	0.0		0.0	0.0
Grants		0.0	0.0		0.0	0.0
Reimbursements		0.0	0.0		0.0	0.0
Commercial Paper		<u>0.0</u>	<u>0.0</u>		<u>0.0</u>	<u>0.0</u>
<b>Total Capital Sources</b>		<b>20.1</b>	<b>20.1</b>		<b>13.7</b>	<b>13.7</b>
Revenue Funded Capital	<u>(21.3)</u>	<u>21.3</u>	<u>0.0</u>	<u>(25.8)</u>	<u>25.8</u>	<u>0.0</u>
<b>Total Sources of Funds</b>	<b>105.7</b>	<b>41.4</b>	<b>147.1</b>	<b>104.1</b>	<b>39.5</b>	<b>143.6</b>
<b>Use of Funds</b>						
Operations	70.6		70.6	73.1		73.1
Debt Service	34.7		34.7	31.9		31.9
Capital Cash Flow		<u>41.4</u>	<u>41.4</u>		<u>39.5</u>	<u>39.5</u>
<b>Total Use of Funds</b>	<b>105.2</b>	<b>41.4</b>	<b>146.6</b>	<b>105.1</b>	<b>39.5</b>	<b>144.6</b>
<b>Ending Balance *</b>	<b>78.0</b>	<b>0.0</b>	<b>78.0</b>	<b>77.0</b>	<b>0.0</b>	<b>77.0</b>

Numbers in the table may be rounded.

\* Includes reserves for working capital, self-insurance, worker's compensation, contingency and rate stabilization, and for capital projects.

## FY 2018 & FY 2019 BUDGET

### SOURCES OF FUNDS

Operating expenses are funded by a group of revenue sources approved by the Board of Directors. Anticipated capital expenses are funded primarily by a combination of bond issues, which results in annual debt service payments, and operating revenue.

The table below displays the amounts to be collected from revenue sources and shows the amounts that are expected to fund the capital program for the Wastewater System.

<b>WASTEWATER SYSTEM SOURCES OF FUNDS</b>				
(\$ Millions)				
	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY19 Proposed Budget</b>
<b>Operating Revenues:</b>				
Treatment Charges	64.3	70.3	71.7	75.3
Resource Recovery	11.6	8.0	8.0	8.0
Wet Weather Facilities Charge	21.9	22.9	24.0	25.2
Property Taxes	4.6	4.4	4.8	4.9
Ad Valorem Bond Levy	3.3	4.1	2.2	0.0
Interest Income	0.3	0.7	1.5	1.5
Laboratory Services	4.3	4.0	4.1	4.3
Reimbursements	1.4	1.0	1.4	1.4
Permit Fees	1.6	1.8	1.6	1.6
Capacity Charges	3.1	1.6	1.8	1.9
All Other Revenue	<u>5.3</u>	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>
<b>Total Operating Revenues</b>	<b>121.8</b>	<b>124.5</b>	<b>127.0</b>	<b>129.9</b>
Revenue Funded Capital	(35.8)	(14.6)	(21.3)	(25.8)
<b>Capital Funding Sources:</b>				
Revenue Funded Capital	35.8	14.6	21.3	25.8
New Bond Proceeds	0.0	22.1	20.1	13.7
Loans Proceeds	0.0	0.0	0.0	0.0
Grants	0.3	0.0	0.0	0.0
Reimbursements	0.7	0.0	0.0	0.0
Commercial Paper	0.0	0.0	0.0	0.0
Construction Fund	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
<b>Total Capital Funding Sources</b>	<b>36.9</b>	<b>36.7</b>	<b>41.4</b>	<b>39.5</b>
<b>Total Wastewater Sources</b>	<b>122.9</b>	<b>146.6</b>	<b>147.1</b>	<b>143.6</b>

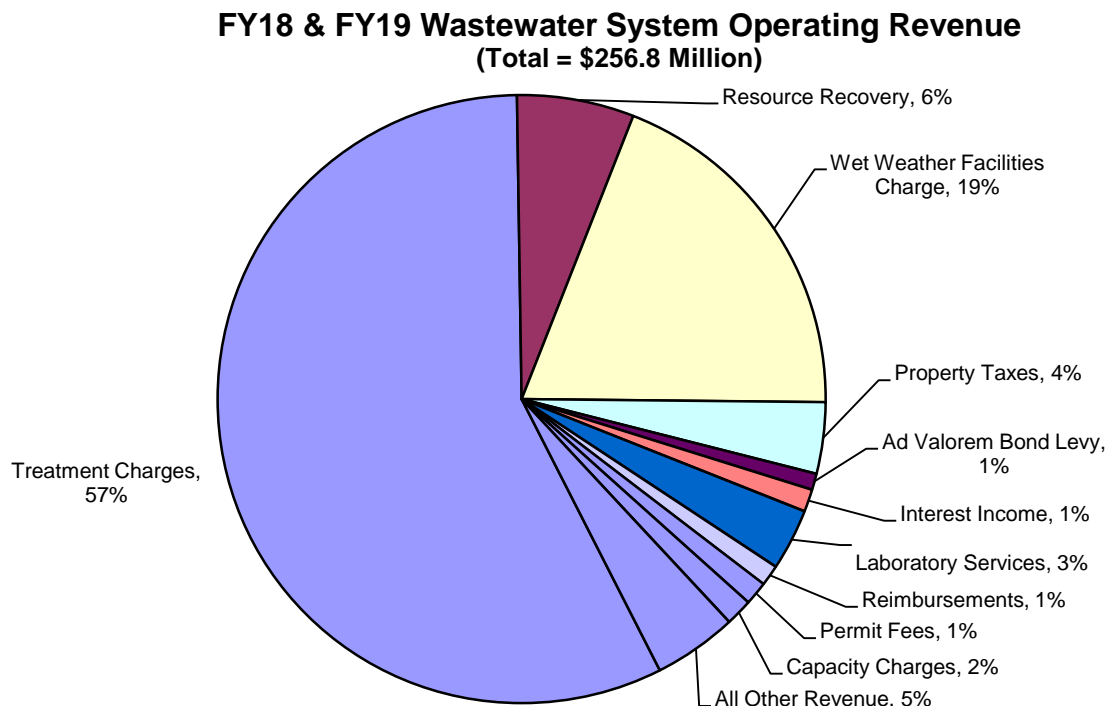
Numbers in the table may be rounded.

## Operating Revenue

Wastewater System operating revenues for FY18 are increasing \$2.5 million, or 2.0 percent compared to FY17, for a total of \$127.0 million. The projected wastewater treatment charges will total \$71.7 million, an increase of \$1.4 million compared to FY17. Wet Weather Facilities Charge revenue in FY18 is projected to increase \$1.1 million from the FY17 budgeted amount. Property tax revenue is increasing \$0.4 million to reflect projected collections. Interest income is increasing \$0.8 million due to higher projected interest rates. Reimbursement income from the Water System is increasing \$0.4 million due to work done by Wastewater staff on the recycled water programs that benefit water system customers. Ad Valorem Bond Levy proceeds are decreasing \$1.9 million compared to FY17 due to the retirement of the General Obligation bonds during this fiscal year.

In FY19, Wastewater System operating revenues will increase \$2.9 million, or 2.3 percent for a total of \$129.9 million. This increase is comprised primarily of \$4.8 million from rate increases in the wastewater treatment and Wet Weather Facilities Charges. Ad Valorem Bond Levy proceeds will decrease \$2.2 million compared to FY18 due to the retirement of the General Obligation bonds.

The figure below illustrates the various sources of revenue and the relative percentage each contributes to the total. Wastewater treatment charges revenue is the largest source of revenue comprising 58 percent of FY18 and FY19 total revenues. The second largest source of revenue is the Wet Weather Facilities Charge.



The following pages provide more detail on each of the revenue categories.

## **Source Descriptions**

### **Operating Revenue**

The following are descriptions of the 11 sources of operating revenue, including information about the projected revenues for FY18 and FY19.

#### **Treatment Charges**

The District provides treatment for discharges collected through city-owned sewers and transported through District interceptors and pump stations to the Main Wastewater Treatment Plant. Treatment charges for all customers are based on the volume and strength of the wastewater discharged plus a service charge, and are collected on the water service bill. The overall rate increase for the various wastewater treatment charges will be 5.0 percent for FY18 and an additional 5.0 percent for FY19. After the 5.0 percent rate increase for FY18, the projected wastewater treatment charge will total \$71.7 million, which is 2.0 percent higher than FY17 due to the drop in water use during the recent drought. For FY19, the projected wastewater treatment charge will be \$75.3 million, an increase of \$3.6 million or 5.0 percent over the FY18 treatment revenue.

#### **Resource Recovery**

The District utilizes its excess capacity at the Main Wastewater Treatment Plant with the acceptance of trucked waste. The Resource Recovery Program is projected to generate \$8.0 million in FY18 and in FY19.

#### **Wet Weather Facilities Charge**

In June 1987, the Board of Directors established the Wet Weather Facilities Charge to pay for the costs associated with the District wet weather facilities. This charge is assessed on a per parcel basis and, while it is not a tax, the charge is collected on the county property tax bill. The charge is projected to generate approximately \$24.0 million in FY18, a 4.8 percent increase over the FY17 budget. In FY19, the projected revenue is \$25.2 million, a 5.0 percent increase over the FY18 budget.

#### **Property Taxes**

The District receives a portion of the one percent county levy on properties within District boundaries. The percentage of the county levy received varies depending on the number of other agencies participating in the distribution. The District's Wastewater share has averaged 0.5 percent of the total monies collected. For FY18, property tax revenue is projected to be \$4.8 million. For FY19, revenues are projected to be \$4.9 million or \$0.1 million over FY18.

#### **Ad Valorem Bond Levy**

The Wastewater System has the authority, approved by a two-thirds majority of the voters, to impose an ad valorem property tax to recover the debt service on its outstanding General Obligation (GO) bonds. The District has one GO bond outstanding with a remaining balance of approximately \$2.2 million. As of August 2016, the net assessed valuation for property within the Wastewater System is \$96.8 billion. For FY18, the ad valorem property tax rate will be approximately \$0.0023 per \$100 of assessed value, or \$2.30 for every \$100,000 of assessed valuation. After FY18, the GO bond will be paid off and the levy will no longer be collected.

**Interest Income**

The District places funds not needed for current expenditures in short-term investments, following the same procedures as the Water System. Interest income in FY18 is projected to be \$1.5 million, an increase of \$0.8 million over the FY17 budgeted amount due to an increase in the projected interest rates. Interest income in FY19 is projected to be \$1.5 million. Interest is assumed to be 2 percent in FY18 and in FY19.

**Laboratory Services**

The Wastewater Laboratory provides testing and analysis services for the Water and Wastewater Systems and several outside agencies. The Water and Wastewater Systems share in the joint costs of operating the lab. Revenues from the Water System and outside agencies are projected to be \$4.1 million for FY18 and \$4.3 million for FY19.

**Reimbursements**

The Wastewater System is reimbursed from the Water System for work done by Wastewater staff on the recycled water programs. In FY18 and in FY19, the estimated revenue from reimbursements is \$1.4 million, which reflects the actual reimbursements from FY16.

**Permit Fees**

The District collects fees to fund its pollution prevention programs and the discharge permit programs. In FY18 and in FY19, the estimated revenue from these permit fees will be \$1.6 million, a slight decrease from the FY17 budget of \$1.8 million due to fewer accounts in the discharge permit programs.

**Capacity Charges**

In FY14, the District designated the revenues received from the Wastewater Capacity Fees (WCF) as operating revenue for purposes of the budget and the bond indenture. This allows the WCF revenues to be used in the debt coverage ratio calculation for Wastewater. Because the WCF is collected from new customers as payment for their share of existing wastewater facilities, these revenues can be classified as being available to pay for debt expenses for capital. This is similar to the treatment of the Water System Capacity Charge revenue. This change in designation of revenues reduces the amount of the wastewater treatment rate increase that is required to meet the debt coverage ratio target. The WCF revenue is projected to be \$1.8 million in FY18 and \$1.9 million in FY19.

**All Other Revenue**

Included in this category are lease revenue of District properties, reimbursements from the U.S. Treasury under the Build America Bond program, revenue from energy sales at the Power Generation Station, and private sewer lateral fees. All other revenue for the Wastewater System is expected to remain at \$5.7 million for FY18 and FY19.



## **Capital Funding**

The following are descriptions of the five sources of capital funding. The FY18 and FY19 capital improvement program will be funded with bond proceeds and wastewater revenue and reserves. It is anticipated that the District will receive \$20.1 million in new revenue bond proceeds in FY18 and \$13.7 in FY19, combined with revenue funded capital of \$21.3 million in FY18 and \$25.8 million in FY19.

Please refer to the section Debt Service and Financing for additional details on debt funding of capital projects.

### **New Bond Proceeds**

The District has the ability to issue long-term bonds to fund its capital program. The proceeds of the bond sales can be used to pay for capital expenses over several years. The repayment of the bonds is generally over 30 years and is paid from wastewater rate revenues.

### **Commercial Paper Issues**

In addition to issuing long-term bonds to fund its capital program, the District has used short-term borrowing in the form of commercial paper to raise revenues for capital expenses. The term of commercial paper can be up to 270 days. The repayment of commercial paper is paid from wastewater rate revenues.

### **Grants and Loans Proceeds**

The District seeks out federal and state grants and low-interest loans to fund some of its capital projects when they meet the conditions of the grant and loan programs.

### **Reimbursements**

Some of the capital projects in the Wastewater System are done at the request of other agencies, and the District is reimbursed for its expenses. An example would be the relocation of a portion of the sewer interceptor at the request of a city or state agency.

### **Revenue Funded Capital**

Annual capital expenses that are not paid from debt funding, grants, loans or reimbursements must be paid from revenues, either from current year revenues or from reserves.

## USE OF FUNDS

The Wastewater System has three types of expenditures:

**Operations**, or the annual costs of providing all wastewater services;

**Debt Service**, or the repayment of bonds for making capital investments in the wastewater system; and

**Capital cash flow**, or the annual costs of the Capital Improvement Program for long-term projects.

The following table shows the breakdown of expenses for operations, debt service, and capital cash flow.

<b>USE OF FUNDS</b>				
(\$ Millions)				
<b>Expenditure Type</b>	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY19 Proposed Budget</b>
Operations	60.3	70.7	70.6	73.1
Debt Service	33.2	34.0	34.7	31.9
Capital Cash Flow	<u>37.0</u>	<u>36.7</u>	<u>41.4</u>	<u>39.5</u>
<b>Total Expenditures</b>	<b>130.4</b>	<b>141.4</b>	<b>146.6</b>	<b>144.6</b>

Numbers in the table may be rounded.

## Operations

This section contains charts and tables which explain the major components of the Wastewater System operations budget. Typical operations expenditures include, but are not limited to labor, benefits, chemicals, energy, spoils/sludge disposal, parts and materials, and fees and licenses.

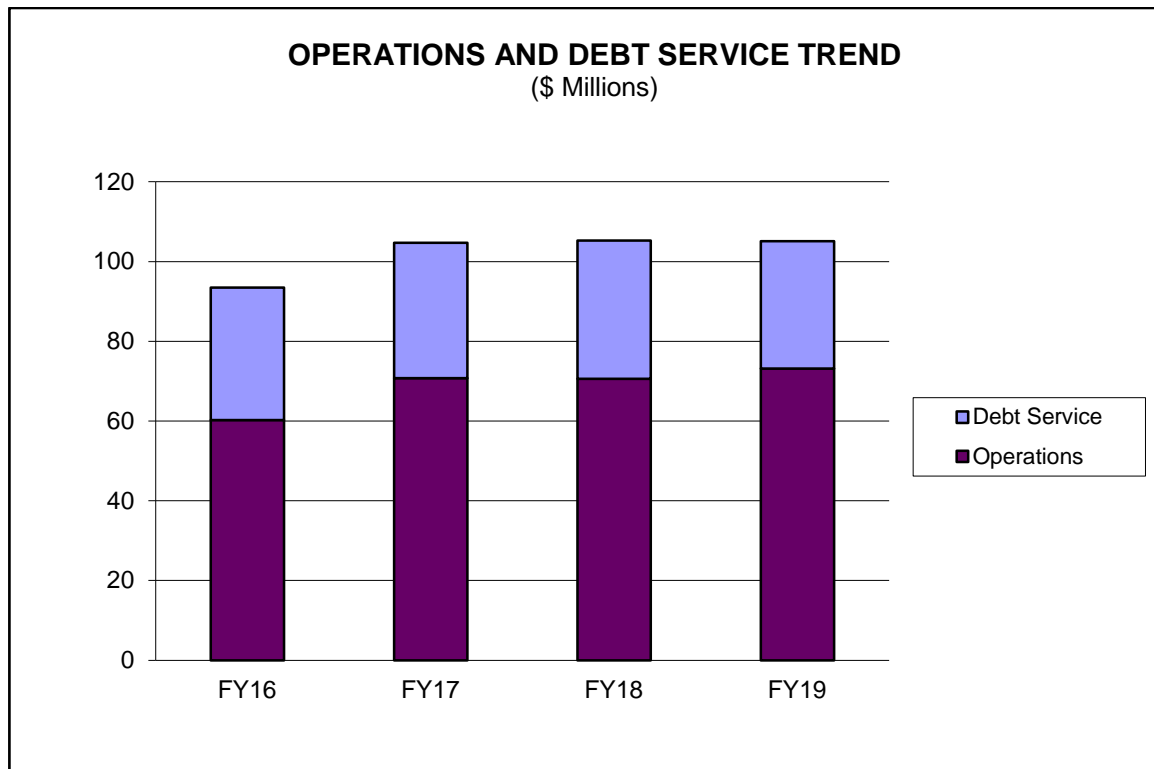
The operations budget is also shown. The details include a discussion of services provided, significant budget changes, and staffing and position changes.

The table below details the operations and debt service budget for FY18 and FY19.

<b>Operations and Debt Service</b> (\$ Millions)						
	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
Operations	60.3	70.7	70.6	-0.2%	73.1	3.7%
Debt Service	<u>33.2</u>	<u>34.0</u>	<u>34.7</u>	2.1%	<u>31.9</u>	-7.9%
<b>Total</b>	<b>93.5</b>	<b>104.7</b>	<b>105.2</b>	0.5%	<b>105.1</b>	-0.1%

Numbers in the table may be rounded.

In FY18, the operations and debt service budget is increasing \$0.5 million or 0.5 percent over the FY17 amended budget, and in FY19 will decrease \$0.1 million or 0.1 percent compared to FY18.



## Department Operations Budget

The operations portion of the Wastewater System budget is divided into various departments. One department is referred to as a staffed department indicating employees are assigned to work in the department. The staffed department budget funds the day-to-day operations of the Wastewater System, and includes funding for labor, benefits, outside contract services and other non-labor expenses such as chemicals, energy, spoils and sludge disposal, parts and materials, and fees and licenses. A detailed description of the staffed department is included later in this chapter.

A small number of departments do not have personnel assigned to them and are referred to as non-staffed departments. The impact on the budget by each of the following departments varies:

**Contingency** - Funds budgeted each fiscal year to primarily cover projected labor-related expenses such as the employee cost of living adjustment which is based upon each year's February Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) in the San Francisco-Oakland-San Jose area. The index is published in March of each year. The contingency budget also includes funding for unanticipated needs which may arise before the next budget cycle.

**Administration of Capital** - The administration of capital represents those costs that are not directly attributable to specific capital projects but are more generalized indirect support of the Capital Improvement Program (CIP). The administration of capital in the operations budget will decrease operating expense by a like amount and reallocate the costs to the capital budget.

The following table presents the total FY18 and FY19 Wastewater System operations budget by department.

<b>Operations Budget by Department</b>						
(\$ Thousands)						
<b>DEPARTMENT</b>	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
Wastewater	64,042	73,477	71,480	-2.7%	72,981	2.1%
<b>Subtotal Staffed Department</b>	<b>64,042</b>	<b>73,477</b>	<b>71,480</b>	<b>-2.7%</b>	<b>72,981</b>	<b>2.1%</b>
Contingency	180	240	2,078		3,156	
Administration of Capital	(3,951)	(3,000)	(3,000)	0.0%	(3,000)	0.0%
<b>Subtotal Operations Expenses</b>	<b>60,271</b>	<b>70,717</b>	<b>70,558</b>	<b>-0.2%</b>	<b>73,137</b>	<b>3.7%</b>
Debt Service	33,202	33,956	34,659	2.1%	31,936	-7.9%
<b>TOTAL</b>	<b>93,472</b>	<b>104,673</b>	<b>105,217</b>	<b>0.5%</b>	<b>105,074</b>	<b>-0.1%</b>

Numbers in the table may be rounded.

The FY17 amended staffed department budgets include a cost of living adjustment.

## **Department Operations Budget Highlights**

The Wastewater System is comprised of one staffed department that performs all aspects of wastewater system operations. This section details the department's labor and non-labor budget, department goals and staffing.

### **Labor and Benefits**

Labor and benefits are allocated between the staffed department and contingency for cost of living adjustments. Cost of living adjustments are not shown in the staffed department's FY18 and FY19 labor and benefits budget since it is based on the CPI-W index and the amount is not known until the index is published annually. Once the index is published, and if funds are needed, contingency would be transferred to departments. The details of the department's labor and benefits budget are shown later in this chapter.

A number of complex drivers impact the labor and benefits budget beyond funding additional positions. One of the major complex drivers is a slower than projected rise in benefit costs which result in a lower fringe benefit rate compared to the prior fiscal year.

In comparison to the prior fiscal year, additional positions have been funded in the Wastewater Department in FY18 and FY19. This increase in funding for positions is offset each fiscal year when compared to the prior biennial budget due to a lower fringe benefit rate and a reduction in budgeted overtime. In addition, starting in FY18, a greater portion of labor is allocated to capital work reducing the operations labor and benefits budget. In FY19, total labor and benefits will increase due to funding an additional position and scheduled salary step increases.

Unlike the Water System, the Wastewater System has only one staffed department as mentioned earlier. Therefore, the department's labor and benefits are explained in greater detail in the budget highlights later in this chapter.

### **Non-labor**

The Wastewater staffed department non-labor costs are decreasing \$0.7 million or 2.0 percent in FY18 and will increase \$0.8 million or 2.4 percent in FY19 compared to the prior fiscal year. A detailed explanation of the significant changes is shown in the department budget highlights section later in this chapter.

## Department Operations by Budget Category

The table below depicts the Wastewater System staffed department operations by expense category. It does not include capital labor; however, capital labor by department is shown later in this chapter.

<b>FY18 &amp; FY19 DEPARTMENT OPERATIONS BY CATEGORIES</b>								
(\$ Thousands)								
<b>Department</b>	<b>FY18</b>				<b>FY19</b>			
	<b>Labor</b>	<b>Contract Services</b>	<b>All Other</b>	<b>Total Budget</b>	<b>Labor</b>	<b>Contract Services</b>	<b>All Other</b>	<b>Total Budget</b>
Wastewater	39,855	4,471	27,153	<b>71,480</b>	40,586	4,413	27,983	<b>72,981</b>
<b>TOTAL</b>	<b>39,855</b>	<b>4,471</b>	<b>27,153</b>	<b>71,480</b>	<b>40,586</b>	<b>4,413</b>	<b>27,983</b>	<b>72,981</b>

Numbers in the table may be rounded.

## Staffed Department Descriptions

The next section describes the staffed department and includes the following topics:

Overview provides an overall statement about the key responsibilities of the department within the larger mission of the District as a whole.

Description of Services Provided describes the responsibilities of the department, by unit (division) or by function, including services required to meet regulatory or legal requirements.

FY18 & FY19 Goals highlights the highest priority tasks or projects related to the budget, and place these in the context of the overall District Strategic Plan.

Department Budget Summary is a reference table that shows the Department's operating budget expenditures by category (Labor and Benefits, Contract Services, All Other Costs). It also includes capital labor to give a more complete picture of departmental budget.

Budget Highlights shows changes in cost relative to the previous fiscal year and describes reasons for those changes. This section focuses on the significant budget change.

Staffing Summary is a reference table that shows the Full-Time Equivalency (FTE) for the department by appointment type (full-time, part-time, etc.).

Staffing Changes is a section included only for departments that have position changes that require Board approval. It includes a table that enumerates position changes, followed by a brief description of the changes. The change in cost is determined by comparing the annual cost of the salaries and benefits of the current classification with the annual cost of the new classification at the top salary step.

## **WASTEWATER DEPARTMENT**

### **OVERVIEW**

The Wastewater Department operates and maintains the District's wastewater treatment facilities to comply with environmental and public health requirements. The department strives to protect the environment by reducing or eliminating the discharge of toxic and noxious substances to the air, land and San Francisco Bay. The primary goal is to ensure public health and safety by complying with federal, state and local regulations regarding air, biosolids and water.

### **DESCRIPTION OF SERVICES**

The department consists of the Wastewater Treatment, Wastewater Engineering, Laboratory Services, and Environmental Services divisions. The department operates and maintains the main wastewater treatment plant and three wet weather facilities; maintains the wastewater system infrastructure including sewer interceptors; monitors discharges by all wastewater customers; and tests and reports analytical results on water and wastewater.

### **FY18 & FY19 GOALS**

The department has a key role in the Strategic Plan goals of Water Quality and Environmental Protection, Long-Term Infrastructure Investment, and Long-Term Financial Stability. Key department goals include:

- Reducing environmental impacts on the San Francisco Bay during wet weather events through improving operational reliability and reducing inflow and infiltration;
- Pursuing opportunities to grow the Resource Recovery Program;
- Continuing to be a good neighbor by improving operating practices and investing in technologies that will minimize odors from the wastewater treatment plant; and
- Initiating planning activities to evaluate short-term and long-term nutrient management alternatives and maintaining a regional leadership role to ensure a collaborative, science based approach to addressing potential nutrient impairment in the San Francisco Bay.



## DEPARTMENT BUDGET SUMMARY

A comparison of the department's budget is shown in the table below.

Category (\$ Thousands)	FY16 Actuals	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Total Labor and Benefits	46,246	50,894	49,702	-2.3%	50,471	1.5%
Less: Capital Labor and Benefits	(10,233)	(9,695)	(9,846)	1.6%	(9,886)	0.4%
Operating Labor and Benefits	36,012	41,199	39,855	-3.3%	40,586	1.8%
Contract Services	3,512	3,806	4,471	17.5%	4,413	-1.3%
All Other Costs	24,518	28,472	27,153	-4.6%	27,983	3.1%
<b>Operating Total</b>	<b>64,042</b>	<b>73,477</b>	<b>71,480</b>	<b>-2.7%</b>	<b>72,981</b>	<b>2.1%</b>

## BUDGET HIGHLIGHTS

The department's total operating budget in FY18 is decreasing \$2.0 million or 2.7 percent compared to FY17. In FY19, the budget will increase \$1.5 million or 2.1 percent compared to the prior fiscal year. Significant budget changes include:

### FY18

Total labor and benefits is decreasing by \$1.2 million. Operating labor and benefits is decreasing by \$1.3 million primarily due to a lower fringe benefit rate, a reduction in budgeted overtime, and a higher portion of labor allocated to capital projects. Contract services are increasing by \$0.7 million for inflow investigations in community sewer systems required by the consent decree and to support the Electrical Integrity Program. All other costs are decreasing by \$1.3 million primarily due to decreased chemical costs (\$0.5 million) resulting from operational efficiencies and lower chemical prices; and a reduction in the department's share of reimbursable costs (\$0.6 million) to the Water System covering services such as billing and collection, finance, human resources, and rent.

### FY19

Total labor and benefits costs will increase \$0.8 million primarily due to scheduled salary step increases and an additional full-time FTE to meet workload needs. Contract services will decrease \$0.06 million primarily due to the elimination of the Electrical Integrity Program outside service which will now be performed by Wastewater staff. All other costs will increase by \$0.8 million primarily due to chemical costs, District vehicle fleet costs, spoils and sludge disposal, fees and licenses, and computer software. In addition, the department's share of reimbursable costs to the Water System will increase by \$0.2 million primarily due to projected labor cost increases.

## STAFFING SUMMARY

The table below shows the staffing of the department.

Position Type	FY16	FY17	FY18	FY18 Change vs FY17	FY19	FY19 Change vs FY18
Full-Time	281.0	280.0	282.0	2.0	283.0	1.0
Limited-Term / Temp Construction	3.0	5.0	4.0	(1.0)	4.0	0.0
Intermittent	0.0	0.0	0.0	0.0	0.0	0.0
Temporary / Part-Time	1.5	1.5	0.5	(1.0)	0.5	0.0
<b>Total FTE</b>	<b>285.5</b>	<b>286.5</b>	<b>286.5</b>	<b>0.0</b>	<b>287.5</b>	<b>1.0</b>

In FY18, one full-time FTE is transferred to the Water System.

## STAFFING CHANGES

The table below summarizes the FTE changes followed by a brief description. The net change in cost represents the difference between the annual salary at the top step including benefits for the existing highest job classification versus the highest classification for the change.

FY	Action	From Classification(s)	To Classification(s)	Change in Cost	Change in FTE	Project/Program
2018	Delete	(Temp) Gardener II		(59,761)	(0.5)	Full-time Gardener utilized in place of two temporary Gardeners
2018	Delete	(Temp) Gardener II		(59,761)	(0.5)	
2018	Delete	(LT) Assistant Engineer		(195,828)	(1.0)	Resource Recovery
2018	Delete	(LT) WW Control Rep		(168,893)	(1.0)	Private Sewer Lateral
2018	Add		Facility Specialist II	149,318	1.0	Reduce outside services
2018	Add		Associate Civil Engineer	216,232	1.0	Increased CIP
2018	Add		Senior Construction Inspector	191,033	1.0	Increased CIP
2018	Add		(LT) Information Services Supervisor	232,788	1.0	To support restructure of information system services
2018	Reallocate & Flex Character	Senior Civil Engineer/ Senior Mechanical Engineer	(Reg/LT) Information System Administrator II	(29,007)	0.0	To procure and implement a replacement Laboratory Information Management System
<b>FY18 TOTAL</b>				<b>276,121</b>	<b>1.0</b>	
2019	Add		Electrical Technician	168,688	1.0	Electrical Integrity Program
<b>FY19 TOTAL</b>				<b>168,688</b>	<b>1.0</b>	

In FY18, the department is deleting one FTE (two temporary positions) and two limited-term FTEs due to either completion of projects or workload efficiencies. The department is adding three full-time FTEs and one limited-term FTE to support increased capital workload and reduce outside services. The department is flexing one full-time FTE with one limited-term FTE and reallocating it to a new classification. In FY19, the department is adding one full-time FTE for the Electrical Integrity Program.

## Staffing

The table below provides the full-time equivalent (FTE) and compares the changes from year-to-year. Depending upon the appointment type, the FTE value will be different. Full-time, limited-term and temporary construction appointment types are equivalent to 1.0 FTE; intermittent appointment types are equivalent to 0.75 FTE; part-time and temporary appointment types are equivalent to 0.5 FTE.

<b>FY18 &amp; FY19 STAFFING BY DEPARTMENT</b>					
By Full-Time Equivalent (FTE)					
Department	FY17 Amended Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
<b>WASTEWATER SYSTEM TOTAL</b>	<b>286.5</b>	<b>286.5</b>	<b>0.0</b>	<b>287.5</b>	<b>1.0</b>

In FY18, the Wastewater System has a net zero change in FTE compared to FY17. Chapter 2 shows 1.0 FTE added to the Wastewater System, but is offset by one FTE transferred from the Wastewater System to the Water System. In FY19, one FTE is added to the Wastewater System.

For a more detailed description of staffing changes, please see the specific department section in this chapter or the Staffing section in the District Budget Summary Chapter 2 of this book.

## Bargaining Unit Changes

The following tables show the net change in bargaining unit status of authorized FTEs represented by AFSCME Local 2019, AFSCME Local 444, IFPTE Local 21, and IUOE Local 39; or included in Management/Confidential, non-represented groups, and civil service exempt positions. The tables reflect all staffing changes for FY18 and FY19.

<b>FY 18 vs. FY 17 Net Change in Bargaining Unit Status (by FTE)</b>							
Department	Local 2019	Local 444	Local 21	Local 39	MGMT / Confi- dential	Non- Rep	Civil Service Exempt
Wastewater			1				
<b>Total Net Change</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

<b>FY 19 vs. FY 18 Net Change in Bargaining Unit Status (by FTE)</b>							
Department	Local 2019	Local 444	Local 21	Local 39	MGMT / Confi- dential	Non- Rep	Civil Service Exempt
Wastewater		1					
<b>Total Net Change</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Debt Service and Financing

This section describes the Wastewater System's current and projected debt obligations, current credit ratings, and adherence to the District's debt financing policies.

The District incurs debt to finance projects or purchase, repair or replace assets which will have useful lives equal to or greater than the related debt. Issuance of revenue supported debt is authorized by the District's Board of Directors, subject to a referendum process. Individual revenue bond issues are authorized by the District's Board of Directors.

The annual debt service principal and interest payments are charged to the operating budget. However, debt is only issued to finance capital investment activities.

## Outstanding Debt

The Wastewater System has a total outstanding debt of \$397.2 million as of June 30, 2017. The District's debt issues are summarized below and discussed in detail thereafter.

<b>OUTSTANDING DEBT</b> <b>As of June 30, 2017</b> (\$ Thousands)				
<b>Issue</b>	<b>Date of Issue</b>	<b>Last Maturity</b>	<b>Amount Issued</b>	<b>Debt Outstanding</b>
<b>LONG-TERM DEBT</b>				
<b>Revenue Bonds:</b>				
Series 2007B	5/16/2007	6/1/2026	46,670	23,915
Series 2010A	10/20/2010	6/1/2029	58,095	41,905
Series 2010B (Build America Bonds)	10/20/2010	6/1/2040	150,000	150,000
Series 2012A	10/10/2012	6/1/2037	20,000	20,000
Series 2014A	8/28/2014	6/1/2031	80,425	72,040
Series 2015A1	3/6/2015	6/1/2037	54,805	54,805
Series 2015A2	3/6/2015	6/1/2038	13,565	13,565
Series 2015B	3/6/2015	6/1/2030	2,795	2,475
<b>Total Revenue Bonds</b>	-	-	<b>\$426,355</b>	<b>\$378,705</b>
<b>General Obligations Bonds</b>				
Series G	2/27/2014	4/1/2018	<b>\$14,160</b>	<b>\$3,515</b>
<b>Total Long-Term Debt</b>			<b>\$440,515</b>	<b>\$382,220</b>
<b>SHORT-TERM DEBT</b>				
<b>Extendable Commercial Paper</b>	Various	Various	<b>N/A</b>	<b>\$15,000</b>
<b>TOTAL OUTSTANDING DEBT</b>				<b>\$397,220</b>

The District may issue Wastewater System revenue refunding bonds in FY17 to take advantage of market interest rates. Refunding debt at lower interest rates can save the District a substantial amount of money if market conditions allow. The budget assumes issuance of \$20.5 million in additional new Wastewater System revenue bonds to fund FY18, and \$14.0 million to fund FY19 capital expenditures.

## Debt Service

The Wastewater System total outstanding debt of \$397.2 million projected as of June 30, 2017 will cost the District \$273.4 million in interest payments over the next 23 years, as detailed in the table below. The principal payments below do not include the payments of extendible commercial paper principal, as there is no final maturity associated with those notes.

Interest rates on extendible commercial paper (ECP) were projected at 2.5 percent in FY17 and thereafter.

<b>Projected Debt Service on Current Outstanding Debt</b>			
<b>Fiscal Year</b>	<b>Principal</b>	<b>Interest</b>	<b>Debt Service</b>
2018	13,790,000	19,336,348	33,126,348
2019	10,675,000	18,817,823	29,492,823
2020	11,185,000	18,315,008	29,500,008
2021	11,665,000	17,814,288	29,479,288
2022	12,220,000	17,235,413	29,455,413
2023	12,790,000	16,628,913	29,418,913
2024	13,360,000	16,024,373	29,384,373
2025	13,980,000	15,360,443	29,340,443
2026	14,625,000	14,665,733	29,290,733
2027	14,285,000	13,937,783	28,222,783
2028	14,300,000	13,226,915	27,526,915
2029	15,030,000	12,515,380	27,545,380
2030	15,750,000	11,769,114	27,519,114
2031	16,305,000	10,982,489	27,287,489
2032	16,795,000	10,164,252	26,959,252
2033	17,620,000	9,321,369	26,941,369
2034	18,505,000	8,430,726	26,935,726
2035	19,410,000	7,498,209	26,908,209
2036	20,360,000	6,520,044	26,880,044
2037	21,345,000	5,493,983	26,838,983
2038	24,365,000	4,418,250	28,783,250
2039	26,250,000	3,162,794	29,412,794
2040	27,610,000	1,804,094	29,414,094
<b>Total</b>	<b>382,220,000</b>	<b>273,443,744</b>	<b>655,663,744</b>

The difference in the debt service from the budgeted amount results from two factors. First, the figures in the table above include only debt service on currently outstanding bonds while budgeted debt service includes interest and principal on new bonds expected to be issued in FY18 and FY19 to fund the Capital Improvement Program. Second, budgeted figures include additional costs associated with the debt portfolio including re-marketing fees and debt service administration.

## Debt Ratings

Credit risk is the risk that the issuer of an investment, such as a revenue bond, will not fulfill its obligation to the holder of the investment. Credit ratings are assigned to bonds by nationally recognized statistical credit rating organizations based on published methodologies. The ratings reflect the organizations' opinions about the issuer's ability and willingness to meet its financial obligations. All investment grade ratings presume the obligation will be paid, in full and on time, currently and in the future.

Strong credit ratings provide tangible benefits to ratepayers in the form of reduced debt service cost. A strong credit rating provides better access to capital markets, lower interest rates, better terms on debt, and access to a greater variety of debt products. Prudent financial management policies have contributed to the District's strong ratings shown in the tables below.

As of January 1, 2017, ratings on the Wastewater System's debt were as follows:

<b>Wastewater System Debt Ratings</b>			
<b>Debt by Type</b>	<b>Standard &amp; Poor's</b>	<b>Moody's Investors Service</b>	<b>Fitch</b>
General Obligation Bonds	AAA	Aa1	--
Fixed Rate Revenue Bonds	AAA	Aa2	AA+
Extendable Commercial Paper	A-1+	P-1	F1+

## **Debt Management Policy and Debt Service Coverage**

The District is subject to legal debt limits prescribed in the Municipal Utility District (MUD) Act. The MUD Act describes three types of legal limitations: general debt limits, revenue bond limits, and short-term borrowing limits.

The District's general debt indebtedness cannot exceed the ordinary annual income and revenue of the District without a two-thirds approval of the voters. However, revenue bonds are not included in general debt limits.

The District is authorized to issue revenue bonds with the approval of a resolution from the Board of Directors, subject to a 60-day referendum period. The resolution specifies the maximum principal amount of bonds that may be issued pursuant to the authorization. The District's Board of Directors also approves individual series of revenue bonds issued under the broader authorization.

The MUD Act authorizes the District to issue short-term indebtedness without an election of the voters. The amount of short-term borrowing cannot exceed the lesser of 1) the annual average total revenue of the three preceding years or 2) twenty-five percent of the District's total outstanding bonds. This provision is substantially the same as the District's internal policy discussed below.

The District has also established its own policy regarding debt management (Policy 4.02: Cash Reserves and Debt Management – see Appendix). The purpose of the debt policy is to maintain a balance between current funding sources and debt financing over each five-year plan horizon in order to retain the District's financing flexibility and achieve the lowest cost of financing.

The District's debt management policy is to:

- a) maintain an annual revenue bond debt service coverage ratio of at least 1.6 times;
- b) limit debt-funded capital to no more than 65 percent of the total capital program over each five-year planning period; and
- c) limit commercial paper/variable rate debt to 25 percent of outstanding long-term debt.

### **Debt Service Coverage Ratio**

The debt service coverage policy ensures that the District has sufficient annual operating revenues to pay its operating expenses and meet its debt service obligations on its revenue bonds and other parity debt. The revenue bond debt service coverage ratio is defined as the District's net operating revenue (current year's operating revenue less the current year's operating expenses) divided by the current year's debt service on all revenue bonds and other parity debt. In FY18 and FY19, the projected debt coverage ratios are 1.78 and 1.81 respectively.



### Debt-Funded Capital

The percentage of the capital program that is funded by debt over the five-year planning period FY18-22 will be 34.7 percent, which is under the financial policy maximum target of 65 percent. The debt percentage funding for FY18 and FY19 is shown in the below table.

<b>Projected Debt Percentage of Funding</b>		
(\$ Millions)		
	<b><u>FY18</u></b>	<b><u>FY19</u></b>
<b>Expenditures:</b>		
Capital Cash Flow	38.4	36.5
Administration of Capital	<u>3.0</u>	<u>3.0</u>
<b>Total Expenditures</b>	<b>41.4</b>	<b>39.5</b>
<b>Project Funding:</b>		
New Bond Proceeds	20.1	13.7
Loans Proceeds	0.0	0.0
Commercial Paper	0.0	0.0
Construction Fund	<u>0.0</u>	<u>0.0</u>
<b>Total Resources</b>	<b>20.1</b>	<b>13.7</b>
<b>Debt Percentage of Funding</b>	48.6%	34.7%

### Commercial Paper and Variable Rate Debt Ratio

The District has authorized a short-term extendable commercial paper (ECP) borrowing program consistent with the MUD Act and the District's debt management policy. Under this program, the District may issue commercial paper notes at prevailing interest rates for periods of not more than 120 days from the date of issuance with the option by the District to extend the maturity for another 150 days. The program is not supported by any liquidity or revolving credit agreement. The Wastewater System ECP is secured by a pledge of the Wastewater System's net revenues, subordinate to the System's revenue bonds.

On June 30, 2017, \$15.0 million of Wastewater ECP is projected to be outstanding under the program. Wastewater System ECP will comprise 3.8 percent of the approximately \$397.2 million in total outstanding debt at the end of FY17.

The Wastewater System has no variable rate debt outstanding.

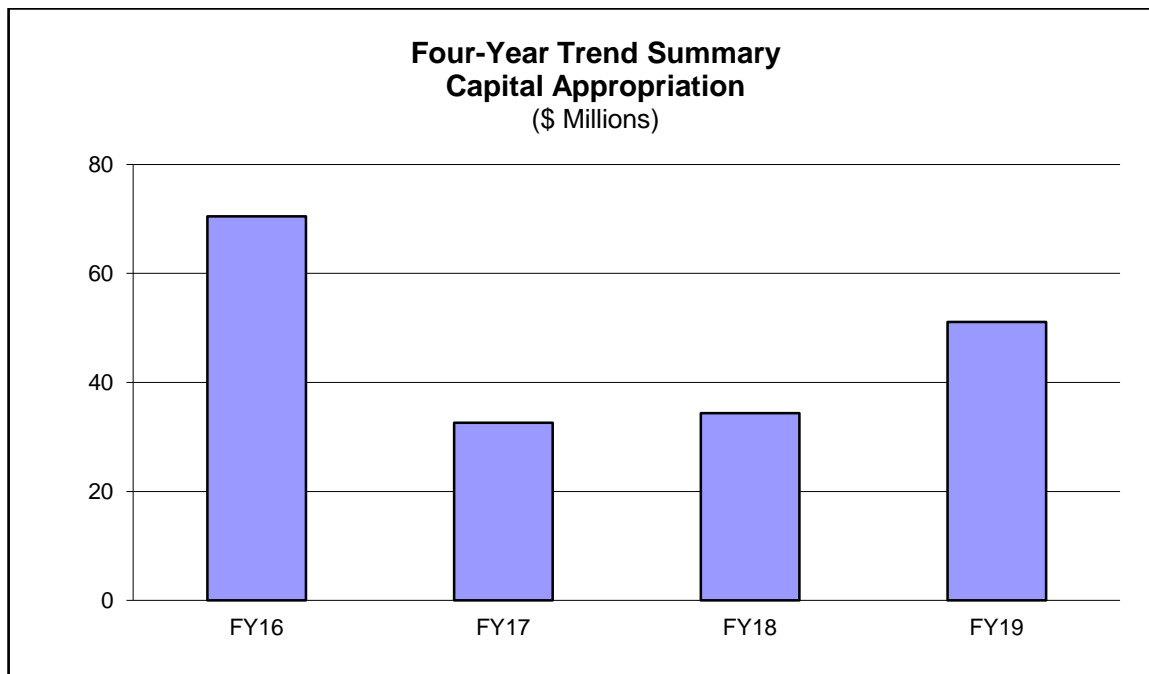
## Capital Expenditures

The Capital Improvement Program (CIP) consists of projects that typically result in the construction of new facilities, or the rehabilitation or upgrade of existing facilities. Project costs include all expenditures required to study, plan, design, purchase, construct, or upgrade new or existing facilities. In addition, projects can include large equipment purchases and the creation or replacement of computer systems infrastructure.

## Capital Appropriation

Capital appropriations represent the amounts approved by the Board to be spent on projects in the CIP. Since these appropriations are often spent over multiple years, the amounts appropriated for each fiscal year will vary depending upon project scope and timing, and any unspent appropriation a project may have.

The Wastewater System's FY18 appropriation totals \$34.4 million, an increase of \$1.8 million from FY17. In FY19, the appropriation totals \$51.1 million, an increase of \$16.7 million from FY18. The FY18 and FY19 appropriations reflect the District's continued commitment to improving the infrastructure at the Main Wastewater Treatment Plant, controlling odors, and rehabilitating sewer interceptors.



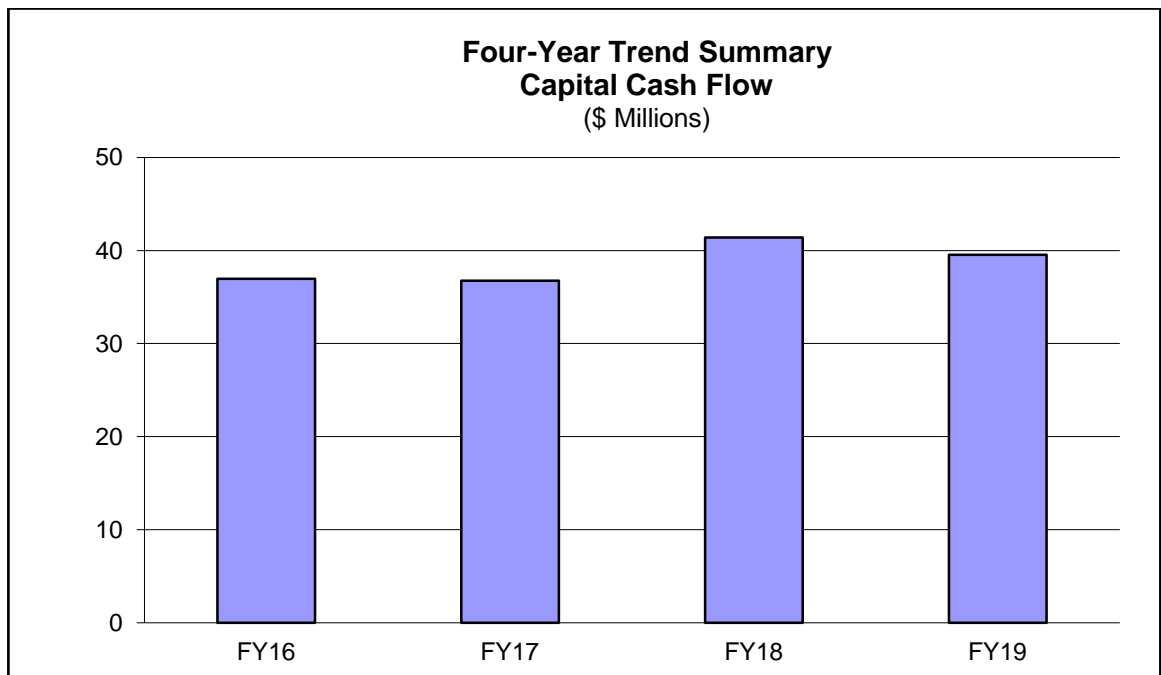
Capital Appropriation (\$ Millions)						
	FY16 Adopted Budget	FY17 Adopted Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
Capital Appropriation	70.5	32.6	34.4	5.5%	51.1	48.7%

Includes Administration of Capital

## Capital Cash Flow

Capital cash flows represent the amounts projected to be spent each fiscal year on projects in the CIP. The amount of cash flow each year varies as projects progress from one phase to another, such as from planning to design and then construction, and as projects are completed and new ones started.

The Wastewater System's FY18 cash flow totals \$41.4 million, an increase of \$4.7 million from FY17. In FY19, the cash flow totals \$39.5 million, a decrease of \$1.9 million from FY18. Key projects in the FY18 and FY19 cash flows include the 3<sup>rd</sup> Street sewer interceptor rehabilitation, concrete rehabilitation, digester upgrades, odor control improvements, and treatment plant infrastructure upgrades.



Capital Cash Flow (\$ Millions)						
	FY16 Actual	FY17 Adopted Budget	FY18 Proposed Budget	FY18 Change vs FY17	FY19 Proposed Budget	FY19 Change vs FY18
<b>Capital Cash Flow</b>	37.0	36.7	41.4	12.7%	39.5	-4.5%

Includes Administration of Capital

## Capital Labor

The following table shows the capital labor and benefits budget for the Wastewater Department for capital project work.

<b>Capital Labor By Department</b>						
(\$ Thousands)						
<b>DEPARTMENT</b>	<b>FY16 Actuals</b>	<b>FY17 Amended Budget</b>	<b>FY18 Proposed Budget</b>	<b>FY18 Change vs FY17</b>	<b>FY19 Proposed Budget</b>	<b>FY19 Change vs FY18</b>
Wastewater	10,233	9,695	9,846	1.6%	9,886	0.4%
<b>Department Total</b>	<b>10,233</b>	<b>9,695</b>	<b>9,846</b>	<b>1.6%</b>	<b>9,886</b>	<b>0.4%</b>

The Wastewater Department capital labor budget is increasing \$0.2 million in FY18 compared to FY17 primarily due to a shift in personnel costs from capital work to the operating budget. In FY19, the capital labor budget is essentially flat with FY18.

## Capital Program Highlights

The FY18-22 Wastewater System Capital Improvement Program (CIP) requires \$159.2 million in project appropriations, a decrease of \$0.3 million or less than one percent from the FY16-20 CIP. The decrease in the Maintaining Infrastructure Strategy is primarily due to completion of the Wood Street Sewer Interceptor Project and reduced needs under the Resource Recovery Project. The increase in the Regulatory Compliance Strategy is for nutrient management studies, pilot tests and possible design of sidestream treatment.

In accordance with the District's ten-year capital budget planning horizon, approximately \$235.0 million of work has been tentatively identified for FY23-27. Key aspects of this future work are discussed in the program and project summaries in the following pages. These future estimates will be revised as studies are completed, priorities are redefined, and new needs emerge. Therefore, the focus is on the first five years of the CIP.

The Wastewater System appropriations focus on the Maintaining Infrastructure Strategy, which comprises 85 percent of the CIP appropriations. All Wastewater System appropriations by strategy are summarized below.

<b>FY16-20 vs. FY18-22 Appropriation</b> <b>Capital Improvement Program by Strategy</b> (\$ Thousands)					
Strategy	Appropriation		Change		% of FY18-22
	FY16-20	FY18-22	\$	%	
Maintaining Infrastructure	132,547	122,369	(10,178)	0%	85%
Regulatory Compliance	8,558	17,956	9,398	110%	13%
Non-Program Specific	2,800	3,300	500	18%	2%
<b>Wastewater Subtotal</b>	<b>143,905</b>	<b>143,625</b>	<b>(280)</b>	<b>0%</b>	<b>100%</b>
Administration of Capital	15,551	15,551	0	0%	
<b>Wastewater Total</b>	<b>159,456</b>	<b>159,176</b>	<b>(280)</b>	<b>0%</b>	

Numbers in the table may be rounded.

No new appropriation is required as prior appropriations will be used.

The FY18-22 CIP identifies \$187.7 million in projected cash flow spending, an increase of \$19.2 million or 11 percent compared to the FY16-20 CIP. The increase is primarily attributable to the Maintaining Infrastructure Strategy for digester upgrades and upgrades to the treatment plant infrastructure. Under the Regulatory Compliance Strategy, new work was identified regarding nutrient management studies, pilot tests and possible treatment improvements.

All Wastewater System cash flows by strategy are summarized below, with select projects discussed in more detail.

<b>FY16-20 vs. FY18-22 Cash Flows</b> <b>Capital Improvement Program by Strategy</b> (\$ Thousands)					
Strategy	Cash Flows		Change		% of FY18-22
	FY16-20	FY18-22	\$	%	
Maintaining Infrastructure	143,095	153,253	10,158	0%	89%
Regulatory Compliance	9,886	18,878	8,992	91%	11%
Non-Program Specific	0	0	0	0%	0%
<b>Wastewater Subtotal</b>	<b>152,981</b>	<b>172,131</b>	<b>19,150</b>	<b>13%</b>	<b>100%</b>
Administration of Capital	15,551	15,551	0	0%	
<b>Wastewater Total</b>	<b>168,532</b>	<b>187,682</b>	<b>19,150</b>	<b>11%</b>	

Numbers in the table may be rounded.

## MAINTAINING INFRASTRUCTURE STRATEGY

This strategy furthers the District's objectives to improve, rehabilitate and replace aging infrastructure in a cost effective manner to ensure sustainable delivery of reliable, high quality service at both the Main Wastewater Treatment Plant (MWWTP) and remote facilities. Work under this strategy focuses on rehabilitating the digesters, concrete structures, and treatment process facilities at the MWWTP; implementing odor control improvements; and rehabilitating sections of the sewer interceptor system. The program included in this strategy is:

Appropriations (\$ Thousands)						
Program	FY18	FY19	FY20	FY21	FY22	Total
Wastewater Infrastructure Program	25,328	46,901	17,567	14,668	17,905	122,369
<b>Total</b>	<b>25,328</b>	<b>46,901</b>	<b>17,567</b>	<b>14,668</b>	<b>17,905</b>	<b>122,369</b>

### Wastewater Infrastructure Program

The Digester Upgrade Project will reuse or rehabilitate the digesters, which perform a key role in stabilizing wastewater solids prior to disposal. Interior coatings applied to some digesters are experiencing failure. The cause of the failure is being investigated and the coatings will be repaired in FY18-19. In FY18-22, the floating covers on Digester Nos. 3 and 4, and the membrane on Digester No. 2 will be replaced along with seismic upgrades, mechanical piping work, and associated electrical and control upgrades.

Additional digester work is scheduled for FY22-24 including new and upgraded equipment to facilitate digester cleaning, and a study to determine the effectiveness of including a grit removal system between the primary and secondary digesters to improve equipment reliability.

The Concrete Rehabilitation Project addresses critical concrete structures, channels and gates at the MWWTP as sulfides and other constituents in the wastewater accelerate corrosion. Repair of the primary tank channels is being conducted in phases and includes replacement of valves, gates and control panels. Phases 3 through 6 are scheduled to take place in FY18-21. Repairs to the secondary aeration reactor basins will be completed in four phases with the repair of two tanks per year starting in FY18 and continuing through FY25.

The Odor Control Project provides for odor control facilities to improve the air quality in communities along the collection system and at the MWWTP. Planned work includes replacing the odor control units at the influent pump station coarse screen and intake structure in FY18-19, and at the fine screen room in FY24-26; replacing the scrubber system at the solids dewatering building with a chemical scrubber in FY21-24; replacing the scrubber system at the resource recovery receiving station in FY18-20; and covering portions of the primary sedimentation tanks and providing two new chemical scrubbers in FY18-21. A second phase, if needed, includes covering the remainder of the primary sedimentation tanks and adding an additional odor control unit in FY25.

The Treatment Plant Infrastructure Projects provide for the cyclical replacement and rehabilitation of various treatment process facilities at the MWWTP. Work planned in FY18-22 includes replacement of large variable frequency drives; repair or replacement of flow meters; laboratory upgrades; rehabilitation of the secondary clarifiers; installation of a plant-wide intercom system; improvements to the plant gallery drains and internal plant drain; upgrades to the security system; improvements to the East Gate Undercrossing; replacement of grit handling equipment; and improvements to the Wastewater administration and operations buildings.

Work planned in FY23-27 includes rehabilitation of the remaining 10 of 12 clarifiers along with the installation of online total suspended solids monitors; replacement of the influent screens; improvements to the dewatering sludge well; additional improvements to plant gallery drains; replacement of aging motors and variable frequency drives at the influent pump station and the effluent pump station; and seismic improvements to various structures.

The Interceptor Rehabilitation program includes several projects to rehabilitate portions of the interceptor system that are approximately 60 years old. In FY18-22, all phases of the rehabilitation of a 9,200 foot portion of the 105 inch diameter South Interceptor along 3<sup>rd</sup> Street will be completed. In FY22-26, rehabilitation of a 2,100 foot portion of the South Interceptor along the Embarcadero will be completed. In addition, repairs will be made to various sections of the South Interceptor pipe ranging from 84 to 30 inches in diameter, along with manholes and flow control structures.

The Pump Station Improvements program includes upgrades to various pump stations such as the replacement of equipment; sump pumps and flow meters; the addition of programmable logic controllers and software; access improvements; and replacement of discharge piping. Work is scheduled for Pump Station M in Alameda in FY19-20, Pump Station L in Oakland in FY20-21, Pump Station C in Alameda in FY22-23, Pump Station A in Albany in FY23-24, and Pump Station J in Oakland in FY25-26.

The Resource Recovery program was developed to accept a wide variety of solid and liquid wastes delivered by truck to the MWWTP. Upgrades in FY18-20 include improvements to the Solid/Liquid Waste Receiving station and the Blend Tank Receiving Station which will result in the ability to accept additional high-strength waste.



## REGULATORY COMPLIANCE STRATEGY

This strategy furthers the District's objectives to operate and maintain facilities to meet all water discharge, air emission, and land disposal requirements; to ensure protection and stewardship of San Francisco Bay; and implement preventative and corrective maintenance programs. Work under this strategy focuses on developing strategic nutrient management solutions to meet current and potential future regulatory requirements. The program included in this strategy is:

Appropriations (\$ Thousands)						
Program	FY18	FY19	FY20	FY21	FY22	Total
Regulatory Compliance Program	6,054	1,208	44	10,465	185	17,956
<b>Total</b>	<b>6,054</b>	<b>1,208</b>	<b>44</b>	<b>10,465</b>	<b>185</b>	<b>17,956</b>

### Regulatory Compliance Program

The Pump Station Q (PS Q) Project includes the design and construction of modifications to portions of the North Interceptor to allow dual-mode operation of PS Q for use as either a gravity relief sewer (north to south flow) or a forcemain (south to north flow). Based on wet weather flow modeling work completed to date, discharges from the wet weather facilities may be reduced by operating the PS Q forcemain as a gravity sewer with relatively minor modifications. Construction began in FY17 and is expected to be completed in FY19.

The Nutrient Management Project includes the development of strategic nutrient management solutions to meet current and potential future regulatory requirements. Starting in FY18, a master plan will be developed to identify and evaluate a range of cost-effective alternatives to achieve nutrient reductions for the MWWTP that provide broad environmental and public health benefits. The work includes conducting one or more pilot-scale tests to evaluate promising sidestream nutrient treatment/recovery technologies. It also includes the implementation of sidestream treatment, if necessary in FY21-26; and planning and preliminary design for mainstream treatment, if necessary in FY23-27. Costs for these phases will be included in future projections when available.

## NON-PROGRAM SPECIFIC STRATEGY

This strategy furthers the District's objective to maintain a strong financial position to meet short and long-term needs. The contingency program focuses on making funds available for unanticipated needs, and for projects that are seeking grants to pay for a substantial portion of the project's cost.

Appropriations (\$ Thousands)						
Program	FY18	FY19	FY20	FY21	FY22	Total
Contingency Program	0	0	3,300	0	0	3,300
<b>Total</b>	<b>0</b>	<b>0</b>	<b>3,300</b>	<b>0</b>	<b>0</b>	<b>3,300</b>

### Contingency Program

The Contingency Project provides funding for unanticipated needs that may arise before the next budget preparation cycle, such as replacement or repairs to facilities and equipment as a result of failures or safety deficiencies, and new projects or the acceleration of planned projects requiring funding before the next budget cycle. Funds may also be set aside for projects where grants are being sought in the event that the grant application is successful. Most grants require the District to fund the project and then apply for reimbursement of allowable costs.

In FY20, funds have been set aside for possible costs related to expanding the food waste receiving station, or constructing a new food waste preprocessing facility at the MWWTP.

## **Capital Appropriation Summary**

This section provides a summary of the five-year appropriation for the Wastewater System projects listed in the Capital Improvement Program, sorted by strategy and program. When the CIP is presented to the Board of Directors, the Board approves the overall five-year plan, but adopts just the first two years of the plan. The remaining three years are for planning purposes only and are subject to revision.

## **Department Abbreviations**

The abbreviation for the Lead Department responsible for each capital project is as follows:

WAS – Wastewater Department

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
MAINTAINING INFRASTRUCTURE								
WW Infrastructure Program								
3rd St Sewer Interceptor Rehab	WAS	28,266	0	6,572	0	0	6,437	13,009
Alameda Sewer Intercept Rehab	WAS	6,901	0	0	0	0	0	0
Biosolids Improvements Project	WAS	500	0	0	0	0	0	0
Centrifuge Replacement	WAS	22,403	0	0	0	0	0	0
Collection System Master Plan	WAS	0	0	0	200	0	0	200
Concrete Rehab at SD1	WAS	24,813	9,225	1,989	1,720	595	1,210	14,739
DCS Upgrades	WAS	9,402	0	0	0	0	0	0
Digester Upgrade	WAS	113,067	6,025	5,714	0	200	500	12,439
Information System Upgrades	WAS	2,210	225	0	2,500	0	0	2,725
Interceptor Corrosion Prevent	WAS	7,787	1,150	409	30	30	30	1,649
MWWTP Master Plan	WAS	19,277	0	550	0	0	0	550
MWWTP Pwr Dist Sys Upgrade	WAS	13,569	767	1,263	4,110	260	460	6,860
Motor Control Center Repl	WAS	2,529	0	0	0	0	0	0
North Interceptor Rehab	WAS	0	0	0	0	0	0	0
Odor Control Improvements	WAS	21,845	450	7,835	0	1,469	0	9,754
Outfall Investigation Project	WAS	1,089	0	0	43	0	0	43
PGS Engine Overhaul	WAS	8,512	0	0	0	0	296	296
PGS Expansion	WAS	49,341	230	970	0	0	0	1,200
Plant Pipe Replacement	WAS	5,091	316	1,771	0	0	0	2,087
Procure Emerg Response Equipmnt	WAS	1,875	0	0	0	0	0	0
Pump Station A Improvements	WAS	1,929	0	0	0	0	0	0
Pump Station C Upgrades	WAS	1,864	0	0	0	0	0	0
Pump Station H Imprvmnts	WAS	6,134	0	0	0	0	0	0
Pump Station J Upgrades	WAS	0	0	0	0	0	0	0
Pump Station L Improvement	WAS	1,490	0	0	1,137	0	0	1,137
Pump Station M Imprvmnts	WAS	0	674	4,099	0	0	0	4,773
Pump Station Master Plan	WAS	181	0	0	0	0	0	0
Pump Station N Upgrades	WAS	520	0	0	0	0	0	0
Resource Recovery Project	WAS	32,887	435	2,242	0	0	0	2,677
Routine Cap Equip Replacements	WAS	28,377	2,287	2,300	2,300	2,300	2,300	11,487
Scum System Improvements	WAS	1,400	0	0	0	0	0	0
Treatment Plant Infra Ph 2	WAS	4,292	2,264	10,360	3,796	5,073	4,923	26,416
Treatment Plant Infrastructure	WAS	57,909	351	764	1,655	4,741	1,749	9,260
Vehicle & Equip Additions, WW	WAS	335	139	63	0	0	0	202
WW Energy Management	WAS	2,200	790	0	76	0	0	866
West End Property Development	WAS	2,593	0	0	0	0	0	0
Wood St Sewer Intercept Rehab	WAS	27,653	0	0	0	0	0	0
WW Infrastructure Program Total		508,240	25,328	46,901	17,567	14,668	17,905	122,369
MAINTAINING INFRASTRUCTURE TOTAL		508,240	25,328	46,901	17,567	14,668	17,905	122,369

Capital Improvement Projects	Dept	Prior Approp	FY18-22 APPROPRIATIONS (IN 000's)					5 YR TOTAL
			FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	
NON-PROGRAM SPECIFIC								
WW Non-Program Specific								
Contingency Project Wastewater	WAS	18,719	0	0	3,300	0	0	3,300
WW Non-Program Specific Total		18,719	0	0	3,300	0	0	3,300
NON-PROGRAM SPECIFIC TOTAL		18,719	0	0	3,300	0	0	3,300
REGULATORY COMPLIANCE								
WW Regulatory Compliance								
Dechlorination Facility Impmpts	WAS	3,652	705	0	0	0	0	705
Infiltration/Inflow Contrl Prj	WAS	26,535	0	8	44	185	185	422
NPDES Compliance	WAS	8,594	49	0	0	280	0	329
Nutrient Management	WAS	0	5,300	0	0	10,000	0	15,300
PS Q FM Dual-Mode Operation	WAS	8,504	0	0	0	0	0	0
Wet Weather Plant Impmpts	WAS	8,067	0	1,200	0	0	0	1,200
WW Regulatory Compliance Total		55,352	6,054	1,208	44	10,465	185	17,956
REGULATORY COMPLIANCE TOTAL		55,352	6,054	1,208	44	10,465	185	17,956
APPROPRIATIONS SUMMARY (IN 000'S)								
Prior	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	5 YR TOTAL		
582,310	31,382	48,109	20,911	25,133	18,090	143,625		

## **Operating Budget Impact of Capital Investments**

The FY18-22 Capital Improvement Program includes various significant nonrecurring capital projects that will affect the operating budget and the services that the District provides. Such projects and their potential impacts include:

### **Nutrient Management**

This project develops strategic nutrient management solutions to meet current and potential future regulatory requirements. Planned work includes identifying and evaluating a range of cost-effective alternatives to achieve nutrient reductions for the Main Wastewater Treatment Plant that provide broad environmental and public benefits; conducting pilot-scale testing to evaluate promising sidestream nutrient treatment/recovery technologies; and implementing sidestream treatment, if necessary.

While planning and pilot testing has yet to be completed, the operation of sidestream treatment is estimated to result in increased operating costs of \$2.4 million per year.

### **Odor Control Improvements**

This project provides for odor control facilities in the collection system and at the Main Wastewater Treatment Plant. Planned work includes replacing the odor control units at the influent pump station; replacing the wet scrubber system at the solids dewatering building with a chemical scrubber; conducting a study of the primary sedimentation basins to evaluate and implement treatment alternatives; covering the primary sedimentation tanks and providing new chemical scrubbers; and replacing the scrubber system at the resource recovery receiving station.

The odor control improvements to the primary sedimentation tanks are estimated to result in increased operating costs of \$0.07 million per year.

# **FIVE-YEAR FINANCIAL FORECAST**

## **SUMMARY**

The five-year financial forecast presents the estimated impact of operations, debt service requirements and reserve balances on rate projections over the five-year period.

This forecast is built upon:

- Adopted District financial policies
- Capital investments in the FY18-FY22 Capital Improvement Program

This forecast identifies rate increases for the Wastewater System based on estimated increases in operating and capital expenditures to maintain current service levels, meet mandated program requirements, and fund increased debt service due to capital expenditures.

On average over the five-year period, revenues are forecast to increase by 3.6 percent per year to cover the increases in operating expenses and debt service, and maintain a minimum of 1.6 times coverage on revenue bond debt service. Forecasted operating expenses are expected to grow by 3.4 percent per year over the five-year period. In FY19, debt service decreases by 0.4 percent per year due in part to the retirement of the General Obligation bond.

The key factors driving the need for increased Wastewater System revenues are:

- Inflation
- Increasing labor and benefits costs

For all five years, the cash reserves exceed the cash reserve targets. Reserves in excess of those needed to meet financial reserve targets are available to pay for a portion of the capital program expenses funded with cash, a positive financial metric.

Capital cash flow spending, including administration of capital expenses, is projected at \$187.7 million over the five-year period. Major programs or projects to be undertaken during this period include: 3<sup>rd</sup> Street Sewer Interceptor Rehabilitation, Treatment Plant Infrastructure, Odor Control Improvements, Concrete Rehabilitation, and Digester Upgrades.

The projected average percentage of capital funded from debt will be 34.7 percent over the five-year period, lower than the financial policy maximum target of 65 percent. In FY18 and FY19, the debt coverage ratio will be 1.78 and 1.81, respectively, and for FY18 through FY22, the ratio meets or exceeds the target coverage ratio of 1.60.

## OPERATIONS

The following table shows the financial forecast for the Wastewater System operating budget based on projected operations and maintenance expenses and debt service requirements.

<b>WASTEWATER SYSTEM FUND – OPERATING BUDGET</b> <b>FIVE-YEAR FINANCIAL FORECAST</b> (\$ Millions)							
	Actuals	Budget	Forecast				
	FY16	FY17	FY18	FY19	FY20	FY21	FY22
<b>Beginning Balance</b>	-	-	<b>77.5</b>	<b>78.0</b>	<b>77.0</b>	<b>80.1</b>	<b>86.8</b>
Treatment Charges	64.3	70.3	71.7	75.3	79.0	82.2	86.2
Resource Recovery	11.6	8.0	8.0	8.0	8.5	8.5	8.5
Wet Weather Facilities Charge	21.9	22.9	24.0	25.2	26.3	27.3	28.4
Property Taxes	4.6	4.4	4.8	4.9	5.1	5.2	5.3
Ad Valorem Bond Levy	3.3	4.1	2.2	0.0	0.0	0.0	0.0
Interest Income	0.3	0.7	1.5	1.5	1.9	2.1	2.2
Laboratory Services	4.3	4.0	4.1	4.3	4.4	4.5	4.7
Reimbursements	1.4	1.0	1.4	1.4	1.5	1.5	1.6
Permit Fees	1.6	1.8	1.6	1.6	1.6	1.6	1.6
Capacity Charges	3.1	1.6	1.8	1.9	1.9	2.0	2.1
All Other Revenue	<u>5.3</u>	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>
<b>Operating Revenues Total</b>	<b>121.8</b>	<b>124.5</b>	<b>127.0</b>	<b>129.9</b>	<b>135.9</b>	<b>140.6</b>	<b>146.2</b>
Revenue Funded Capital	35.8	14.6	21.3	25.8	24.3	22.1	29.0
Operations	60.3	70.7	70.6	73.1	75.5	78.1	80.7
Debt Service	<u>33.2</u>	<u>34.0</u>	<u>34.7</u>	<u>31.9</u>	<u>32.9</u>	<u>33.8</u>	<u>34.1</u>
<b>Expenses Total</b>	<b>129.3</b>	<b>119.3</b>	<b>126.5</b>	<b>130.9</b>	<b>132.8</b>	<b>134.0</b>	<b>143.8</b>
<b>Ending Balance</b>	-	-	<b>78.0</b>	<b>77.0</b>	<b>80.1</b>	<b>86.8</b>	<b>89.2</b>
Policy Reserves	-	-	43.2	43.9	44.5	45.1	45.8

Numbers in the table may be rounded.

The following table shows the key assumptions used to create the revenue forecast.

<b>WASTEWATER SYSTEM FUND – KEY ASSUMPTIONS</b> <b>FIVE-YEAR FINANCIAL FORECAST</b>							
	Actuals	Budget	Forecast				
	FY16	FY17	FY18	FY19	FY20	FY21	FY22
% Rate Increase	5.0%	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%
Average monthly single family residential bill based on 6 ccf/month	\$19.01	\$19.93	\$20.89	\$21.95	\$22.82	\$23.72	\$24.66
Debt Service Coverage Ratio	1.98	1.69	1.78	1.81	1.87	1.89	1.96

Excludes Wet Weather Facilities Charge



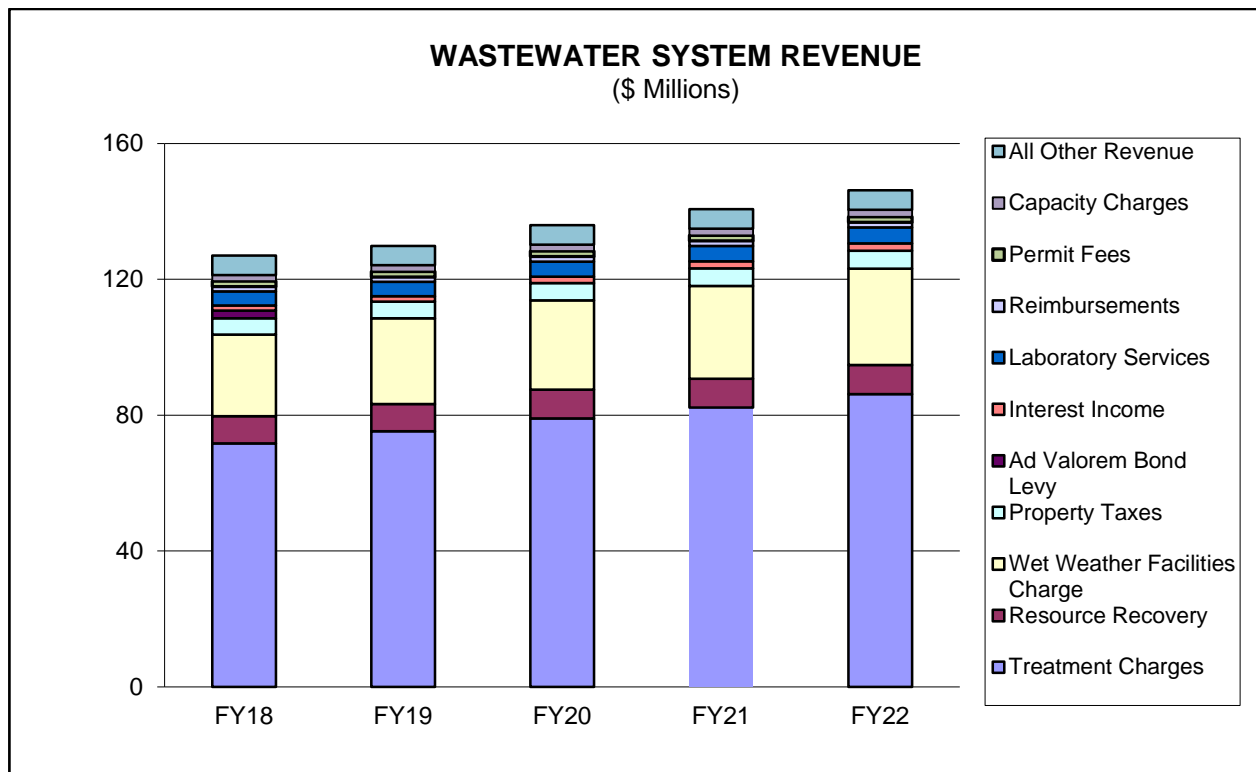
## Five-Year Projection of Revenue

The key factors driving the need for increased Wastewater System revenues are: inflation, increasing labor and benefit costs, projected reductions in treatment revenue due to lower customer water use, and increasing capital expenditures.

Projected annual operating revenues are expected to increase from \$127.0 million in FY18 to \$146.2 million by FY22, an increase of \$19.2 million or 3.6 percent per year. The increase in revenue over the five-year period is to cover increased costs in operations and maintenance, debt service requirements, and revenue funding for capital projects.

The major components of the increase in operating revenue over the five-year period are wastewater treatment charges which are projected to increase from \$71.7 million in FY18 to \$86.2 million in FY22 and increases in revenue from the Wet Weather Facilities Charge from \$24.0 million in FY18 to \$28.4 million in FY22.

The following chart shows projected Wastewater System operating revenue by category for the next five years.



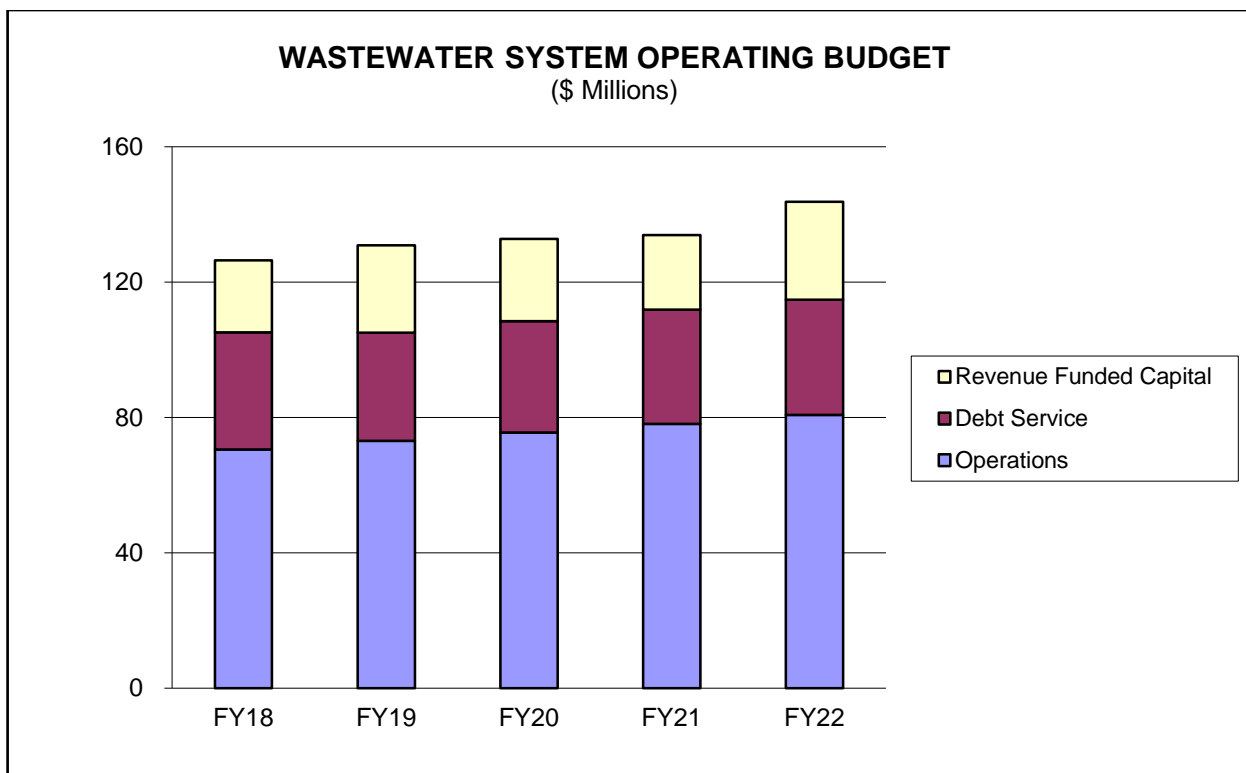
## Five-Year Projection of Operating Budget

The Wastewater System operations expenses are projected to increase from \$70.6 million in FY18 to \$80.7 million in FY22, an increase of 3.4 percent per year.

Debt service requirements are expected to decrease from \$34.7 million in FY18 to \$34.1 million by FY22, a decrease of 0.4 percent per year because of the retirement of the General Obligation bond.

The District uses rate revenue to cash fund a portion of the annual capital improvement expenses. The amount of revenue funded capital will increase from \$21.3 million in FY18 to \$29.0 million in FY22, an increase of 8 percent per year.

This chart summarizes projected Wastewater System budget by category for the next five years.



## Five-Year Projection of Reserves

The operating reserves consist of:

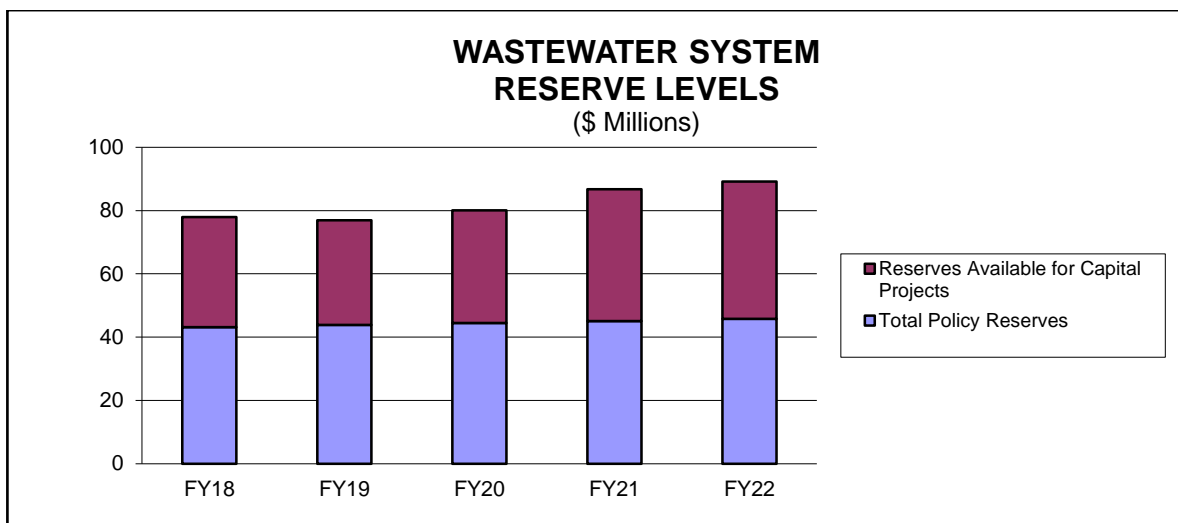
- Working capital reserves equal to three months operating and maintenance expenses
- Self-Insured Liability reserve based on the Actuarial Self-Insured Retention (SIR) funding recommendation
- Workers' Compensation reserve based on the Actuarial SIR funding recommendation
- Rate stabilization reserve of a minimum of 5 percent of operating and maintenance expenses

The table below shows the changes to reserve components over the five-year period. Reserve balances meet or exceed the policy reserve levels for the entire period.

<b>WASTEWATER SYSTEM RESERVE COMPONENTS</b> (\$ Millions)					
	<b>Forecast</b>				
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>
<b>Projected Operating Budget Reserves</b>	<b>78.0</b>	<b>77.0</b>	<b>80.1</b>	<b>86.8</b>	<b>89.2</b>
<b>Policy Reserves</b>					
Working Capital	17.6	18.3	18.9	19.5	20.2
Self-Insured Liability Reserve	0.3	0.3	0.3	0.3	0.3
Workers' Compensation Reserves	1.2	1.2	1.2	1.2	1.2
Rate Stabilization Reserve	<u>24.1</u>	<u>24.1</u>	<u>24.1</u>	<u>24.1</u>	<u>24.1</u>
<b>Total Policy Reserves</b>	<b>43.2</b>	<b>43.9</b>	<b>44.5</b>	<b>45.1</b>	<b>45.8</b>
<b>Reserves Available for Capital Projects</b>	<b>34.8</b>	<b>33.1</b>	<b>35.6</b>	<b>41.7</b>	<b>43.4</b>

Numbers in the table may be rounded.

The following chart shows Wastewater System reserve levels projected at the end of each fiscal year.



## **CAPITAL INVESTMENTS AND FINANCING**

The Five-Year Capital Improvement Program (CIP) outlines the Wastewater System capital investment plan for the next five-year period, the estimated cost of these investments and the sources of funds. Appropriations reflect the amount that is authorized and budgeted over a multi-year period for each program. Cash flows are the amounts estimated to be spent on each program in a given year. The five-year program for the Wastewater System includes \$159.2 million in capital project appropriations, including administration of capital expenses, and \$187.7 million in projected cash flow spending.

The focus of the CIP is the five-year period from FY18-22. Capital needs have been estimated for a second five-year period from FY23-27, but given the long-term nature of these capital improvement plans, by necessity they are preliminary estimates only and will be revised as studies are completed, priorities are redefined, and as new needs emerge. Therefore, the budget focuses on the first five years of the CIP.

In the FY18-22 CIP, 85 percent of the Wastewater System's project appropriations will focus on the Maintaining Infrastructure Strategy. This strategy furthers the District's objectives to improve, rehabilitate and replace aging infrastructure in a cost effective manner to ensure sustainable delivery of reliable, high quality service at both the Main Wastewater Treatment Plant (MWWTP) and remote facilities. Work under this strategy focuses on rehabilitating the digesters, concrete structures, and treatment process facilities at the MWWTP; implementing odor control improvements; and rehabilitating sections of the sewer interceptor system.

Funding for these projects is drawn from the proceeds of revenue bond issues, commercial paper, grants, and current reserves and revenues.

For the FY18-22 CIP, an increasing amount of capital expenditures will be funded on a pay-as-you-go basis in accordance with the District's financial policies. Over the five-year period, the percentage of capital funded from debt will average 34.7 percent, which is less than the target maximum of 65 percent contained in the District's debt policy, and debt service will drop by \$0.6 million as the General Obligation bonds are retired. Wastewater System total outstanding debt will decrease by \$5.1 million during the period. Total debt outstanding at the end of the five-year period will total \$398.2 million.

In FY18 and FY19, the debt coverage ratio will be 1.78 and 1.81, respectively, and for FY20 through FY22, the ratio meets or exceeds the target coverage ratio of 1.60.

The following table shows the cash flow spending on capital improvements anticipated for the next five years, along with the financial resources anticipated to fund the capital program.

<b>WASTEWATER SYSTEM FUND - CAPITAL BUDGET</b>						
<b>FIVE-YEAR FINANCIAL FORECAST</b>						
(\$ Millions)						
	<b>Forecast</b>					
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>Totals</b>
<b>Beginning Balance</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>
<b>Resources:</b>						
Revenue Funded Capital	21.3	25.8	24.3	22.1	29.0	122.5
New Bond Proceeds	20.1	13.7	13.7	12.7	4.9	65.2
Loans Proceeds	0.0	0.0	0.0	0.0	0.0	0.0
Grants	0.0	0.0	0.0	0.0	0.0	0.0
Reimbursements	0.0	0.0	0.0	0.0	0.0	0.0
Commercial Paper	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
<b>Total Resources</b>	<b>41.4</b>	<b>39.5</b>	<b>38.0</b>	<b>34.8</b>	<b>33.9</b>	<b>187.7</b>
<b>Expenditures:</b>						
Capital Cash Flow	38.4	36.5	34.9	31.7	30.6	172.1
Administration of Capital	<u>3.0</u>	<u>3.0</u>	<u>3.1</u>	<u>3.2</u>	<u>3.3</u>	<u>15.6</u>
<b>Total Expenditures</b>	<b>41.4</b>	<b>39.5</b>	<b>38.0</b>	<b>34.8</b>	<b>33.9</b>	<b>187.7</b>
<b>Ending Balance</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>
<b>Debt Percentage of Funding</b>	<b>48.6%</b>	<b>34.7%</b>	<b>36.1%</b>	<b>36.6%</b>	<b>14.5%</b>	<b>34.7%</b>

Numbers in the table may be rounded.

Projected new bond issues, outstanding debt, and debt service are shown in the following table.

<b>OUTSTANDING DEBT AND DEBT SERVICE AT END OF FISCAL YEAR</b>					
(\$ Millions)					
	<b>Forecast</b>				
	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>
Beginning of Year Outstanding Debt	397.2	403.3	405.8	407.6	407.7
Debt Retired	14.4	11.5	12.2	12.9	14.5
New Bond Issues and Commercial Paper	<u>20.5</u>	<u>14.0</u>	<u>14.0</u>	<u>13.0</u>	<u>5.0</u>
<b>Total Outstanding Debt</b>	<b>403.3</b>	<b>405.8</b>	<b>407.6</b>	<b>407.7</b>	<b>398.2</b>
Debt Service, Existing Debt	33.1	29.5	29.6	29.6	29.6
Debt Service, New Debt	1.3	2.2	3.2	4.0	4.3
Debt Servicing Costs	<u>0.3</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>
<b>Total Debt Service</b>	<b>34.7</b>	<b>31.9</b>	<b>33.0</b>	<b>33.8</b>	<b>34.1</b>

Numbers in the table may be rounded.

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# Proposed Biennial Budget

*Fiscal Years 2018 & 2019*

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***Supplemental Material***

***Capital Project Summaries***



***East Bay Municipal Utility District  
Oakland, California***





# ***Fiscal Years 2018 & 2019***

## **Proposed Biennial Budget**

***Volume 1***      *District Overview*  
*Water System Budget*  
*Wastewater System Budget*

***Volume 2***      ***Supplemental Material:***  
***Capital Project Summaries***

*Presented to the Board of Directors*  
*April 11, 2017*

***East Bay Municipal Utility District***

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## FY18-22 CAPITAL PROJECTS SUMMARY

This chapter contains a Project Summary for each project that has work planned in FY18-22, and an alphabetical project listing.

- **Project Summary**

The project summaries are presented in alphabetical order first by Lead Department and then by Project, and provide a description of the project including recent accomplishments and future plans, as well as previously adopted and planned appropriations.

- **Project Index**

The projects are listed in alphabetical order by title to facilitate looking up a Project Summary.

- **Department Abbreviations**

The abbreviation for the Lead Department responsible for each capital project is as follows:

CUS – Customer and Community Services Department  
ENG – Engineering Department  
FIN – Finance Department  
ISD – Information Systems Department  
MCD – Maintenance & Construction Department  
NRD – Natural Resources Department  
OSD – Operations & Maintenance Support Department  
WAS – Wastewater Department  
WOD – Water Operations Department  
WRD – Water Resources Department  
WRP – Water Recycling Program

- **Recurring Projects**

Projects that perform similar work each year are considered recurring projects, such as Meter Replacements. For recurring projects only the FY18-22 appropriations are shown on the Project Summary page since such projects do not have a definitive total project cost.

- **Funding Sources**

Funding for the CIP is drawn from multiple sources, the abbreviation for the sources is as follows:

APPL – Applicant  
BOND/REV – Bond or Revenue  
ERF – Equipment Replacement Fund  
GRANTS – Grants  
OAG – Other Agencies  
SCC – System Capacity Charges  
VRF – Vehicle Replacement Fund

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## Capital Improvement Program - Project Summary

**Project:** Water Conservation Project

**Project Number:** 000894

**Strategy:** Water Supply

**Program:** Water Conservation

**Justification:**

Demand management is a key component of the District's water policies to promote the efficient use of our limited water supply. The Water Supply Management Program (WSMP) is evaluating conservation goals to achieve as high as an additional 39 MGD of water savings by the year 2040.

**Description:**

In 2016, the District adopted an updated 2015 Urban Water Management Plan that included water conservation programs designed to reduce potable water demand by a cumulative 62 million gallons per day (MGD) by the year 2040. Estimated conservation savings achieved through 2016 toward the long-term goal totaled 33.5 MGD.

In FY16-17, customers continued to achieve substantial water savings through their individual drought response including participation in District indoor and outdoor conservation incentives, water use and leak detection surveys, and education programs. Overall conservation savings have remained higher than long-term annual averages due to District and State mandated drought water use reductions, increased water efficiency behavior, and heightened interest in water efficient technologies and practices.

Going forward, greater focus will be applied toward customer water use management services and tools, and outdoor landscape water budgets and incentives as indoor high-efficiency toilet and clothes washer rebates come to an end due to state efficiency codes. Other areas of focus include water loss control programs and Advanced Metering Infrastructure.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Conservation Incentives	31,636,016	3,450,000	0	35,086,016
Water Management Services	10,437,123	9,780,000	0	20,217,123
Research and Development	7,849,433	1,600,000	0	9,449,433
Education and Outreach	4,777,242	3,200,000	0	7,977,242
Supply-Side Conservation	825,000	1,352,500	0	2,177,500
Regulation and Legislation	654,977	800,000	0	1,454,977

Appropriations:		Lead Dept: CUS	
Prior Years	\$ 63,631,991	Recurring: No	
2018	\$ 3,800,000	Funding:	BOND/REV 89%
2019	\$ 3,917,500		GRANTS 1%
2020	\$ 4,030,000		OAG 10%
2021	\$ 4,155,000		
2022	\$ 4,280,000		
Future Years	\$ 0	In Service Date: 31-Dec-30	
<b>Total Cost</b>	<b>\$ 83,814,491</b>		

## Capital Improvement Program - Project Summary

**Project:** Adm Bldg Modifications

**Project Number:** 003033

**Strategy:** Facilities, Servc and Equip

**Program:** Area Service Center/Bldg Prog

**Justification:**

Existing systems, equipment and flooring are over 25 years old, beyond their useful service life, and a source of higher than normal energy consumption and operating and maintenance costs.

Replacement of building systems with newer technology and design will improve productivity and sustainability and reduce costs.

**Description:**

The Oakland Administration Building opened in 1991. Upgrade of building systems and equipment serves to maintain safe, comfortable work spaces, enhance staff productivity, reduce operating and maintenance costs, and minimize energy use and carbon footprint.

In FY16-17, the Building Management Control System upgrade was completed; the fire alarm system was replaced; construction began to modernize the building's eight elevators; design began on improvements to Data Center air conditioning, backup power supply, and power distribution modules; planning for the replacement of roofing systems was completed; an assessment was performed to identify safety improvements to the building facade access system used for maintenance of exterior pre-cast concrete panels, sealant and glazing; and work was performed to replace traffic coatings and to replace sealant at rainwater infiltration locations on the 4th floor terrace.

FY18-19 works includes completing construction of passenger and freight elevator upgrades; design and construction of reliability and energy efficiency improvements to the HVAC system; replacement of air conditioning, backup power systems, and power distribution units in the computer server center; building-wide duct cleaning; sealing of utility penetrations through fire walls; design and installation of improvements to the building facade access system; replacement of roofing systems on the terraces and penthouse roof; and development of a comprehensive carpet replacement program.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
AB HVAC System Upgrade	4,006,629	3,950,736	0	7,957,365
Roofing Systems Improvements	1,119,000	4,040,000	0	5,159,000
Elevator Upgrades	1,578,196	1,287,042	0	2,865,238
Adm Bldg Carpet Replacement	1,067,300	1,019,236	0	2,086,536
Building Envelope Sealing	83,372	0	1,036,628	1,120,000
Facade Access System Upgrade	250,000	296,000	0	546,000
Space Plng & Reconfiguration	116,000	334,000	0	450,000
A/V System Upgrades	100,000	337,000	0	437,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 20,376,132	Recurring: No	
2018	\$ 5,996,778	Funding: BOND/REV 100%	
2019	\$ 5,355,236		
2020	\$ 337,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 1,036,628	In Service Date: 30-Jun-27	
<b>Total Cost</b>	<b>\$ 33,101,774</b>		

## Capital Improvement Program - Project Summary

**Project:** Almond/Fire Trail PZI

**Project Number:** 2003431

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

This project is needed to replace and eliminate aging infrastructure, improve operating efficiency and reliability, and improve water quality in the Almond Pressure Zone by removing excess storage which is causing low reservoir turnover. The projects will improve level of service and reduce long-term operation and maintenance costs.

**Description:**

This project includes replacing the 6.6 million gallon (MG) open-cut Almond Reservoir with two 1.8 MG reservoirs, demolishing the 3.1 MG Cull Creek Reservoir, installing a new regulator, and rehabilitation of the Fire Trail Pumping Plant which will be implemented by the Pumping Plant Rehabilitation Program. The existing open-cut Almond Reservoir, located in Castro Valley, has structural issues, roof leakage that compromises the integrity of the reservoir, and excess storage capacity which contributes to water quality issues. Facilities planning was completed in FY16 and the California Environmental Quality Act (CEQA) process was initiated in FY17 and is scheduled to be completed in FY18. Design is scheduled for FY19-20 followed by construction in FY22-23.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Almond Reservoir Replacement	11,372,000	4,000,000	0	15,372,000
Almond/Fire Trail PZ Planning	488,000	200,000	0	688,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 11,860,000	Recurring: No	
2018	\$ 200,000	Funding: BOND/REV 100%	
2019	\$ 4,000,000		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-23	
<b>Total Cost</b>	<b>\$ 16,060,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Aqueduct Cathodic Protection

**Project Number:** 001210

**Strategy:** Maintaining Infrastructure

**Program:** Corrosion

**Justification:**

Cathodic protection along the aqueducts will enhance the reliability of the raw water delivery system. Cathodic protection systems lessen aqueduct outages due to leaks by reducing external corrosion to the steel pipelines.

**Description:**

This is an ongoing project that includes annual investigations and periodic renewal of a portion of the Mokelumne Aqueducts' 44 cathodic protection systems (CPSs). These systems prevent corrosion of steel pipelines that come in contact with soil and require periodic replacement of expendable components, such as anode beds and power supplies.

In FY17-18, work includes renewal of CPSs at Monument Boulevard, G Street, and Astrid Drive.

FY18-22 work includes renewal of CPSs at Franklin Avenue, West Portal, Old River, Port Chicago, Richard Avenue, Waterloo Hwy, Holt Rd, Bixler Rd, Eden Plains Rd, and Larch Way.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Aqueduct Cathodic Protection	3,392,000	1,311,273	2,988,000	7,691,273

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 3,392,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 211,273		
2021	\$ 454,000		
2022	\$ 646,000		
Future Years	\$ 2,988,000	In Service Date: 30-Jun-30	
<b>Total Cost</b>	<b>\$ 7,691,273</b>		



## Capital Improvement Program - Project Summary

**Project:** Buildings Assessment & Improve

**Project Number:** 2003491

**Strategy:** Facilities, Servc and Equip

**Program:** Area Service Center/Bldg Prog

**Justification:**

Improvements furnished under this project promote sustainability, reduce operation and maintenance costs, save energy, reduce carbon footprint, enhance workplace safety, and maintain compliance with codes and regulations.

**Description:**

This project provides a comprehensive approach to upgrades of District occupied facilities. The project includes assessment of: (1) compliance with building codes, zoning ordinances, health and safety regulations and District standards for space utilization, furniture and finishes; and (2) the condition of building structural, mechanical and electrical systems and equipment. It provides improvements to meet operational needs, improve energy efficiency and reduce carbon footprint.

In FY16, upgrade of the fire alarm systems at four buildings was completed. In FY17, the Oakport office exterior was rehabilitated and upgraded with an energy efficient cool roof, a roof safety access ladder, removal of fascia and coping materials containing asbestos, and the addition of new fascia and paint.

In FY18-19, and future years the conversion of an acquired property into the new Fleet Maintenance East facility will be completed; upgrade lighting, HVAC and controls at the Adeline Maintenance Center Administration Building; replace fire alarm systems at service centers, Orinda Watershed Headquarters and Orinda Water Treatment Plant; improvements at Stockton Yard, Bixler and Walnut Creek Pumping Plants No. 1 and 2 to meet ADA requirements; replace the warehouse roof and convert office building un-insulated space into workstations at Oakport; evaluate improvements to Central Maintenance Services and Anderson Buildings to meet storage and crew space needs; and assess the condition of occupied facilities to evaluate and prioritize building modifications.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Fleet Maintenance East Improve	7,100,000	267,000	0	7,367,000
CMS Building Improvmements	120,000	4,100,000	0	4,220,000
Master Plan Implementation	0	885,000	2,300,000	3,185,000
Aqueduct Facilitie ADA Upgrade	0	2,717,000	0	2,717,000
Oakport Storage Facility Roof	400,000	1,145,000	0	1,545,000
Anderson Building Modification	720,000	0	0	720,000
Small Misc. Projects	252,338	249,839	0	502,177
Assessments & Master Plan Dev	367,000	0	0	367,000

Appropriations:			
Prior Years	\$ 10,327,997	Lead Dept:	ENG
2018	\$ 654,839	Recurring:	No
2019	\$ 4,132,000	Funding:	BOND/REV 100%
2020	\$ 945,000		
2021	\$ 4,045,000		
2022	\$ 0		
Future Years	\$ 2,300,000		
Total Cost	\$ 22,404,836	In Service Date:	30-Jun-30

## Capital Improvement Program - Project Summary

**Project:** CAD/CAM Mapping, Documentation **Project Number:** 000112

**Strategy:** Extensions and Improvements **Program:** Mapping

**Justification:**

This is a recurring project to develop and maintain the District's Computer-Aided Drafting and Mapping System (CAD/CAM) and Geographic Information System (GIS). These systems are an integral part of the District's information infrastructure which provide data, engineering drawings, and maps required for infrastructure planning, emergency response and maintenance.

**Description:**

This project provides for maintenance and upgrade of the District's Computer-Aided Drafting and Mapping System (CAD/CAM) and Geographic Information System (GIS), and resources for maintaining and updating distribution system maps and associated data. Mapping and GIS data is produced which is used District-wide and by other public agencies. CAD/CAM is also used to create design and construction drawings for all District facilities and distribution system pipelines.

During FY16-17, an online BMap using ArcGIS online was implemented, which allowed District-wide access to current distribution system data. In addition, a major database upgrade is underway, which will pave the way for implementation of additional data analysis and field tools, as envisioned in the Geospatial Strategic Plan.

In FY18-22 and future years, this project will continue to maintain and improve CAD/CAM and GIS to ensure that these systems remain up to date with current technologies. The GIS database and desktop software will be upgraded. Hardware will be replaced to ensure system integrity and there will be periodic major upgrades of CAD Drafting and GIS software.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Cad Cam Sys Development	32,813,200	7,941,418	26,500,000	67,254,618

Appropriations:			
Prior Years	-	Lead Dept:	ENG
2018	\$ 1,210,632	Recurring:	Yes
2019	\$ 1,457,609	Funding:	BOND/REV 100%
2020	\$ 1,706,033		
2021	\$ 1,757,214		
2022	\$ 1,809,930		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

## Capital Improvement Program - Project Summary

**Project:** Cent Oakland Hills Cascade PZI

**Project Number:** 003042

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

This project is needed to replace aging infrastructure, improve water quality, and improve operating efficiency and reliability in the Central Oakland Hills Cascade area by combining and optimizing storage and pumping within several different pressure zones. The projects will improve the level of service and reduce long-term operation and maintenance costs.

**Description:**

The Central Oakland Hills Cascades Pressure Zone Improvements are a series of projects within the Oakland Hills, including the 39th Avenue, Dingee, Joaquin Miller, Piedmont, Pinehaven, and Skyline Pressure Zones. Work includes replacement of the 39th Avenue Reservoir and Joaquin Miller Pumping Plant (PP), and demolition of the Dingee, Oak Knoll, Piedmont, and Swainland Reservoirs. The Swainland Reservoir demolition may also include construction of a new regulator. Some of the demolition work will be undertaken as part of the Reservoir Rehabilitation Program, and rehabilitation of the Montclair PP will take place under the Pumping Plant Rehabilitation program.

Projects completed include the demolition of the Hilltop and Pinehaven PPs, demolition of the Pinehaven Reservoirs, and demolition and replacement of the Estates Reservoir. As part of the Piedmont Reservoir project, a planning study will be completed in FY18 to evaluate the need for storage at the Piedmont Reservoir site, which will determine the schedule for the demolition of the Piedmont Reservoir, the need for drainage improvements if a portion of the site can be sold, and if and when a new reservoir is needed at the site.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Joaquin Miller PP Rehab	0	0	15,171,000	15,171,000
39th Ave Res Rehab	2,553,998	0	11,919,636	14,473,634
Swainland Res and Regulator	175,000	3,434,000	0	3,609,000
Piedmont Res Decommission	397,000	1,028,000	0	1,425,000
Oak Knoll Res. Decommission	0	691,000	0	691,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 26,045,998	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 5,153,000		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 27,771,493	In Service Date: 30-Jun-30	
<b>Total Cost</b>	<b>\$ 58,970,491</b>		

## Capital Improvement Program - Project Summary

**Project:** Colorados Pressure Zone Imprv

**Project Number:** 1006294

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

This project is needed to provide additional water storage to meet future demands and increase water transmission capacity between reservoirs in the Colorados Pressure Zone. The project will improve the level of service and reduce long-term operation and maintenance costs.

**Description:**

The Colorados Pressure Zone Improvements (PZI) study provided planning and conceptual design for the Highland Reservoir in Lafayette, Tice Pumping Plant in Walnut Creek, and Withers Pumping Plant in Lafayette as part of the approved Water Treatment and Transmission Improvements Program (WTTIP) Environmental Impact Report.

Design and construction of Tice Pumping Plant will take place as a separate project, and Withers Pumping Plant is included as part of the WTTIP Distribution Improvements Project.

Design and construction of three additional projects in the Colorados Pressure Zone were identified for FY21 and beyond and include: (1) replacement of Diablo Vista Reservoir; (2) 2,700 feet of 16-inch pipeline in Brook Street; and (3) 1,300 feet of 12-inch pipeline in Old Tunnel Road. The size and need for these three projects will be confirmed in FY18 by the Colorados PZI Update Study.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Brook Street Pipeline	0	2,751,500	0	2,751,500
Old Tunnel Rd. Pipeline	750,000	96,250	0	846,250
Colorados PZI Update	50,000	3,000	0	53,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 955,000	Recurring: No	
2018	\$ 3,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 2,847,750		
2022	\$ 0		
Future Years	\$ 5,400,000	In Service Date: 30-Jun-37	
<b>Total Cost</b>	<b>\$ 9,205,750</b>		

## Capital Improvement Program - Project Summary

**Project:** Dam Operational Upgrades

**Project Number:** 1002574

**Strategy:** Regulatory Compliance

**Program:** Dam Safety

**Justification:**

Upgrades to dams, spillways, channels, embankment slopes, reservoir linings, drain lines, valves and other features are required by regulatory agencies to safely operate the District's reservoirs and dam facilities.

**Description:**

This project involves making improvements to various dams and reservoirs to allow continued safe operation of the facilities. Accomplishments in FY16-17 include repairs to the Watson Reservoir lining to mitigate leaks and performing Lafayette Tunnel lining inspections.

Upcoming work includes: 1) completion of terminal reservoir inundation maps in FY18-19; 2) lining repairs at Watson Reservoir in San Ramon in FY18-19, with replacement of the reservoir lining in FY20-21; and 3) dam tunnel/conduit inspections and repairs.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Reservoir Tunnel Inspection	220,000	2,780,000	0	3,000,000
Dam and Spillway Upgrades	1,445,000	500,000	0	1,945,000
Watson Res Lining Repairs	1,070,000	700,000	0	1,770,000
Terminal Res Inundation Maps	700,000	300,000	0	1,000,000
Maloney Reservoir Improvments	0	578,000	0	578,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 5,885,000	Recurring: No	
2018	\$ 2,780,000	Funding: BOND/REV 100%	
2019	\$ 578,000		
2020	\$ 1,500,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-22	
<b>Total Cost</b>	<b>\$ 10,743,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Dam Seismic Upgrades

**Project Number:** 000861

**Strategy:** Regulatory Compliance

**Program:** Dam Safety

**Justification:**

California Division of Safety of Dams (DSOD) and the District require that embankments are safe to withstand the maximum credible earthquake without an uncontrolled release of reservoir water.

**Description:**

This project includes seismic safety evaluations and dam freeboard increases to improve seismic safety. Evaluations and/or safety reviews have been completed at all of the District's Dams. Retrofit construction has been completed for Dunsmuir in Oakland and San Pablo in Kensington.

Dam freeboard has been increased by making structural modifications to the spillways at North Dam in Richmond, Estates Dam in Oakland (subsequently replaced with tanks), and Danville Dam; and by operational modifications at Maloney Dam in Pinole, Moraga Dam, San Pablo Clearwell in Kensington and Argyle #2 in El Sobrante.

Planning and design of the seismic upgrade at Chabot Dam in San Leandro began in FY11, and construction is expected to be completed in FY18. Upgrades at Camanche Dam are dependent on Federal Energy Regulatory Commission (FERC) review, approval, and subsequent directive, but are currently planned to begin in FY18.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Chabot Dam Seismic Upgrade	22,026,000	0	0	22,026,000
Camanche Dam Seismic Upgrade	11,400,000	0	0	11,400,000
Pardee Dam and Spillway	500,000	0	0	500,000

Appropriations:			
Prior Years	\$ 40,841,000	Lead Dept:	ENG
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 40,841,000	In Service Date:	30-Jun-27

## Capital Improvement Program - Project Summary

**Project:** Dam Surveillance Improvements      **Project Number:** 000748

**Strategy:** Regulatory Compliance      **Program:** Dam Safety

**Justification:**

On-going dam surveillance is required per the District's Dam Safety Program and per California Division of Safety of Dams (DSOD) and Federal Energy Regulatory Commission (FERC) permit requirements. Dam instrumentation must be upgraded and replaced as needed to provide early warning of potential dam safety issues.

**Description:**

The District regularly monitors the performance and safety of its 23 active dams and 5 inactive dams, with routine inspections and measurements using over 2,000 instruments. These instruments include piezometers to measure water levels below the dam, seepage weir and relief well flow measurements, dam settlement monitoring, tie-down anchor load measurements, and seismographs to measure ground motions.

In FY16-17, the District installed seismographs at Pardee and Camanche Reservoirs; constructed seepage monitoring devices at multiple open-cut reservoirs; upgraded the Camanche Dike 2 relief wells collection and monitoring; completed the automated GPS topographic survey system at Pardee and Camanche Dams; and replaced vibrating wire piezometer equipment.

In FY18-22, the proposed work includes: 1) continue to operate and maintain the automated GPS survey system at Camanche and Pardee Dams; 2) flush and clean the Camanche Main Dam relief wells; 3) evaluate and re-tension the tie-down anchors on the Pardee concrete spillway; 4) install seismographs at Briones and Lafayette Reservoirs; 5) plan, design and install an automated GPS survey system at Briones and Upper San Leandro Reservoirs; and 6) replace, repair, or add new instruments as necessary to maintain effective dam safety surveillance.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pardee Camanche Survey Imprvts	1,500,000	490,000	0	1,990,000
Pardee Camanche Instruments	595,000	1,055,000	0	1,650,000
Dam Instrumentation Upgrades	1,215,000	425,000	0	1,640,000
Terminal Reservoir Survey Impr	0	1,500,000	0	1,500,000
Terminal Res Seismographs	900,000	250,000	0	1,150,000
GIS-Based Dam Monitoring	0	525,000	0	525,000

Appropriations:			
Prior Years	\$ 7,153,322	Lead Dept:	ENG
2018	\$ 570,000	Recurring:	No
2019	\$ 340,000	Funding:	BOND/REV 100%
2020	\$ 1,225,000		
2021	\$ 965,000		
2022	\$ 1,145,000		
Future Years	\$ 0		
Total Cost	\$ 11,398,322	In Service Date:	30-Jun-25

## Capital Improvement Program - Project Summary

**Project:** Diablo PZ Improvements      **Project Number:** 000482  
**Strategy:** Extensions and Improvements      **Program:** WC-SRV In Zone Improvements

**Justification:**

This project is needed to address storage and level of service deficiencies, which include low pressure problems in the Diablo Pressure Zone. The project will restore operating storage to District standards, eliminate temporary facilities, and provide more flexibility for the future Emmons Reservoir outage.

**Description:**

This project includes design and construction of a replacement 3.1 million gallon (MG) welded-steel reservoir with a deep pier foundation at the same location as the demolished Diablo Reservoir, improvements to the existing access road, and site restoration. In 2004, the 5.0 MG Diablo Reservoir, located in Danville, was removed from service and demolished due to foundation issues, leaving the 5.5 MG Emmons Reservoir, 2.5 MG Miranda Reservoir, and temporary regulator at the Scenic Pumping Plant to serve the area formerly served by the Diablo Reservoir. Design will begin in FY20 followed by construction in FY22.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Diablo PZI	13,555,058	1,980,000	0	15,535,058

Appropriations:				
Prior Years	\$ 13,555,058	Lead Dept:	ENG	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	20%
2020	\$ 1,980,000		SCC	80%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 0		In Service Date:	30-Jun-23
Total Cost	\$ 15,535,058			



### Capital Improvement Program - Project Summary

**Project:** Dist Sys Corrosion Protection

**Project Number:** 000711

**Strategy:** Maintaining Infrastructure

**Program:** Corrosion

**Justification:**

The project is needed to reduce maintenance costs and extend the useful life of the District's water mains through the ongoing upgrade of cathodic protection systems.

**Description:**

This is an ongoing project to repair or replace cathodic protection units for distribution water mains. The distribution system is protected by 1,300 galvanic anode units and 110 impressed current units. Many of the existing units have become deficient and no longer provide adequate cathodic protection.

In FY18-22, work includes repair of 20 galvanic anode units per year, repair or replacement of 10 impressed current units, and start of the copper service lateral anode program to install 18,000 anodes over the course of four years.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Distr System Corrosion Protect	8,593,000	5,761,000	5,273,000	19,627,000

Appropriations:			
Prior Years	\$ 8,593,000	Lead Dept:	ENG
2018	\$ 2,732,000	Recurring:	No
2019	\$ 724,000	Funding:	BOND/REV 100%
2020	\$ 746,000		
2021	\$ 768,000		
2022	\$ 791,000		
Future Years	\$ 5,273,000		
Total Cost	\$ 19,627,000	In Service Date:	30-Jun-30

## Capital Improvement Program - Project Summary

**Project:** Distribution System Upgrades

**Project Number:** 000130

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

Various project elements are needed to restore service levels or improve distribution system redundancy and capacity. Work is prioritized annually based on level of service and operating efficiency.

**Description:**

This is an ongoing project that focuses on the distribution system where operational issues are identified or customer complaints are received and verified. The project reviews and prioritizes pipeline and related system improvements, including storage level optimization for water age.

In FY16-17, the Seneca Reservoir (Oakland) demolition study, Crockett Aqueduct realignment study, and four pressure zone rezonings were completed. Planned projects for FY18-22 include additional rezonings, related pipeline system improvements and valve improvements for storage cycling optimization.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
New Pressure Zone Studies	2,041,812	600,000	2,250,000	4,891,812
PZ Rezoning	680,000	800,000	1,800,000	3,280,000
Dual Tank Isolation Valves	177,000	795,000	0	972,000
Hill Mutual PZ Rezoning	856,000	100,000	0	956,000
Cultural Resources	0	500,000	0	500,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 5,926,808	Recurring: No	
2018	\$ 600,000	Funding: BOND/REV 100%	
2019	\$ 539,000		
2020	\$ 546,000		
2021	\$ 552,000		
2022	\$ 558,000		
Future Years	\$ 4,050,000	In Service Date: 30-Jun-30	
<b>Total Cost</b>	<b>\$ 12,771,808</b>		

### Capital Improvement Program - Project Summary

**Project:** East Area Service Center

**Project Number:** 000150

**Strategy:** Facilities, Servc and Equip

**Program:** Area Service Center/Bldg Prog

**Justification:**

The existing service center building was originally constructed in 1962, and replaced in FY11. The proposed electrical power improvements to the HVAC, power and lighting systems are critical for emergency response and business continuity operations at the facility.

**Description:**

This project includes the remodel of the existing office building and was completed in FY11. This project replaced the service center administration and warehouse buildings with a new seismically strengthened office building with approximately 1,700 square feet of new space on a second floor that provides men's and women's accessible restrooms, lockers, showers, and storage.

In FY18-19, design and construction of electrical power improvements to the HVAC, power and lighting systems for emergency response and business continuity operations will be completed.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Main Switchgear and Generator	600,000	0	0	600,000

Appropriations:			
Prior Years	\$ 9,440,248	Lead Dept:	ENG
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 9,440,248	In Service Date:	31-Dec-18

## Capital Improvement Program - Project Summary

**Project:** Electrical Hazard Prevention

**Project Number:** 2001485

**Strategy:** Maintaining Infrastructure

**Program:** Electrical Hazard Prevent Pgm

**Justification:**

The District must comply with the Occupational Safety and Health Administration (OSHA) standard for electrical safety in the workplace. The standard involves identifying and analyzing electrical hazards, educating the workforce on those hazards, and implementing safeguards to protect the workers.

**Description:**

An arc flash evaluation of each facility will enable the District to assess and mitigate the potential for electrical hazards to personnel working on and around electrical power distribution equipment. Arc flash evaluations for Pumping Plants Phase 1 through 5, Water Treatment Plants Phase 1 and 2, Hydroelectric Plants Phase 1, Administration Building Phase 1 and 2, and Arc Flash Review Phase 1 have been completed.

Remaining work consists of arc flash studies for nine pumping plants in FY18, six office buildings in FY19, and four service areas in FY19.

In addition, arc flash studies are required to be reviewed every five years by OSHA. In FY18, studies completed prior to FY13 will be reviewed.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
PP Arc Flash Evaluation	1,363,000	50,000	0	1,413,000
Arc Flash 5 Year Review	328,000	898,000	0	1,226,000
Admin Buildings Arc Flash Eval	326,000	25,000	0	351,000

Appropriations:			
Prior Years	\$ 2,393,000	Lead Dept:	ENG
2018	\$ 70,000	Recurring:	No
2019	\$ 213,000	Funding:	BOND/REV 100%
2020	\$ 220,000		
2021	\$ 236,000		
2022	\$ 234,000		
Future Years	\$ 0		
Total Cost	\$ 3,366,000	In Service Date:	30-Jun-22

## Capital Improvement Program - Project Summary

**Project:** Encinal Cascade PZI

**Project Number:** 2009581

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

The projects are needed to replace aging infrastructure, improve water quality and low pressure issues, and improve operating efficiency and reliability in the Encinal Cascade Pressure Zones which have excess storage capacity and low reservoir turnover. The projects will improve level of service and reduce long-term operation and maintenance costs.

**Description:**

The Encinal Cascade Pressure Zone improvements address high priority pumping plant and reservoir rehabilitation and replacement projects within the Encinal, Westside and Dos Osos Pressure Zones (PZ) located in Orinda. Encinal PZ improvements include construction of a new Encinal Regulator and demolition of Encinal Pumping Plant (PP) and Encinal Reservoir to make it a fully-regulated PZ. Westside PZ improvements include relocation of Westside PP to the existing Encinal PP site and construction of 1,500 feet of new 8-inch discharge pipeline and replacement of 2,000 feet of 6-inch and 8-inch pipeline. Dos Osos PZ improvements include replacement of Dos Osos Reservoir with dual tanks at a higher elevation and rehabilitation of the Dos Osos PP.

The facilities improvements and outage plan was completed in FY15 and updated in FY17. Environmental documentation was completed in FY17, and environmental permitting for the Dos Osos Reservoir replacement will be completed in FY19. Design of the Encinal PZ and Westside PZ improvements will take place in FY18-19. Construction of the Encinal PZ improvements will take place in FY19-21, and the Westside PZ improvements in FY20-21. Design of the Dos Osos PZ improvements is scheduled for FY20-21 followed by construction in FY22-23.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Dos Osos Res Repl and PP Rehab	0	7,035,448	0	7,035,448
Westside PP Relocation	0	5,753,674	0	5,753,674
Enc Res Westsd PP Dem, Enc Reg	0	848,322	0	848,322

Appropriations:			
Prior Years	\$ 0	Lead Dept:	ENG
2018	\$ 6,601,996	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 7,035,448		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 13,637,444	In Service Date:	31-Dec-23

## Capital Improvement Program - Project Summary

**Project:** Enterprise Hyd WQ & Op Modl

**Project Number:** 2005281

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

Implementation of the Enterprise Hydraulic Modeling will improve the efficiency and productivity of hydraulic modeling workflows, optimize hydraulic operations and provide cost savings in District-wide water distribution system energy use and system water quality.

**Description:**

Recent conversion of the enterprise systems (e.g., mapping, water consumption, pipeline risk models) to ArcGIS and advances in commercially available hydraulic modeling software present an opportunity to integrate enterprise systems including Supervisory Control and data Acquisition (SCADA) with the District's ArcGIS-based hydraulic modeling software (InfoWater). The Enterprise Hydraulic Modeling Project will implement new tools to further leverage hydraulic models and enterprise systems to streamline and improve workflows and infrastructure planning decision making, and optimize water distribution operations for energy and water quality management.

In FY16-17, the Enterprise Hydraulic Modeling Study and Strategic Plan was completed which included a project recommendation and implementation plan. Enterprise Hydraulic Modeling is scheduled to occur in multiple phases beginning with implementation of SCADAWatch and the GIS Gateway in FY18, pilot testing and evaluation of IWLIVE in FY18-19, and implementation of IWLIVE in FY19-20, if it is selected for full implementation.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Enterprise Model Study	520,000	265,270	0	785,270

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 520,000	Recurring: No	
2018	\$ 265,270	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-20	
<b>Total Cost</b>	<b>\$ 785,270</b>		

### Capital Improvement Program - Project Summary

<b>Project:</b> Faria PZI (formerly Purdue)	<b>Project Number:</b> 2003495
<b>Strategy:</b> Extensions and Improvements	<b>Program:</b> Pressure Zone Improvements

**Justification:**

The project is needed to create a new pressure zone to serve the Faria Preserve Development in San Ramon that includes 618 dwelling units, a school site and community facilities.

**Description:**

This is a new pressure zone needed to serve the Faria Preserve Development located in San Ramon. The project includes two new 0.5 million gallon reservoirs, a new 1.6 million gallon per day pumping plant, and related inlet-outlet pipeline. Initial facility planning was completed in FY07 and included in the City of San Ramon's approved Environmental Impact Report. Due to delays in the development project and acquisition by a new developer, the City of San Ramon prepared a subsequent Mitigated Negative Declaration that was approved in FY15. Final planning was completed in FY16 and design was completed in FY17. Construction commenced in FY17 and is scheduled to be completed in FY19.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Purdue Pumping and Reservoirs	14,342,000	0	0	14,342,000

Appropriations:				
Prior Years	\$ 14,342,000	Lead Dept:	ENG	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	APPL	83%
2020	\$ 0		BOND/REV	17%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 0			
Total Cost	\$ 14,342,000	In Service Date:	31-Dec-20	

### Capital Improvement Program - Project Summary

**Project:** Hydrants Installed by DF

**Project Number:** 000099

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Appurtenances

**Justification:**

This project is needed to install hydrants at the request of City and County Fire Districts for new developments including urban in-fill projects, and for District projects.

**Description:**

This is an ongoing project to install new hydrants in the service area using District forces. Most requests for new hydrants come from fire districts or developers. In prior years, the number of hydrants installed decreased to as few as 50 hydrants due to a reduction in new developments. However, development activity has rebounded in recent years, with a corresponding increase in the number of hydrants installed.

In FY16-17, the District installed an average of 85 new hydrants annually. In FY18-19, work includes installation of approximately 90 new hydrants annually. In FY20-22, the installation rate is planned to increase to 100 hydrants annually in anticipation of favorable development conditions.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Hydrants Instl'd By Dist	19,587,000	6,910,000	8,230,000	34,727,000

Appropriations:		Lead Dept: ENG	
Prior Years	-	Recurring: Yes	
2018	\$ 1,210,000	Funding:	APPL 38%
2019	\$ 1,310,000		BOND/REV 25%
2020	\$ 1,420,000		OAG 37%
2021	\$ 1,460,000		
2022	\$ 1,510,000		
Future Years	-	In Service Date: Recurring	
<b>Total Cost</b>	<b>-</b>		



## Capital Improvement Program - Project Summary

**Project:** Large Diameter Pipelines

**Project Number:** 1006298

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

The replacement of large diameter transmission pipelines is required to maintain infrastructure reliability. These pipelines convey large volumes of water and many distribution pipelines branch off from them. If any of these pipelines were to fail, there would be a major service disruption, a high cost of repair, and a potential for collateral damage.

**Description:**

Large diameter transmission pipelines form the backbone of the distribution system. This project replaces transmission pipelines that are at risk of failure, performs condition assessments and develops master plans.

FY16-17 work included completing construction of the Dingee Pipeline and Aqueducts at Claremont Center in Oakland and El Portal in Castro Valley; and beginning construction of Grand Avenue, MacArthur/Davenport, and International Boulevard in Oakland. Also, planning and design took place on several projects.

FY18-19 projects include completing construction of MacArthur/Davenport, Grand Ave, and International Blvd; design of Berryman South Reservoir Pipeline Improvements in Oakland, D Street in Hayward, and East 15th Street in Oakland; Golf Links Road and Webster Street planning in Oakland; beginning construction of Alameda Crossing #1, and Estudillo Avenue in Hayward; and beginning design of Summit Pressure Zone (PZ) Transmission. The Large Diameter Pipeline Master Plan (LDPMP) will also be updated.

In FY20-27, work includes completing construction of Summit PZ Transmission, Berryman South Reservoir Pipeline Improvements, D Street, and East 15th Street, and design and construction on Alameda Crossings #2 and #3. The LDPMP will be updated bi-annually to confirm the priority of existing projects and identify the need for any new projects.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Lg Diameter Pipeline Replace	84,047,150	104,817,793	408,988,310	597,853,253
Master Planning	822,000	682,866	5,482,000	6,986,866
Danville PP PL Property Rights	1,010,411	105,589	0	1,116,000

Appropriations:			
Prior Years	-	Lead Dept:	ENG
2018	\$ 41,652,000	Recurring:	Yes
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 16,359,866		
2021	\$ 29,940,030		
2022	\$ 17,654,352		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

<b>Project:</b> Leland Pressure Zone Impr	<b>Project Number:</b> 2001451
<b>Strategy:</b> Extensions and Improvements	<b>Program:</b> Pressure Zone Improvements

**Justification:**

This project is needed to replace aging infrastructure due to a deteriorating concrete roof and seismic stability issues of the earthen embankment. The project will improve the level of service and reduce long-term operation and maintenance costs.

**Description:**

The project includes replacement of the existing 18 million gallon (MG) open-cut Leland Reservoir in Lafayette with two 8-MG concrete tanks in the existing basin and 3,650 feet of 36-inch transmission pipeline. Leland Reservoir is the major storage serving Lafayette and most of Walnut Creek. In FY16, preparation of an Environmental Impact Report commenced which will be completed in FY18. Design of the replacement reservoirs and pipeline is scheduled for FY21-22, followed by construction in FY23-25.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Leland Reservoir Upgrade	6,176,000	31,261,000	0	37,437,000

Appropriations:				
Prior Years	\$ 8,121,480	Lead Dept:	ENG	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	30%
2020	\$ 0		SCC	70%
2021	\$ 31,261,000			
2022	\$ 0			
Future Years	\$ 0	In Service Date:	31-Dec-24	
Total Cost	\$ 39,382,480			

### Capital Improvement Program - Project Summary

**Project:** Maloney Pressure Zone Facility

**Project Number:** 1002575

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

The projects are needed to replace aging infrastructure and address operational and reliability issues including storage capacity, pumping capacity, and distribution system pipeline deficiencies. The projects will improve the level of service and reduce long-term operation and maintenance costs.

**Description:**

The Maloney Pressure Zone Improvements include a new 3 to 5 million gallon (MG) Selby Reservoir in Crockett; upgrades to the Maloney Pumping Plant (PP) in El Sobrante and Crockett PP in San Pablo to increase the combined pumping capacity by 12.5 MGD; and 18,500 feet of 36-inch pipeline to improve transmission capacity from the Crockett PP to the new Selby Reservoir.

In FY17, the Maloney PP transient analysis was completed. Design of the Maloney PP which includes electrical upgrades at the Sobrante Water Treatment Plant (WTP) commenced in FY17 and is scheduled to be completed in FY19. A Maloney Reservoir outage plan is scheduled for FY20, with construction of both the Maloney PP and Sobrante WTP improvements scheduled for FY19-21. Planning, design and construction of the Selby Reservoir replacement is scheduled for FY23-27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Maloney PP & SOWTP Imprvmnts	9,500,000	9,300,000	0	18,800,000
Selby Reservoir Replacement	0	0	13,190,000	13,190,000
Crockett PP Capacity	180,000	450,000	5,830,000	6,460,000
Maloney PZI Planning Study	709,000	0	0	709,000

Appropriations:				
Prior Years	\$ 10,389,000	Lead Dept:	ENG	
2018	\$ 9,300,000	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	59%
2020	\$ 0		SCC	41%
2021	\$ 450,000			
2022	\$ 0			
Future Years	\$ 44,640,000	In Service Date:	30-Jun-31	
Total Cost	\$ 64,779,000			

## Capital Improvement Program - Project Summary

**Project:** Mok Aqu No 2 & 3 Relining Proj

**Project Number:** 2003494

**Strategy:** Water Supply

**Program:** Aqueduct Program

**Justification:**

This project is needed to preserve the integrity of the steel aqueduct pipelines and restore hydraulic capacity. In areas where the lining has delaminated, the steel pipe wall is corroding, reducing the steel wall thickness. The new lining will prevent internal corrosion.

**Description:**

This project will replace the deteriorated cement mortar lining in Mokelumne Aqueduct Nos. 2 and 3 to protect the steel pipeline from internal corrosion. Previous spot inspections of the elevated Delta reach revealed that 10 miles of the lining in Mokelumne Aqueduct No. 3 is in need of replacement. Limited inspections of Mokelumne Aqueduct No. 2 indicate that 65 miles of the lining in this pipeline also needs replacement.

FY16-17 work included completion of a study on lining materials/technologies, and an assessment of water quality improvement options. Work also included a comprehensive internal inspection of the above-ground segment of Mokelumne No. 2 (15 miles).

FY18-22 planned work includes design and construction of water treatment improvements, pilot testing of lining materials, and a comprehensive internal inspection of the below-ground segment of Mokelumne No. 2 (65 miles) and the above-ground section of Mokelumne No. 3 (10 miles).

In FY23-30, work includes design and construction of approximately six relining project phases.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mok Aqueduct No. 2 Relining	24,419,000	0	186,000,000	210,419,000
Mok Aqueduct No. 3 Relining	29,023,000	0	9,000,000	38,023,000
Lining Studies & Improvements	11,980,347	0	0	11,980,347

Appropriations:			
Prior Years	\$ 65,422,347	Lead Dept:	ENG
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 195,000,000		
Total Cost	\$ 260,422,347		

### Capital Improvement Program - Project Summary

**Project:** Mokelumne Aqueduct Recoating

**Project Number:** 2001487

**Strategy:** Water Supply

**Program:** Aqueduct Program

**Justification:**

Recoating the Mokelumne aqueducts protects them from the corrosive Delta environment, prevents deterioration and breaks, and prolongs their useful life.

**Description:**

This project continues the annual removal of lead-based paint and recoating portions of the 10 miles of above ground pipelines of the Mokelumne Aqueducts in the Delta. The work typically takes place during the summer months and includes recoating several over-water areas of the aqueducts.

FY18-22 work includes recoating Aqueduct No. 1 Phases 12 and 13, which covers the Orwood Tract and Woodward Island, and approximately sixty gully crossings.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mokelumne Aqueducts Recoating	23,804,000	1,335,369	0	25,139,369

Appropriations:			
Prior Years	\$ 43,315,153	Lead Dept:	ENG
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 1,335,369		
Future Years	\$ 0		
Total Cost	\$ 44,650,522	In Service Date:	30-Jun-24

### Capital Improvement Program - Project Summary

**Project:** New Service Installations

**Project Number:** 000101

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Appurtenances

**Justification:**

New accounts require new service installations to furnish water to developments.

**Description:**

This is an ongoing project to install new services. Services include taps on the main, laterals, and meter sets. The work consists of adding services due to expansion of the system and urban in-fill projects. The work excludes replacement of old services or polybutylene laterals. Recently, District Forces have installed between 300 to 450 new services annually. The need for installing new services is expected to increase as housing trends have elevated demand for new services.

In FY16-17, an average of 450 new services per year were installed. In FY18-19, work is estimated at 500 new services per year. In FY20-22, work is estimated to increase up to 550 new services per year.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
New Svc Installs	169,579,000	28,230,000	27,530,000	225,339,000

Appropriations:			
Prior Years	-	Lead Dept:	ENG
2018	\$ 8,950,000	Recurring:	Yes
2019	\$ 4,610,000	Funding:	APPL100%
2020	\$ 4,750,000		
2021	\$ 4,890,000		
2022	\$ 5,030,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

## Capital Improvement Program - Project Summary

**Project:** Open Cut Reservoir Rehab

**Project Number:** 000241

**Strategy:** Maintaining Infrastructure

**Program:** Reservoir Rehab Program

**Justification:**

Open-cut reservoir rehabilitation, replacement, and demolition projects are necessary to remove hazardous materials, reduce maintenance costs, improve safety, and improve water quality by reducing storage in the distribution system.

**Description:**

The Open Cut Reservoir Rehabilitation project includes the rehabilitation and replacement of the District's open-cut reservoirs. In FY16-17, construction was completed for Phase I of the replacement of South Reservoir in Castro Valley, a 50 Million Gallon (MG) open-cut reservoir that was removed from service in 2008 due to roof leaks. In addition, construction of Phase II of the replacement of South Reservoir commenced. Also in FY16-17, design for the replacement of the San Pablo Clearwell in Kensington commenced, and plans to replace the District's largest distribution reservoir, Central Reservoir in Oakland continued.

Planned accomplishments for FY18-22 include completion of Phase II construction of the replacement of South Reservoir; completion of design and construction of the San Pablo Clearwell replacement; completion of the planning phase and kickoff of the design phase for the Central Reservoir replacement; completion of the environmental review documents to replace North Reservoir in Richmond; and completion of the Seneca Reservoir demolition project. Construction of the Central Reservoir replacement is planned beyond FY22.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Central Reservoir Replacement	2,787,402	2,234,000	151,894,000	156,915,402
North Reservoir Replacement	182,000	0	76,300,000	76,482,000
San Pablo Clearwell Replacemnt	19,064,000	6,219,000	0	25,283,000
South Reservoir Replacement	22,915,000	0	0	22,915,000
Seneca Reservoir Demolition	2,400,000	2,548,000	0	4,948,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 57,326,402	Recurring: No	
2018	\$ 8,767,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 2,234,000		
Future Years	\$ 228,194,000	In Service Date: 30-Jun-30	
<b>Total Cost</b>	<b>\$ 296,521,402</b>		

### Capital Improvement Program - Project Summary

**Project:** Pipeline Infrastruct Renewals

**Project Number:** 000554

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

Planned replacement of deteriorating pipelines is needed to maintain the reliability of the distribution infrastructure. Replacing portions of the 3,800 miles of distribution system piping on an annual basis mitigates the costs and service disruptions associated with emergency leak repairs on problem pipelines.

**Description:**

This is an ongoing project to replace deteriorating water distribution pipelines. Candidate pipelines for renewal are identified primarily through evaluation of maintenance histories and consideration of consequences associated with future leaks and cost benefits of immediate replacement. In FY16, a total of 13.5 miles of pipeline replacements took place. In FY17, a total of 15 miles of pipeline replacements was planned which included the baseline 10 miles per year installed by existing District crews, and an additional 5 miles installed under the new Pipeline Rebuild Program. In FY18-22, work includes a total of 15 miles in FY18, ramping up to 20 miles per year by FY22. An increase in production is expected each year as Pipeline Rebuild implements more efficient processes and installation methods.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Infrastructure Renewals	238,902,476	143,726,000	181,571,000	564,199,476
Pipeline Rebuild Program	25,213,000	116,105,000	312,503,880	453,821,880
Pipeline Research-Development	3,878,000	1,288,000	1,518,000	6,684,000

Appropriations:			
Prior Years	-	Lead Dept:	ENG
2018	\$ 42,080,000	Recurring:	Yes
2019	\$ 43,337,000	Funding:	BOND/REV 100%
2020	\$ 44,605,000		
2021	\$ 60,814,000		
2022	\$ 70,283,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring



## Capital Improvement Program - Project Summary

**Project:** Pipeline Relocations

**Project Number:** 000108

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

The project is needed to relocate distribution system pipelines as required due to various projects by public agencies including cities, counties, Caltrans and BART.

**Description:**

This is an ongoing project to relocate pipelines and accommodate projects of other agencies, such as roadway improvements, bridge replacements, or rail system expansions. The work is non-discretionary and typically cannot be forecasted accurately since it is dependent on the schedule of other agencies. The District is obligated to bear the cost of pipeline relocations originating from street improvement projects, while costs for pipeline relocations driven by agencies, such as Caltrans and BART are typically reimbursable.

In FY18-22, anticipated work includes design and construction of approximately 1.5 miles of pipeline relocations per year, which includes 0.5 mile of reimbursable and 1 mile of non-reimbursable work.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Non Reimbursable	37,204,166	22,299,000	29,994,000	89,497,166
Reimbursable	13,629,127	5,164,000	11,248,000	30,041,127

Appropriations:		Lead Dept: ENG	
Prior Years	-	Recurring: Yes	
2018	\$ 4,200,000	Funding: BOND/REV OAG	73%
2019	\$ 4,326,000		27%
2020	\$ 6,127,000		
2021	\$ 6,311,000		
2022	\$ 6,499,000		
Future Years	-	In Service Date: Recurring	
<b>Total Cost</b>	<b>-</b>		

### Capital Improvement Program - Project Summary

**Project:** Pipeline System Extensions

**Project Number:** 000104

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

This project is needed to satisfy the District's obligation to provide service to new customers within the service area.

**Description:**

This is an ongoing project for pipelines to serve new customers via Applicant Extension Agreements. Annual workload is estimated from projections of land development activity and recent trends in water service activity in the District's New Business Office.

The District averaged approximately twelve miles of extensions per year in FY00-08, with two miles installed by District forces and ten miles by applicants. Although demand had been reduced to about three miles per year from FY09-13 due to the economic downturn, there is currently an increasing demand in applicant work. In FY16-17, approximately six miles per year of system extensions were installed by applicants and District forces combined (one mile constructed by District forces and five miles installed by applicants), indicating an upward trend from previous years.

In FY18-19, work is anticipated to ramp up to eight miles per year of system extensions, with 1.5 miles constructed by District forces and 6.5 miles installed by applicants per year. Projecting further, FY20-22 will include approximately eight miles per year of system extensions.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
New Pipeline Installations	56,490,353	47,750,000	77,569,000	181,809,353

Appropriations:			
Prior Years	-	Lead Dept:	ENG
2018	\$ 8,940,000	Recurring:	Yes
2019	\$ 9,207,000	Funding:	APPL100%
2020	\$ 9,530,000		
2021	\$ 9,864,000		
2022	\$ 10,209,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** Pipeline System Improvements

**Project Number:** 000110

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

This program is needed to maintain reliable potable water service to customers by improving various components of the distribution system and addressing areas such as water quality, capacity, maintainability, and reliability.

**Description:**

This is an on-going project that serves to enhance the water distribution system by improving water quality, system performance, capacity, reliability, and maintainability of the distribution system.

In FY17, work included the design of approximately 0.25 miles of pipeline system improvements in Oakland and Orinda, the design and construction of 0.5 miles of 4-inch main replacements, and the on-going design and construction of system improvement projects currently underway throughout the District.

In FY18-22, work will include the design and construction of 1.0 mile per year of pipeline system improvements and 0.5 miles per year of 4-inch replacements. Planned work includes pipeline system improvement projects to support the Alcosta Boulevard Rate Control Station Project in San Ramon and the Encinal Pumping Plant replacement in Orinda.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Maintainability Imprv Projects	5,723,290	7,640,000	17,472,000	30,835,290
4-inch Reliability Imprv	1,000,000	4,895,000	8,518,000	14,413,000

Appropriations:			
Prior Years	-	Lead Dept:	ENG
2018	\$ 0	Recurring:	Yes
2019	\$ 1,170,000	Funding:	BOND/REV 100%
2020	\$ 3,677,000		
2021	\$ 3,787,000		
2022	\$ 3,901,000		
Future Years	-	In Service Date:	Recurring
Total Cost	-		

## Capital Improvement Program - Project Summary

**Project:** Pressure Zone Planning Program      **Project Number:** 001424

**Strategy:** Extensions and Improvements      **Program:** Pressure Zone Improvements

**Justification:**

The Pressure Zone Planning Program (PZPP) is needed to support ongoing and future capital projects including pipeline and major facility rehabilitation. The PZPP will report current District facilities and pipeline needs, reduce duplication of effort, and minimize multi-project scheduling conflicts and delays to rehabilitation projects.

**Description:**

The PZPP is a comprehensive District-wide facilities planning project to support ongoing and future capital projects. Individual PZPP studies define pressure zone issues, describe conceptual solutions for those issues, identify facility priority, and provide planning level cost estimates. The studies are compiled into the Distribution System Master Plan (DSMP).

No major work was completed in FY16-17. Starting in FY18 and occurring on an ongoing basis, numerous PZPPs will be updated in advance of upcoming infrastructure renewal priorities. The PZPPs require updates to incorporate recommendations for pipeline improvements where operational issues are identified, address more detailed hydraulic modeling and emerging priorities, and beginning in FY20 will reflect updates to the demand projections based on the results of the 2050 Demand Study, which is planned to be completed in FY18. An update to the DSMP will be completed in FY19.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pressure Zone Planning Studies	1,567,000	581,119	725,000	2,873,119

Appropriations:				
Prior Years	\$ 2,684,000	Lead Dept:	ENG	
2018	\$ 581,119	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	80%
2020	\$ 0		SCC	20%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 725,000		In Service Date:	30-Jun-27
Total Cost	\$ 3,990,119			

## Capital Improvement Program - Project Summary

**Project:** Pumping Plant Rehabilitation

**Project Number:** 001252

**Strategy:** Maintaining Infrastructure

**Program:** Pumping Plant Rehabilitation

**Justification:**

This project is needed to upgrade pumping plants to conform to current District standards to ensure efficient, reliable and safe operation.

**Description:**

The District updated the Distribution Pumping Plant Infrastructure Rehabilitation Plan (IRP) in 2016. The IRP identifies the 53 highest priority pumping plants (PPs) for rehabilitation, replacement, or demolition.

In FY15-16, the District awarded construction contracts for replacement of Shasta, Woods, and Diablo Vista PPs; rehabilitation of Moyers, Road 24 No. 2, Diablo, and Gwin PPs; and demolition of Laguna No. 1. PP. In FY17, construction contracts were awarded for Country Club, Schapiro, Road 24, Berryman, and University PPs.

In FY18-22, work includes planning, design and construction at 31 of the District's 130 distribution pumping plants. The following pumping plants are included: Gwin, Laguna, Country Club, Schapiro, Road 24 #1, Berryman North, University, Fire Trail, Jensen #1, Bayfair, Peralta, May, Proctor, Summit West, Montclair, Madrone, Palo Seco, Hill Mutual, Crest, Ridgewood, Valory, Quarry, Summit North, Echo Springs, Summit South, Aqueduct, Crockett, Larkey, Stott, Pearl, Welle, and Rolph. Work will also continue on PP Arc Flash Mitigation.

Future work will include design and construction on the remaining priority PP rehabilitation projects, as well as any priorities that may arise.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Future PP Rehabs	0	30,606,000	31,750,000	62,356,000
Summit West Montclair PP	0	16,234,000	0	16,234,000
Diablo Vista PP Rehabilitation	12,607,000	0	0	12,607,000
Country Club/Schapiro/Rd24#1PP	11,800,000	0	0	11,800,000
Quarry, Sumt North, Echo Springs	0	10,964,000	0	10,964,000
Fire Trail-Jensen #1 PP Rehab	9,012,807	0	0	9,012,807
Hill Mutl, Crest, Rdgwd, Valory PP	0	7,406,000	0	7,406,000
Bayfr, Prlta, Mdrne, PlSeco, MayPP	31,000	7,154,000	0	7,185,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 98,988,039	Recurring: No	
2018	\$ 28,491,000	Funding: BOND/REV 100%	
2019	\$ 12,487,000		
2020	\$ 11,237,000		
2021	\$ 16,780,000		
2022	\$ 13,826,000		
Future Years	\$ 31,823,000	In Service Date: 30-Jun-28	
<b>Total Cost</b>	<b>\$ 213,632,039</b>		

## Capital Improvement Program - Project Summary

**Project:** Rate Control Station Rehab

**Project Number:** 1002590

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

This project is needed to rehabilitate rate control stations that present safety hazards, corrosion damage, flooding, poor ventilation, and remote-monitoring malfunctions.

**Description:**

This project rehabilitates or replaces deteriorated Rate Control Stations (RCSs) in the distribution system. The District operates 36 RCSs with many older than 50 years. Over the next five years, the plan is to rehabilitate or replace an average of two RCSs per year. Access safety will be improved by replacing street manholes and outdated hatches with safer sidewalk hatches, and Occupational Safety and Health Administration approved ladders and ventilation where required. It will also replace deteriorated structures or enlarge existing structures with seismically safe, appropriately sized concrete structures, and replace deteriorated mechanical equipment and telemetry. In addition, this project includes site inspections and evaluations of RCSs to prioritize rehabilitations and replacements.

The RCS Infrastructure Rehabilitation Plan was updated in FY16 and will be updated every four years. In FY16-17, 82nd Avenue and Hollis RCS were designed and are currently in construction, and seven others are currently in design. RCS facilities scheduled for design and construction in FY18-22 include Oak, 98th Avenue, Sequoia, Ney, Victoria, Church, and Golf Links.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Future RCS Rehabs	0	1,001,000	10,035,000	11,036,000
CastroValley Dunsmuir,Lahonda	0	2,338,000	2,970,000	5,308,000
Alcsta,Bolngr,SanLuisNo1,Wbstr	0	2,219,000	3,050,000	5,269,000
Ney,Vctria,Chrch,GolfLinks	2,730,000	1,885,000	0	4,615,000
Oak,98Av,Sequoia RCS Rehabs	1,791,000	687,000	0	2,478,000
RCS Facility Assessments	275,000	0	100,000	375,000
RCS Planning	105,000	0	0	105,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 8,897,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 387,000		
2020	\$ 419,000		
2021	\$ 1,887,000		
2022	\$ 5,437,000		
Future Years	\$ 16,155,000	In Service Date: 30-Jun-27	
<b>Total Cost</b>	<b>\$ 33,182,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Raw Water Studies and Improves      **Project Number:** 1000810

**Strategy:** Water Supply      **Program:** Aqueduct Program

**Justification:**

The project is needed to maintain the integrity of the raw water system; facilitate effective, fast response following an emergency; improve the function of the system; or a combination of all three.

**Description:**

This project consists of evaluating and improving the raw water system to reliably meet operational requirements. FY16-17 accomplishments included completion of the inspection of Lafayette Aqueduct #2; continued retrofit work of the settling temperature anchors on Mokelumne Aqueduct #1; extensive geotechnical investigations for the Delta Tunnel study; and inspection of the Pardee Tunnel.

In FY18-22, work includes continuing to monitor and retrofit the temperature anchors on Mokelumne Aqueduct #1; design and construction of the Briones Center upgrades; design and construction of the Walnut Creek Raw Water PP upgrades; completion of the Mokelumne Aqueduct wasteways facility plan and design and construction of identified upgrades; and selective demolition of the Bixler PP.

Beyond FY22, planned work includes installing a liner in Lafayette Aqueduct #1 and completing the preliminary design for the Delta Tunnel.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Delta Tunnel	2,474,000	11,247,000	94,401,000	108,122,000
Raw Wtr Improvements	19,683,000	22,931,000	39,066,000	81,680,000
Mok Aq No3	22,069,260	27,038,000	24,477,000	73,584,260
Raw Wtr Infrastructure Std	4,444,000	827,000	755,000	6,026,000

Appropriations:			
Prior Years	\$ 53,088,610	Lead Dept:	ENG
2018	\$ 6,739,000	Recurring:	No
2019	\$ 16,588,000	Funding:	BOND/REV 100%
2020	\$ 16,660,000		
2021	\$ 8,687,000		
2022	\$ 13,369,000		
Future Years	\$ 158,699,000		
Total Cost	\$ 273,830,610	In Service Date:	30-Jun-27

## Capital Improvement Program - Project Summary

**Project:** Regulator Rehabilitation

**Project Number:** 000398

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Regulators

**Justification:**

This project is needed to rehabilitate regulators that provide insufficient fire flow, present a hazard to operating personnel, or may need to be relocated due to site constraints.

**Description:**

This project rehabilitates or replaces deteriorated, undersized, and unsafe regulators in the distribution system. The District operates 73 regulators with many older than 50 years. Regulator upgrades typically include replacing deep vaults in the street with shallow vaults located in the sidewalk; improved hatches and ladders; replacement of regulator valves; and the addition of emergency shut off valves. Ventilation fans, sump pumps, flow meters, lights, and telemetry are added when electrical power is available. In addition, this project includes site inspections and evaluations of regulator facilities.

In FY16-17, planning was completed on seven regulator projects, design was completed on five projects and construction was completed on one project. Castle regulator was replaced in FY17. Designs for the rehabilitation of Black Feather, Grand, Painted Pony, Circle and Orion regulators were completed in FY17.

In FY18-22, designs for the rehabilitation of fifteen regulators are planned at an average of three regulators per year. After FY22, the plan is to rehabilitate or replace regulators at an average of two per year. If this schedule is maintained, each regulator will be upgraded once every 50 years.

Planning and design will be completed in FY20-22 for Ascot, Bayfair, Campus, Columbia, Crockett, Girvin, Gramercy, Henry, Keller, Laloma, Maud, Norris Canyon, Potrero, and Villareal regulators.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
RegulatorBundlePhase1Rehabs	6,570,000	0	0	6,570,000
RegulatorBundlePhase2Rehabs	2,770,000	0	2,878,300	5,648,300
Future Regulator Rehabs	0	394,000	4,077,000	4,471,000
BlkFeathr,PntdPony,Crcle,Orion	1,930,932	0	0	1,930,932
Regulator Facility Assessments	275,000	0	100,000	375,000
Standby regulator evaluation	210,000	10,000	0	220,000

Appropriations:				
Prior Years	\$ 22,414,000	Lead Dept:	ENG	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	90%
2020	\$ 10,000		SCC	10%
2021	\$ 0			
2022	\$ 394,000			
Future Years	\$ 7,055,300	In Service Date:	30-Jun-27	
Total Cost	\$ 29,873,300			



## Capital Improvement Program - Project Summary

**Project:** Reservoir Rehab/Maintenance

**Project Number:** 000716

**Strategy:** Maintaining Infrastructure

**Program:** Reservoir Rehab Program

**Justification:**

This project is necessary to maximize the utility of the District's distribution reservoirs through the rehabilitation, replacement, and demolition of the District's reservoirs.

**Description:**

This project includes the rehabilitation, replacement, and demolition of the District's steel, concrete, redwood, and pressure reservoirs to improve reservoir roof safety, replace reservoir coatings, improve water quality, and assess the rehabilitation priorities through updates to the reservoir Infrastructure Rehabilitation Plan (IRP).

In FY16-17, construction contracts were awarded to rehabilitate, replace, or demolish three steel reservoirs each year. The design phase to demolish the Berkeley View No. 2, Muir, and Potrero reservoirs was completed in FY16 and the design phase to rehabilitate the Bacon, Mendocino, and Pearl reservoirs is on schedule for completion in FY17. The construction phases for the rehabilitation of Round Hill and El Portal reservoirs, the replacement of Eden Reservoir, and the demolition of three steel reservoirs were completed in FY16-17. Also in FY17, the design of the Carisbrook, Montclair, and Skyline Pumping Plant project was completed and the reservoir rehabilitation priorities were updated.

In FY18-22, the District will continue the sustainable rehabilitation rate for steel reservoirs of three to four reservoirs each year. Other planned accomplishments for FY18-22 include completion of the construction phase for the new Carisbrook Reservoir and the rehabilitation of Montclair Reservoir, and completion of the reservoir roof safety program which includes improvements for reservoir roof and ladder fall protection.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Res Rehab/Mai Prog (Coatings)	106,356,000	63,593,000	52,438,000	222,387,000
Res Supplemental Imprv Proj	25,251,000	13,313,000	0	38,564,000
Reservoir Roof Safety Program	1,342,000	0	0	1,342,000
Reservoir Facility Assessments	636,000	202,000	0	838,000

Appropriations:			
Prior Years	\$ 133,633,000	Lead Dept:	ENG
2018	\$ 12,395,000	Recurring:	No
2019	\$ 17,248,000	Funding:	BOND/REV100%
2020	\$ 20,127,000		
2021	\$ 14,231,000		
2022	\$ 13,107,000		
Future Years	\$ 52,438,000		
In Service Date:	30-Jun-30		
Total Cost	\$ 263,179,000		

## Capital Improvement Program - Project Summary

**Project:** Reservoir Tower Modifications

**Project Number:** 000672

**Strategy:** Regulatory Compliance

**Program:** Dam Safety

**Justification:**

Failure of a reservoir tower could cause an uncontrolled release of water or could prevent withdrawing water from the reservoir. The California Division of Safety of Dams requires outlet works to remain functional after a major earthquake.

**Description:**

This project encompasses the seismic retrofit of six reservoir towers. Retrofits to Chabot Tower started in FY15 as part of the seismic upgrades being made to Chabot Dam in San Leandro. The Briones Tower in Orinda requires upgrades to resist earthquake loads. Planning and design of the upgrades started in FY16, with construction planned in FY21-22. Lafayette Reservoir Tower modifications include seismic and gate control upgrades, and modification of the tower to act as a spillway capable of handling the revised Probable Maximum Flood. Planning is underway, with construction planned to start in FY22.

A seismic evaluation of the Pardee Reservoir Outlet Tower included the evaluation of the seepage from Pardee Tunnel in the vicinity of the West Portal. Design fixes were delayed because it was not possible to take the tunnel out of service for operational reasons. The tunnel is scheduled to be repaired in FY21, assuming an outage is possible.

A stability analysis was conducted for the Upper San Leandro Reservoir Tower in Oakland. Design of structural and mechanical upgrades for this critical tower is ongoing, with construction planned to take place in FY18.

The need for the San Pablo Filter Plant is uncertain. Therefore, the San Pablo Tower in Richmond will undergo only minor seismic rehabilitation for safety, and the gate valves will be replaced.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Briones & Lafayette Tower Mods	21,688,000	7,000,000	0	28,688,000
USL-San Pablo-Chabot Tower Mod	11,294,000	0	0	11,294,000
Pardee Outlet Tower & Tunnel	750,000	2,750,000	0	3,500,000

Appropriations:			
Prior Years	\$ 33,732,000	Lead Dept:	ENG
2018	\$ 150,000	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 9,600,000		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 43,482,000	In Service Date:	30-Jun-22

### Capital Improvement Program - Project Summary

**Project:** San Pablo Dam Seismic Mods

**Project Number:** 2001483

**Strategy:** Regulatory Compliance

**Program:** Dam Safety

**Justification:**

Seismic evaluation of the reservoir embankment indicates that the slopes may become unstable and the crest settlements may be excessive during the maximum credible earthquake. Therefore, retrofit measures are required to stabilize the dam to prevent an uncontrolled release of reservoir water.

**Description:**

This project provides for modifications to the downstream slope of the San Pablo Dam embankment in Orinda to prevent slope instability and crest settlement during a maximum credible earthquake on the Hayward Fault. Upgrades to the embankment including foundation improvements, placement of buttress fill at the downstream toe, and installation of geotechnical instrumentation. Mitigation measures during construction have been completed, resulting in the lifting of the California Division of Safety of Dams (DSOD) restrictions on the maximum operating level.

The replacement of old valves in the tunnel scheduled for FY14-16 was not completed due to the continued use of the Sobrante Water Treatment Plant during the drought. The work is now scheduled for completion in FY18-19, along with replacing the total station survey equipment. Ongoing work includes maintenance and monitoring for the mitigation structures and meeting reporting requirements to the regulatory agencies. Mitigation maintenance and monitoring will continue through FY21.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
San Pablo Dam Mods	81,613,000	0	0	81,613,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 82,588,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 31-Dec-21	
Total Cost	\$ 82,588,000		

## Capital Improvement Program - Project Summary

**Project:** Service Lateral Replacements

**Project Number:** 000654

**Strategy:** Maintaining Infrastructure

**Program:** Polybutylene Lateral Replcmt

**Justification:**

This project is needed to manage the cost-effective replacement of defective and/or failed service laterals.

**Description:**

This project previously focused on the replacement of defective polybutylene service laterals, but has been restructured to encompass the replacement of all types of service laterals.

District crews respond to 4 to 5 service lateral failures each day (classified as emergency replacements). The majority of this work involves replacing defective polybutylene laterals that were installed during the 1970s and 1980s. A large portion also involves replacing corroding copper laterals that were installed during the 1990s.

The District recognizes the need to identify and replace laterals with known problems within areas that have suffered high failure rates. This project continues the practice of pre-emptively replacing polybutylene and copper service laterals where cost-effective opportunities arise. Funding for pre-emptive service lateral replacements is set to cover an estimated 400 planned replacements.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Unplanned Svc Repls	0	58,885,000	53,142,000	112,027,000
Planned Copper Svc Repls	0	8,657,000	8,730,000	17,387,000
Planned Polybutylene Svc Repls	0	6,073,000	0	6,073,000

Appropriations:			
Prior Years	\$ 186,766,000	Lead Dept:	ENG
2018	\$ 13,753,000	Recurring:	No
2019	\$ 13,779,000	Funding:	BOND/REV 100%
2020	\$ 15,161,000		
2021	\$ 15,443,000		
2022	\$ 15,479,000		
Future Years	\$ 61,872,000		
Total Cost	\$ 322,253,000	In Service Date:	30-Jun-30

## Capital Improvement Program - Project Summary

**Project:** So Oakland Hills Cascades PZI

**Project Number:** 2003493

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

The project is needed to replace and/or eliminate aging infrastructure, improve water quality, and improve operating efficiency and reliability in the South Oakland Hills Cascades which have excess storage capacity causing low reservoir turnover. The project will improve the level of service and reduce long-term operation and maintenance costs.

**Description:**

The South Oakland Hills Cascades Pressure Zone Improvement (PZI) study is a detailed master plan that identified a series of projects within the South Oakland Hills, including Palo Seco, Madrone, City Line, Country Club and Peralta Pressure Zones. Projects under the South Oakland Hills Cascades PZI include removal of May Pumping Plant (PP) from service and a new Peralta Regulator and 4,700 feet of 16-inch pipeline.

Projects to be implemented under other infrastructure rehabilitation programs include demolition of Peralta Reservoir, Peralta Pumping Plant and 1.5 miles of discharge pipeline; replacement of the 2.3 million gallon (MG) Country Club Reservoir with a 0.9 MG reservoir; construction of a second 0.7 MG May Reservoir; replacement of the 0.9 MG City Line Reservoir with a 0.4 MG reservoir; replacement of the 1.8 MG Palo Seco Reservoir with dual 0.8 MG reservoirs; replacement of the 2.8 MG Madrone Reservoir with a 1.2 MG reservoir; and increasing capacities of the Country Club, City Line, Madrone, and Palo Seco PPs. Interim operating plans were developed to improve conveyance and fire flows, and size reservoirs and pumping plants commensurate with demands in the area as part of the master plan which coordinates capital improvements.

In FY17, planning was completed for the Peralta Regulator and supporting pipeline. Design and construction is scheduled for FY18-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Country Club-Peralta PZI	2,190,000	1,088,000	0	3,278,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 2,411,000	Recurring: No	
2018	\$ 1,088,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-20	
<b>Total Cost</b>	<b>\$ 3,499,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Summit Pressure Zone Improve

**Project Number:** 2001457

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

Summit Pressure Zone has significant hydraulic (transmission) limitations, excess storage that creates water quality issues, and aging facilities that require major maintenance/replacement and mitigation of hazardous materials. The projects will address regulatory requirements, improve level of service and reduce long-term operation and maintenance costs.

**Description:**

This project includes the replacement of Berryman and Summit Reservoirs, Woods and Shasta Pumping Plants, and a new proposed Lawrence Reservoir, all located in Berkeley.

Construction of the Berryman Reservoir replacement was completed in FY13. The Summit Reservoir Replacement includes demolition of Summit Reservoir and Woods and Shasta Pumping Plants located at the Summit Reservoir site, and replacement with a partially buried 3.5 million gallon concrete tank, a new flow control valve to access excess Woods Reservoir storage, and replacement pumping plants. In FY16-17, construction of the replacement facilities at the Summit Reservoir site was completed, with final site work to be completed in FY18.

This project also includes a study to be performed in FY20 to determine the required storage at the proposed Lawrence Reservoir site in Strawberry Canyon and the existing Woods Reservoir site. Based on the results of the study, the Lawrence Reservoir would include negotiations with the Lawrence Berkeley National Laboratory and the University of California concerning candidate reservoir sites in FY21, followed by environmental reviews in FY22-23, and then design and construction of a new reservoir in FY24-26.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Summit Reservoir Replacement	28,025,000	0	0	28,025,000
Lawrence Tank Des & Construct	0	1,260,000	15,600,000	16,860,000
Pressure Zone Improvemnt Study	2,604,000	0	0	2,604,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 40,259,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 1,260,000		
2022	\$ 0		
Future Years	\$ 15,600,000	In Service Date: 30-Jun-26	
<b>Total Cost</b>	<b>\$ 57,119,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Tice Pumping Plant

**Project Number:** 2001476

**Strategy:** Extensions and Improvements

**Program:** Water Trmt and Trans Impr

**Justification:**

The project is needed to correct hydraulic and water quality issues in the Colorados Pressure Zone, and to access available capacity from the Walnut Creek Water Treatment Plant (WTP) and remove its dependence on the Lafayette WTP. The project will improve level of service and reduce long-term operation and maintenance costs.

**Description:**

This project includes a new 10 million gallon per day Tice Pumping Plant (PP) in Walnut Creek and approximately 2,700 feet of 20-inch inlet pipeline. The Tice PP project will allow for rezoning of the Tice area of the Colorados Pressure Zone into a new Tice Pressure Zone. Property was purchased in FY12, and design is scheduled for FY23 followed by construction in FY24-25.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Tice PP and I/O Pipeline	888,930	0	14,905,000	15,793,930

Appropriations:				
Prior Years	\$ 888,930	Lead Dept:	ENG	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	30%
2020	\$ 0		SCC	70%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 14,905,000		In Service Date:	30-Jun-25
Total Cost	\$ 15,793,930			

## Capital Improvement Program - Project Summary

**Project:** Trans Main Cathodic Protection

**Project Number:** 003026

**Strategy:** Maintaining Infrastructure

**Program:** Corrosion

**Justification:**

Transmission mains and large diameter pipelines constitute the District's costliest pipelines. Many cathodic protection systems have reached the end of their useful life and need rehabilitation to continue to control pipeline corrosion and prevent leaks and breaks.

**Description:**

This project will investigate and prioritize cathodic protection (CP) upgrades for transmission mains and large diameter pipelines, and reconfigure existing, but obsolete CP systems. In FY18-22, the CP systems on the Upper San Leandro Raw Water Pipeline and South 30 Aqueduct will be replaced, and replacement of galvanic anodes on a District-wide basis will commence on plastic-coated steel transmission mains.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Transmission Mains Cathodic Pr	2,021,000	3,326,000	5,589,000	10,936,000

Appropriations:			
Prior Years	\$ 2,551,000	Lead Dept:	ENG
2018	\$ 115,000	Recurring:	No
2019	\$ 768,000	Funding:	BOND/REV 100%
2020	\$ 791,000		
2021	\$ 814,000		
2022	\$ 838,000		
Future Years	\$ 5,589,000		
Total Cost	\$ 11,466,000	In Service Date:	30-Jun-30



### Capital Improvement Program - Project Summary

**Project:** Treatment Plant Upgrades

**Project Number:** 000437

**Strategy:** Water Quality

**Program:** Water Treatment Upgrade

**Justification:**

The project is needed to comply with water quality regulations and to improve the operation, reliability and safety of the water treatment plants.

**Description:**

Work completed in FY16-17 included reviving the San Pablo Water Treatment Plant (WTP) to support drought operations, and renovating and upgrading the Orinda WTP to improve treatment plant reliability and maintainability. In FY18-22, work is planned at five water treatment plants, including: (1) at the Orinda WTP filter renovation, sodium hypochlorite system replacement, and adding a filter air scour system; (2) at the Upper San Leandro (USL) WTP renovating the solids removal, backwash water reclamation, and solids handling systems; (3) at the Sobrante WTP new wash water reclamation and solids handling systems, and installing an oxygenation/mixing system in the San Pablo Reservoir to improve water quality; (4) at the Walnut Creek WTP rehabilitating the old filters, improving the solids handling, and designing a new pretreatment system; and (5) at Lafayette WTP conducting interim safety and reliability upgrades. Additional work in FY18-22 includes improving the chemical system safety at five WTPs and upgrading the controls systems at USL and Sobrante WTPs.

Planned work in FY23-27 includes completion of Phase I of the Walnut Creek WTP pretreatment system construction, and design of Phase II of the pretreatment system.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Walnut Creek WTP	1,650,000	46,200,000	33,500,000	81,350,000
Orinda WTP	45,339,000	3,000,000	0	48,339,000
WTP Work - Multiple Locations	6,052,102	36,561,000	3,500,000	46,113,102
Sobrante WTP	6,155,000	33,060,000	0	39,215,000
USL WTP	3,661,100	17,300,000	0	20,961,100
Lafayette WTP	3,903,000	1,141,000	2,000,000	7,044,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 98,584,957	Recurring: No	
2018	\$ 51,962,000	Funding: BOND/REV 100%	
2019	\$ 82,300,000		
2020	\$ 3,000,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 39,000,000	In Service Date: 30-Jun-31	
<b>Total Cost</b>	<b>\$ 274,846,957</b>		

### Capital Improvement Program - Project Summary

**Project:** Trench Spoils Disposal Sites

**Project Number:** 000652

**Strategy:** Regulatory Compliance

**Program:** Trench Spoils

**Justification:**

The project is needed to ensure that adequate storage capacity is maintained at the District's trench spoils disposal sites, and operations continue to comply with regulatory requirements.

**Description:**

The District continually generates trench spoils material from ongoing pipeline installation and maintenance repairs. The excavated trench spoils are temporarily stockpiled for future reuse or final disposal at three District-owned disposal sites: Miller Road in Castro Valley, Briones in Orinda and Amador in San Ramon.

The project includes periodic removal of trench spoils material, site management and maintenance in accordance with regulatory requirements, and evaluation of potential spoils reduction and disposal alternatives. Work in FY16-17 included management of the trench spoils sites in compliance with stormwater control regulations, preparation of a Master Plan and off-haul of trench spoils at Miller Road.

In FY18-22, work includes implementation of the Master Plan and a 5-year update, ongoing management of the trench spoils sites, and off-haul of the Briones site in FY19-20. Trench spoils production is expected to increase as more pipe is installed in the future under the Pipeline Rebuild Program. Once off hauling of Briones and Miller Road is completed, the sites will be on a 5 -7 year cycle for off hauling of stored spoils.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Trench Spoils Management Prog	14,323,786	18,815,000	17,202,000	50,340,786

Appropriations:				
Prior Years	-	Lead Dept:	ENG	
2018	\$ 15,101,000	Recurring:	Yes	
2019	\$ 812,000	Funding:	BOND/REV	100%
2020	\$ 836,000			
2021	\$ 861,000			
2022	\$ 1,205,000			
Future Years	-			
Total Cost	-	In Service Date:	Recurring	

### Capital Improvement Program - Project Summary

**Project:** USL Pressure Zone Impr

**Project Number:** 2001462

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

This project is needed to improve monitoring, demand management and operational efficiency in the Upper San Leandro and Aqueduct Pressure Zones, and to improve water quality in El Portal Reservoir.

**Description:**

This project will install bi-directional distribution system flow monitors and pressure transducers at rate control stations to better control and operate the distribution system. Design and construction of two flow monitors in the Upper San Leandro Pressure Zone is scheduled for completion by FY21.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Distribution System Monitors	429,000	300,000	0	729,000

Appropriations:			
Prior Years	\$ 672,000	Lead Dept:	ENG
2018	\$ 50,000	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 250,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 972,000	In Service Date:	30-Jun-21

## Capital Improvement Program - Project Summary

**Project:** WTTIP Distribution Improvs

**Project Number:** 2003498

**Strategy:** Extensions and Improvements

**Program:** Water Trmt and Trans Impr

**Justification:**

The project is needed to improve the distribution system by addressing existing and future system capacity and demand deficiencies in the Lamorinda and western Walnut Creek area. In addition, the Moraga and Fay Hill open cut reservoirs need replacement due to infrastructure age, operational reliability, and concerns about the reservoir lining materials.

**Description:**

In FY16-17, design of the Happy Valley Pumping Plant (PP) in Orinda and the Sunnyside PP in Lafayette was initiated.

This project includes the following distribution system improvements in Lafayette, Orinda, Moraga and western Walnut Creek: (1) 3,900 feet of 16-inch suction/discharge pipeline and a new 3.2 million gallon per day (MGD) Happy Valley PP, along with a new 1.5 MGD Sunnyside PP in FY20-21; (2) replacement of the 1.6 MGD Fay Hill PP with a 2.6 MGD pumping plant and replacement of 500 feet of 12-inch pipeline in Rheem Boulevard in Moraga in FY19-21; and (3) a new 2.0 million gallon (MG) Ardith Reservoir and a replacement 1.3 MGD Donald PP in Orinda in FY21-22.

The project also includes: (1) 1,525 feet of 12-inch pipeline in Glen Road and Nordstrom Lane in Lafayette in FY20, which allows for the decommission of Glen Reservoir in FY21; (2) construction of 21,600 of 20-inch pipeline in St. Mary's Road/Rohrer Drive in FY24-25; and (3) a 3.0 MGD Withers PP in Lafayette in FY27-28.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Moraga Reservoir	200,000	0	20,596,000	20,796,000
St. Mary's/Rohrer Dr. Pipeline	100,000	16,965,700	0	17,065,700
Happy Valley/Sunnyside PP & PL	16,175,547	0	0	16,175,547
Ardith Reservoir/Donald PP	9,073,525	1,303,085	0	10,376,610
Withers Pumping Plant	455,000	0	7,281,000	7,736,000
Fay Hill Pumping Plant Upgrade	2,436,712	3,063,288	0	5,500,000
Glen Pipeline & Res Decommiss	914,000	218,050	0	1,132,050
Fay Hill Pipeline	304,000	24,350	0	328,350

Appropriations:				
Prior Years	\$ 36,186,290	Lead Dept:	ENG	
2018	\$ 3,305,688	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	30%
2020	\$ 1,303,085		SCC	70%
2021	\$ 16,965,700			
2022	\$ 0			
Future Years	\$ 33,288,292	In Service Date:	30-Jun-37	
Total Cost	\$ 91,049,055			

## Capital Improvement Program - Project Summary

**Project:** WTTIP WTP Improvements

**Project Number:** 2003499

**Strategy:** Extensions and Improvements

**Program:** Water Trmt and Trans Impr

**Justification:**

The project is needed to meet existing and future water demands in the Lamorinda and western Walnut Creek area, to meet future water quality standards when treating a diversified water supply, to comply with environmental permit conditions, and to replace and upgrade aging infrastructure.

**Description:**

This project includes upgrades at the Water Treatment Plants (WTPs). Planning and design was completed in FY17 on the Upper San Leandro WTP and Sobrante WTP for ozone upgrades which includes conversion of the existing air feed ozone generator to a liquid oxygen feed system. Construction commenced in FY17 and will be completed in FY19. Future work includes a Lafayette WTP Master Plan including environmental reviews which will determine the operational need for the Lafayette WTP in FY19-21.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Sobrante and USL WTPs Ozone	40,264,075	0	0	40,264,075
Lafayette WTP Master Plan	0	2,200,000	0	2,200,000

Appropriations:				
Prior Years	\$ 60,051,484	Lead Dept:	ENG	
2018	\$ 0	Recurring:	No	
2019	\$ 2,200,000	Funding:	BOND/REV	30%
2020	\$ 0		SCC	70%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 402,825,199		In Service Date:	30-Jun-34
Total Cost	\$ 465,076,683			

## Capital Improvement Program - Project Summary

**Project:** Water Demand Projection Update      **Project Number:** 2001472  
**Strategy:** Extensions and Improvements      **Program:** Pressure Zone Improvements

**Justification:**

Demand projections are required for long-term water supply projections, distribution system facility sizing, water supply assessments for large developments, updates to the Urban Water Management Plan and Water Supply Management Plan, and other planning needs such as facility outages.

**Description:**

This project updates District-wide water demand projections. A detailed update is completed approximately every 10 years, followed by a mid-cycle update five years later. The last detailed update, called the 2040 Demand Study, was completed in FY09 and the Mid-Cycle Update was completed in FY14. The next detailed update will be completed in FY19 and will project demands to 2050, while incorporating changes in city and county land use plans, estimating changes in water use within the service area, estimating the influence of climate change, and reflecting recent plans for water conservation and recycled water. A Mid-Cycle Update will be completed in FY24.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Demand Study Update	550,000	390,000	120,000	1,060,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 550,000	Recurring: No	
2018	\$ 390,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 120,000	In Service Date: 30-Jun-24	
<b>Total Cost</b>	<b>\$ 1,060,000</b>		

## Capital Improvement Program - Project Summary

**Project:** West of Hills Master Plan

**Project Number:** 2001475

**Strategy:** Extensions and Improvements

**Program:** Pressure Zone Improvements

**Justification:**

The project is needed to improve water transmission, pumping and treatment plant capacities to address existing deficiencies and meet future water demands in the West of Hills distribution system. In addition, the existing Fontaine PP in Oakland is located close the Hayward Fault and needs to be relocated.

**Description:**

The West of Hills (WOH) Master Plan is a comprehensive regional plan that addresses water treatment plant storage and transmission capacity for the west of hills area, focusing on the Central, Aqueduct, and Upper San Leandro Pressure Zones.

The WOH Master Plan recommended 23 individual projects including improvements at three water treatment plants; two pumping plants; five water storage reservoirs; and approximately 120,000 feet of transmission pipelines. The individual projects will be grouped together into several Environmental Impact Reports (EIRs) and Mitigated Negative Declarations (MNDs). In FY16-17, design of a portion of the WOH Northern Pipelines was initiated and property was purchased for the Fontaine Pumping Plant (PP).

The project groups include the Upper San Leandro WTP Supplemental EIR (SEIR) in FY18, Sobrante WTP SEIR in FY18-19, San Pablo WTP Master Plan and MND in FY18-20, Orinda WTP Master Plan and EIR in FY21-23, completion of Fontaine PP MND in FY18, WOH Southern Pipelines EIR in FY19-20, WOH Central Pipelines EIR in FY21-22, and Sobrante WTP Expansion Project and EIR in FY23-24.

FY18-24 also includes design and construction of the 42,150 feet of 36-inch and 48-inch pipeline and the new Fontaine PP, and the South 30 Pipeline improvements.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Sequoia Aq Pipeline Impr.	0	0	44,264,400	44,264,400
Central North Pipeline Impr.	0	37,272,000	0	37,272,000
No. & So. Wildcat Aq Pipe Impr	30,274,824	3,432,669	0	33,707,493
Relocate Fontaine PP	13,266,000	7,947,000	0	21,213,000
Wildcat Pumping Plant	0	0	18,436,000	18,436,000
West of Hills EIRs	7,588,430	4,694,000	2,381,350	14,663,780
South 30 Pipeline Impr.	0	14,502,000	0	14,502,000
Genoa Pipeline	0	8,687,000	0	8,687,000

Appropriations:		Lead Dept: ENG	
Prior Years	\$ 52,114,254	Recurring:	No
2018	\$ 3,586,669		
2019	\$ 37,272,000	Funding:	BOND/REV 100%
2020	\$ 14,502,000		
2021	\$ 4,540,000		
2022	\$ 16,634,000		
Future Years	\$ 390,481,150		
Total Cost	\$ 519,130,073	In Service Date: 30-Jun-37	

### Capital Improvement Program - Project Summary

**Project:** Contingency Project Water

**Project Number:** 001300

**Strategy:** Non-Program Specific

**Program:** Non-Program Specific

**Justification:**

This project is required to ensure quick response to unforeseen hazards and emergency situations. Rapid response is critical for maintaining regulatory compliance, public safety, employee safety or addressing other unanticipated essential needs.

**Description:**

This is an ongoing project to provide funding for unanticipated needs which arise before the next budget preparation cycle. Typical examples of such needs include replacement or repairs to facilities and equipment as a result of failures or safety deficiencies, and new projects or the acceleration of planned projects requiring funding before the next budget cycle.

This project also sets aside funds for various projects in the event that grant funding is received such as habitat enhancement and restoration, watershed fencing and trails, Bay Area Regional Desalination Project, water conservation projects, raw water improvements, and East Bayshore recycled water.

In FY19, funds have been set aside for possible costs related to the implementation of new computer systems.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Contingency Proj Water	3,429,111	22,000,000	0	25,429,111
FIS / MMIS Contingency FY18	0	4,500,000	0	4,500,000

Appropriations:			
Prior Years	\$ 39,700,111	Lead Dept:	FIN
2018	\$ 6,000,000	Recurring:	No
2019	\$ 8,500,000	Funding:	BOND/REV 100%
2020	\$ 4,000,000		
2021	\$ 4,000,000		
2022	\$ 4,000,000		
Future Years	\$ 0		
Total Cost	\$ 66,200,111	In Service Date:	30-Jun-22



### Capital Improvement Program - Project Summary

**Project:** Data & Telecom Infrastructure

**Project Number:** 000363

**Strategy:** Facilities, Servc and Equip

**Program:** Communications

**Justification:**

The District supports a myriad of disparate, older phone systems interconnected via a Centrex-Mate service offering. This project provides a single, geographically redundant and manageable telecommunications service to District staff.

**Description:**

This project upgrades the networking cables, equipment and telephony circuits at office locations outside of the Administration Building to implement a Voice over IP (VoIP) phone system.

Currently, the Administration Building, Pardee, Stockton, Mokelumne, and various departments at the Adeline Maintenance Center are utilizing VoIP phone technology. The VoIP phone system implementation requires the existing network cabling be brought up to specification, and the replacement of network switches, voice gateways and telephony circuits. The project is expected to be completed in FY20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Phone Infrastructure Upgrade	300,000	230,000	0	530,000

Appropriations:			
Prior Years	-	Lead Dept:	ISD
2018	\$ 50,000	Recurring:	Yes
2019	\$ 80,000	Funding:	BOND/REV 100%
2020	\$ 100,000		
2021	\$ 0		
2022	\$ 0		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** FIS Replacement

**Project Number:** 2003539

**Strategy:** Facilities, Servc and Equip

**Program:** Communications

**Justification:**

The Financial Information System is a PeopleSoft product that is no longer supported and is difficult to maintain. A replacement is required to ensure a long-term, reliable function of the system.

**Description:**

This project is a joint effort of the Finance, Information Systems, and user departments to replace the Financial Information System (FIS) and to reduce risks associated with vendor dependence. Evaluating and selecting a replacement alternative is scheduled for completion in FY18, followed by developing an implementation plan, selecting a vendor and implementing the new financial system. Accounts payable functionality is handled by the Materials Management Information System (MMIS), so the FIS replacement alternative will be evaluated along with the MMIS Replacement project to ensure such functionality is addressed. Implementation of the new system will take place in FY18-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Implementation	2,300,000	4,450,000	0	6,750,000
Evaluation Option Selection	200,000	525,965	0	725,965

Appropriations:		Lead Dept: ISD	
Prior Years	\$ 2,500,000	Recurring: No	
2018	\$ 525,965	Funding: BOND/REV 100%	
2019	\$ 1,850,000		
2020	\$ 2,600,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-20	
<b>Total Cost</b>	<b>\$ 7,475,965</b>		

## Capital Improvement Program - Project Summary

**Project:** HRIS Replacement

**Project Number:** 2003543

**Strategy:** Facilities, Servc and Equip

**Program:** Communications

**Justification:**

The PeopleSoft Human Resources Information System is reaching the end of its useful life, and support for the product is winding down. Loss of support would increase the risk of failure of the District's HR functions and make it difficult to implement required tax and regulatory updates.

**Description:**

This project is a joint effort of the Information Systems, Human Resources and user departments to replace the Human Resources Information System (HRIS), using the best of breed replacement approach which allows for selection and implementation of HRIS modules rather than the entire system in one effort. Documenting business rules, evaluating and selecting alternatives, developing an implementation plan, and preparing associated Requests for Proposals began in FY16. High level requirements for all modules began in FY17 and will facilitate sequencing of remaining system module replacement. Implementation of the new system modules will take place in FY18-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Implementation	2,000,000	4,600,000	0	6,600,000
Evaluation Option Selection	1,200,000	0	0	1,200,000

Appropriations:			
Prior Years	\$ 3,200,000	Lead Dept:	ISD
2018	\$ 1,000,000	Recurring:	No
2019	\$ 3,000,000	Funding:	BOND/REV 100%
2020	\$ 600,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 7,800,000	In Service Date:	30-Jun-20

### Capital Improvement Program - Project Summary

**Project:** MMIS Replacement

**Project Number:** 2003547

**Strategy:** Facilities, Servc and Equip

**Program:** Communications

**Justification:**

A new purchasing/accounting/inventory system will reduce the risk of system failure, reduce vendor dependence, and improve system integration with other District applications.

**Description:**

This project is a joint effort of the Information Systems, Purchasing, Accounting and Contract Equity Program Office to replace the Materials Management Information System (MMIS) with a new procurement and vendor management system. MMIS is a computer application written in a 25-year-old computer language and is supported by a one person consulting firm. There is no in-house staff skilled in the language and finding new staff with that knowledge is increasingly difficult. Accounts Payable functionality is handled in MMIS so the replacement alternative will be evaluated along with the Financial Information System Replacement project to ensure such functionality is addressed. The evaluation and selection of a replacement alternative is scheduled for FY18, with implementation of the new system expected in FY19-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Implementation	3,500,000	2,500,000	0	6,000,000

Appropriations:		Lead Dept: ISD	
Prior Years	\$ 4,000,000	Recurring: No	
2018	\$ 83,190	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 2,500,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-20	
<b>Total Cost</b>	<b>\$ 6,583,190</b>		

### Capital Improvement Program - Project Summary

**Project:** Work Mgmt Systems Replacement **Project Number:** 2009564

**Strategy:** Facilities, Servc and Equip **Program:** Communications

**Justification:**

The existing environment consists of multiple standalone applications that are written in outdated languages and provide overlapping functionality. This project consolidates the functionality into a single application that will minimize maintenance and improve the ability to leverage information between work groups to ensure a reliable system for field maintenance work.

**Description:**

This project is a joint effort of Information Systems, Operation Maintenance and user departments to replace the group of work management systems (WMS) which include the general work order system, concrete order system, paving order system and the asset and infrastructure management system. The District supports multiple WMS applications that are written in outdated software and difficult to maintain. Evaluating and selecting replacement alternatives is scheduled for FY18 followed by an implementation plan in FY19-22 which includes selecting a vendor and implementing new WMS.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Implementation	0	5,400,000	0	5,400,000
Evaluation Option Selection	200,000	0	0	200,000

Appropriations:		Lead Dept: ISD	
Prior Years	\$ 200,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 1,500,000		
2020	\$ 1,500,000		
2021	\$ 1,400,000		
2022	\$ 1,000,000		
Future Years	\$ 0	In Service Date: 30-Jun-22	
<b>Total Cost</b>	<b>\$ 5,600,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Meter Replacements

**Project Number:** 000738

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Appurtenances

**Justification:**

Meters need to be replaced periodically to accurately record water use and bill customers. Meter boxes need to be replaced periodically to eliminate tripping liability. New meter installation costs are included as part of the new service installation cost.

**Description:**

This is an ongoing project to replace water meters and meter boxes at the end of their useful life, and to replace meters that are believed to be reading inaccurately. In FY16, approximately 16,200 residential meters, 1,250 small commercial meters and 184 large commercial meters were replaced. An estimated total of 12,000 meters are expected to be replaced in FY17.

Also under this project, 2,250 meters that were difficult or dangerous to read were replaced in FY16-17 with automated electronic meters under a meter reading mitigation program.

In FY18-19, it is planned that 5,000 meters in each of the two years will be replaced with an integrated system of smart meters under the new Advanced Metering Infrastructure (AMI) pilot project for which the District has received a grant. The project also includes adding equipment to collect data from these automated meters.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Planned Meter Replacements	17,144,357	12,657,600	18,336,000	48,137,957
Advanced Metering Infra	0	2,935,800	0	2,935,800
AMI Collectors	0	1,000,000	0	1,000,000

Appropriations:				
Prior Years	-	Lead Dept: MCD Recurring: Yes		
2018	\$ 6,446,200			
2019	\$ 3,543,700	Funding: BOND/REV GRANTS	93%	
2020	\$ 2,125,900		7%	
2021	\$ 2,200,300			
2022	\$ 2,277,300			
Future Years	-		In Service Date: Recurring	
Total Cost	-			

### Capital Improvement Program - Project Summary

**Project:** Meter Test Facility

**Project Number:** 2003551

**Strategy:** Facilities, Servc and Equip

**Program:** Area Service Center/Bldg Prog

**Justification:**

The District's accelerated-wear testing capabilities need to be upgraded to allow for year round testing of meters of multiple sizes and flows up to 3". A new test facility and meter test bench will enable the District to more accurately test meters.

**Description:**

This project has two parts. The first involves building a new accelerated wear testing facility to meet the District's requirements for testing water meters up to 3". This involves construction of a remote site that provides year-round operational flows sufficient for testing multiple large meters.

The second aspect is to improve the Meter Shop's ability to test revenue meters for accuracy. This involves replacing the nearly 70 year old meter test bench at the Adeline Maintenance Center. The new bench will provide greater accuracy and efficiency in testing meters, and will result in water and labor savings. Construction of these facilities will be completed in FY18.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Meter Test Facility	750,000	0	0	750,000

Appropriations:			
Prior Years	\$ 750,000	Lead Dept:	MCD
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 750,000	In Service Date:	30-Jun-19

## Capital Improvement Program - Project Summary

**Project:** OP/NET System

**Project Number:** 000628

**Strategy:** Extensions and Improvements

**Program:** OP/NET

**Justification:**

The OP/NET System is necessary for the operation of the water system. The Remote Terminal Units (RTU) have reached the end of their useful life, and replacing and upgrading system components is necessary to maintain system reliability. The Supervisory Control and Data Acquisition (SCADA) system needs continuous upgrades to ensure its reliability and security.

**Description:**

This project consists of ongoing component upgrades and replacements for the OP/NET System to ensure that it reliably obtains water system information, and reports process data to system operators, engineers and planners. The OP/NET System includes the Security System, SCADA system at more than 20 locations, wired and wireless communication networks, monitoring and control equipment at over 300 facilities, and distributed control systems to provide operations staff with the ability to control and monitor water production, treatment, distribution, hydroelectric power generation, and field facilities.

In FY16-17, the entire SCADA system was upgraded with new software and hardware; high speed SCADA communication lines and industrial network routers were added; the wireless broadband communications network was expanded; and 60 RTUs were replaced. The Distributed Control Systems at Sobrante and Walnut Creek Water Treatment Plants were upgraded. In addition, a cyber security vulnerability assessment was performed on our Industrial Control System (ICS) that includes water control, building management control, centralized security, and wastewater control systems. The majority of the cyber security vulnerability mitigation recommendations were completed in FY17.

In FY18-22, upgrade of the SCADA system will continue, and deployment of additional communication and security equipment will take place to coincide with the RTU replacement project. Also, ICS cyber security vulnerability assessment recommendations will continue.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Op/Net Sys Improvements	8,272,000	6,915,000	1,475,000	16,662,000
Recurring Op/Net Improvements	4,911,600	2,070,600	6,392,000	13,374,200
Control System Improvements	1,312,600	1,924,200	2,344,100	5,580,900

Appropriations:			
Prior Years	-	Lead Dept:	MCD
2018	\$ 2,909,300	Recurring:	Yes
2019	\$ 2,711,800	Funding:	BOND/REV 100%
2020	\$ 3,108,300		
2021	\$ 1,123,100		
2022	\$ 1,057,300		
Future Years	-		
Total Cost	-	In Service Date:	Recurring



## Capital Improvement Program - Project Summary

**Project:** Pipeline Appurtenances

**Project Number:** 000218

**Strategy:** Maintaining Infrastructure

**Program:** Pipelines/Appurtenances

**Justification:**

Inoperable water main appurtenances can cause distribution system outages or extend the duration of system outages, adversely affecting customers. Replacement of these appurtenances improves system reliability. This project also includes corrective maintenance on the valves and appurtenances throughout the distribution system.

**Description:**

This is an ongoing project to replace distribution system isolation valves, blow-off assemblies, air valves and other appurtenances that have reached the end of their useful lives, or no longer meet current installation practices. The Large Valve Master Plan has identified a number of appurtenances that need to be upgraded to ensure system reliability.

A goal is to inspect and operate 10% of distribution valves annually. In FY15-16, 13 appurtenances, 107 small gate valves, and 20 large valves were replaced.

In FY15-16, 1,019 gate valve assemblies were upgraded which allow improved access during emergency and routine valve operations and are safer for workers to remove. This level of replacement has continued to increase due to increased funding within cities and counties for paving restoration and street reconstruction.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Annual Appurtenance Work	10,077,970	6,394,000	5,659,000	22,130,970

Appropriations:			
Prior Years	-	Lead Dept:	MCD
2018	\$ 1,367,000	Recurring:	Yes
2019	\$ 1,201,000	Funding:	BOND/REV 100%
2020	\$ 1,238,000		
2021	\$ 1,275,000		
2022	\$ 1,313,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

## Capital Improvement Program - Project Summary

**Project:** Small Capital Improvements

**Project Number:** 2006310

**Strategy:** Maintaining Infrastructure

**Program:** Pumping Plant Rehabilitation

**Justification:**

This project replaces critical electrical, mechanical, instrument, and structural components at distribution and treatment facilities that have reached the end of their useful life. Failure of the components can affect water service to customers, fire suppression capability, and water quality.

**Description:**

This project provides small, urgent capital improvements to pumping plants, reservoirs, regulators and rate control stations. There are 425 of these facilities, of which 135 have improvements scheduled in the Infrastructure Rehabilitation Plan (IRP). This project provides improvements to maintain the reliability and safety of the remaining facilities, as well as accelerated replacement of failed or unreliable components in some of the 135 facilities slated for eventual rehabilitation. Improvements at a facility will be smaller in scale than the typical project under the IRP.

Major projects completed in FY16-17 include the replacement of electrical equipment at Stott (Pinole), Sleepy Hollow (Orinda), Fontaine (Oakland) and Tewksbury (El Cerrito) Pumping Plants; replacement of the emergency generator at Lafayette Water Treatment Plant (WTP); repairs to the emergency generator at Walnut Creek WTP; and repair or replacement of motors at Summit West (Kensington), Road 24 No. 2 (Richmond), Strathmoor (Oakland), Fontaine (Oakland), Holly (Walnut Creek), and several other smaller pumping plants.

Planned projects for FY18-19 include replacement of electrical equipment at six pumping plants. Other projects include repair and replacement of motors, valves, piping, instrumentation, retaining walls and roofs at various pumping plants, water treatment plants, regulators, and rate control stations.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Small Capital Improvements	7,986,540	13,341,756	25,027,796	46,356,092
Portable Generator & Pump Repl	0	0	11,000,000	11,000,000

Appropriations:			
Prior Years	-	Lead Dept:	MCD
2018	\$ 2,019,566	Recurring:	Yes
2019	\$ 2,619,852	Funding:	BOND/REV 100%
2020	\$ 2,706,329		
2021	\$ 2,941,039		
2022	\$ 3,054,970		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** Veh & Hvy Equip Additions, Wtr

**Project Number:** 000528

**Strategy:** Facilities, Serc and Equip

**Program:** Vehicle/Equipment

**Justification:**

Providing staff with the necessary equipment enhances the District's ability to ensure field productivity, and result in reduced operating costs by limiting the need to rent equipment.

**Description:**

This is an ongoing project that involves the acquisition of additions to the fleet resulting from new positions that require a vehicle to perform necessary job responsibilities, or changing demands on the existing work force and redirection of priorities.

In FY18-19, the District will purchase the necessary equipment to outfit additional staff and decrease the reliance on fully manned and operated contracts. Additionally, new vacuum excavators and equipment to outfit two new large valve crews for leak detection are required to meet regulatory compliance and resource conservation goals.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Trucks and Heavy Eq Additions	13,519,500	7,637,000	0	21,156,500

Appropriations:			
Prior Years	-	Lead Dept:	MCD
2018	\$ 4,543,000	Recurring:	Yes
2019	\$ 3,094,000	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	-		
Total Cost	-		

### Capital Improvement Program - Project Summary

**Project:** Vehicle Replacements

**Project Number:** 000526

**Strategy:** Facilities, Servc and Equip

**Program:** Vehicle/Equipment

**Justification:**

The Vehicle Study indicates that the criteria for evaluating replacement needs provides the most cost-effective means of fleet management.

**Description:**

This is an ongoing project to replace vehicles and construction equipment. Under the replacement policy, all vehicles that meet or exceed specific thresholds of age, mileage or clock hours are systematically evaluated. A major consideration is the impact of equipment failure on crew and user productivity.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Fleet & Equip Repl/Purchases	84,748,635	21,245,457	3,135,170	109,129,262

Appropriations:			
Prior Years	-	Lead Dept:	MCD
2018	\$ 5,000,000	Recurring:	Yes
2019	\$ 5,000,000	Funding:	VRF100%
2020	\$ 5,000,000		
2021	\$ 3,370,734		
2022	\$ 2,874,723		
Future Years	-	In Service Date:	Recurring
Total Cost	-		

## Capital Improvement Program - Project Summary

**Project:** East Bay Watershed Rec Projs

**Project Number:** 000198

**Strategy:** Resource Management

**Program:** Watershed Recreation

**Justification:**

Public facilities need to be maintained; new facilities may need to be constructed; and health, safety and regulatory requirements need to be addressed in a planned and proactive manner to better serve the public and District staff.

**Description:**

In accordance with the East Bay Watershed Master Plan, Range and Fire plans, and local and state regulatory requirements, work includes upgrades and enhancements to watershed land, facilities and recreation areas.

In FY18-22, recreation projects at the San Pablo and Lafayette Recreation Areas will include picnic area, parking lot and trail staging area improvements; visitor center, cafe and retail upgrades; marina improvements; water and sewer system upgrades; and repaving of primary roadways.

Watershed projects will include trail staging area upgrades and paving; habitat and pond restoration; hazardous tree removal; replacement of old fire pumps; boundary fence upgrades and replacement; infrastructure upgrades at the Orinda Watershed Headquarters; and Division of Safety of Dams required upgrades at Upper San Leandro and San Pablo Reservoirs.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Lafayette Rec Infrastructure	3,460,000	1,275,000	0	4,735,000
San Pablo Rec Infrastructure	1,921,993	1,595,000	0	3,516,993
EB Public Safety/Reg/Wtr Qual	1,289,210	465,000	150,000	1,904,210
EB Range/Fire Mgmt Prog Upgrds	1,227,000	505,000	30,000	1,762,000
EB Facilities/Watershed Imprvs	437,500	636,000	0	1,073,500

Appropriations:			
Prior Years	\$ 10,667,202	Lead Dept:	NRD
2018	\$ 706,000	Recurring:	No
2019	\$ 1,110,000	Funding:	BOND/REV 100%
2020	\$ 770,000		
2021	\$ 980,000		
2022	\$ 910,000		
Future Years	\$ 180,000		
Total Cost	\$ 15,323,202	In Service Date:	30-Jun-24

## Capital Improvement Program - Project Summary

**Project:** F&W Projects and Mok Hatchery

**Project Number:** 1002592

**Strategy:** Resource Management

**Program:** Watershed Recreation

**Justification:**

This project is required to comply with agreements with regulatory agencies to maximize hatchery fish production, to implement measures to protect and enhance the natural (in-river) production of anadromous fish, and to implement habitat and species protection and enhancement measures required by the East Bay Habitat Conservation Plan (HCP).

**Description:**

This project includes the purchase and installation of equipment needed to maintain and operate the Mokelumne River Fish Hatchery (MRFH) to ensure compliance with the California Department of Fish and Wildlife operation agreement; and to meet the fisheries monitoring and assessment requirements in the Mokelumne River, additional Endangered Species Act listings, and proposed changes to Sacramento - San Joaquin Delta operations. The project also includes species and habitat protection and enhancement measures as required by the East Bay HCP.

FY18-22 planned work will downsize the existing freezer, expand the fish rearing space, and maintain the acoustic receiver array. Infrastructure options will be assessed to improve survival of Mokelumne origin salmon. California red-legged frog habitat enhancements, Alameda whipsnake monitoring and invasive species control will be implemented on the East Bay Watershed.

Future work plans include an instream flow study to support water rights, upgrades to MRFH to meet new regulatory requirements, and installation of a passive integrated transponder tag reader to support monitoring requirements.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mok River & Hatchery Equipment	1,389,198	150,000	150,000	1,689,198
Mok Rvr Riparian Habitat Rest	945,000	575,000	115,000	1,635,000
EB Habitat Conservation Plan	460,332	0	46,000	506,332
Hatchery Reform Measures	220,000	200,000	30,000	450,000
SL Creek Fisheries Mgmt Plan	0	250,000	30,000	280,000

Appropriations:			
Prior Years	\$ 3,771,332	Lead Dept:	NRD
2018	\$ 200,000	Recurring:	No
2019	\$ 190,000	Funding:	BOND/REV100%
2020	\$ 245,000		
2021	\$ 195,000		
2022	\$ 345,000		
Future Years	\$ 371,000		
Total Cost	\$ 5,317,332	In Service Date:	30-Jun-23

### Capital Improvement Program - Project Summary

**Project:** Mokelumne Watershed Rec HQ

**Project Number:** 000158

**Strategy:** Resource Management

**Program:** Watershed Recreation

**Justification:**

New fuel, warehouse and office facilities are needed due to the condition, size, and lack of critical office and crew facilities in the current headquarters.

**Description:**

This project replaces the Mokelumne headquarters that accommodates 22 staff. A new pre-engineered modular administration building with energy efficient and sustainable features was constructed in FY11. Supplemental cooling improvements and demolition of the old ranger building took place in FY14.

Phase 2 consists of a new fuel station, a back-up generator, construction of a modular warehouse/shop building, and vehicle access and circulation improvements. The back-up generator will be installed in FY18. Planning, design and construction of the warehouse/shop building and fuel station is planned for FY20-22.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mok Watershed HQ - Phase 2	1,048,500	1,695,000	0	2,743,500

Appropriations:				
Prior Years	\$ 4,159,500	Lead Dept:	NRD	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	100%
2020	\$ 1,695,000			
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 0			
Total Cost	\$ 5,854,500	In Service Date:	31-Jan-22	

### Capital Improvement Program - Project Summary

**Project:** Mokelumne Watershed Rec Projs      **Project Number:** 2008687

**Strategy:** Resource Management      **Program:** Watershed Recreation

**Justification:**

Planned improvements address public safety issues and regulatory requirements for the public and staff facilities in the Mokelumne Watershed.

**Description:**

In accordance with the Mokelumne Watershed Master Plan, Range and Fire plans, and local and state regulatory requirements, work includes upgrades and enhancements to watershed land, facilities and recreation areas.

In FY18-22, recreation projects include boat barrier protections at Pardee and Camanche Dams, cafe and retail upgrades, marina improvements and new docks, water system upgrades, and repaving of primary roadways.

Watershed projects include habitat restoration, hazardous tree removal, and boundary fence upgrade and replacement.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mokelumne Watershed Fencing	1,140,000	400,000	1,500,000	3,040,000
Moke Facilities/Infrastructure	1,155,301	325,000	0	1,480,301
Mok Public Safety/Reg/Wtr Qual	617,200	370,000	50,000	1,037,200

Appropriations:				
Prior Years	-	Lead Dept: NRD Recurring: Yes		
2018	\$ 270,000			
2019	\$ 200,000	Funding: BOND/REV 100%		
2020	\$ 225,000			
2021	\$ 200,000			
2022	\$ 200,000			
Future Years	-	In Service Date: Recurring		
Total Cost	-			



## Capital Improvement Program - Project Summary

**Project:** Pardee/Cam Rec Areas Impr Plan      **Project Number:** 2003500

**Strategy:** Resource Management      **Program:** Recreation Areas

**Justification:**

The Camanche and Pardee Recreation Areas are over 40 years old and require upgrades to the utilities, structures and traffic circulation for continued safe operations.

**Description:**

The Pardee and Camanche Recreation Area facilities require periodic upgrades and replacements. This project includes improvements to the roads, parking lots, fuel docks, launch ramps and docks, covered boat berths, stores, recreation halls, maintenance facilities, campgrounds, concession structures, and bathroom and shower buildings.

In FY16-17, work included the replacement of the Camanche North Shore floating marina and a total renovation of the Pardee seasonal RV park (water, wastewater, electrical, roads and landscaping). In addition, replacement of the exposed polystyrene flotation tubs with fully encapsulated tubs was completed for the Pardee floating marina.

In FY18-20, the Camanche South Shore above ground fuel tank will be downsized and replaced to better meet regulatory requirements, and the Camanche South Shore general store will be evaluated for replacement due to settling issues. Also, the piping and delivery equipment will be replaced between the fuel tanks and floating fuel dock at Camanche North Shore.

The Pardee Recreation Area coffee shop will be evaluated for replacement, and the restroom at Camanche South Shore Oaks Campground will be evaluated for renovation including the addition of shower facilities.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pardee Recreation Area	6,472,312	475,000	0	6,947,312
Camanche Recreation Area	2,406,000	800,000	0	3,206,000

Appropriations:			
Prior Years	\$ 8,929,000	Lead Dept:	NRD
2018	\$ 500,000	Recurring:	No
2019	\$ 775,000	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 10,204,000	In Service Date:	30-Jun-20

### Capital Improvement Program - Project Summary

**Project:** Pinole Valley Miti. Bank Plan

**Project Number:** 2003501

**Strategy:** Resource Management

**Program:** Watershed Recreation

**Justification:**

The Pinole Valley supports at least six State or Federally protected species. This District property has excellent potential for establishment of a mitigation bank that could generate revenue for other watershed conservation efforts.

**Description:**

The Pinole Valley Mitigation Bank Planning project will allow the District to develop the documentation needed to support a mitigation bank proposal through the formal approval process. A mitigation bank is a new approach to compensate for the environmental impacts of selected projects. Rather than replacing or providing substitute resources or environments on-site, those mitigations are funded by project sponsors and provided at another site.

The bank planning process will identify physical improvements in the Pinole watershed, located four miles east of Pinole and two miles north of San Pablo Reservoir, as well as monitoring and reporting requirements for the bank. Additional funding may be needed to complete improvements and to perform the required monitoring and reporting.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mitigation Bank Documentation	1,055,000	2,300,000	0	3,355,000

Appropriations:		Lead Dept: NRD	
Prior Years	\$ 1,055,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 2,300,000		
Future Years	\$ 0	In Service Date: 30-Jun-22	
<b>Total Cost</b>	<b>\$ 3,355,000</b>		

## Capital Improvement Program - Project Summary

**Project:** Diesel Engine Retrofit

**Project Number:** 1002588

**Strategy:** Facilities, Servc and Equip

**Program:** Vehicle/Equipment

**Justification:**

The California Air Resources Board establishes and enforces regulations for air emissions. Not being in compliance with established deadlines can result in fines and civil actions against the District.

**Description:**

This project will install Best Available Control Technology (BACT) on off-road, on-road, portable and stationary diesel engines to comply with air quality regulations.

In FY16-17, the District replaced 21 vehicles that were equipped with a level 1 diesel emissions control device in 2006 through a grant with the Bay Area Air Quality District. Four portable pumps and six portable generators were also replaced. The remaining two portable pumps have been deferred until FY19 for cost management. Additionally, in FY19 the final Tier 0 generator needs to be replaced when it becomes available from the manufacturer.

The District is in compliance with the Off-Road Diesel engine regulation through 2020 due to double credit for retrofitting off-road equipment before the first compliance date. All large spark ignition equipment has either been equipped with catalytic converters or confirmed as low usage equipment.

An additional eight portable pumps will need to be replaced or retired by 2020 to comply with the California Air Resources Board restrictions on Tier 1 and Tier 2 engines.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
On Road Diesel Engine Retrofit	10,180,000	300,000	0	10,480,000
Portable Pump & Generator Repl	3,353,000	3,300,000	0	6,653,000
OffRoad Diesel Engine Retrofit	350,000	0	0	350,000
Portable Equipment	200,000	0	0	200,000

Appropriations:			
Prior Years	\$ 14,228,000	Lead Dept:	OSD
2018	\$ 1,700,000	Recurring:	No
2019	\$ 1,900,000	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 17,828,000	In Service Date:	30-Jun-20

### Capital Improvement Program - Project Summary

**Project:** Fueling Facility Upgrades

**Project Number:** 1002589

**Strategy:** Facilities, Servc and Equip

**Program:** Vehicle/Equipment

**Justification:**

Upgrading the fuel facilities is required by current and proposed environmental regulations. Replacing the existing fuel dispensers ensures the District's fueling facilities will meet environmental regulations.

**Description:**

This project includes planning, design and construction to upgrade District fueling facilities. FY16-17 accomplishments include upgrading the automated fuel management system at thirteen sites to improve the District's ability to better track fuel usage and vehicle mileage, and replacing the fuel dispensers at five fueling sites. Improvements scheduled for FY18-19 include installing new fuel dispensers at six sites, and installing the Enhanced Vapor Recovery Phase II equipment for the above ground storage tanks.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Fuel Facility Improvements	3,515,000	0	0	3,515,000
Fuel Facility Major Upgrades	2,855,000	0	0	2,855,000

Appropriations:			
Prior Years	\$ 6,370,000	Lead Dept:	OSD
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 6,370,000	In Service Date:	30-Jun-19

### Capital Improvement Program - Project Summary

**Project:** Minor Facility Improvements

**Project Number:** 1002676

**Strategy:** Facilities, Servc and Equip

**Program:** Area Service Center/Bldg Prog

**Justification:**

Each year various relatively low-cost capital improvements and modifications to existing facilities are required. Most involve equipment or structural problems impacting facility integrity, or health and safety issues.

**Description:**

This project consists of low-cost capital improvements to existing facilities that do not require extensive planning or design, or justify a stand alone project. The project also includes cost sharing with Wastewater for Lab upgrades, improvements and equipment.

In FY18, projects will include removing loose insulation in ducts and fan rooms, conference room high definition displays, replacing all air handling units at shops, replacing the Lime Tower chiller, and replacing window film at the Administration Building (AB). In FY19, projects will include re-coating flooring on AB terraces, exterior painting, sealing garage floors, fire alarm repairs, and waterproofing planters.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Laboratory Upgrds-Waterside	777,500	6,322,900	0	7,100,400
Minor Facilities Work	2,237,149	1,193,540	800,000	4,230,689

Appropriations:			
Prior Years	-	Lead Dept: OSD Recurring: Yes	
2018	\$ 822,370		
2019	\$ 1,079,370	Funding: BOND/REV 100%	
2020	\$ 783,000		
2021	\$ 4,466,500		
2022	\$ 365,200		
Future Years	-	In Service Date: Recurring	
Total Cost	-		

## Capital Improvement Program - Project Summary

**Project:** Penn Mine Remediation

**Project Number:** 001337

**Strategy:** Regulatory Compliance

**Program:** Penn Mine

**Justification:**

Remediation work at Penn Mine landfill was required per a now-rescinded Environmental Protection Agency Order, and a settlement agreement with the State Water Resources Control Board. The Regional Water Quality Control Board (RWQCB) has directed the District to conduct an environmental assessment and remediation of the three mine tailing ponds.

**Description:**

This project includes the evaluation and implementation of long-term remedial solutions for two sites: former Penn Mine and Poison Lake.

The goal is to restore the Penn Mine site to pre-mining conditions. Recent accomplishments include bi-monthly leachate pumping and off haul, a downward trend in leachate production within the landfill in response to previous efforts to seal the liner and cap, groundwater monitoring and reporting to the State, and general site management. Planned activities for FY18-22 include continued leachate removal. If the leachate generation rate does not decrease significantly upon the return of normal rainfall patterns to California, additional investigations and landfill repairs may be necessary. A weir in an onsite stream will also be removed during FY18-22.

Recent accomplishments for Poison Lake include ongoing negotiations on a cost sharing agreement with the Bureau of Land Management for site stabilization efforts. RWQCB staff have been provided a tour of the site demonstrating the current favorable condition of the three tailings ponds. Planned activities for FY18-22 include implementation of site stabilization measures, post-remediation inspections, maintenance, and surface water monitoring.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Mine Tailing Ponds ESA	1,645,358	0	0	1,645,358

Appropriations:			
Prior Years	\$ 18,221,472	Lead Dept:	OSD
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	OAG100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
In Service Date:	30-Jun-22		
Total Cost	\$ 18,221,472		

Capital Improvement Program - Project Summary					
<b>Project:</b> Upcountry WW Trmt Imprvmts		<b>Project Number:</b> 1000816			
<b>Strategy:</b> Regulatory Compliance		<b>Program:</b> Remediation			
<b>Justification:</b> Improvements to the upcountry wastewater systems are needed to protect the environment from spills and overflows, and to maintain permit requirements issued by the California Regional Water Quality Control Board.					
<b>Description:</b> The Upcountry Wastewater Improvement Program includes multiple projects to upgrade the wastewater collection systems and the treatment and disposal systems serving Pardee Center (PACT), Pardee Recreation Area (PARA), Camanche North Shore (CANS) and Camanche South Shore (CASS) Recreation Areas. An Upcountry Utility Infrastructure Master Plan was completed in 2009 which recommended upgrading the existing collection facilities to meet new regulatory requirements.  FY16-17 accomplishments include construction of the sewer collection system improvements at PARA RV Park, construction of the force main at CANS Lift Station No. 1 to the treatment plant, and the purchase of a new Vactor-Jetter. FY18-22 priorities include design and construction of the sewer collection system improvements at CASS Mobile Home Park (Northern), CANS Mobile Home Park No. 2, CASS Cottages and CASS Monument RV Park.					
<b>Key Segments &amp; Appropriations</b>		<b>Prior Yrs</b>	<b>FY18-22</b>	<b>Future Yrs</b>	<b>Total</b>
Collection System Improvements		11,896,061	2,400,000	5,190,000	19,486,061
<b>Appropriations:</b>		<b>Lead Dept:</b> OSD <b>Recurring:</b> No			
Prior Years	\$ 23,953,000				
2018	\$ 0	<b>Funding:</b> BOND/REV 100%			
2019	\$ 0				
2020	\$ 0				
2021	\$ 1,140,000				
2022	\$ 1,260,000				
Future Years	\$ 5,190,000	<b>In Service Date:</b> 30-Jun-28			
<b>Total Cost</b>	<b>\$ 31,543,000</b>				

## Capital Improvement Program - Project Summary

**Project:** VA Security System Imprmts

**Project Number:** 1005899

**Strategy:** Facilities, Servc and Equip

**Program:** Security

**Justification:**

The District looks to maintain a level of security to provide a secure work place; a safe and reliable water supply and wastewater services; and to prevent or mitigate potential damage or loss of assets. Improvements are guided by the recent update to the Security Vulnerability Assessment.

**Description:**

This project includes planning, design, and construction of critical security improvements recommended in the Security Vulnerability Assessment. FY16-17 accomplishments included completion of the Cyber and Physical Security Vulnerability Assessments, the installation of new security improvements at South Yard (San Lorenzo) and miscellaneous security improvements to various facilities.

Work in FY18-22 includes security improvements for six water treatment plants; Pardee and Camanche Area Control Centers and Powerhouse Warehouses; key pumping plants, reservoirs and distribution facilities; Castenada (San Ramon) and South Yards; and miscellaneous security improvements to various facilities as needed to address regulatory requirements and personnel safety concerns. Future work includes security improvements at the aqueduct facilities.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Distribution Facilities	2,508,500	5,565,000	14,000,000	22,073,500
Admin Yard Facilities	14,694,500	0	3,250,000	17,944,500
Water Treatment Facilities	6,966,200	4,000,000	875,000	11,841,200
Aqueduct Watershed Facilities	230,000	450,000	4,000,000	4,680,000
Upcountry Facilities	1,032,600	0	0	1,032,600

Appropriations:			
Prior Years	\$ 25,431,800	Lead Dept:	OSD
2018	\$ 0	Recurring:	No
2019	\$ 1,265,000	Funding:	BOND/REV 100%
2020	\$ 2,050,000		
2021	\$ 6,600,000		
2022	\$ 100,000		
Future Years	\$ 22,125,000		
Total Cost	\$ 57,571,800	In Service Date:	30-Jun-28



## Capital Improvement Program - Project Summary

**Project:** 3rd St Sewer Interceptor Rehab

**Project Number:** 2003554

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Interceptor concrete pipelines and structures experience sulfide-related corrosion over time. Rehabilitation of the corroded concrete in the aging, over 60-year-old interceptor system is needed to prevent further deterioration and potential collapse. A collapsed pipeline would create a public health risk and would be costly to replace.

**Description:**

This project includes rehabilitation of a 105" diameter segment of the South Interceptor along 3rd Street, as well as the structural rehabilitation of 14 manholes and 7 pipe reaches totaling approximately 11,000 linear feet. Cleaning and closed circuit television inspection work will be conducted as part of the rehabilitation effort. The need for rehabilitation of this segment was identified in the 2008 Interceptor Master Plan Update. The work is scheduled to take place in four phases between FY17 and FY26.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
3rd St Sewer Intrcpt Rehab Ph2	20,000,000	5,622,000	0	25,622,000
Embarcadero Sewer Intcpt Rbh	0	477,000	12,373,000	12,850,000
3rd St Sewer Interceptor Rehab	8,265,667	0	0	8,265,667
Special Structures Sewer Rehab	0	6,910,000	0	6,910,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 28,265,667	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 6,572,000		
2020	\$ 0		
2021	\$ 0		
2022	\$ 6,437,000		
Future Years	\$ 12,373,000	In Service Date: 31-Dec-26	
<b>Total Cost</b>	<b>\$ 53,647,667</b>		

Capital Improvement Program - Project Summary									
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<b>Project:</b> Centrifuge Replacement	<b>Project Number:</b> 000989
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<b>Project:</b> Centrifuge Replacement	<b>Project Number:</b> 000989
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<b>Strategy:</b> Maintaining Infrastructure	<b>Program:</b>	WW Infrastructure Program
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<b>Strategy:</b> Maintaining Infrastructure	<b>Program:</b>	WW Infrastructure Program
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**Justification:**

Periodic replacement of the centrifuges with state-of-the-art equipment is necessary to maintain a reliable, cost-effective solids handling process.

<b>Description:</b>
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This project provides for the cyclic replacement of the four centrifuges for dewatering at the Main Wastewater Treatment Plant. The first centrifuge has been replaced. Two additional centrifuges are planned to be replaced in FY24-27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Centrifuge Replacement - Ph 2	0	0	11,727,000	11,727,000
Centrifuge Replacement - Ph 3	0	0	5,464,000	5,464,000

<b>Appropriations:</b>		<b>Lead Dept:</b> WAS	
Prior Years	\$ 22,402,832		
2018	\$ 0	<b>Recurring:</b> No	
2019	\$ 0		
2020	\$ 0	<b>Funding:</b> BOND/REV 100%	
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 17,191,000		
<b>Total Cost</b>	<b>\$ 39,593,832</b>	<b>In Service Date:</b> 30-Jun-27	

### Capital Improvement Program - Project Summary

**Project:** Collection System Master Plan

**Project Number:** 2006691

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Master planning for the collection system is required to identify and prioritize infrastructure renewal projects to maintain reliable operation of the wet weather facilities, pump stations, gravity interceptors, and force mains.

**Description:**

This project includes master plans for wastewater interceptors, pump stations and wet weather facilities. Master planning activities include evaluating the condition of existing infrastructure, identifying future needs, and developing a prioritized rehabilitation and replacement schedule. This work will build on recent inspections and asset management activities. In FY20, an update to the Interceptor Master Plan will be completed.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Interceptor Master Plan Update	0	200,000	0	200,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 0	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 200,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-20	
<b>Total Cost</b>	<b>\$ 200,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Concrete Rehab at SD1

**Project Number:** 000969

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Concrete rehabilitation must be completed to prevent degradation of structures to the point where the steel reinforcement bars are exposed, replacement costs increase significantly, and/or treatment processes are disrupted.

**Description:**

This project includes design and construction for rehabilitating critical concrete hydraulic structures, channels and gates at the Main Wastewater Treatment Plant, including the primary sedimentation basins and channels, secondary aeration reactor basins, grit channels, and the plant effluent channel. Sulfides and other constituents in the wastewater have accelerated corrosion of the concrete in these aging facilities.

Repair of the Primary Tank Channels is being conducted in six phases, with the third phase completed in FY17. Phases 4 through 6 are scheduled to take place from FY17 through FY21. Repair of the secondary aeration reactor basins will be completed in four phases, including the repair of two tanks per year beginning in FY18. The final phase will be completed in FY25. Inspection of the secondary clarifiers is scheduled for FY21-22.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Repair Prim Tank Channels Ph 5	0	9,225,000	0	9,225,000
Repair Prim Tank Channels Ph 4	5,174,000	0	0	5,174,000
Repair Reactor Basin Conc Ph 4	0	0	3,215,000	3,215,000
Repair Reactor Basin Conc Ph 3	0	160,000	2,925,000	3,085,000
Repair Reactor Basin Conc Ph 2	0	1,495,000	1,580,000	3,075,000
Repair Reactor Basin Conc Ph1	950,000	1,759,000	0	2,709,000
Repair Prim Tank Channels Ph 6	0	1,950,000	0	1,950,000
IPS Infl & Effl Channel Assess	200,000	0	0	200,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 24,812,838	Recurring: No	
2018	\$ 9,225,000	Funding: BOND/REV 100%	
2019	\$ 1,989,000		
2020	\$ 1,720,000		
2021	\$ 595,000		
2022	\$ 1,210,000		
Future Years	\$ 7,720,000	In Service Date: 31-Dec-25	
Total Cost	\$ 47,271,838		

### Capital Improvement Program - Project Summary

**Project:** Contingency Project Wastewater

**Project Number:** 000477

**Strategy:** Non-Program Specific

**Program:** WW Non-Program Specific

**Justification:**

This project is required to ensure timely response to unanticipated critical work, and specific projects that are contingent upon the receipt of grants or other outside funding. Rapid response is critical for maintaining regulatory compliance, public safety, employee safety or addressing other unanticipated essential needs.

**Description:**

An ongoing project to provide funding for unanticipated needs that arise before the next budget preparation cycle. Typical examples of such needs include replacement or repairs to facilities and equipment as a result of failures or safety deficiencies, new projects, or the acceleration of planned projects requiring funding before the next budget cycle. Funds are also set aside for projects where grants are being sought in the event that the grant application is successful and funding is received.

In FY20, funds have been set aside for possible costs related to expansion of the food waste receiving station, or construction of a new preprocessing food waste facility at the Main Wastewater Treatment Plant.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Contingency Proj WW	7,367,000	0	0	7,367,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 18,719,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 3,300,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-20	
<b>Total Cost</b>	<b>\$ 22,019,000</b>		

### Capital Improvement Program - Project Summary

**Project:** DCS Upgrades

**Project Number:** 1005995

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

DCS input/output (I/O) racks require periodic replacement in order to maintain reliable operations and reduce long-term maintenance costs.

**Description:**

This project will replace the Ovation control system including operator and engineering work stations, servers, network equipment and associated software. This work will bring the Distributed Control System (DCS) up to current standards. Regular replacement will take place every four to five years, with the next cycle of replacement scheduled for FY23-FY24.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
DCS Console Replacement - Ph 3	0	0	3,000,000	3,000,000

Appropriations:			
Prior Years	\$ 9,402,263	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 3,000,000		
Total Cost	\$ 12,402,263		

### Capital Improvement Program - Project Summary

**Project:** Dechlorination Facility Impmts

**Project Number:** 1000800

**Strategy:** Regulatory Compliance

**Program:** WW Regulatory Compliance

**Justification:**

Upgrades to the dechlorination facilities are required to ensure performance and continuous dechlorination of effluent prior to discharge to San Francisco Bay.

**Description:**

This project includes a variety of improvements to the dechlorination facilities, including automating the dechlorination process; relocating the sampling and Sodium Bisulfite System (SBS); installing a new SBS injection/mixing system in the outfall pipeline; replacing the existing SBS storage tanks; and installing plant effluent metering to allow for automatic dechlorination control. The work is being completed in three phases.

Phase 2B work began in FY17 and includes seismic upgrades to the Injector Building and minor modification of the Distributed Control System controls for greater reliability. Phase 3 includes automation of the dechlorination process and replacement of the SBS storage tanks and is scheduled to take place in FY21-23.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Dechlorination Facility Impr	3,382,500	0	575,000	3,957,500
Navy Pipeline Modifications	0	705,000	0	705,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 3,651,500	Recurring: No	
2018	\$ 705,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 575,000	In Service Date: 31-Dec-23	
<b>Total Cost</b>	<b>\$ 4,931,500</b>		

## Capital Improvement Program - Project Summary

**Project:** Digester Upgrade

**Project Number:** 000987

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Loss of digesters due to corrosion of covers would adversely impact operations at the Main Wastewater Treatment Plant, and inadequate mixing and heating can affect the District's ability to provide adequate sludge treatment for compliance with EPA regulations.

**Description:**

This project includes four phases to rehabilitate eleven digesters with new fixed covers and upgraded mixing. The second phase, rehabilitating four additional digesters was completed in FY15.

The third phase includes seismic upgrades for the three second-stage digesters and replacing the floating covers with new dual-membrane covers. Design is scheduled for FY18-19 and construction is scheduled for FY20-22. Phase 4 includes the addition of external pump mixing for the second-stage digesters, replacing the digester control building roof, and electrical upgrades. Design for the fourth phase is scheduled to begin in FY22 and construction is scheduled to begin in FY23.

This project also includes coating inspections and rehabilitation. In FY17, inspections of two digesters were completed and repairs will be completed in FY18. In FY19 and FY21, additional digester coating inspections are scheduled.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Digester Upgrades Ph 3	8,695,000	5,714,000	0	14,409,000
Digester Coating Insp & Rehab	600,000	5,425,000	0	6,025,000
Digester Upgrades Ph 4	0	500,000	3,800,000	4,300,000
Digester Cleaning Facility	2,250,000	0	703,000	2,953,000
Blend Tank Odor Ctrl Upgrade	0	800,000	0	800,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 113,067,163	Recurring: No	
2018	\$ 6,025,000	Funding: BOND/REV 100%	
2019	\$ 5,714,000		
2020	\$ 0		
2021	\$ 200,000		
2022	\$ 500,000		
Future Years	\$ 4,503,000	In Service Date: 31-Dec-24	
<b>Total Cost</b>	<b>\$ 130,009,163</b>		



### Capital Improvement Program - Project Summary

**Project:** Infiltration/Inflow Contrl Prj

**Project Number:** 000570

**Strategy:** Regulatory Compliance

**Program:** WW Regulatory Compliance

**Justification:**

This project is required to comply with conditions of the District's wet weather facility NPDES permits and the Wet Weather Consent Decree (effective September 2014).

**Description:**

This project includes work required by the National Pollutant Discharge Elimination System (NPDES) permit and the Wet Weather Consent Decree (CD). Ongoing funding is required for the continued implementation of the regional private sewer lateral ordinance, continued flow modeling, and reporting. Construction of the Urban Runoff Diversion Project to divert dry weather urban runoff flows from the stormwater system to the Main Wastewater Treatment Plant (MWWTP) was substantially completed in FY17.

This project also includes several components to allow the District to more efficiently operate the interceptor system and pump stations to reduce wet weather facility discharges. An engineering study to evaluate the potential application of Real Time Control systems to improve overall integration and operation of the interceptor system, wet weather facilities, and MWWTP influent pump station and wet weather storage basins will take place in FY19.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Infiltration/Inflow Program	11,696,000	414,000	3,325,000	15,435,000
Wet Weather Real Time Control	250,000	8,000	0	258,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 26,534,913	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 8,000		
2020	\$ 44,000		
2021	\$ 185,000		
2022	\$ 185,000		
Future Years	\$ 3,325,000	In Service Date: 31-Dec-32	
<b>Total Cost</b>	<b>\$ 30,281,913</b>		

### Capital Improvement Program - Project Summary

**Project:** Information System Upgrades

**Project Number:** 003057

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Software enhancements and applications development provide operational efficiencies and improved regulatory compliance monitoring and reporting. Hardware replacement is necessary to ensure the reliability, performance, and security of the information systems.

**Description:**

This project covers development and upgrades to wastewater-specific information systems. It includes the design and implementation of a replacement for the Laboratory Information Management System in FY18-20. This project also includes server contracts and hardware/software upgrades.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
LIMS Replacement Project	0	2,725,000	0	2,725,000
WW Applications Development	740,641	0	0	740,641
WEB Server Upgrades	145,000	0	17,000	162,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 2,210,000	Recurring: No	
2018	\$ 225,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 2,500,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 17,000	In Service Date: 31-Dec-24	
<b>Total Cost</b>	<b>\$ 4,952,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Interceptor Corrosion Prevent

**Project Number:** 2005283

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Recent inspection of portions of the interceptor system identified additional areas with severe corrosion. Cathodic protection, corrosion prevention, condition assessments, and asset management are essential elements in maintaining the integrity of the interceptor system.

**Description:**

This project provides for cathodic protection and corrosion prevention in the interceptor system. In FY14, staff conducted an evaluation of potential methods for corrosion prevention in the interceptor system and recommended various improvements to repair and rehabilitate the cathodic protection system scheduled for FY19-20. Staff also completed a force main condition assessment, which resulted in recommended improvements for implementation in FY16-19. Additional inspections are scheduled for FY23-25. The project also includes periodic inspection of the interceptors and force mains, and ongoing work to raise buried manholes to grade and locate missing manholes.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Intrcept & Forcemn Cond Assess	4,099,999	0	151,000	4,250,999
Interceptor Pipe and MH Inspec	0	0	2,336,000	2,336,000
Cathodic Protection Project	1,020,000	379,000	0	1,399,000
Intercept Corrosion Prevention	800,000	0	0	800,000
Remote Fac Locate & MH Raising	317,000	145,000	175,000	637,000
PS M FM Access Improvements	0	455,000	0	455,000
Force Main Access Improvements	0	366,000	0	366,000
Force Main Valve and Appur	0	304,000	0	304,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 7,786,543	Recurring: No	
2018	\$ 1,150,000	Funding: BOND/REV 100%	
2019	\$ 409,000		
2020	\$ 30,000		
2021	\$ 30,000		
2022	\$ 30,000		
Future Years	\$ 2,662,000	In Service Date: 31-Dec-27	
<b>Total Cost</b>	<b>\$ 12,097,543</b>		

### Capital Improvement Program - Project Summary

**Project:** MWWTP Master Plan

**Project Number:** 000601

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Land use planning and management are necessary to ensure efficient use and regulatory compliance for the MWWTP and West End property.

**Description:**

The Main Wastewater Treatment Plant (MWWTP) Master Plan includes long-term planning and managing the West End Property.

A land use master plan and Environmental Impact Report for the MWWTP and West End property was previously completed. Preparation of a wastewater treatment system master plan and an odor control master plan are scheduled for completion in FY19. The project also includes the ongoing remediation of the West End property, including sampling and reporting required under the Consent Agreement with the California Department of Toxic Substances Control.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
OAB Purch Environ Remediation	2,025,000	0	0	2,025,000
Master Land Use/Facility Plan	1,585,000	0	0	1,585,000
WW Energy System Master Plan	600,000	0	0	600,000
Odor Control Master Plan Updat	0	550,000	0	550,000
WW Trmt System Master Plan	500,000	0	0	500,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 19,277,263	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 550,000		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 30-Jun-27	
<b>Total Cost</b>	<b>\$ 19,827,263</b>		

### Capital Improvement Program - Project Summary

**Project:** MWWTP Pwr Dist Sys Upgrade

**Project Number:** 000140

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Electrical reliability improvements are required to maintain the power supply to key facilities and quickly restore power following an outage. A prolonged power outage at the MWWTP would likely result in permit violations.

**Description:**

This project includes a number of tasks to increase the reliability of the power distribution system at the Main Wastewater Treatment Plant (MWWTP). Tasks in FY18-22 include arc flash protection, replacement of power meters, reconfiguration of the internal power distribution system for added redundancy, seismic improvements, and an electrical system master plan.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Seismic Retro Pwr Dist Sys	0	4,050,000	0	4,050,000
Split IPS & EPS Power Dist Sys	0	1,683,000	0	1,683,000
Arc Flash	510,000	252,000	300,000	1,062,000
DCS Connect Gravity Belt Thick	0	400,000	650,000	1,050,000
Electrical Master Plan	300,000	200,000	0	500,000
MWWTP Elctrcl Reliability Impr	0	275,000	0	275,000

Appropriations:			
Prior Years	\$ 13,568,737	Lead Dept:	WAS
2018	\$ 767,000	Recurring:	No
2019	\$ 1,263,000	Funding:	BOND/REV 100%
2020	\$ 4,110,000		
2021	\$ 260,000		
2022	\$ 460,000		
Future Years	\$ 950,000		
Total Cost	\$ 21,378,737	In Service Date:	30-Jun-27

### Capital Improvement Program - Project Summary

**Project:** Motor Control Center Repl

**Project Number:** 001004

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Replacement of MCCs nearing the end of their service life is required to ensure continued reliable operation of equipment at the Main Wastewater Treatment Plant.

**Description:**

This project provides for the cyclical replacement of all Motor Control Centers (MCC) that are at the end of their service life. This project provides for replacement of the MCCs at the Grit Dewatering Building, secondary reactor deck (oxygenation tank), and Aerated Grit. The most critical MCCs were replaced in FY16. Additional MCC replacement is scheduled for FY19 and FY23-24.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Main Plant MCC Replace - Ph 2	0	0	2,900,000	2,900,000
Main Plant MCC Replace - Ph 1	2,529,000	0	0	2,529,000

Appropriations:			
Prior Years	\$ 2,529,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 2,900,000		
Total Cost	\$ 5,429,000		

### Capital Improvement Program - Project Summary

**Project:** NPDES Compliance

**Project Number:** 000599

**Strategy:** Regulatory Compliance

**Program:** WW Regulatory Compliance

**Justification:**

The project is necessary to complete upgrades to reduce the risk of permit violations, including upgrades to ensure timely activation of the wet weather facilities to comply with the MWWTP NPDES permit.

**Description:**

This project consists of improvements necessary to meet the Main Wastewater Treatment Plant (MWWTP) National Pollutant Discharge Elimination System (NPDES) permit requirements. Work remaining under this project includes the installation of two new level monitoring stations in the South Interceptor, which is scheduled for FY18-19. Upgrades to secondary reactors are scheduled for FY21-25.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Reactors Stage 3 Aerator Conv	0	280,000	5,460,000	5,740,000
So Intercept Level Monitor Sta	730,500	49,000	0	779,500

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 8,594,234	Recurring: No	
2018	\$ 49,000	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 280,000		
2022	\$ 0		
Future Years	\$ 5,460,000	In Service Date: 31-Dec-25	
<b>Total Cost</b>	<b>\$ 14,383,234</b>		

### Capital Improvement Program - Project Summary

**Project:** North Interceptor Rehab

**Project Number:** 2009794

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Interceptor concrete pipelines and structures experience sulfide-related corrosion over time. Rehabilitation of the corroded concrete in the aging, over 60-year-old interceptor system is needed to prevent further deterioration and potential collapse. A collapsed pipeline would create a public health risk and would be costly to replace.

**Description:**

This project includes the rehabilitation of 450 linear feet of the 66-inch diameter North Interceptor and the rehabilitation of four manholes. The work was identified based on a condition assessment and is scheduled in FY24-25.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
North Interceptor Rehab	0	0	1,497,000	1,497,000

Appropriations:			
Prior Years	\$ 0	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 1,497,000		
Total Cost	\$ 1,497,000		



### Capital Improvement Program - Project Summary

**Project:** Nutrient Management

**Project Number:** 2011022

**Strategy:** Regulatory Compliance

**Program:** WW Regulatory Compliance

**Justification:**

The current nutrient watershed permit will expire in mid-2019. Future permits with more stringent requirements may require implementation of sidestream treatment to maintain compliance with the National Pollutant Discharge Elimination System (NPDES) permit.

**Description:**

Nutrient discharge to the San Francisco Bay continues to be a key area of concern for regulators. This project includes the development of strategic nutrient management solutions to meet the current and potential future regulatory requirements. A master plan will be conducted to identify and evaluate a range of cost-effective alternatives to achieve nutrient reductions for the Main Wastewater Treatment Plant that provide broad environmental and public health benefits. The work includes conducting one or more pilot-scale tests to evaluate promising sidestream nutrient treatment/recovery technologies. It also includes the implementation of sidestream treatment, if necessary in FY21-26, and mainstream treatment, if necessary in FY23-27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Nutrient Sidestream Treatment	0	15,300,000	55,000,000	70,300,000
Nutrient Mainstream Treatment	0	0	11,600,000	11,600,000

Appropriations:			
Prior Years	\$ 0	Lead Dept:	WAS
2018	\$ 5,300,000	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 10,000,000		
2022	\$ 0		
Future Years	\$ 66,600,000		
Total Cost	\$ 81,900,000	In Service Date:	31-Dec-27

### Capital Improvement Program - Project Summary

**Project:** Odor Control Improvements

**Project Number:** 000963

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Odor control projects reduce onsite and offsite odor impacts which results in reduced offsite odor complaints, improved community relationships, an improved work environment, and continued compliance with Bay Area Air Quality Management District requirements.

**Description:**

This project provides for the design and construction of odor control facilities in the collection system and at the Main Wastewater Treatment Plant. This project implements improvements that were identified and prioritized in the Odor Control Master Plan.

The replacement of the odor control units at the influent pump station will be completed in FY19, and a second phase will be initiated in FY23. Planning and design for the replacement of the system at the solids dewatering building will begin in FY20. Construction of the first phase of the primary sedimentation tank odor control system is scheduled to begin in FY19, with a second phase scheduled to begin in FY25. The scrubber system at the high-strength waste receiving station will be replaced in FY19-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Primary Sed Odor Control	3,852,000	5,511,000	10,344,000	19,707,000
IPS Odor Control Sys Impr	10,050,000	0	5,368,000	15,418,000
Odor Control Dewatering Bldg	2,850,000	1,469,000	1,618,000	5,937,000
R2 Facility Odor Ctrl Upgrade	0	2,774,000	0	2,774,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 21,844,966	Recurring: No	
2018	\$ 450,000	Funding: BOND/REV 100%	
2019	\$ 7,835,000		
2020	\$ 0		
2021	\$ 1,469,000		
2022	\$ 0		
Future Years	\$ 17,330,000	In Service Date: 31-Dec-27	
<b>Total Cost</b>	<b>\$ 48,928,966</b>		

### Capital Improvement Program - Project Summary

**Project:** Outfall Investigation Project

**Project Number:** 000985

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

The integrity of the effluent outfall is essential for compliance with the MWWTP NPDES permit.

**Description:**

The effluent outfall, which is over 60 years old, must be inspected periodically to identify corrosion and/or deterioration damage and plan for future rehabilitation. In addition, an inspection of the entire submerged portions was required by the Main Wastewater Treatment Plant (MWWTP) National Pollutant Discharge Elimination System (NPDES) permit, which was completed in 2015. This inspection generated baseline conditions for future Bay Bridge related projects that are expected in the next few years (e.g., bridge demolition, Gateway Park). Additional inspections are planned for FY20-21, and upgrades are scheduled to begin in FY23.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
MWWTP Outfall Upgrades	0	0	12,000,000	12,000,000
Outfall Investigation	1,089,000	43,000	0	1,132,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 1,089,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 43,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 12,000,000	In Service Date: 31-Dec-25	
<b>Total Cost</b>	<b>\$ 13,132,000</b>		

### Capital Improvement Program - Project Summary

**Project:** PGS Engine Overhaul

**Project Number:** 2001379

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

If the cogeneration engines are not operating or performing properly, an air permit violation may occur. In addition, an outage to the engines would require the District to both flare biogas and purchase power.

**Description:**

This project covers the recurring major rebuilds of the three cogeneration engines at the Power Generation Station (PGS). These engines utilize biogas to produce power and process heat for use at the Main Wastewater Treatment Plant. The current overhaul was started in FY17 and will be completed in FY18, and the next overhaul is scheduled for FY22-23.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
PGS Engine Overhaul	8,512,000	296,000	2,444,000	11,252,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 8,512,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 296,000		
Future Years	\$ 2,444,000	In Service Date: 31-Dec-28	
<b>Total Cost</b>	<b>\$ 11,252,000</b>		

## Capital Improvement Program - Project Summary

**Project:** PGS Expansion

**Project Number:** 2003556

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

The PGS expansion results in additional power production and revenue for the District; reduces flaring; provides additional process heat; increases electrical reliability at the MWWTP; and is consistent with the District's Energy and Sustainability Policies. The gas flare expansion provides sufficient flaring capacity and redundancy to prevent uncontrolled biogas releases.

**Description:**

This renewable energy project expanded the Power Generation Station (PGS) at the Main Wastewater Treatment Plant (MWWTP) from 6.5 to 11 megawatts when a new biogas-powered turbine was installed in FY12.

This project also includes work to improve reliability and replace aging gas piping and to add new flares in two phases. The first phase of the flare project was substantially completed in FY17, and the second phase is scheduled for FY25-27. In addition, the original four flares will be upgraded in FY18-20.

Reliability improvements to the PGS facility will be made in FY18-21 and include the installation of a radiator/cooling tower, replacement of the PGS gas piping, and miscellaneous programming and controls improvements.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Gas Flare Expansion	0	0	5,640,000	5,640,000
PGS Reliability Improv Ph 3	5,100,000	0	0	5,100,000
Upgrades to Original Flares	0	1,200,000	0	1,200,000

Appropriations:			
Prior Years	\$ 49,340,723	Lead Dept:	WAS
2018	\$ 230,000	Recurring:	No
2019	\$ 970,000	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 5,640,000		
Total Cost	\$ 56,180,723	In Service Date:	31-Dec-27

### Capital Improvement Program - Project Summary

**Project:** PS Q FM Dual-Mode Operation

**Project Number:** 2006716

**Strategy:** Regulatory Compliance

**Program:** WW Regulatory Compliance

**Justification:**

This project is required to comply with the Wet Weather Consent Decree (effective September 2014).

**Description:**

This project includes the design and construction of modifications to portions of the North Interceptor to allow dual-mode operation of Pump Station Q (PS Q) for use as either a gravity relief sewer (north to south flow) or a forcemain (south to north flow). Based on wet weather flow modeling work completed to date, discharges from the wet weather facilities may be reduced by operating the PS Q forcemain as a gravity sewer with relatively minor modifications. Construction began in FY17 and is expected to be completed in FY19.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
PS Q FM Dual-Mode Operation	8,504,000	0	0	8,504,000

Appropriations:			
Prior Years	\$ 8,504,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 8,504,000	In Service Date:	31-Dec-19

### Capital Improvement Program - Project Summary

**Project:** Plant Pipe Replacement

**Project Number:** 000959

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Regular replacement of piping systems is necessary to prevent failures that could require extended shutdowns and impact the District's ability to properly chlorinate wastewater and comply with the National Pollutant Discharge Elimination System permit requirements.

**Description:**

This project provides cyclical replacement of piping systems that are critical to the operation of the Main Wastewater Treatment Plant. The first phase, complete in FY17, includes repair or replacement of sodium hypochlorite distribution piping. The second phase will include replacement of sodium hypochlorite piping within the storage area and is scheduled for FY18-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
MWWTP Hypo Pipe Replace Ph 2	0	2,087,000	0	2,087,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 5,091,000	Recurring: No	
2018	\$ 316,000	Funding: BOND/REV 100%	
2019	\$ 1,771,000		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 31-Dec-20	
<b>Total Cost</b>	<b>\$ 7,178,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Procure Emerg Response Equipmt **Project Number:** 000392

**Strategy:** Maintaining Infrastructure **Program:** WW Infrastructure Program

**Justification:**

This project is necessary to provide emergency backup equipment to ensure employee safety, public health, and maintenance of critical operations following an emergency or disaster, such as a major earthquake. Emergency response equipment is required to maintain NPDES permit compliance during an emergency.

**Description:**

This is an ongoing project for the procurement of emergency response equipment including pumps, pipes, fittings, trailers, generators, traffic control equipment, communications equipment and storage containers for emergency pumping and bypassing of pump stations to ensure timely emergency response in a disaster.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Emergency Response Equipment	1,875,000	0	2,000	1,877,000

Appropriations:			
Prior Years	\$ 1,875,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 2,000		
Total Cost	\$ 1,877,000		



### Capital Improvement Program - Project Summary

**Project:** Pump Station A Improvements

**Project Number:** 2009792

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Pump rehabilitation is required to continue to provide reliable service. Improved access is needed for personnel safety.

**Description:**

This project includes mechanical and electrical upgrades to Pump Station A in Albany. The mechanical work includes the investigation of pump station hydraulics; refurbishing the ventilation system; replacing/repairing the influent isolation gate; and upgrading the sump and main pumps. The electrical and instrumentation work includes replacing equipment in the wet well and upgrading switches, alarms, and displays. Other work includes investigating the wet well concrete condition; improving site access conditions; and upgrading stairs to access below grade infrastructure. This work is scheduled for FY22-24.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pump Station A Improvements	1,929,000	0	1,060,000	2,989,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 1,929,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 1,060,000	In Service Date: 31-Dec-24	
<b>Total Cost</b>	<b>\$ 2,989,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Pump Station C Upgrades

**Project Number:** 1006000

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Existing dry weather pumps have no standby capacity, and inadequate ventilation can cause excessive equipment corrosion. Chemical flow monitoring is needed for effective monitoring. A wet well isolation gate is needed to take the wet well out of service.

**Description:**

This project increases the reliability of Pump Station C in Alameda by implementing improvements identified in the Pump Station Master Plan Update. Improvements include replacing the dry weather submersible pumps to double the capacity; improving ventilation in the dry weather wet well and chemical storage vault; and other upgrades to increase reliability and safety. This work is scheduled for FY21-23.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pump Station C Upgrades	1,864,000	0	1,531,000	3,395,000

Appropriations:			
Prior Years	\$ 1,864,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 1,531,000		
Total Cost	\$ 3,395,000		

### Capital Improvement Program - Project Summary

**Project:** Pump Station H Imprvmts

**Project Number:** 001352

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Pump Station H is the largest pump station and is critical to maintain in reliable operating condition. The pumps and drives require periodic rehabilitation in order to meet current standards and have available spare parts.

**Description:**

This project will increase the reliability of Pump Station H in Oakland by implementing improvements identified in the Pump Station Master Plan and a criticality assessment. The project will be implemented in two phases.

Phase 1 has been completed and replaced all of the mechanical, electrical, and instrumentation equipment that was no longer cost-effective to maintain or did not meet operational standards. Under Phase 2 the main pumps and discharge piping will be replaced. Design and construction of Phase 2 is scheduled for FY26-27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pump Station H Imprvmts Ph 2	0	0	2,474,000	2,474,000

Appropriations:			
Prior Years	\$ 6,134,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 2,474,000		
Total Cost	\$ 8,608,000		

### Capital Improvement Program - Project Summary

**Project:** Pump Station J Upgrades

**Project Number:** 1006001

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Pump rehabilitation is required to continue to provide reliable wet weather pumping capacity. System alarms and improved access are needed for personnel safety. Remote telemetry is needed for improved monitoring.

**Description:**

This project increases the reliability of Pump Station J in Oakland by implementing improvements identified in the Pump Station Master Plan Update. Improvements include ventilation fan replacement, access improvements, and adding Distributed Control System monitoring. Design and construction is planned for FY24-26.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pump Station J Improvements	0	0	4,237,000	4,237,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 0	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 4,237,000	In Service Date: 31-Dec-26	
<b>Total Cost</b>	<b>\$ 4,237,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Pump Station L Improvement

**Project Number:** 2005285

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

The equipment is reaching the end of its useful life and additional remote monitoring telemetry is needed to improve monitoring.

**Description:**

This project increases the reliability of Pump Station L in Oakland by implementing improvements identified in the Pump Station Master Plan Update. Improvements include replacement of all mechanical and electrical equipment. Implementation is scheduled for FY19-21.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pump Station L Imprv	1,490,000	1,137,000	0	2,627,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 1,490,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 0		
2020	\$ 1,137,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0	In Service Date: 31-Dec-21	
<b>Total Cost</b>	<b>\$ 2,627,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Pump Station M Imprvmts

**Project Number:** 001372

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Electrical equipment is located below grade and is susceptible to failure if flooded. Improved access is needed for personnel safety. Additional remote monitoring telemetry is needed to improve monitoring.

**Description:**

This project increases the reliability of Pump Station M in Alameda by implementing improvements identified in the Pump Station Master Plan Update. Improvements include replacement of electrical equipment, sump pumps and flow meter; the addition of a programmable logic controller and software; modification of below grade access; and the addition of a restroom. Construction of these improvements is scheduled to take place in FY18-20.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pump Station M Improvements	0	4,773,000	0	4,773,000

Appropriations:			
Prior Years	\$ 0	Lead Dept:	WAS
2018	\$ 674,000	Recurring:	No
2019	\$ 4,099,000	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 4,773,000	In Service Date:	31-Dec-20

### Capital Improvement Program - Project Summary

**Project:** Resource Recovery Project

**Project Number:** 1004872

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

This project will provide infrastructure for the acceptance of trucked waste that will continue to generate revenues through tipping fees and electricity sales from excess biogas.

**Description:**

The Resource Recovery (R2) program was developed to accept a wide variety of solid and liquid wastes delivered by truck to the Main Wastewater Treatment Plant. This project includes studies and capital improvements to support the program. Numerous improvements to the R2 facilities have already been implemented under this project.

Planned upgrades in FY18-20 include improvements to the existing Solid/Liquid Waste Receiving station and the new Blend Tank Receiving Station. These improvements will result in the ability to accept additional high-strength waste.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Blend Tank Rcv Station Upgrade	0	2,677,000	0	2,677,000
R2 S/L Waste Tanks Concrete	1,280,000	0	0	1,280,000
SLW Receiving Station Improve	1,250,000	0	0	1,250,000

Appropriations:			
Prior Years	\$ 32,886,587	Lead Dept:	WAS
2018	\$ 435,000	Recurring:	No
2019	\$ 2,242,000	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 35,563,587	In Service Date:	31-Dec-20

### Capital Improvement Program - Project Summary

**Project:** Routine Cap Equip Replacement

**Project Number:** 000943

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

The programmatic repair and replacement of equipment maximizes equipment availability to ensure continued permit compliance.

**Description:**

Work includes repair and replacement of equipment throughout the wastewater system such as valves, piping, electrical apparatus and systems, instrumentation components, and communications equipment. This includes repairs that extend the life of equipment.

Projects identified for FY18-22 include rebuilding numerous pumps, motors, and other equipment. In FY18-19, it also includes identification and prioritization of coating repairs for equipment at the Main Wastewater Treatment Plant, pump stations, and wet weather facilities; and the replacement of equipment at the laboratory.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Capital Equipment Replacement	25,642,249	9,927,000	11,500,000	47,069,249
Lab Equipment	2,562,023	60,000	0	2,622,023
Coating Rehab Project	0	1,500,000	0	1,500,000

Appropriations:			
Prior Years	-	Lead Dept:	WAS
2018	\$ 2,287,000	Recurring:	Yes
2019	\$ 2,300,000	Funding:	ERF100%
2020	\$ 2,300,000		
2021	\$ 2,300,000		
2022	\$ 2,300,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring



### Capital Improvement Program - Project Summary

**Project:** Scum System Improvements

**Project Number:** 2001375

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Ensure that scum and nocardia foam are removed from the wastewater, thereby reducing operating costs and enhancing the District's ability to meet its National Pollutant Discharge Elimination System permit requirements.

**Description:**

This project addresses scum system deficiencies at the Main Wastewater Treatment Plant. Planning, design and construction of modifications to the primary and secondary scum systems will begin in FY23. Specific components include improving the primary scum removal weir in the primary effluent channel; improving secondary scum and nocardia foam removal efficiency in the mixed liquor channel; separating the primary and secondary scum handling systems; and a system for disposal of nocardia foam once it is removed from the secondary system.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Primary Scum Improvements	1,000,000	0	236,000	1,236,000
Secondary Scum Improvements	400,000	0	550,000	950,000

Appropriations:			
Prior Years	\$ 1,400,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 786,000		
Total Cost	\$ 2,186,000	In Service Date:	31-Dec-24

## Capital Improvement Program - Project Summary

**Project:** Treatment Plant Infra Ph 2

**Project Number:** 2009787

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Replacement or rehabilitation of equipment, structures, and support systems that are reaching the end of their design life or do not provide the required level of service is necessary to maintain continued compliance with the MWWTP National Pollutant Discharge Elimination System permit, safe working conditions, and reliable cost-effective treatment.

**Description:**

This project provides for the cyclical replacement and rehabilitation of various treatment process facilities at the Main Wastewater Treatment Plant (MWWTP).

Improvements planned in FY18-22 include a seismic evaluation; improvement of plant gallery drains; upgrades to the security system; improvements to the East Gate Undercrossing; upgrades to the internal plant drain; grit handling equipment replacement; and improvements to the Administration and Operations Buildings.

Improvements planned in FY23-27 include additional improvement of plant gallery drains; replacing aging motors and variable frequency drives for the main pumps at the Influent Pump Station and the Effluent Pump Station; and seismic improvements to various structures.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
IPS Main Pump Improvements	0	63,000	21,200,000	21,263,000
EPS Main Pump Improvements	0	63,000	11,234,000	11,297,000
Grit Handling Eqpmt Rplcmt	0	7,916,000	2,875,000	10,791,000
Plant Gallery Drains	3,782,000	2,880,000	3,590,000	10,252,000
MWWTP Admin Bldg Improvements	0	4,176,000	1,620,000	5,796,000
Ops Center Improvements	0	3,884,000	0	3,884,000
Plant Drain Sys Improvements	0	2,220,000	1,000,000	3,220,000
MWWTP Fire Protection Improv	0	1,599,000	521,000	2,120,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 4,292,000	Recurring: No	
2018	\$ 2,264,000	Funding: BOND/REV 100%	
2019	\$ 10,360,000		
2020	\$ 3,796,000		
2021	\$ 5,073,000		
2022	\$ 4,923,000		
Future Years	\$ 44,845,000	In Service Date: 30-Jun-27	
<b>Total Cost</b>	<b>\$ 75,553,000</b>		

## Capital Improvement Program - Project Summary

<b>Project:</b> Treatment Plant Infrastructure	<b>Project Number:</b> 000932
<b>Strategy:</b> Maintaining Infrastructure	<b>Program:</b> WW Infrastructure Program
<b>Justification:</b> Replacement or rehabilitation of equipment, structures, and support systems that are reaching the end of their design life or do not provide the required level of service is necessary to maintain continued compliance with the MWWTP National Pollutant Discharge Elimination System permit, safe working conditions, and reliable cost-effective treatment.	
<b>Description:</b> This project provides for the cyclical replacement and rehabilitation of various treatment process facilities at the Main Wastewater Treatment Plant (MWWTP).  Improvements planned in FY18-22 include replacement of large variable frequency drives; repair or replacement of flow meters; laboratory upgrades; paving; rehabilitation of the secondary clarifiers; reactor piping condition assessment and the installation of a plant-wide intercom system. This project also includes engineering support for urgent capital projects and preparation and maintenance of record drawings.  Improvements planned in FY23-27 include improvements to Engineers Road along the southern edge of the MWWTP property and a new intersection with the realigned Wake Avenue; rehabilitation of the remaining 10 of 12 clarifiers along with the installation of online total suspended solids monitors; replacement of the influent screens; and improvements to the dewatering sludge well.	

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
WW Fac Records Documentation	5,669,000	2,382,000	2,964,000	11,015,000
Sec Clarifier Mech Rehab Ph 2	0	3,143,000	7,238,000	10,381,000
MWWTP Influent Screen Repl	4,838,000	0	4,637,000	9,475,000
Urgent Capital Projects	5,108,000	1,250,000	2,850,000	9,208,000
Engineer's Road Improvements	6,448,000	0	2,095,000	8,543,000
Large VFD Replacement	2,968,000	0	2,103,000	5,071,000
MWWTP Flow Meter Improvements	1,783,000	0	717,000	2,500,000
MWWTP Intercom Paging Sys Upgr	1,340,000	797,000	0	2,137,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 57,909,300	Recurring: No	
2018	\$ 351,000	Funding: BOND/REV 100%	
2019	\$ 764,000		
2020	\$ 1,655,000		
2021	\$ 4,741,000		
2022	\$ 1,749,000		
Future Years	\$ 24,389,000	In Service Date: 31-Dec-27	
<b>Total Cost</b>	<b>\$ 91,558,300</b>		

### Capital Improvement Program - Project Summary

**Project:** Vehicle & Equip Additions, WW

**Project Number:** 2003558

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

New and upgraded vehicles are required to support emergency response needs and for new field employees performing inspection and monitoring duties.

**Description:**

This project provides for new or upgraded vehicles to support continued operations at the MWWTP and remote facilities. This project includes two new pickup trucks and a yard goat in FY18, and a flatbed truck in FY19.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Vehicle & Equip Additions	335,000	202,000	0	537,000

Appropriations:				
Prior Years	\$ 335,000	Lead Dept:	WAS	
2018	\$ 139,000	Recurring:	No	
2019	\$ 63,000	Funding:	BOND/REV	100%
2020	\$ 0			
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 0			
Total Cost	\$ 537,000	In Service Date:	30-Jun-20	

### Capital Improvement Program - Project Summary

**Project:** WW Energy Management

**Project Number:** 1002730

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Energy is a significant portion of the operating costs at the MWWTP. Improved energy management provides opportunities to improve efficiency and reduce costs.

**Description:**

The goal of this project is to improve energy efficiency at the Main Wastewater Treatment Plant (MWWTP) and to maximize the production of biogas used to generate renewable energy. The 2013 Wastewater Energy System Master Plan provides the basis for prioritizing energy efficiency alternatives and energy management projects.

In FY18-22, submeters will be installed at several MWWTP substations to help identify ways to increase operating efficiency and reduce energy costs. In FY20-21, a comprehensive lighting survey at the MWWTP will be conducted to prioritize and replace lights to maximize energy savings.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Electrical Sub-Metering Data	142,000	790,000	0	932,000
MWWTP Lighting Improvements	155,000	76,000	0	231,000

Appropriations:			
Prior Years	\$ 2,199,748	Lead Dept:	WAS
2018	\$ 790,000	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 76,000		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 3,065,748	In Service Date:	31-Dec-22

### Capital Improvement Program - Project Summary

**Project:** West End Property Development

**Project Number:** 2006694

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Provision of utilities and other site improvements are required to support long-term uses of the West End property that was acquired from the Oakland Army Base.

**Description:**

This project extends utilities to the West End property, which is located adjacent to the Main Wastewater Treatment Plant (MWWTP). Work will include provision of utilities (potable water, recycled water, sewer and storm water) to the property. These utilities will be required when there is a need to expand MWWTP operations onto the West End property. Work is scheduled to be take place in FY24-27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
West End Bldg Demo	1,766,000	0	0	1,766,000
WEP Utility Upgrades	827,000	0	0	827,000

Appropriations:			
Prior Years	\$ 2,593,000	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 2,593,000	In Service Date:	31-Dec-27

### Capital Improvement Program - Project Summary

**Project:** Wet Weather Plant Imprmts

**Project Number:** 000657

**Strategy:** Regulatory Compliance

**Program:** WW Regulatory Compliance

**Justification:**

This project is necessary to ensure compliance with the District's National Pollutant Discharge Elimination System (NPDES) Wet Weather Permit by reducing the risk of chemical piping failures.

**Description:**

This project addresses upgrades at the Wet Weather Treatment Facilities (WWF) to maintain reliable operations. It includes chemical system improvements at the Point Isabel, Oakport and San Antonio Creek WWFs.

Improvements to the chemical feed systems at the Oakport and San Antonio Creek WWFs were completed in FY16. Instrumentation upgrades at Point Isabel are scheduled for FY19-20, and concrete rehabilitation is scheduled for FY23-25.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
PT Isabel Remote I/O Ctrl Add	0	1,200,000	0	1,200,000
Pt Isabel WWF Concrete Rehab	0	0	758,000	758,000

Appropriations:		Lead Dept: WAS	
Prior Years	\$ 8,067,000	Recurring: No	
2018	\$ 0	Funding: BOND/REV 100%	
2019	\$ 1,200,000		
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 758,000	In Service Date: 31-Dec-25	
<b>Total Cost</b>	<b>\$ 10,025,000</b>		

### Capital Improvement Program - Project Summary

**Project:** Wood St Sewer Intercept Rehab

**Project Number:** 001363

**Strategy:** Maintaining Infrastructure

**Program:** WW Infrastructure Program

**Justification:**

Interceptor concrete pipelines and structures suffer from sulfide-related corrosion over time. Rehabilitation of the corroded concrete in the aging, over 60-year-old interceptor system is needed to prevent further deterioration and potential collapse. A collapsed pipeline would create a public health risk and would be costly to replace.

**Description:**

The Wood Street segment of the South Interceptor in Oakland was identified as requiring rehabilitation in the Interceptor Master Plan Update. Rehabilitation of this two-mile long, 105-inch diameter, reinforced concrete pipeline was completed in FY17 and included the structural retrofit and application of a protective lining to extend the life of the interceptor. Demolition of an abandoned Quality Monitoring Station is scheduled for FY27.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Abandon QMS at MH S66	625,000	0	0	625,000

Appropriations:			
Prior Years	\$ 27,653,022	Lead Dept:	WAS
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	BOND/REV100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 27,653,022	In Service Date:	31-Dec-27



### Capital Improvement Program - Project Summary

**Project:** Cam So Shore WTP Replacement    **Project Number:** 1000797

**Strategy:** Water Supply    **Program:** Supply Reservoirs

**Justification:**

The Camanche Water Treatment Plants require a higher level of water treatment than is currently provided. The Disinfection Byproduct Rule, the Total Coliform Rule, and the Lead and Copper Rule require additional secondary treatment processes to ensure the water meets regulatory standards.

**Description:**

This project will replace the Camanche South Shore Recreation Area water treatment plant with a 0.5 million gallon per day (MGD) plant that meets Department of Public Health regulations. The plant can be expanded to 2.2 MGD as a regional plant with Amador and Calaveras County partners.

Replacement of the water treatment plant began in FY15 and will be completed in FY18. Additional secondary treatment processes are required which include a system for source water total organic carbon reductions, a chlorine contact tank to achieve disinfection requirements, and post-filtration pH adjustment for corrosion prevention in the distribution system.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Cam So Shore WTP Repl	6,234,000	735,000	0	6,969,000

Appropriations:			
Prior Years	\$ 6,234,000	Lead Dept:	WOD
2018	\$ 735,000	Recurring:	No
2019	\$ 0	Funding:	BOND/REV 100%
2020	\$ 0		
2021	\$ 0		
2022	\$ 0		
Future Years	\$ 0		
Total Cost	\$ 6,969,000	In Service Date:	30-Jun-18

### Capital Improvement Program - Project Summary

**Project:** Camanche Area WWTP

**Project Number:** 2011079

**Strategy:** Water Supply

**Program:** Supply Reservoirs

**Justification:**

Regional Board action may require mitigation measures for existing treatment ponds.

**Description:**

Wastewater Treatment Plant improvements are needed to comply with new Regional Board requirements to mitigate influence to groundwater. The work is anticipated to take place in FY21-22.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Camanche Area WWTP Improvement	0	6,000,000	0	6,000,000

Appropriations:				
Prior Years	\$ 0	Lead Dept:	WOD	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	100%
2020	\$ 0			
2021	\$ 6,000,000			
2022	\$ 0			
Future Years	\$ 0	In Service Date:	30-Jun-23	
Total Cost	\$ 6,000,000			

Capital Improvement Program - Project Summary					
<b>Project:</b> Distrib Sys Wtr Quality Imprv		<b>Project Number:</b> 000919			
<b>Strategy:</b> Water Quality		<b>Program:</b> Water Quality Improvement			
<b>Justification:</b> Improvements to the distribution system are necessary to address water quality issues.					
<b>Description:</b> This project provides ongoing improvements related to water quality in the distribution system which is composed of over 4,100 miles of pipeline and 165 reservoirs. In FY15, a chloramine boosting station was successfully tested at Tice Reservoir in Walnut Creek and has been retained to maintain chlorine residual.  Plans to install additional chloramine boosting stations, chlorine analyzers, and reservoir mixers at various reservoir are planned for FY18-22.					
<b>Key Segments &amp; Appropriations</b>		<b>Prior Yrs</b>	<b>FY18-22</b>	<b>Future Yrs</b>	<b>Total</b>
Chloramine Boosting Stations		316,000	7,500,000	0	7,816,000
<b>Appropriations:</b>		<b>Lead Dept:</b> WOD <b>Recurring:</b> Yes			
Prior Years	-				
2018	\$ 1,500,000	<b>Funding:</b> BOND/REV 100%			
2019	\$ 1,500,000				
2020	\$ 1,500,000				
2021	\$ 1,500,000				
2022	\$ 1,500,000				
Future Years	-	<b>In Service Date:</b> Recurring			
<b>Total Cost</b>	-				

### Capital Improvement Program - Project Summary

**Project:** Enhanced Power Revenue

**Project Number:** 1002593

**Strategy:** Water Supply

**Program:** Supply Reservoirs

**Justification:**

Developing cost-effective renewable generation and improving energy efficiency to reduce the District's reliance on energy purchases and greenhouse gas emissions supports the District's Energy Policy.

**Description:**

This project provides ongoing support for the District's goal to develop renewable generation projects or purchase renewable energy to reduce indirect greenhouse gas emissions to zero and direct emissions by 50% by 2040. The project also supports efforts to fund efficiency projects that directly reduce energy consumption.

In FY16-17, two photovoltaic (PV) projects totaling 705 kW were determine to be economically feasible and contracts were executed to construct a 380kW PV project at Camanche Dam and a 325 kW PV project at the North Richmond Water Reclamation Plant.

In FY17-FY18, the two PV projects will be constructed and operational. In FY18-19, the feasibility of building two large PV projects totaling up to 8 MW on the District's watershed land will be investigated. Work will include environmental and endangered species permitting, securing clean energy bonds, electronic grid interconnection, project design and construction.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Briones Hydro Project	1,452,610	1,500,000	0	2,952,610
Large Scale PV	0	1,750,000	0	1,750,000
Advanced Metering Project	10,000	60,000	0	70,000

Appropriations:				
Prior Years	-	Lead Dept:	WOD	
2018	\$ 1,420,000	Recurring:	Yes	
2019	\$ 370,000	Funding:	BOND/REV	81%
2020	\$ 20,000		GRANTS	19%
2021	\$ 1,500,000			
2022	\$ 0			
Future Years	-	In Service Date:	Recurring	
Total Cost	-			

### Capital Improvement Program - Project Summary

**Project:** Minor WTP Capital Work

**Project Number:** 2003502

**Strategy:** Water Quality

**Program:** Water Treatment Upgrade

**Justification:**

Each year various relatively low-cost improvements and modifications to existing water treatment plants are required. Most involve equipment or structural problems impacting facility integrity, or health and safety issues.

**Description:**

This project consists of low-cost capital improvements to existing facilities that do not require extensive planning or design, or justify a stand alone project. These improvements may also address small infrastructure improvements that were unanticipated but are critical for Water Treatment Plant (WTP) operations.

Projects in FY18-22 include purchase of new chemical metering pumps at various WTPs; purchase of sump pumps and replacement of sluice gates for the Orinda diversion works building; a new total organic carbon analyzer to improve enhanced coagulation compliance at Sobrante WTP; improvements to the ammonia feed system at Orinda WTP; replacement of a filter wash valve at Sobrante; purchase and replenish filter media at Upper San Leandro (USL); complete paving work at USL, Sobrante, and Lafayette WTP; and replacement of laboratory and online equipment at all WTPs as needed.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
WTP Capital Improvements	3,709,931	2,261,000	4,377,000	10,347,931

Appropriations:			
Prior Years	-	Lead Dept:	WOD
2018	\$ 405,000	Recurring:	Yes
2019	\$ 427,000	Funding:	BOND/REV 100%
2020	\$ 451,000		
2021	\$ 476,000		
2022	\$ 502,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** Pardee Ctr Cap Maint & Imprvmt

**Project Number:** 2001367

**Strategy:** Water Supply

**Program:** Supply Reservoirs

**Justification:**

Projects address regulatory compliance and reliability issues pertaining to water, wastewater and building systems; life cycle replacement of pumps, system valves and instruments; and ensure the safety of employees and guests.

**Description:**

This project provides for improvements to the Pardee Center Water Treatment Plant, Wastewater Treatment Plant, potable water system, collection system piping, buildings and grounds, roads, buildings, chemical plant and aqueduct control infrastructure to ensure a safe and reliable system.

FY18-22 projects include replacement of power poles on the 7kv system; replacement of siding, flooring, and porch tile on building 119 and the gazebo; garage renovation; purchase of a storage building for the Vactor; exterior painting of the warehouse and shops; scheduled replacement of HVAC systems; rehabilitation of the elevated fire water tank; replacement of failing pavement; Pardee Ridge emergency generator replacement; irrigation system replacement; 800MHz radio system replacement; and siding replacement on the Water Quality office and lab.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Water, WasteWtr Infrastructure	668,552	560,000	1,041,000	2,269,552

Appropriations:			
Prior Years	-	Lead Dept:	WOD
2018	\$ 106,000	Recurring:	Yes
2019	\$ 109,000	Funding:	BOND/REV 100%
2020	\$ 112,000		
2021	\$ 145,000		
2022	\$ 88,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** Powerhouse Improvements

**Project Number:** 2001368

**Strategy:** Water Supply

**Program:** Supply Reservoirs

**Justification:**

System improvements are critical to comply with current and new regulations, and parameters mandated by various regulatory agencies such as the Bureau of Reclamation (river flows), the Federal Energy Regulatory Commission (reservoirs and dams), and the California Independent System Operator (power marketing).

**Description:**

This project provides for replacement and improvements for reliable power production, management of river flows, and remote operation and monitoring of critical systems by the Pardee Area Control Center.

FY18-22 work consists of purchasing a timing test set and analyzer, a generator protection upgrade, Programmable Logic Controller upgrades, piping and valve replacement, piping recoating, concrete restoration, complete turbine overhaul, lube oil system upgrade, Bank C transformer upgrade, relay replacement, installation of digital fault recorders, rebuild of the Kaplan head and instrumentation upgrades.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pardee Powerhouse	5,435,400	633,000	360,000	6,428,400
Camanche Powerhouse	2,929,463	400,000	1,065,000	4,394,463
PPH Unit 1 Turbine Overhaul	711,000	65,000	349,000	1,125,000
PPH Unit 3 Turbine Overhaul	0	0	840,400	840,400
CPH Unit 1 Overhaul	0	500,000	0	500,000
CPH Unit 2 Overhaul	0	0	0	0
CPH Unit 3 Overhaul	0	0	0	0

Appropriations:			
Prior Years	-	Lead Dept:	WOD
2018	\$ 290,000	Recurring:	Yes
2019	\$ 300,000	Funding:	BOND/REV 100%
2020	\$ 300,000		
2021	\$ 603,000		
2022	\$ 105,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** Raw Wtr Aq O&M Imprvmnts

**Project Number:** 001316

**Strategy:** Water Supply

**Program:** Aqueduct Program

**Justification:**

Improvements are required to address deterioration of the Aqueducts and Raw Water Pumping Plant systems, and regulatory changes affecting system operations.

**Description:**

This project provides infrastructure improvements to facilitate the safe and reliable operation of the raw water aqueducts. In FY18-22, plans include improvements to raw water pipeline appurtenances, support cradles, culvert replacement, fencing and structure rehabilitation. This project also includes EBMUD monetary support of Delta Levee improvements by Reclamation Districts and other Delta area projects according to Aqueduct Levee Security Program Plans, such as Woodward Island Bridge - a multi-agency joint project.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Moke Aqued Security - Levees	23,170,668	3,000,000	1,500,000	27,670,668
Rehab Aqueduct Facilities	6,559,930	3,578,634	1,729,550	11,868,114
Freeport Region Wtr Authority	0	1,600,000	0	1,600,000
FSCC Chemical System Imprv	1,100,000	0	0	1,100,000

Appropriations:			
Prior Years	-	Lead Dept:	WOD
2018	\$ 2,545,000	Recurring:	Yes
2019	\$ 697,800	Funding:	BOND/REV 100%
2020	\$ 1,605,834		
2021	\$ 1,660,000		
2022	\$ 1,670,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring



### Capital Improvement Program - Project Summary

**Project:** Rec Area Cap Maint & Imprvmt

**Project Number:** 2001369

**Strategy:** Water Supply

**Program:** Supply Reservoirs

**Justification:**

This project ensures compliance with regulatory agency requirements and maintains recreation facilities in safe condition.

**Description:**

This project provides for replacement and improvements to facilities that are part of the Water and Wastewater Treatment Plants, potable water systems, waste collection systems, dams, dikes and watershed lands at the Pardee and Camanche recreation areas.

FY18-22 projects include replacement of the Pardee Recreation Area Water Treatment Plant (WTP); connection of the cross lake pipeline to Camanche North Shore (CANS) at China Gulch; Motor Control Center upgrade at the Camanche South Shore (CASS) WTP; replacement of failing potable water isolation valves at CASS; piping replacement at CANS, sludge removal, failed paving replacement, and CANS water tank replacement.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Pardee/ Camanche Projects	1,728,049	1,243,000	939,000	3,910,049

Appropriations:			
Prior Years	-	Lead Dept:	WOD
2018	\$ 155,000	Recurring:	Yes
2019	\$ 260,000	Funding:	BOND/REV 100%
2020	\$ 268,000		
2021	\$ 276,000		
2022	\$ 284,000		
Future Years	-		
Total Cost	-	In Service Date:	Recurring

### Capital Improvement Program - Project Summary

**Project:** Reservoir Access Roads

**Project Number:** 000089

**Strategy:** Maintaining Infrastructure

**Program:** Reservoir Rehab Program

**Justification:**

This project ensures safe access to distribution reservoirs for District and non-District individuals who use these roads. Deteriorated roads limit access for staff that operate and maintain the distribution reservoirs.

**Description:**

This project maintains and replaces distribution reservoir access roads. In FY16-17, portions of the access road for Valory Reservoir in Lafayette were paved. Planned work in FY18-22 includes paving repairs and replacements for reservoir access roads as needed.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Res Access Rds	1,409,000	355,447	77,614	1,842,061

Appropriations:			
Prior Years	\$ 2,389,000	Lead Dept:	WOD
2018	\$ 66,950	Recurring:	No
2019	\$ 68,959	Funding:	BOND/REV100%
2020	\$ 71,027		
2021	\$ 73,158		
2022	\$ 75,353		
Future Years	\$ 77,614		
Total Cost	\$ 2,822,061	In Service Date:	30-Jun-27

### Capital Improvement Program - Project Summary

**Project:** Wtr Supply Monitoring System

**Project Number:** 000065

**Strategy:** Water Supply

**Program:** Supply Reservoirs

**Justification:**

Timely hydrologic, meteorologic, flow and water quality data is required to meet the operational needs of the District. Improvements to water supply forecasting are needed for expanded hydrologic monitoring in the Mokelumne watershed.

**Description:**

This project provides for the development of a system for monitoring Mokelumne and East Bay Watersheds for precipitation, water flow and storage level to provide information in real-time for operations and water supply forecasting. Work includes monitoring on the Lower Mokelumne, Upper Mokelumne, Pardee, Camanche and East Bay watersheds and reservoirs. FY18-22 plans include ongoing upgrades of weather and gauging station instruments such as water level sensors, cableways and satellite telemetry.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Res/River Inst & Monitoring	543,649	238,000	625,000	1,406,649

Appropriations:			
Prior Years	\$ 1,757,000	Lead Dept:	WOD
2018	\$ 70,000	Recurring:	No
2019	\$ 30,000	Funding:	BOND/REV100%
2020	\$ 38,000		
2021	\$ 50,000		
2022	\$ 50,000		
Future Years	\$ 625,000		
Total Cost	\$ 2,620,000	In Service Date:	30-Jun-27

## Capital Improvement Program - Project Summary

**Project:** Addl Supplemental Supply Projs

**Project Number:** 000460

**Strategy:** Water Supply

**Program:** Water Supply Mgmt Program

**Justification:**

This project is needed to secure supplemental water supplies and provide adequate water through 2040 to help reduce rationing requirements during a drought.

**Description:**

The Water Supply Management Program (WSMP) 2040 identifies the need for supplemental water supply projects to reliably meet dry year needs through the year 2040. Current and future efforts identified in the WSMP 2040 preferred portfolio include Mokelumne Regional Projects, Regional Desalination and Water Transfers.

FY16-17 accomplishments include securing grant funding from the U.S. Bureau of Reclamation to prepare the Bay Area Regional Reliability Drought Contingency Plan; completion of environmental documentation in coordination with San Joaquin County (SJC) for a potential groundwater banking demonstration project; development of partnership principles with Contra Costa Water District (CCWD) for potential storage options for an expanded Los Vaqueros (LV) Reservoir; and development of a long-term water transfer project with Placer County Water Agency (PCWA).

In FY18-19, EBMUD will continue to work with PCWA to complete environmental reviews needed to implement a long-term water transfer and, if needed, obtain supplemental dry year water through temporary water transfers. Engineering is expected to be completed on the SJC groundwater banking demonstration project. Preliminary planning will continue for other supplemental supply elements including EBMUD and Zone 7 Water Agency efforts to develop a system intertie for emergency use. Also, EBMUD will continue to work with CCWD on the potential to take part in their expansion of the LV Reservoir.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
WSMP Special Projects	20,522,540	0	118,500,000	139,022,540
Mokelumne Regional Projects	19,382,583	0	0	19,382,583
Water Transfers	12,821,000	0	0	12,821,000
Sacramento Basin GW Banking	880,000	0	0	880,000

Appropriations:				
Prior Years	\$ 103,156,777	Lead Dept:	WRD	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	30%
2020	\$ 0		SCC	70%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 118,500,000	In Service Date:	31-Dec-30	
Total Cost	\$ 221,656,777			

### Capital Improvement Program - Project Summary

**Project:** Bayside Groundwater Project

**Project Number:** 1002726

**Strategy:** Water Supply

**Program:** Water Supply Mgmt Program

**Justification:**

This project is needed to secure supplemental water supplies and provide adequate water through 2040 to help reduce rationing requirements during a drought.

**Description:**

Phase 1 facilities in San Leandro consist of a 1 million gallon per day (MGD) water treatment plant, a 1 MGD injection/extraction well, and associated monitoring systems.

In FY15, a Groundwater Monitoring Plan was completed to serve as a tool to provide the California Department of Water Resources basin water level data under the California Statewide Groundwater Elevation Monitoring (CASGEM) program requirements for mid-priority groundwater basins. Phase 2 facility planning efforts are not expected to begin until FY23 at the earliest.

In FY17, the District became the Groundwater Sustainability Agency for the portion of the Southeast Bay Plain (SEBP) that underlies its service area. For FY18-22, additional work related to CASGEM and the Sustainable Groundwater Management Act is anticipated, including the preparation of a Groundwater Sustainability Plan for the SEBP.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Bayside Phase II 10 MGD	23,022,000	0	10,000,000	33,022,000
Local Groundwater/SGMA	0	0	0	0

Appropriations:				
Prior Years	\$ 58,164,111	Lead Dept:	WRD	
2018	\$ 0	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	30%
2020	\$ 0		SCC	70%
2021	\$ 0			
2022	\$ 0			
Future Years	\$ 10,000,000		In Service Date:	31-Dec-27
Total Cost	\$ 68,164,111			

## Capital Improvement Program - Project Summary

**Project:** East Bayshore

**Project Number:** 1005395

**Strategy:** Water Supply

**Program:** Water Recycling

**Justification:**

The District has set a goal of providing 20 million gallons per day (MGD) of recycled water by the year 2040, thereby offsetting the demand for potable water. This project will contribute to the goal.

**Description:**

The East Bayshore Phase 1A Project will provide 0.5 MGD of recycled water to the cities of Albany, Berkeley, Emeryville, and Oakland. A portion of Phase 1A began operating in 2008 and currently delivers about 0.2 MGD of recycled water to customers in Oakland and Emeryville. The schedule for completion of Phase 1A is by FY26, including pipelines and customer retrofits. A water quality improvements study will be conducted in FY18 to evaluate treatment improvements. Also included are capital equipment replacements.

The Phase 1B project, estimated at 1.2 MGD, is planned to be implemented from FY21-29. Recycled water will be provided to Alameda. The crossing of the estuary (slip lining of existing pipe) will be completed in FY21-22. The remainder of the facilities to be completed by FY29 include pipelines, a possible booster pump station, and customer retrofits.

The East Bayshore Phase 2 Project will expand recycled water service in the East Bay area by an additional 0.6 MGD. This is an estimated demand and may change due to the timing of redevelopment in the area. The timeframe for implementation is estimated at FY30-34.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
East Bayshore Phase I	55,408,198	23,066,842	45,000,000	123,475,040

Appropriations:				
Prior Years	\$ 55,408,198	Lead Dept:	WRD	
2018	\$ 2,572,842	Recurring:	No	
2019	\$ 2,094,000	Funding:	BOND/REV	30%
2020	\$ 5,170,000		SCC	70%
2021	\$ 7,500,000			
2022	\$ 5,730,000			
Future Years	\$ 72,260,000	In Service Date:	30-Jun-35	
Total Cost	\$ 150,735,040			

## Capital Improvement Program - Project Summary

**Project:** RARE Water Project

**Project Number:** 2004604

**Strategy:** Water Supply

**Program:** Water Recycling

**Justification:**

This project is required to meet the District's contractual obligation to provide high purity recycled water to the Chevron refinery in Richmond for use as boiler feedwater. In addition, this project helps the District to meet its water recycling goal of providing 20 million gallons per day (MGD) of recycled water by the year 2040.

**Description:**

Phase 1 of the Richmond Advanced Recycled Expansion (RARE) Water Project has been completed and provides 3.5 MGD of recycled water to Chevron for boiler feedwater applications to conserve the use of potable water. Facilities consist of a high-purity recycled water treatment plant at Chevron, an influent pump station, flow equalization, and a standby generator at West County. In FY18-22 and beyond, equipment will be replaced at the high-purity recycled water treatment plant including the microfiltration and reverse osmosis membranes. These replacements are to be funded by Chevron.

The RARE Water Project could be expanded incrementally to an additional 0.5 MGD (Phase 2) and 1.0 MGD (Future Expansion). Timing of the expansions will be in FY24 and beyond depending on water supply availability.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
RARE Treatment Plant	55,184,406	384,412	4,000,000	59,568,818
RARE Wtr Proj Ph2 Future Exp	5,750,000	0	30,000,000	35,750,000
RARE Prog Management	479,659	0	7,500,000	7,979,659

Appropriations:			
Prior Years	\$ 64,802,000	Lead Dept:	WRD
2018	\$ 0	Recurring:	No
2019	\$ 0	Funding:	OAG100%
2020	\$ 104,412		
2021	\$ 280,000		
2022	\$ 0		
Future Years	\$ 41,500,000		
Total Cost	\$ 106,686,412	In Service Date:	30-Jun-36

### Capital Improvement Program - Project Summary

**Project:** SRV Recycled Water Program

**Project Number:** 1005224

**Strategy:** Water Supply

**Program:** Water Recycling

**Justification:**

The District has set a goal of providing 20 million gallons per day (MGD) of recycled water by the year 2040, thereby offsetting the demand for potable water. This project will contribute to the goal.

**Description:**

Expansion of the Dublin San Ramon-EBMUD Recycled Water Authority (DERWA) tertiary treatment facilities from 9.7 MGD to 16.2 MGD will be completed by FY19 to provide capacity as the distribution system is expanded and customers are connected. Also, additional supplemental supplies will need to be secured over the next few years to meet peak demands.

EBMUD's portion of the San Ramon Valley (SRV) Recycled Water Program includes customer retrofits and connecting customers to the distribution system; implementation of distribution systems in San Ramon, Danville and Blackhawk; and planning/property purchase of Pump Stations 3 and 4. Phase 1 began operating in 2006 and delivers 0.7 MGD of recycled water to EBMUD customers in San Ramon.

Phase 2A distribution pipelines have been completed. Phase 2 customer retrofits will be completed in FY18. The Phase 3 pump station on the border between San Ramon and Danville will be completed in FY20 with distribution pipelines to be implemented in FY20-22. Phase 3 site retrofits will be completed from FY21-23.

The Phase 4 pump station in Blackhawk will be completed in FY24 with distribution pipelines and site retrofits to be implemented by FY25. Phase 5 (Blackhawk West) and Phase 6 (Danville West) are anticipated to be completed beyond FY25.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
EBMUD/DERWA Distrib. Pipelines	30,211,000	35,376,956	47,000,000	112,587,956
DERWA/EBMUD Share of Fut Fac	3,020,000	13,977,622	3,000,000	19,997,622

Appropriations:				
Prior Years	\$ 69,171,000	Lead Dept:	WRD	
2018	\$ 12,724,000	Recurring:	No	
2019	\$ 6,497,102	Funding:	BOND/REV	30%
2020	\$ 17,633,824		SCC	70%
2021	\$ 10,551,769			
2022	\$ 1,947,883			
Future Years	\$ 50,000,000	In Service Date:	30-Jun-33	
Total Cost	\$ 168,525,578			



## Capital Improvement Program - Project Summary

**Project:** Water Recycling WSMP

**Project Number:** 000890

**Strategy:** Water Supply

**Program:** Water Recycling

**Justification:**

The District's Water Supply Management Program (WSMP) has set a goal of providing 20 million gallons per day (MGD) of recycled water by the year 2040, thereby offsetting the demand for potable water. These projects will contribute to the goal.

**Description:**

This project consists of: (1) updating the master plan in FY18; (2) coordinating the implementation of customer satellite treatment plants including the Diablo Country Club in FY18 and Moraga Country Club by FY20 pending customer financing; (3) further evaluation and implementation of the Phillips 66 recycled water project in Rodeo in FY23-27; (4) rehabilitation of the San Leandro project by FY21; (5) development and implementation of potential recycled water opportunities with the Central Contra Costa Sanitary District by FY25; and (6) expansion of the recycled water truck program.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
Phillips 66 Recycled Wtr Proj	420,000	3,328,398	77,000,000	80,748,398
Satellite Trtmt Plant Pilot	1,556,000	0	39,500,000	41,056,000
San Leandro Rehabilitation	3,075,000	502,168	34,000,000	37,577,168
Reliez Valley Recycled Wtr Prj	4,121,380	0	3,300,000	7,421,380
Master Plan Update	170,000	500,000	1,250,000	1,920,000
Recycled Water Truck Program	374,000	198,000	110,000	682,000

Appropriations:				
Prior Years	\$ 16,098,105	Lead Dept:	WRD	
2018	\$ 500,000	Recurring:	No	
2019	\$ 0	Funding:	BOND/REV	30%
2020	\$ 600,566		SCC	70%
2021	\$ 1,113,000			
2022	\$ 2,315,000			
Future Years	\$ 155,160,000	In Service Date:	30-Jun-36	
Total Cost	\$ 175,786,671			

### Capital Improvement Program - Project Summary

**Project:** No Richmond Recy Wtr Fac Impr      **Project Number:** 000876

**Strategy:** Water Supply      **Program:** Water Recycling

**Justification:**

This project is required to meet the District's contractual obligations to provide recycled water to the Chevron Richmond refinery. In addition, this project helps the District to meet its water recycling goal of providing 20 million gallons per day (MGD) of recycled water by the year 2040.

**Description:**

This project includes upgrades at the North Richmond Water Recycling Plant (NRWRP) that are needed to maintain the facility and continue to meet the District's contractual obligations to the Chevron Richmond refinery. In FY18-19, this project will include equalization tank corrosion improvements, clarifier and thickener drive replacements, and polymer improvements.

Expansion of the NRWRP by an additional 1 MGD is expected by FY27 pending supply availability. The expansion study was completed in FY17.

Key Segments & Appropriations	Prior Yrs	FY18-22	Future Yrs	Total
No. Richmond Improvements/Exp	3,235,100	937,577	24,000,000	28,172,677
NRWRP Routine Capital Maint	3,843,500	2,649,835	7,000,000	13,493,335

Appropriations:				
Prior Years	\$ 12,857,952	Lead Dept:	WRP	
2018	\$ 926,835	Recurring:	No	
2019	\$ 1,274,577	Funding:	BOND/REV	30%
2020	\$ 449,000		SCC	70%
2021	\$ 462,000			
2022	\$ 475,000			
Future Years	\$ 31,000,000		In Service Date:	30-Jun-27
Total Cost	\$ 47,445,364			

## FY18-22 CAPITAL IMPROVEMENT PROJECTS

PROJECT ID	PROJECT TITLE	Page #
2003554	3rd St Sewer Interceptor Rehab	78
000460	Addl Supplemental Supply Projs	129
003033	Adm Bldg Modifications	3
2003431	Almond/Fire Trail PZI	4
001210	Aqueduct Cathodic Protection	5
1002726	Bayside Groundwater Project	130
2003491	Buildings Assessment & Improve	6
000112	CAD/CAM Mapping, Documentation	7
1000797	Cam So Shore WTP Replacement	118
2011079	Camanche Area WWTP Improvement	119
003042	Cent Oakland Hills Cascade PZI	8
000989	Centrifuge Replacement	79
2006691	Collection System Master Plan	80
1006294	Colorados Pressure Zone Imprv	9
000969	Concrete Rehab at SD1	81
000477	Contingency Project Wastewater	82
001300	Contingency Project Water	53
1005995	DCS Upgrades	83
1002574	Dam Operational Upgrades	10
000861	Dam Seismic Upgrades	11
000748	Dam Surveillance Improvements	12
000363	Data & Telecom Infrastructure	54
1000800	Dechlorination Facility Impmts	84
000482	Diablo PZ Improvements	13
1002588	Diesel Engine Retrofit	72
000987	Digester Upgrade	85
000711	Dist Sys Corrosion Protection	14
000919	Distrib Sys Wtr Quality Imprv	120
000130	Distribution System Upgrades	15
000150	East Area Service Center	16
000198	East Bay Watershed Rec Projs	66

## FY18-22 CAPITAL IMPROVEMENT PROJECTS

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1005395	East Bayshore	131
2001485	Electrical Hazard Prevention	17
2009581	Encinal Cascade PZI	18
1002593	Enhanced Power Revenue	121
2005281	Enterprise Hyd WQ & Op Modl	19
1002592	F&W Projects and Mok Hatchery	67
2003539	FIS Replacement	55
2003495	Faria PZI (formerly Purdue)	20
1002589	Fueling Facility Upgrades	73
2003543	HRIS Replacement	56
000099	Hydrants Installed by DF	21
000570	Infiltration/Inflow Contrl Prj	86
003057	Information System Upgrades	87
2005283	Interceptor Corrosion Prevent	88
1006298	Large Diameter Pipelines	22
2001451	Leland Pressure Zone Impr	23
2003547	MMIS Replacement	57
000601	MWWTP Master Plan	89
000140	MWWTP Pwr Dist Sys Upgrade	90
1002575	Maloney Pressure Zone Facility	24
000738	Meter Replacements	59
2003551	Meter Test Facility	60
1002676	Minor Facility Improvements	74
2003502	Minor WTP Capital Work	122
2003494	Mok Aqu No 2 & 3 Relining Proj	25
2001487	Mokelumne Aqueduct Recoating	26
000158	Mokelumne Watershed Rec HQ	68
2008687	Mokelumne Watershed Rec Projs	69
001004	Motor Control Center Repl	91
000599	NPDES Compliance	92
000101	New Service Installations	27

## FY18-22 CAPITAL IMPROVEMENT PROJECTS

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2009794	North Interceptor Rehab	93
2011022	Nutrient Management	94
000628	OP/NET System	61
000963	Odor Control Improvements	95
000241	Open Cut Reservoir Rehab	28
000985	Outfall Investigation Project	96
2001379	PGS Engine Overhaul	97
2003556	PGS Expansion	98
2006716	PS Q FM Dual-Mode Operation	99
2001367	Pardee Ctr Cap Maint & Imprvmt	123
2003500	Pardee/Cam Rec Areas Impr Plan	70
001337	Penn Mine Remediation	75
2003501	Pinole Valley Miti. Bank Plan	71
000218	Pipeline Appurtenances	62
000554	Pipeline Infrastruct Renewals	29
000108	Pipeline Relocations	30
000104	Pipeline System Extensions	31
000110	Pipeline System Improvements	32
000959	Plant Pipe Replacement	100
2001368	Powerhouse Improvements	124
001424	Pressure Zone Planning Program	33
000392	Procure Emerg Response Equipmt	101
2009792	Pump Station A Improvements	102
1006000	Pump Station C Upgrades	103
001352	Pump Station H Imprvmts	104
1006001	Pump Station J Upgrades	105
2005285	Pump Station L Improvement	106
001372	Pump Station M Imprvmts	107
001252	Pumping Plant Rehabilitation	34
2004604	RARE Water Project	132

## FY18-22 CAPITAL IMPROVEMENT PROJECTS

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1002590	Rate Control Station Rehab	35
1000810	Raw Water Studies and Improves	36
001316	Raw Wtr Aq O&M Imprvmts	125
2001369	Rec Area Cap Maint & Imprvmt	126
000398	Regulator Rehabilitation	37
000089	Reservoir Access Roads	127
000716	Reservoir Rehab/Maintenance	38
000672	Reservoir Tower Modifications	39
1004872	Resource Recovery Project	108
000943	Routine Cap Equip Replacement	109
1005224	SRV Recycled Water Program	133
2001483	San Pablo Dam Seismic Mods	40
2001375	Scum System Improvements	110
000654	Service Lateral Replacements	41
2006310	Small Capital Improvements	63
2003493	So Oakland Hills Cascades PZI	42
2001457	Summit Pressure Zone Improve	43
2001476	Tice Pumping Plant	44
003026	Trans Main Cathodic Protection	45
2009787	Treatment Plant Infra Ph 2	111
000932	Treatment Plant Infrastructure	112
000437	Treatment Plant Upgrades	46
000652	Trench Spoils Disposal Sites	47
2001462	USL Pressure Zone Impr	48
1000816	Upcountry WW Trmt Imprvmts	76
1005899	VA Security System Imprmts	77
000528	Veh & Hvy Equip Additions, Wtr	64
2003558	Vehicle & Equip Additions, WW	113
000526	Vehicle Replacements	65
2003498	WTTIP Distribution Improvs	49
2003499	WTTIP WTP Improvements	50

## FY18-22 CAPITAL IMPROVEMENT PROJECTS

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1002730	WW Energy Management	114
000894	Water Conservation Project	2
2001472	Water Demand Projection Update	51
000890	Water Recycling WSMP	134
2006694	West End Property Development	115
2001475	West of Hills Master Plan	52
000657	Wet Weather Plant Imprmts	116
001363	Wood St Sewer Intercept Rehab	117
2009564	Work Mgmt Systems Replacement	58
000065	Wtr Supply Monitoring System	128

# **FY18 & FY19 Budget Workshop 3**

Board of Directors

April 11, 2017



# Workshop Agenda



- Introduction
- Budget priorities
- Recommended budget
- Break
- Recommended rates and charges
- Workshop conclusion
- Board discussion

# Introduction

# Workshop #2 Recap



- Reviewed highlights of the proposed FY18 & FY19 biennial budget
- Presented a water rate sensitivity analysis
- Provided written responses to questions raised at Budget Workshop 2 held on March 14, 2017

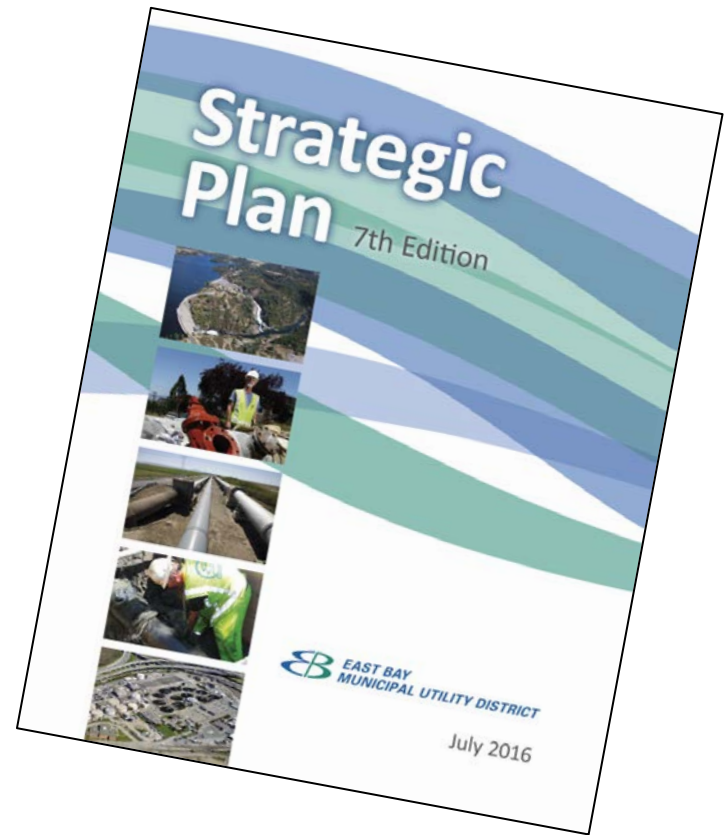
# Budget Priorities

# FY18 & FY19 Biennial Budget



## Budget Priorities

- Increase investments in and maintenance of aging infrastructure
- Manage the financial and operational impacts of severely reduced consumption



# Budget Priority #1



**Increase investments in and  
maintenance of aging infrastructure**

# Water Infrastructure

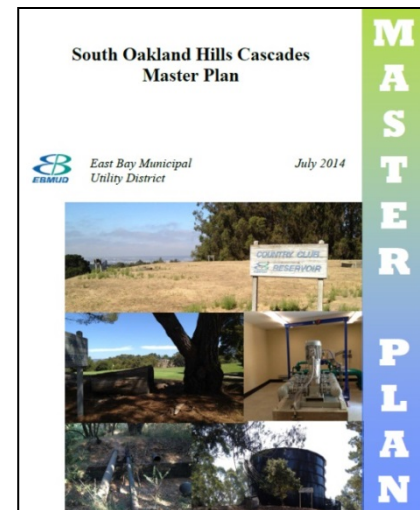


1. Review of CIP Priorities & Strategy
2. CIP Costs by Major Program
3. Highlights
  - a. Raw Water
  - b. Distribution Reservoirs
  - c. Pumping Plants
  - d. Treatment Plants
  - e. Pipelines/Service Laterals
  - f. Water Recycling

# CIP Priorities Reflected in Proposed Budget



Priority	Example
1. Safety	Improving chemical system safety at water treatment plants
2. Regulatory	Upgrading dams
3. Critical Reliability	Replacing the ozone systems at USL and Sobrante Water Treatment Plants to address reliability issues that could impact customers
4. Cost Effectiveness	Performing planned copper lateral replacements vs. replacing on an emergency basis



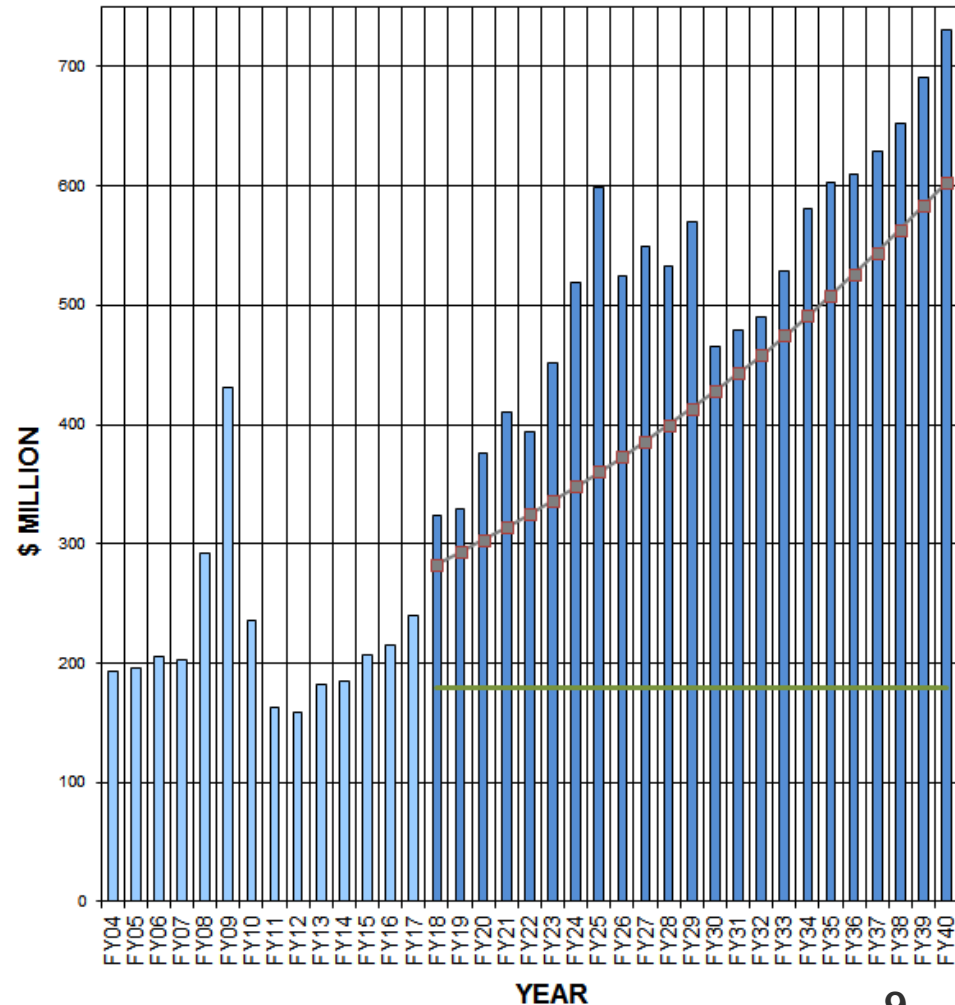


# Long-Term Water Infrastructure Investment Needs



- Expected cash flows increasing at higher rate than inflation, despite efficiency measures
- Long-term projections reflect enhanced understanding of long-term infrastructure needs, goals, and priorities
- Increase preventative maintenance and upgrades
- Augmented scope of work due to increased knowledge and changing codes
- Deferring work increases future cost and risk

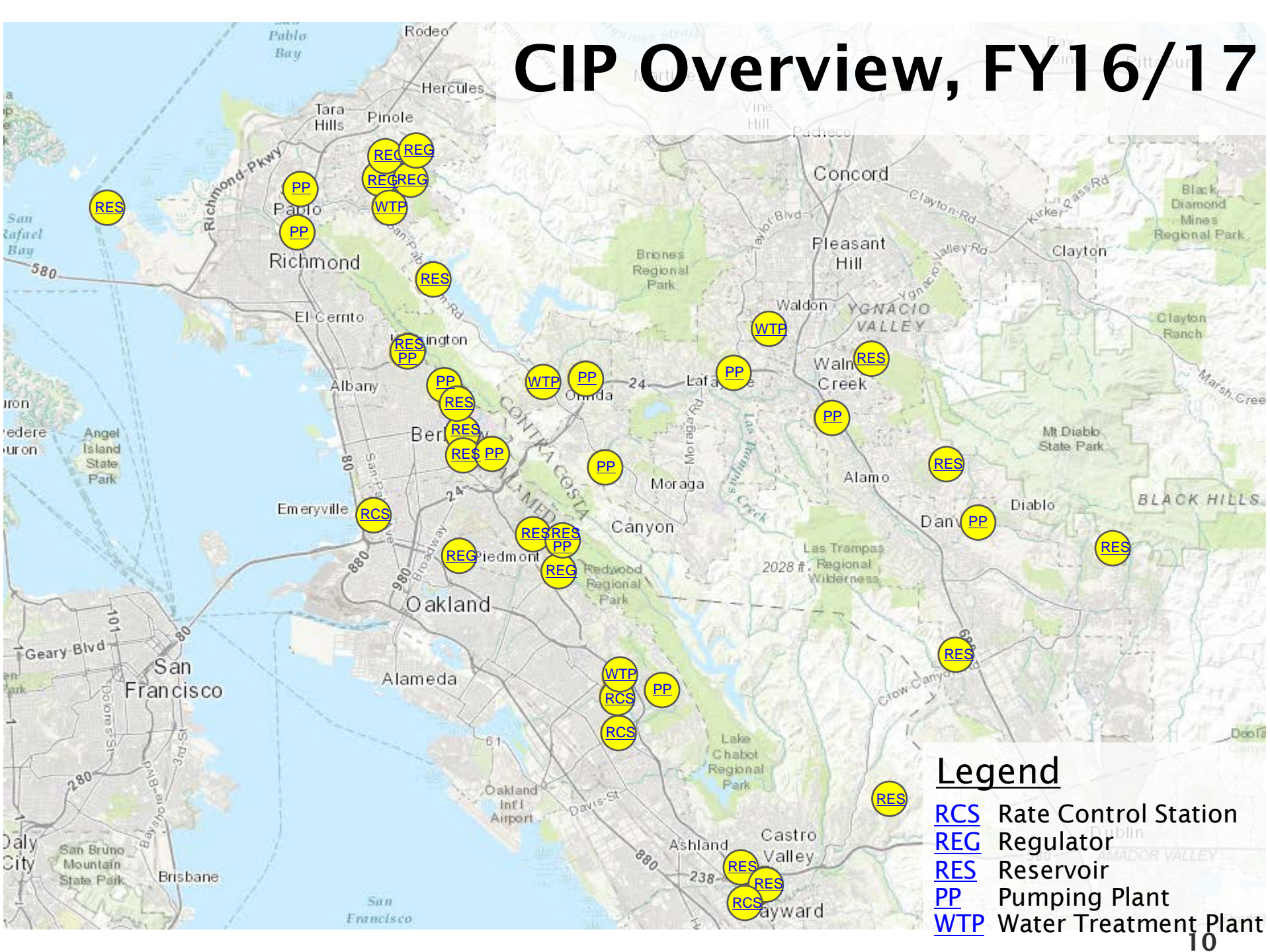
**HISTORIC AND PROJECTED CIP DIRECT COSTS**



# CIP Overview, FY16/17

**Legend**

- RCS** Rate Control Station
- REG** Regulator
- RES** Reservoir
- PP** Pumping Plant
- WTP** Water Treatment Plant



### Legend

RCS Rate Control Station

REG Regulator

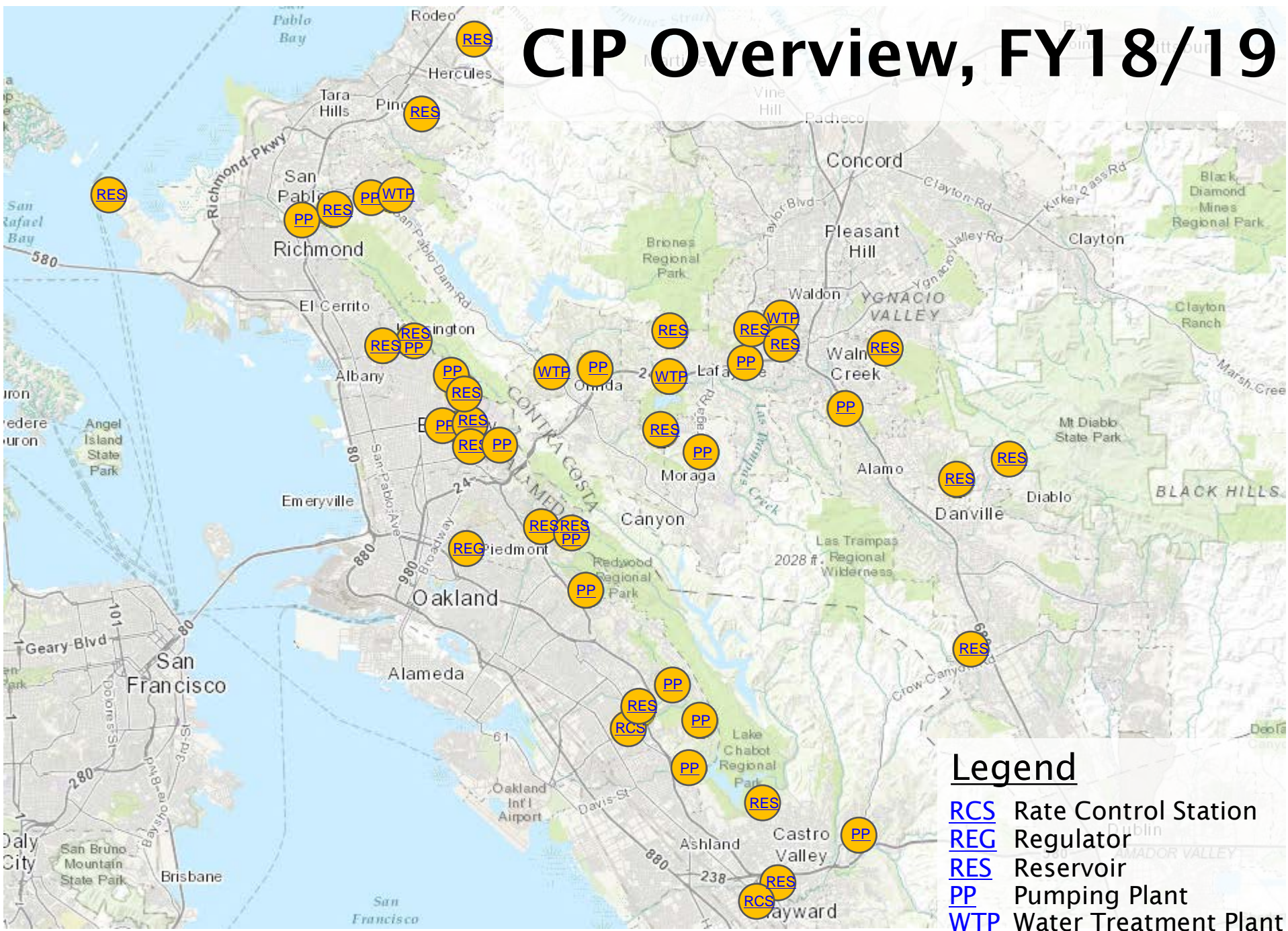
**RES** Reservoir

PP Pumping Plant

WTP Water Treatment Plant



# CIP Overview, FY18/19

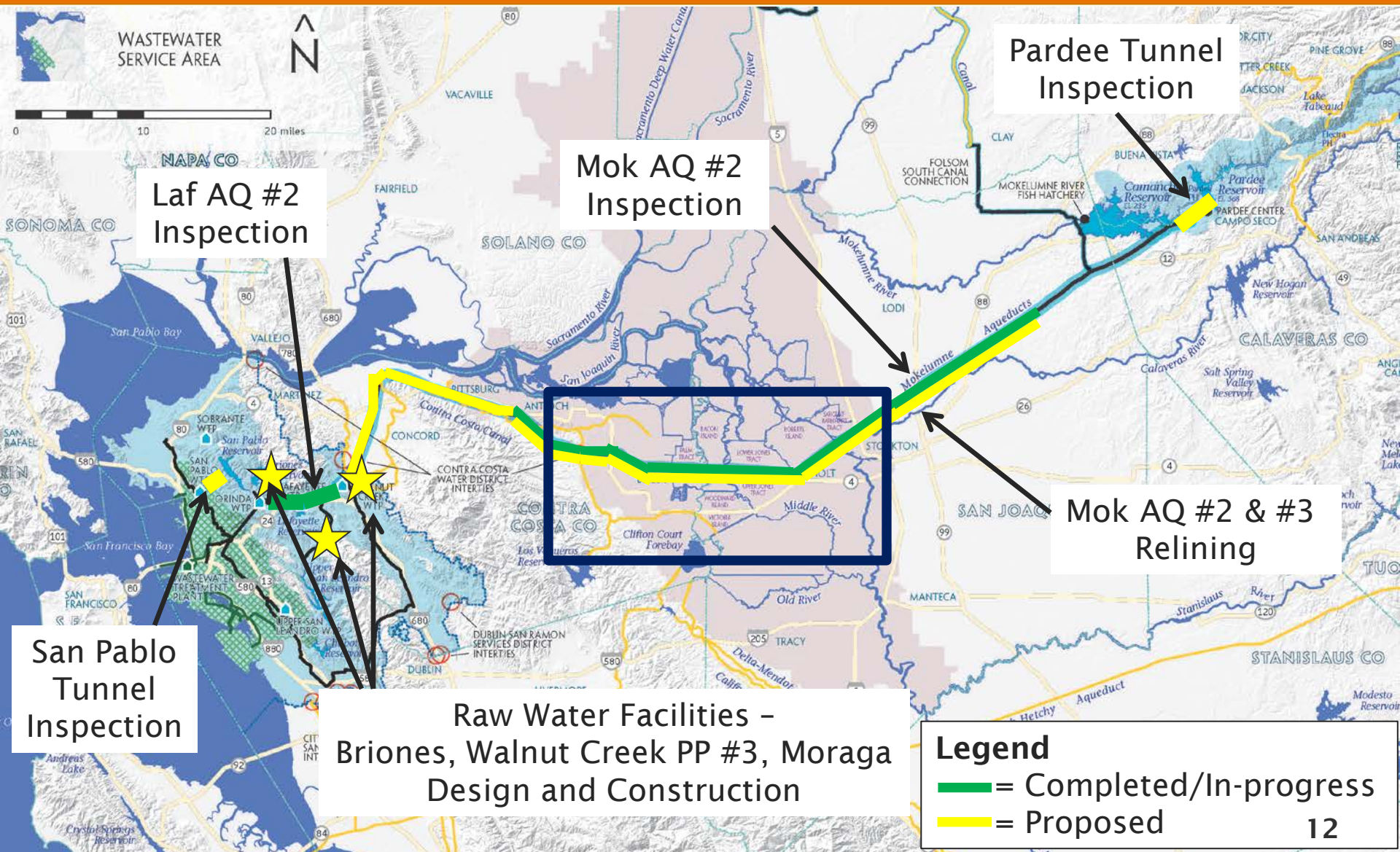


## Legend

- RCS** Rate Control Station
- REG** Regulator
- RES** Reservoir
- PP** Pumping Plant
- WTP** Water Treatment Plant

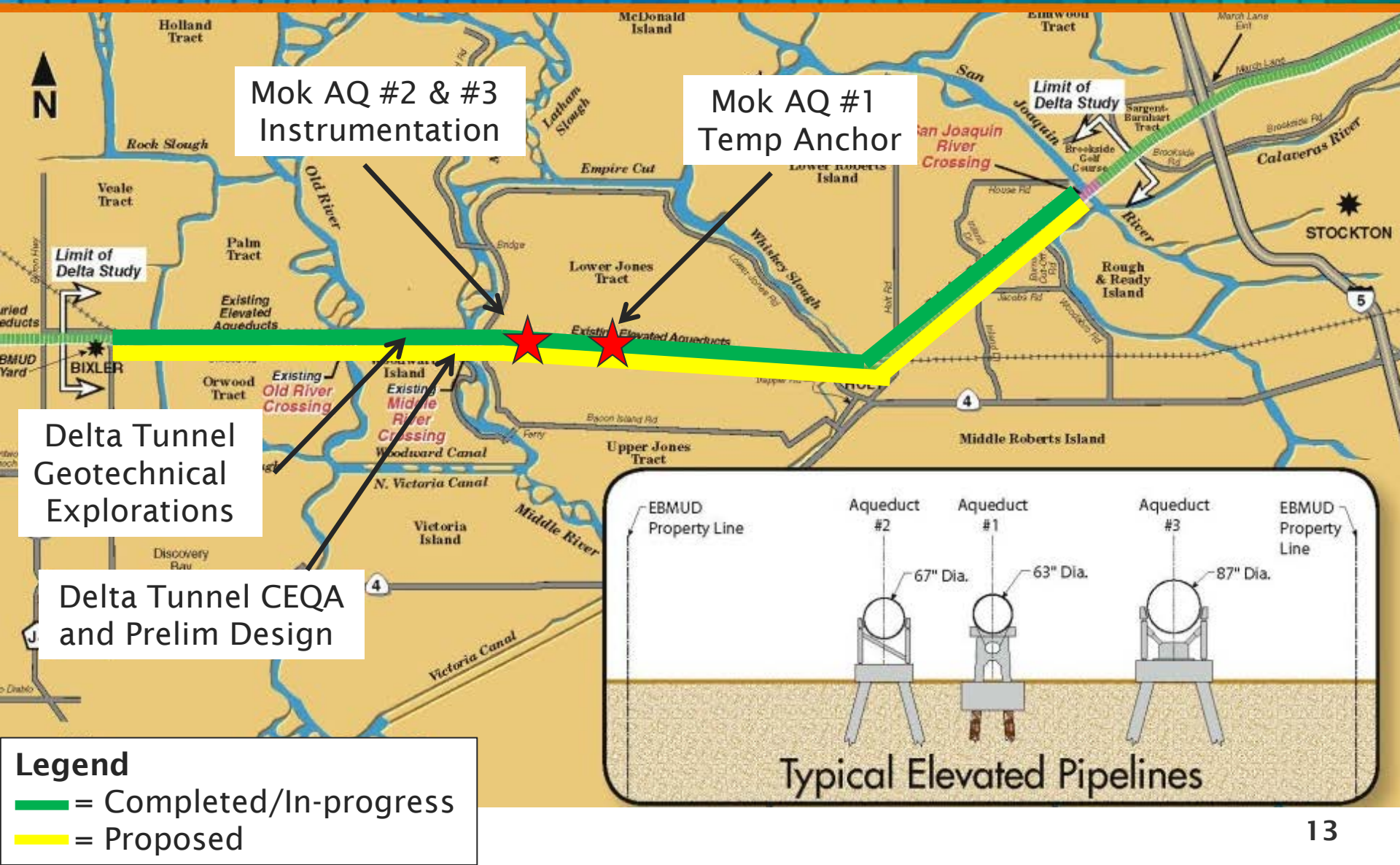


# Raw Water Improvements





# Raw Water Improvements – Delta Projects



# Reservoirs – Steel Tanks



## Recent Accomplishments

Reservoir	City	Ward
Acorn (In Progress)	Blackhawk	2
Round Hill (In Progress)	Alamo	
Stonewall (In Progress)	Oakland	4
University (In Progress)	Oakland	
Eden (In Progress)	Castro Valley	7



Acorn

## Upcoming Projects

Reservoir	City	Ward
Birch	Rodeo	1
Mendocino	Hercules	
Larkey	Walnut Creek	2
Holly	Walnut Creek	
Grizzly	Lafayette	
Bacon	Lafayette	3
Carter	Moraga	
Pearl	Richmond	
Rheem	Lafayette	
Verde	El Sobrante	7
Arcadian	Castro Valley	
Faria No. 1 & No. 2	San Ramon	



Round Hill



Eden



# Reservoirs – Open-Cut



## Recent Accomplishments

Reservoir	City	Ward
Summit Reservoir (In Progress)	Berkeley	4
South Reservoir, Phase I (Complete)	Castro Valley	7
South Reservoir, Phase II (In Progress)	Castro Valley	



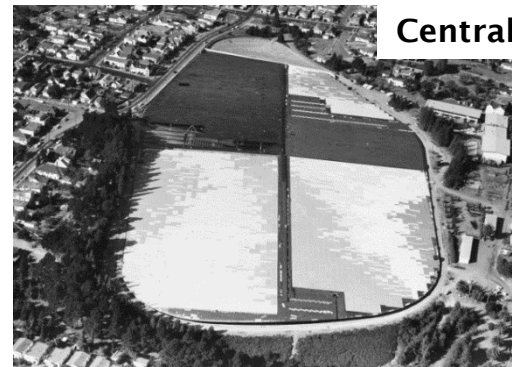
South



Summit

## Upcoming Projects

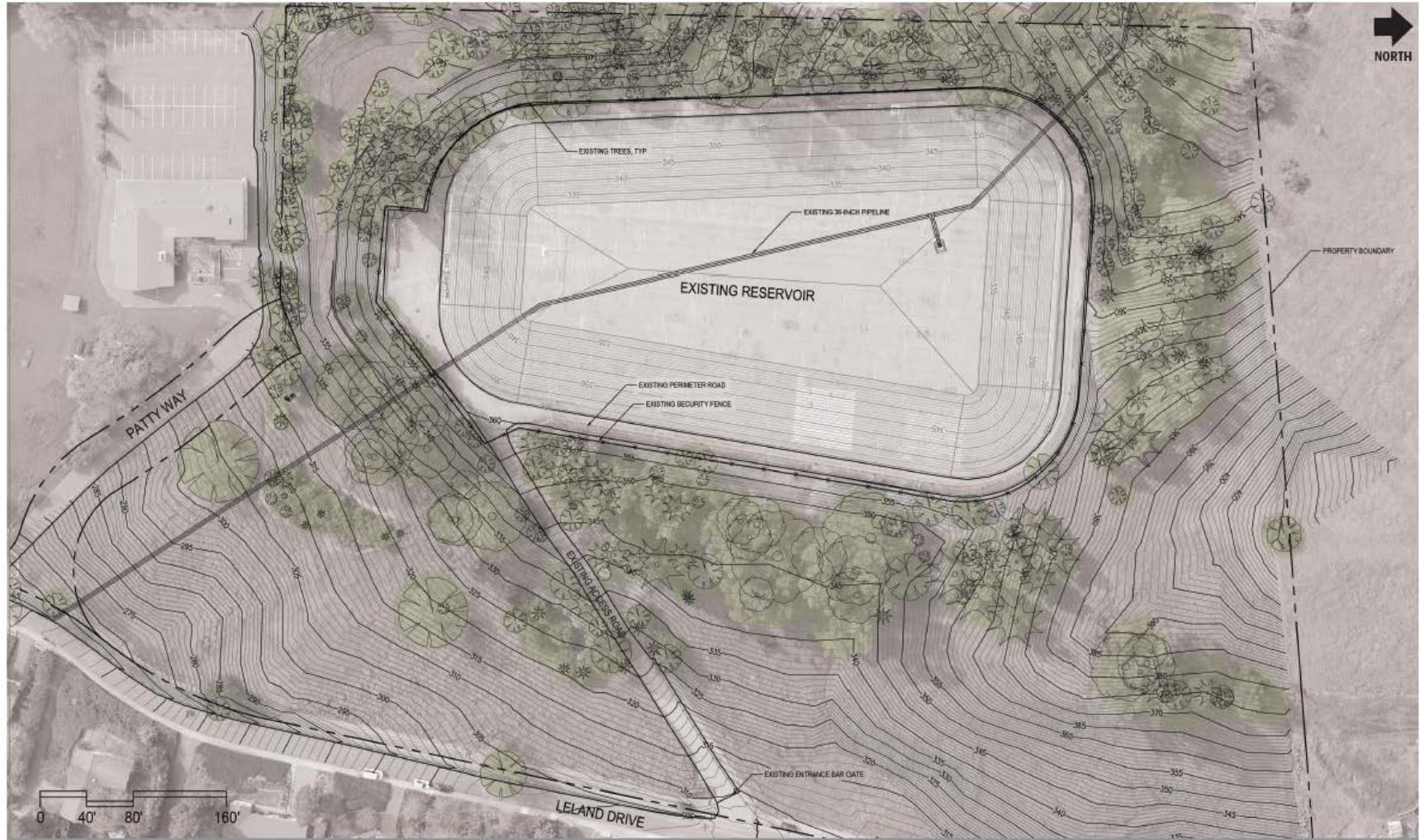
Reservoir	City	Ward
Leland Reservoir	Lafayette	2
San Pablo Clearwell	Kensington	4
Central Reservoir	Oakland	6
Seneca Reservoir	Oakland	
Almond Reservoir	Castro Valley	7



Central

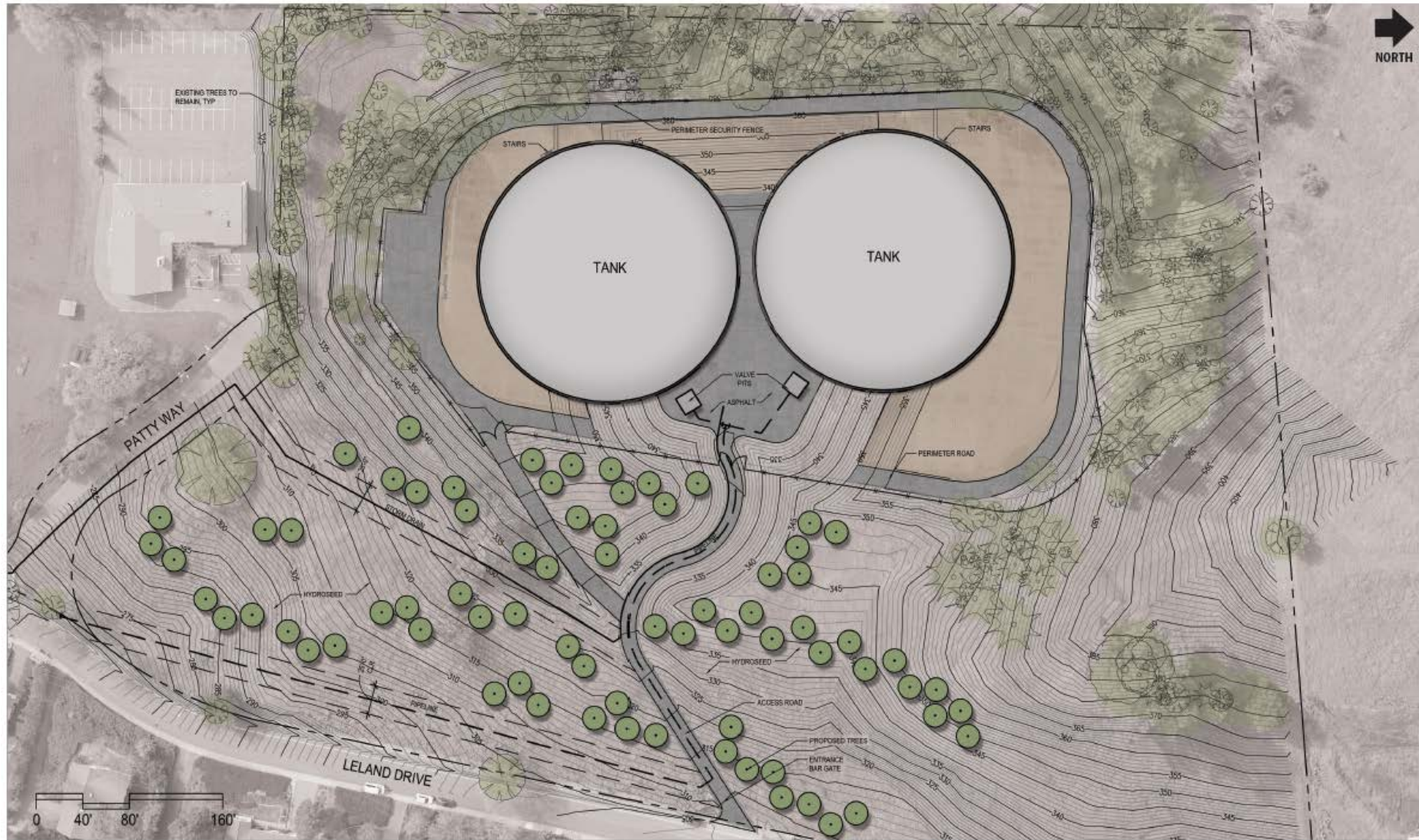


# Existing Leland Reservoir Site Plan





# New Leland Reservoir Site Plan





# Reservoir Issues – Carisbrook



Ponding on Roof





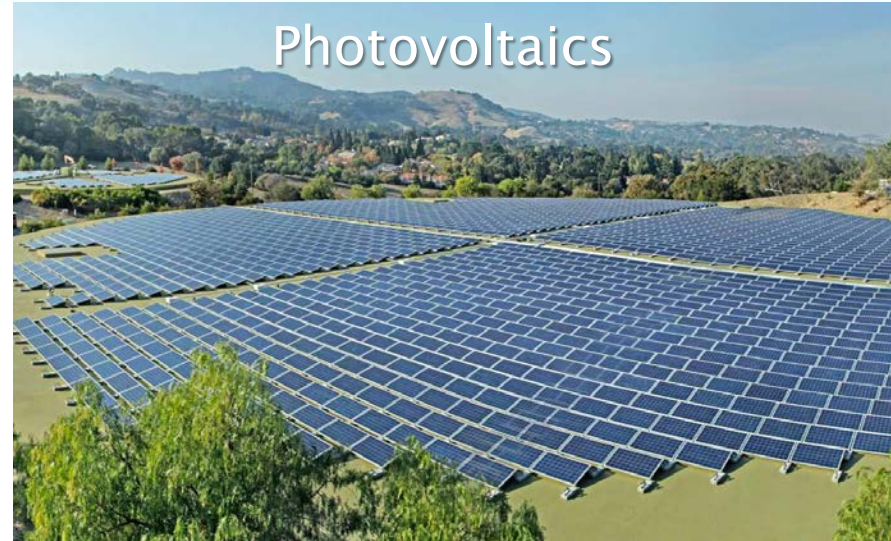
# Improving Sustainability



Concrete Recycling



Photovoltaics



Pipeline Relining



ISI Envision



ENVISION®



# Pumping Plant Highlights



## Upgraded 6 PPs in FY16-17

Pumping Plant	City	Ward
Danville No. 1	Walnut Creek	2
Bryant No. 2	Lafayette	
Redwood & 39 <sup>th</sup> Avenue	Oakland	3
Las Aromas	Orinda	
Berkeley View	Berkeley	4



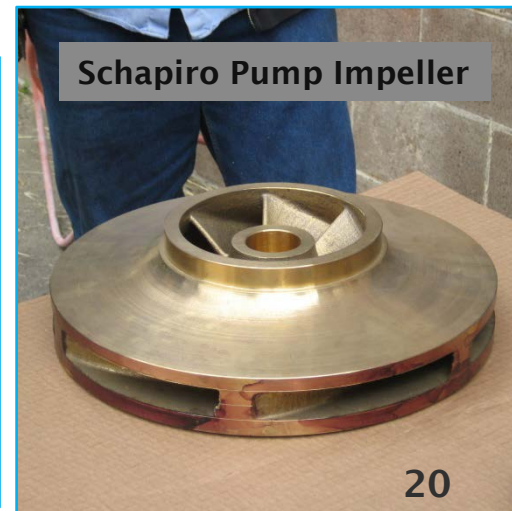
39<sup>th</sup> & Redwood

## Recently awarded 8 PPs

Moyers & Road 24 No. 1	Richmond	1
Diablo	Danville	
Diablo Vista	Lafayette	2
Gwin	Oakland	3
Laguna No. 1	Orinda	
Shasta & Woods	Berkeley	4



Moyers & Road 24 No. 2



Schapiro Pump Impeller

## Award 5 PPs in FY17

Schapiro & Rd 24 No. 1	San Pablo	1
Skyline	Oakland	3
Country Club	Oakland	6
Faria (new PP)	San Ramon	7

# Upcoming PP Projects

## Start Construction in FY18

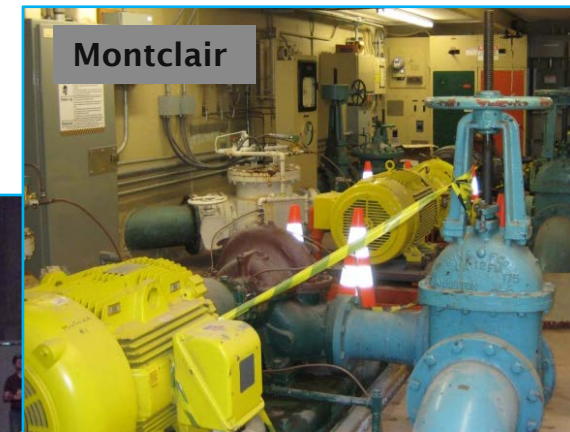
Pumping Plant	City	Ward
Maloney	El Sobrante	3
University	Berkeley	4
Fire Trail & Jensen No.1	Castro Valley	7

## Start Construction in FY19

Pumping Plant	City	Ward
Encinal & Westside	Orinda	3
Madrone & Palo Seco	Oakland	
Fay Hill	Moraga	
Bayfair & Peralta	Oakland	6

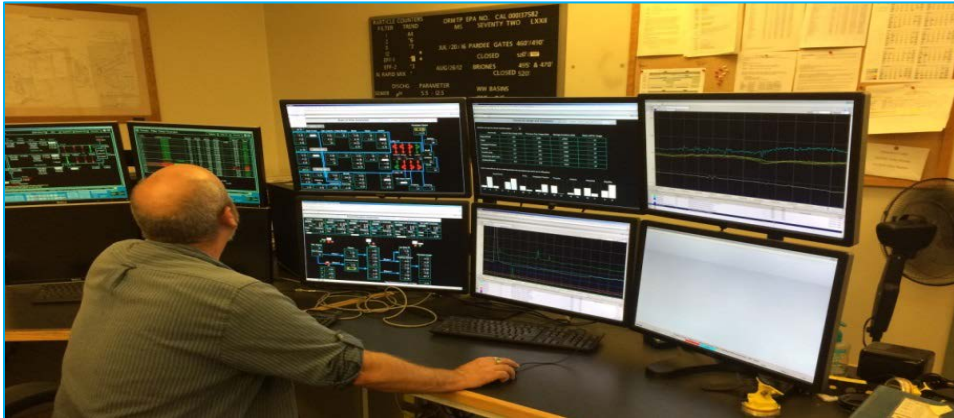
## Start Design in FY19

Pumping Plant	City	Ward
Montclair	Oakland	3
Summit West	Kensington	4
Proctor	Castro Valley	7





# Water Treatment Plant Highlights



**Orinda WTP Controls Systems  
Modernization (In Progress)**



**USL and Sobrante Ozone  
Improvements (In Progress)**



**Chemical Feed Systems**



**Effluent Flow Meter**



**Bifurcation Vault**

**Orinda WTP Maintenance and Reliability  
Improvements Project (In Progress)**



# Overview of Upcoming WTP Improvements Projects (FY18-22)



**Walnut Creek \$37M**



**Pre-treatment & Filter Rehab**

**Orinda \$13M**



**Chemical Safety, Air Scour**

**Lafayette \$8M**



**Chemical Safety**

**Sobrante \$58M**



**Reliability Project & Ozone**

**USL \$42M**



**Reliability Project & Ozone**



# Examples of Upcoming WTP Projects



## Improvement projects at both plants

- Replace & upgrade ozone system
- Replace/reconfigure critical reclaim and solids handling systems
- Add filter-to-waste capabilities
- Rehabilitate filter underdrains
- Control System Upgrades

## Project benefits

- Minimizes taste & smell episodes
- Restores 30% of WTP capacity lost to underperforming solids handling systems
- Improves efficiency for in-plant water use
- Improves drought preparedness by maximizing use of existing conventional WTP capacity

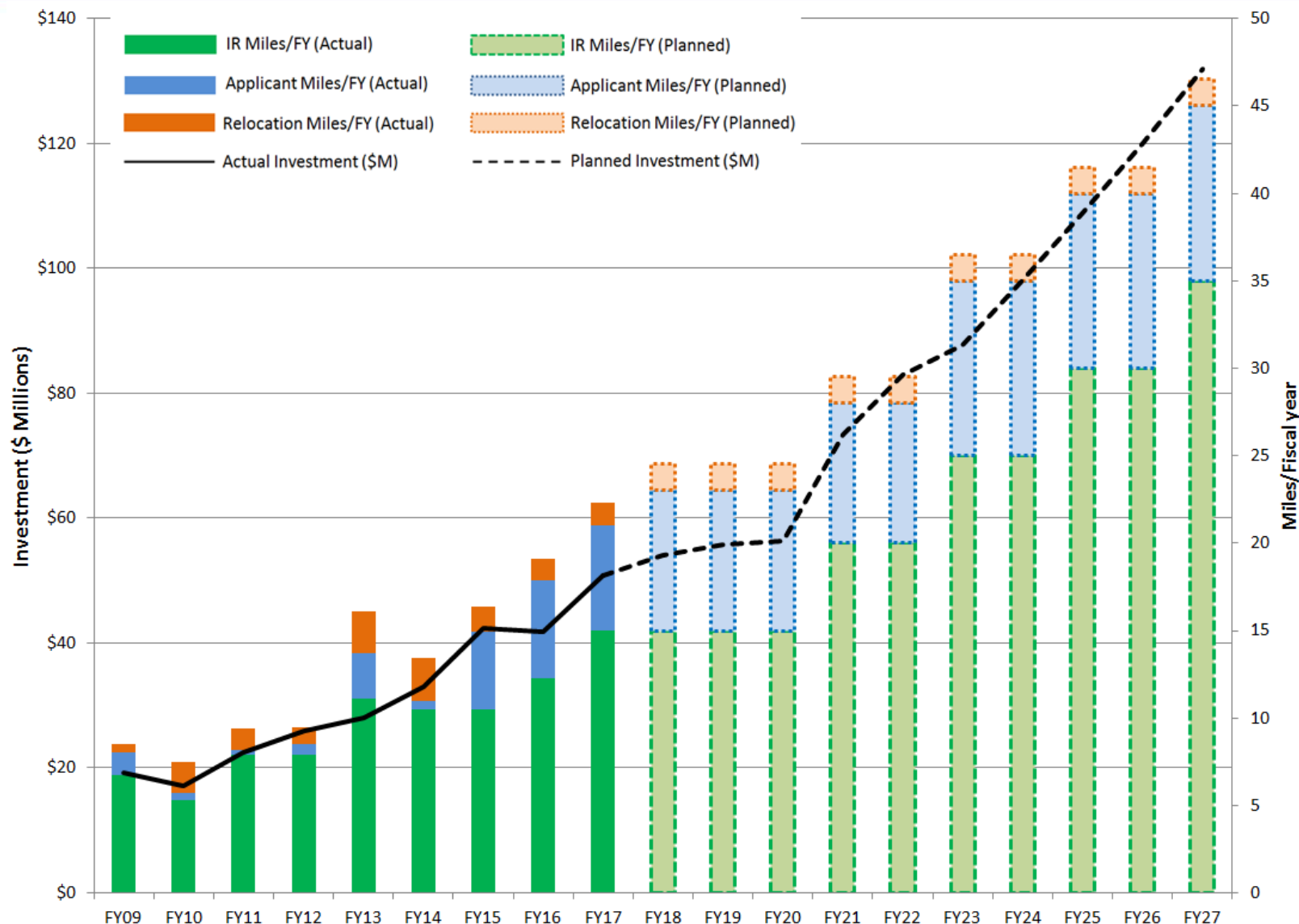


# Pipeline Rebuild

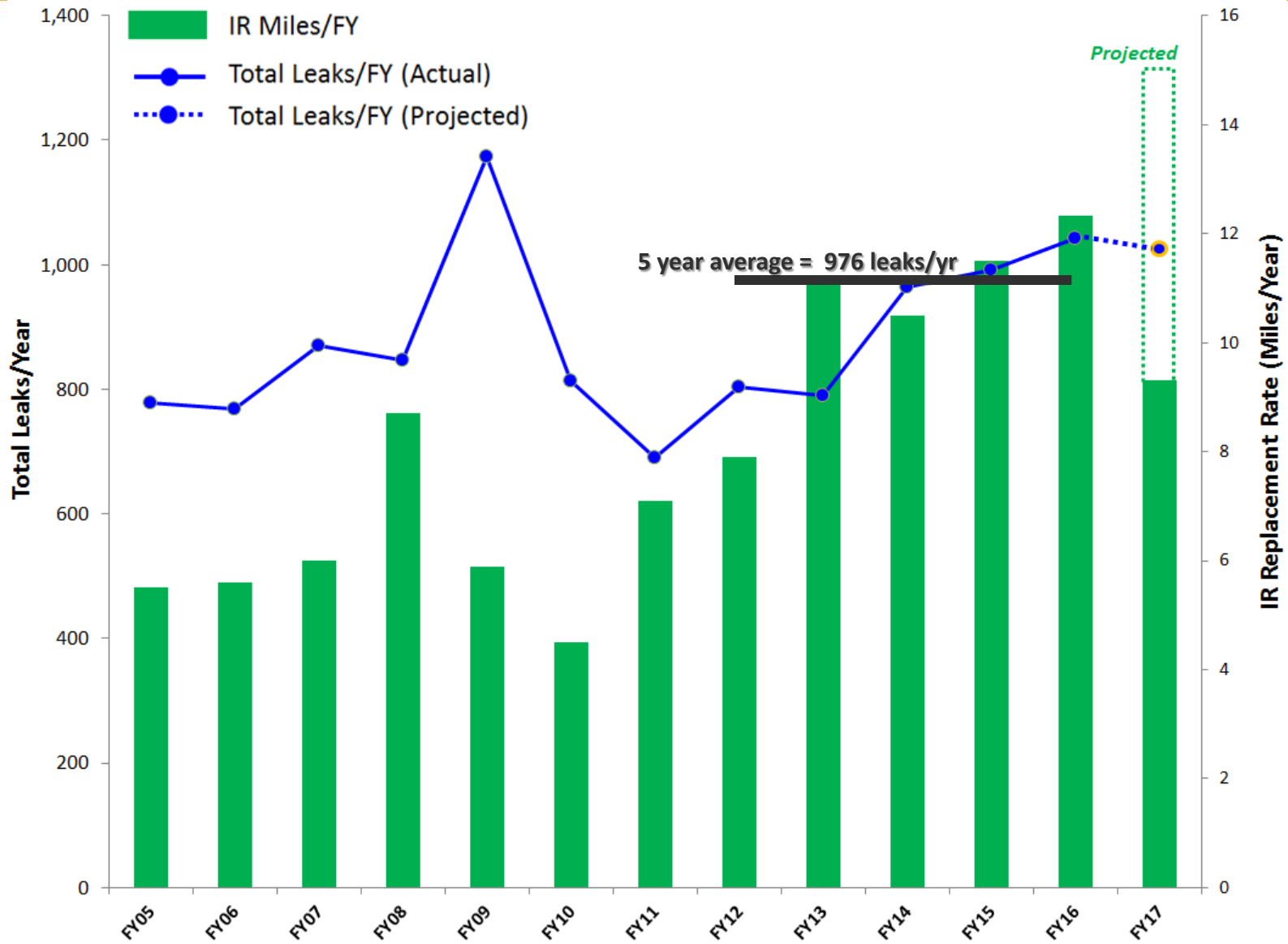
- Replacement goal of 15 miles FY17-FY20
- Piloting innovative methods
- Evaluating production and cost metrics
- Defining best practices to improve efficiencies
- Making long-term recommendations by FY20



# Pipeline Investments (IR, Applicant, Relocations)



# Pipeline IR Replacement Rate & Leaks





# Life Extension of Assets

- Cast Iron Pipe Cathodic Protection Feasibility Study
- Extend the useful life of CI pipes and copper laterals by retrofitting with anodes
- Acoustic leak detection of copper laterals



# Service Laterals



- Pinhole leaks on copper laterals average leak rate ~300 GPD
- 32,000 copper laterals in the District
- ~\$9M to retrofit copper lateral w/anodes FY18-22

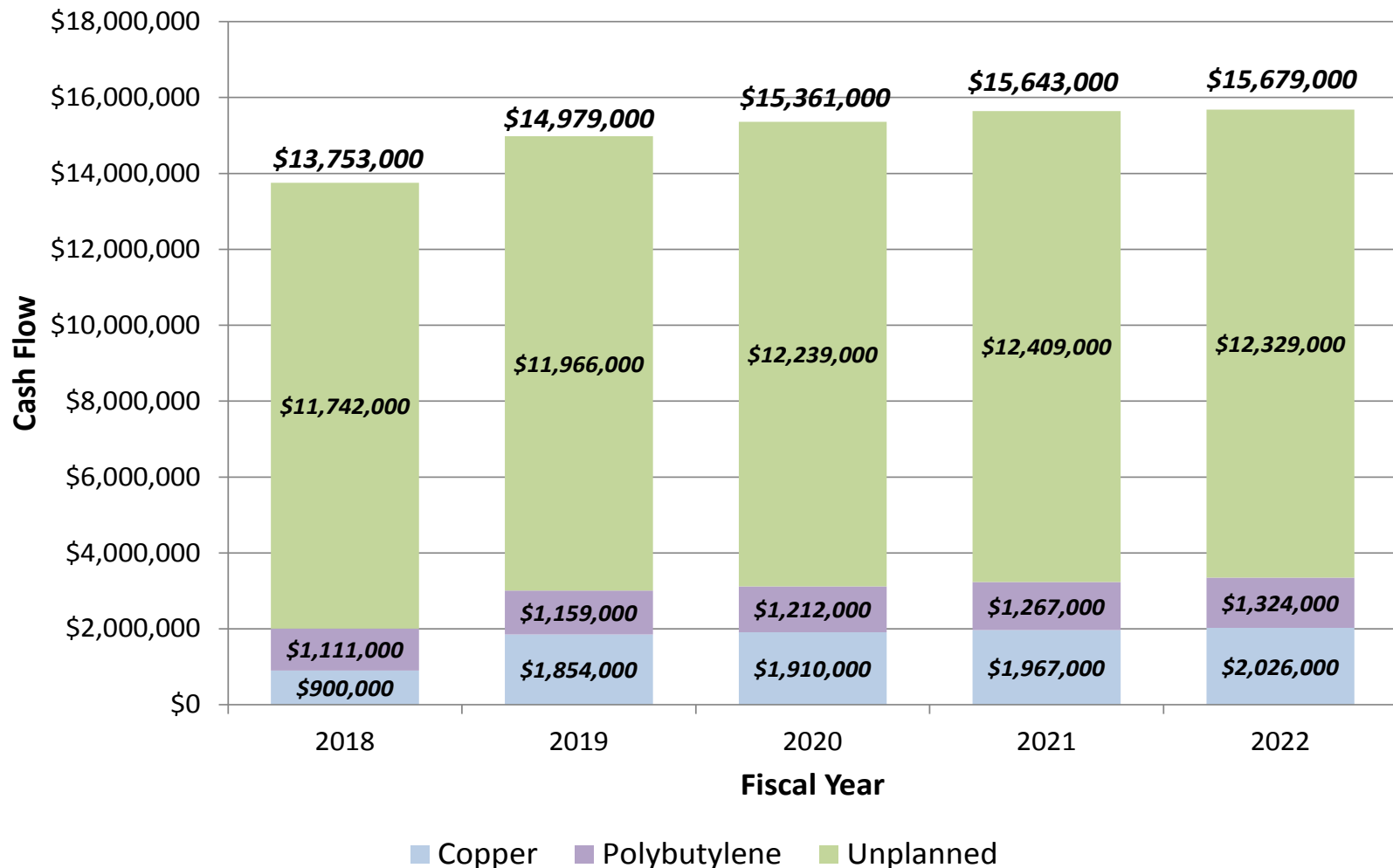
- Continued replacement of poly laterals
- ~15,000 remaining of original 64,000



# Service Lateral Replacements

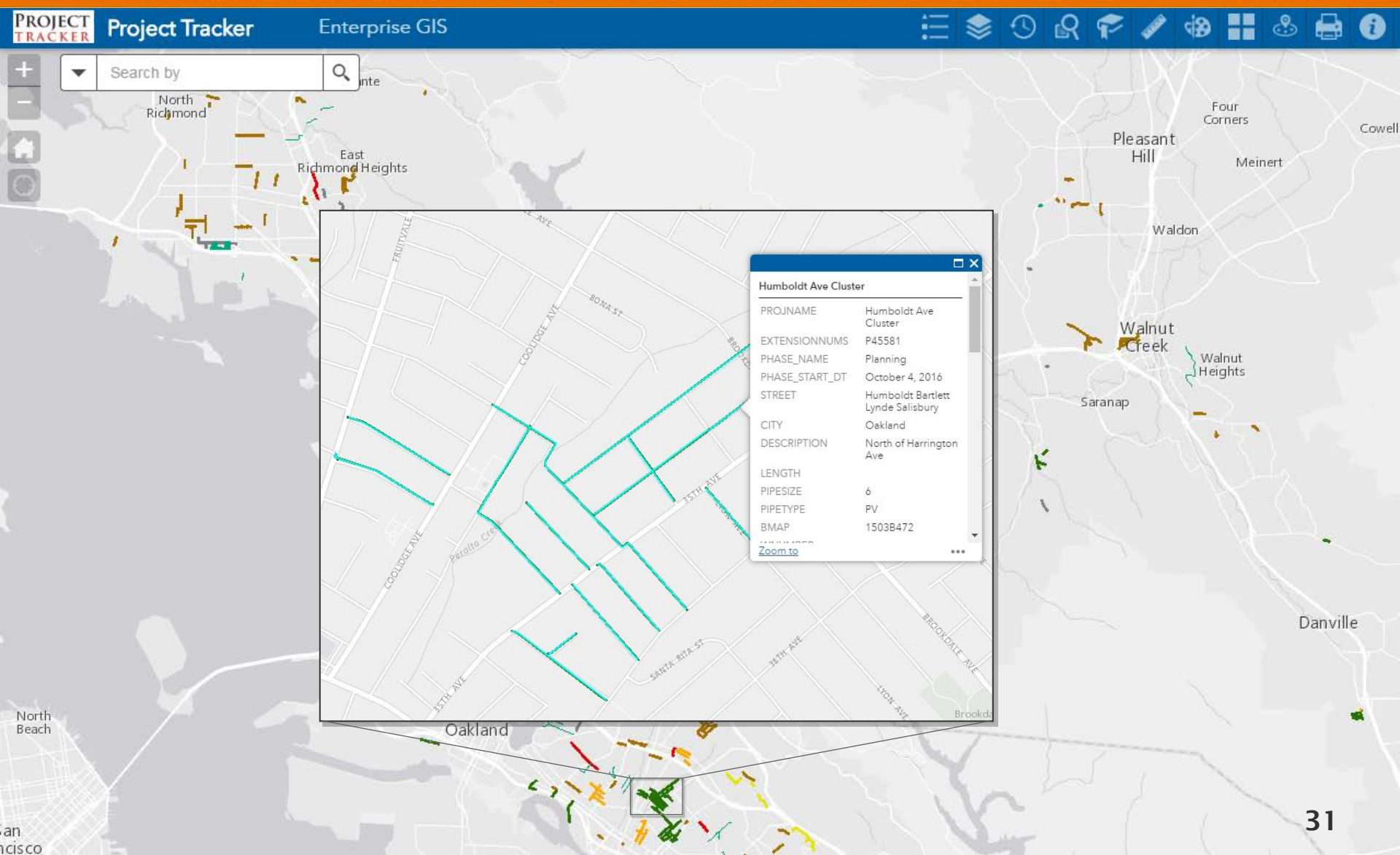


Service Lateral Replacements  
CIP FY18-22





# Project Tracker



# DERWA/San Ramon Valley



- Bishop Ranch pipeline extension
  - 3.5 miles of pipe
  - \$2M State grant
  - Pipeline installed in 2016
  - 40 site conversions (0.7 mgd)
- DERWA treatment capacity
  - Expand from 9.7 to 16.2 mgd
  - \$15M construction 2017-2018
  - Cost share with DSRSD & Pleasanton
- Supplemental supply
- Phase 3 EBMUD pump station
  - CEQA, property acquisition 2017
  - Design FY18-19, construction FY19-20
  - \$6M estimate





# Summary – Water System Capital Investment



- Work advancing in all asset classes consistent with KPIs and master plan priorities
- Key FY18 & FY19 Priorities
  - Maintain progress on upgrades to pumping plants, reservoirs, and treatment plants
  - Continue comprehensive interior inspection of Mokelumne Aqueducts Nos. 2 and 3 and pilot testing of lining materials
  - Continue ramp up of pipeline work and complete study by FY20 with long-term recommendations for replacement program

# Effective Management of Infrastructure



## FY18 & FY19 Objectives

- Reduce use of FM&O
- Reduce overtime
- Increase preventative maintenance



# Ongoing Maintenance Efforts



- Maintain water system infrastructure and facilities
- Perform preventative and corrective maintenance
- Replace and rehabilitate infrastructure
- Read and maintain nearly 400,000 water meters
- Maintain vehicles and heavy equipment

# FM&O Services



- Fully maintained and operated (FM&O) services include equipment and personnel
- FM&O services
  - Paving and concrete
  - Dump truck
  - Backhoe
  - Hydro excavation
  - Sweeping



- FM&O contracts assist with
  - Peak workload demands
  - Need for specialized equipment
- Increased use in recent years due to
  - Main breaks and main relocations
  - Infrastructure renewals
  - Joint paving projects with cities/counties
  - Pipeline Rebuild start-up



# Fiscal Impact – FM&O Services



- Reduce contract services ~\$1.7 up to \$2.7 million
- Reduction fully realized in FY20 due to time to procure equipment and hire staff
- Annual labor/equipment costs: \$2.8 million partially offset by reduction in contract use
- Staffing
  - FY17 – Fill 2 positions (Concrete Finisher I/II) to reduce contract services
  - FY18 & FY19 budget – Add 14 positions (Heavy Transport Operator, Heavy Equipment Operator, Truck Driver II) to reduce contract services

# Overtime and Preventative Maintenance



- Overtime
  - Average around 16 percent
  - Unsustainable – worker fatigue
- Preventative maintenance
  - Leak detection, valve testing, appurtenance maintenance
  - Control system maintenance
  - Increasing miles of pipe surveyed

# Fiscal Impact – Overtime & Preventative Maintenance



- Reduce OT by ~\$550K in FY18 and ~\$1M in FY19
- Annual labor costs: \$1.4M
- Staffing
  - Add 11 positions (Maintenance Shift Supervisor, Utility Laborer) to reduce overtime and increase preventative maintenance



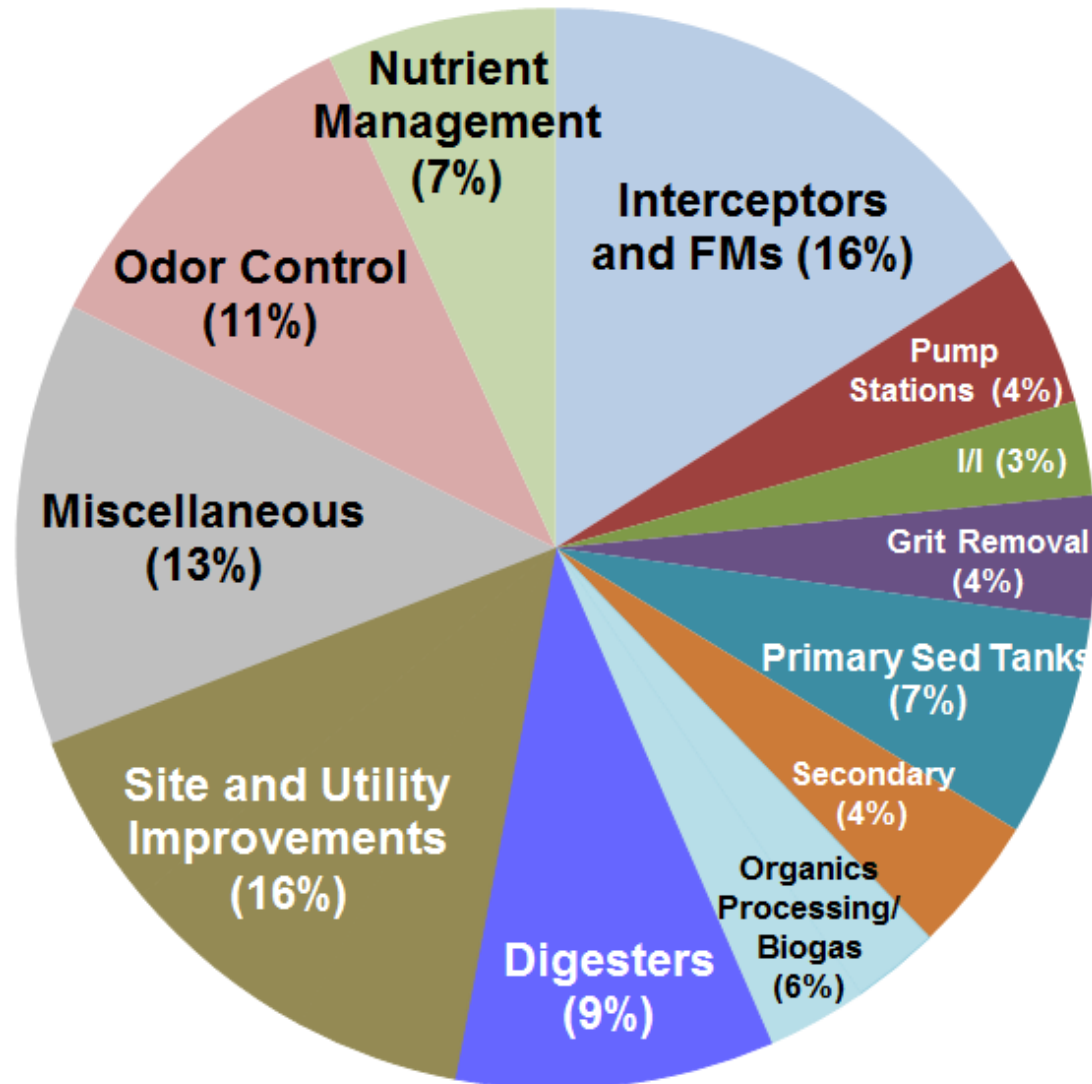


# Wastewater Infrastructure

1. Infrastructure Renewal
2. Odor Control
3. Wet Weather Consent Decree Implementation
4. Nutrient Management
5. Food Waste



# Wastewater FY18-22 CIP Breakdown



# Infrastructure Renewal

## Key Priority Areas



- Interceptor Rehabilitation (\$32 million, 15% of CIP)
  - 2.3 miles planned in 5-year CIP (4.2 miles to date)
  - 3<sup>rd</sup> Street Interceptor Rehab Project
- Concrete Rehabilitation (\$19 million, 9%)
  - Primary sedimentation tanks, secondary treatment reactor basins



# Infrastructure Renewal

## Key Priority Areas (cont'd)



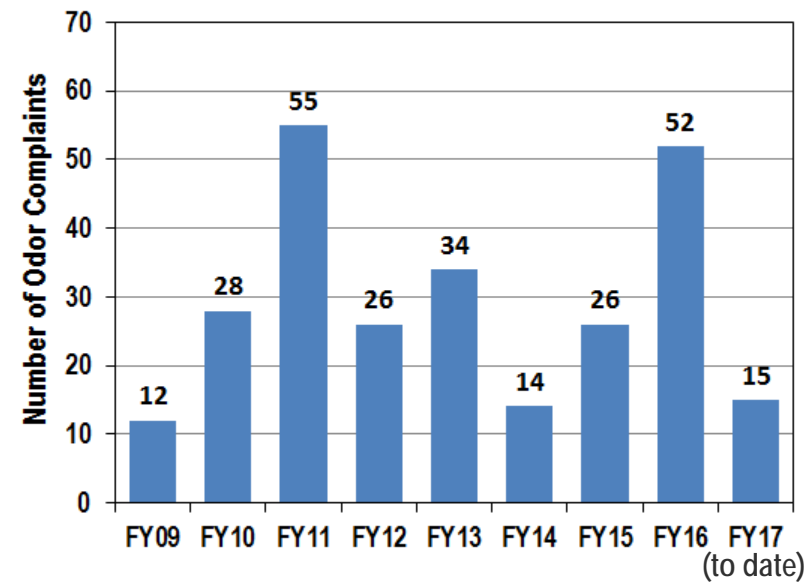
- Digester Upgrades (\$21 million, 10%)
  - Install gas storage covers, mixing system, seismic improvements
  - Repair failed coating on digester covers and walls
- MWWTP Building Improvements (\$8 million, 4%)
  - Operations Center and Administration Building ventilation and roof repairs



# Odor Control Background



- Significant redevelopment near MWWTP amplifies public concerns regarding odors
- Continuous improvement and good neighbor focus
  - Improving operational and maintenance practices
  - Continuing capital investment to address major odor sources
- Odor Program is focus area under Values Initiative

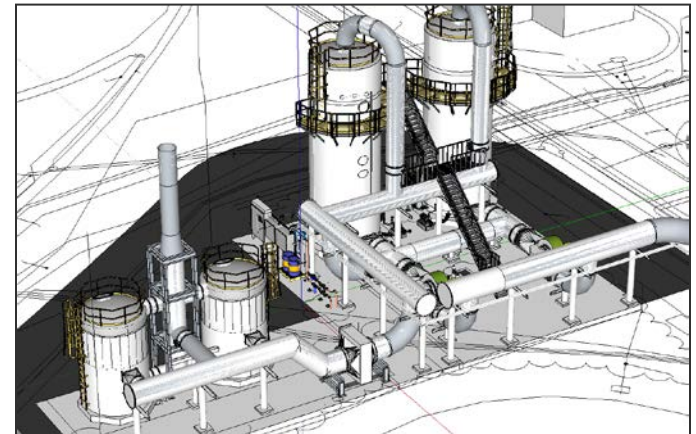




# Odor Control Budget Implications



- CIP includes \$23 million for odor control (11% of total)
- Key Projects
  - Influent Pump Station (by FY18)
  - R2 Receiving Station (by FY20)
  - Primary Sedimentation Tanks (Phase 1 by FY21)
  - Dewatering Building (by FY24)
- Master plan update in FY19 to measure progress, guide future projects



# Wet Weather Consent Decree Background



- 22-year Consent Decree signed in 2014 to reduce discharges from Wet Weather Facilities
- Implementing two required capital projects
  - Urban Runoff Diversion Project (completed)
  - Pump Station Q Reverse Flow Project
- Private Sewer Lateral Program
- Regional Technical Support Program
  - Investigate sources of I/I
  - District is required to spend \$2 million/year



# Wet Weather Consent Decree Budget Implications

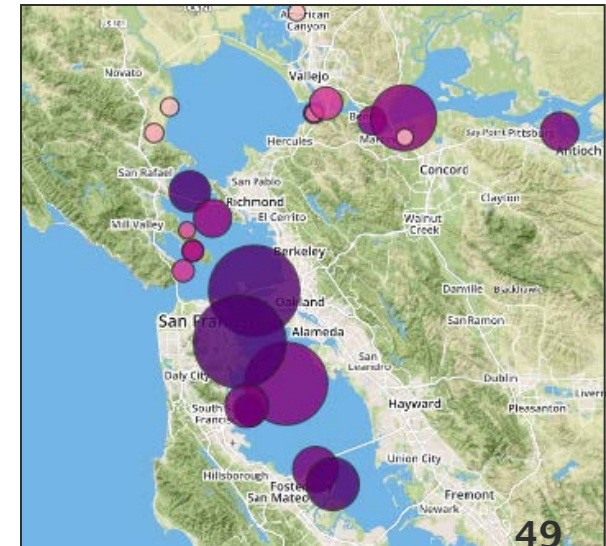


- CIP includes \$925k over next five years for flow monitoring and modeling work
- Progress check-ins are required in 2022, 2030
  - Failure to meet targets results in potential additional requirements
  - CIP includes an additional \$600k (FY18 & FY19) to evaluate progress in advance of 2022 check-in



# Nutrient Management Background

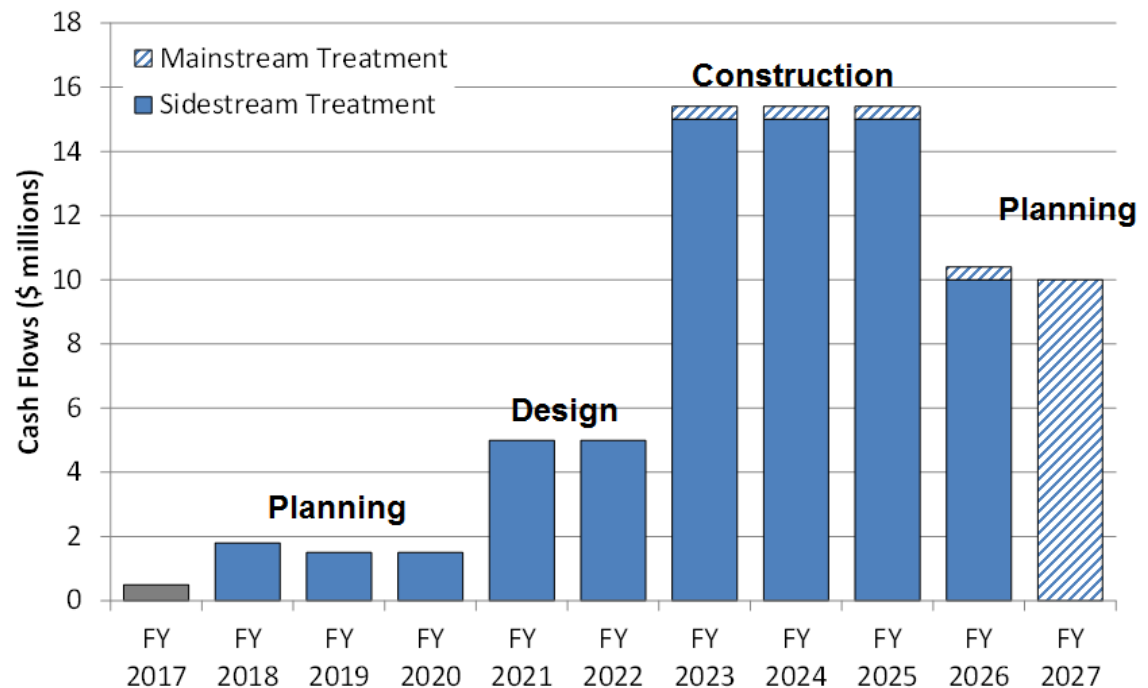
- Excess nutrient (nitrogen, phosphorus) loading can cause algal blooms, fish kills
- Historical resiliency of SF Bay may be declining
- WWTPs contribute ~65% of nutrient loading
- Preliminary estimate to upgrade the MWWTP for “mainstream” nutrient removal exceeds \$1 billion
- District is working to ensure sound-science based approach under Watershed Permit process



# Nutrient Management Budget Implications

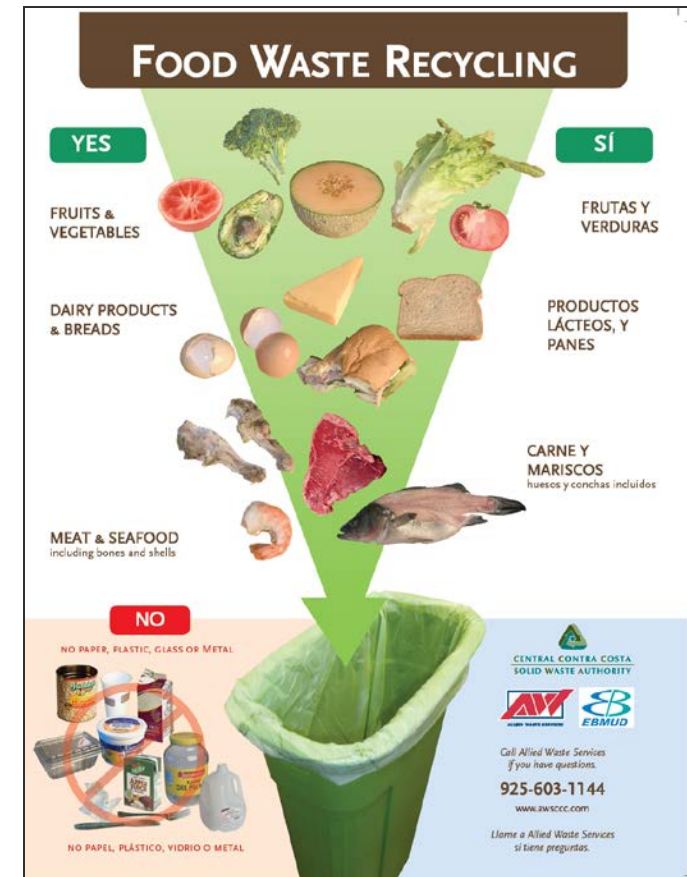


- 5-year CIP includes \$15 million for planning/design of “sidestream” treatment and master planning work
  - \$55 million outside the 5-year CIP for construction
  - Potential “early action” benefit for Watershed Permit renewal in 2024



# Food Waste Background

- Large-scale (200 tons/day) food waste facility on hold
  - Insufficient revenues under current market conditions to offset capital investment (~\$60 million)
- Near-term focus on off-site preprocessing
- State's organics diversion mandate likely to create more favorable economics



# Food Waste Budget Implications

- CIP includes \$1.3 million to maintain food waste processing reliability at existing station
- \$10 million is included in Wastewater Contingency
  - Provides flexibility if a cost-effective option is identified



# Budget Priority #2



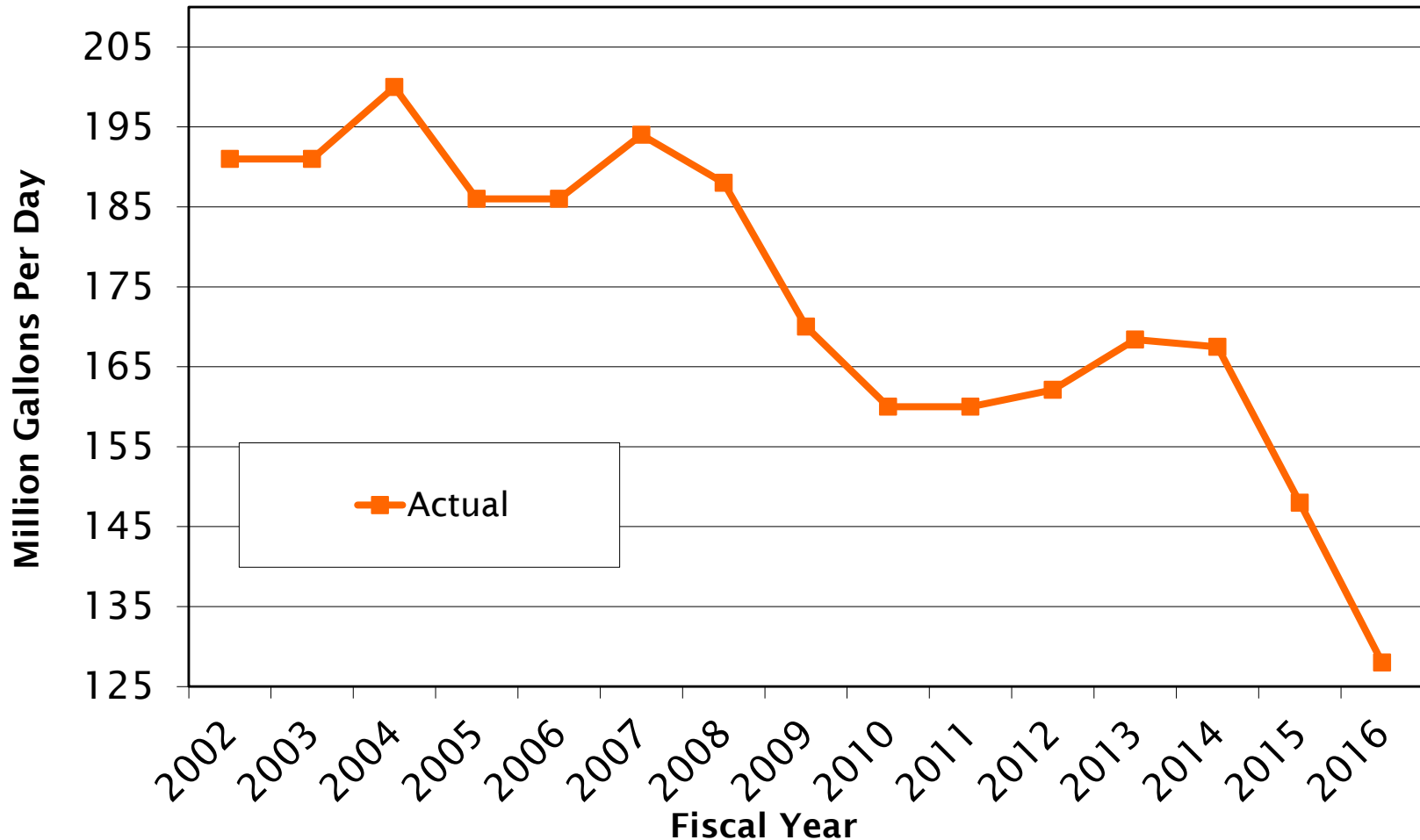
**Manage the financial and operational impacts of severely reduced consumption**



# Water Demands Have Dropped 33% Since 2007



## Actual



# Water Quality and Environmental Protection



- The District is responsible for operating a complex water system to surpass federal and state drinking water regulations
  - Drought impacts
  - Storm impacts



# Operating Challenges

- Reduced demands
  - Water age
  - Water quality





# Water Quality Challenges



- Large, complex water system
- With reduced demands, very high water age in many parts of the system
- Chlorine residual decays over time, particularly in water from conventional plants
- Staff had to manually treat over 70 distribution reservoirs in 2016 to maintain water quality compared to a previous average of 14 per year
- Continue to require more staff to maintain water quality in the distribution system with the reduced demands

# Fiscal Impact – Water Operations



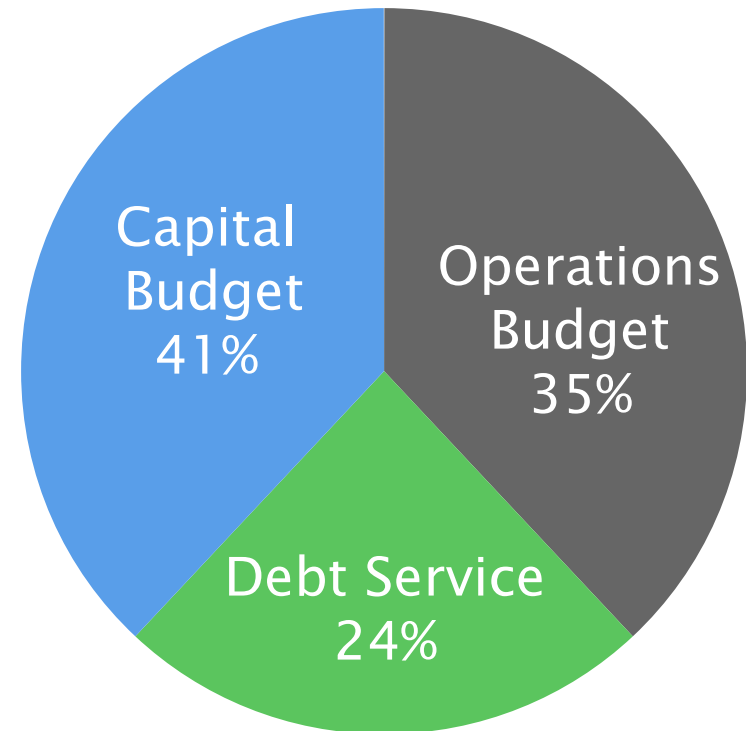
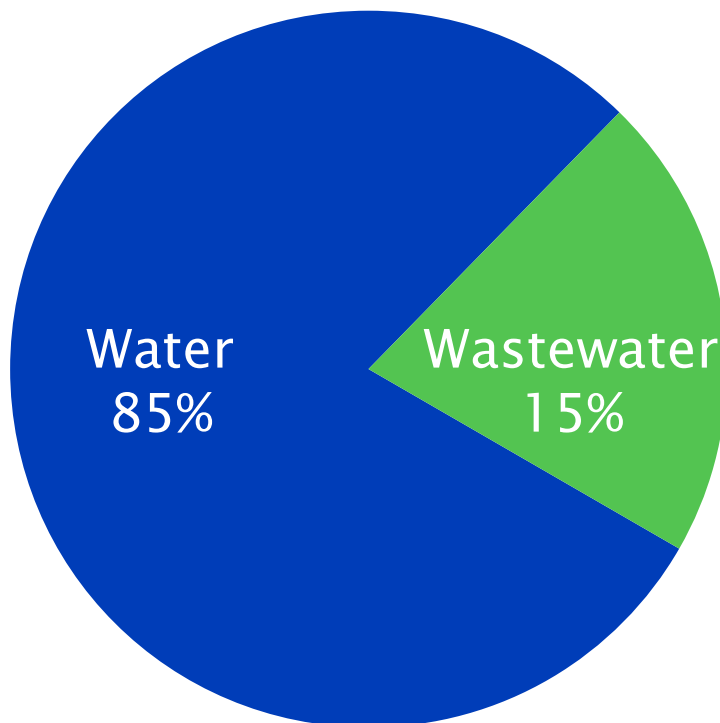
- FY17 staffing costs of \$1.5M for 11 positions filled
  - 1 Water Distribution Operator, 4 Water System Inspectors, and 1 Water Sampler to address distribution system water quality issues
  - 5 Water Treatment Operators to operate San Pablo Water Treatment Plant to support the Orinda Water Treatment Plant Improvement Project
- FY18 & FY19 staffing and program costs
  - Add 1 LT Water Distribution Supervisor to manage \$1.5M per year program for lead testing in schools and customer tap sampling

# Recommended Budget

# Biennial Budget – FY18 & FY19



**\$2.03 Billion**



- 65% of budget is capital investment-related

# Biennial Budget – FY18 & FY19



## FY18 & FY19 APPROPRIATIONS (\$ Millions)

	FY18			FY19			FY18 & FY19
	Water	Wastewater	Total	Water	Wastewater	Total	Grand Total
Operations <sup>1</sup>	277.9	70.6	348.5	292.5	73.1	365.6	714.1
Debt Service	199.6	34.7	234.2	210.0	31.9	242.0	476.2
Capital Appropriation	<u>386.5</u>	<u>34.4</u>	<u>420.8</u>	<u>367.5</u>	<u>51.1</u>	<u>418.6</u>	<u>839.4</u>
<b>Total<sup>1</sup></b>	<b>863.9</b>	<b>139.6</b>	<b>1,003.5</b>	<b>869.9</b>	<b>156.2</b>	<b>1,026.1</b>	<b>2,029.7</b>

<sup>1</sup> Change in appropriation reflects funding of 17.5 FTEs for additional staffing considerations presented at March 14 workshop

# FY18 & FY19 Biennial Budget Recommended Staffing



## *Proposed changes to Position Resolution*

- Total authorized FTEs will increase from 2,068 to:
  - 2,102 (FY18)
  - 2,109 (FY19)
- Net increase of 41 FTEs:

	FY18	FY19	Total
Additions	39	7	46
Deletions	(5)	-	(5)
Total	34	7	41

- Flex staffing change of 12 existing FTEs

# Five-Year Capital Improvement Program Cash Flows (\$ Millions)



	FY18	FY19	FY20	FY21	FY22	5-Year Total
Water	\$268	\$270	\$305	\$337	\$322	\$1,502
Wastewater	\$41	\$40	\$38	\$35	\$34	\$188

- Wastewater contingency appropriation not shown above includes \$10 million for potential food waste projects
- Discounted cash flow shown above includes Administration of Capital

# Recommended Rates and Charges



# Rates & Charges



	Proposed		Projected		
	<u>FY18</u>	<u>FY19</u>	<u>FY20</u>	<u>FY21</u>	<u>FY22</u>
Water	9.25%	9%	7%	7%	5%
Wastewater	5%	5%	4%	4%	4%

- Water rates requires use of RSF in FY18 & FY19 with replenishment of RSF by FY21
- As discussed in workshop #2, a six percent reduction in assumed water sales requires higher rate increases of 8.5% (FY20), 8.5% (FY21), and 7.5% (FY22)

# Previously Adopted and Projected Rates



	<u>FY14</u>	<u>FY15</u>	<u>FY16</u>	<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>FY20</u>	<u>FY21</u>
Projected Water	9.75%	9.5%	8%	7%	5%	5%	7%	7%
Adopted Water	9.75%	9.5%	8%	7%	9.25%	9%	TBD	TBD
Projected Wastewater	9%	8%	5%	5%	5%	5%	4%	4%
Adopted Wastewater	9%	8%	5%	5%	5%	5%	TBD	TBD

# Monthly Single Family Residential Customer Impacts – Water



	SFR Use (Ccf)	FY17 Bill	FY18 Bill	Change	FY19 Bill	Change
25 <sup>th</sup> Percentile	4	\$33.33	\$36.40	9.2%	\$39.67	9.0%
50 <sup>th</sup> Percentile	6	\$39.65	\$43.30	9.2%	\$47.19	9.0%
75 <sup>th</sup> Percentile	10	\$55.83	\$60.97	9.2%	\$66.46	9.0%
95 <sup>th</sup> Percentile	22	\$116.31	\$127.03	9.2%	\$138.46	9.0%
Average SFR Use*	8	\$47.15	\$51.49	9.2%	\$56.12	9.0%

\*8 Ccf/month represents recent average single-family residential use, down from 10 Ccf/month historic use

# Monthly Single Family Residential Customer Impacts – Wastewater Treatment

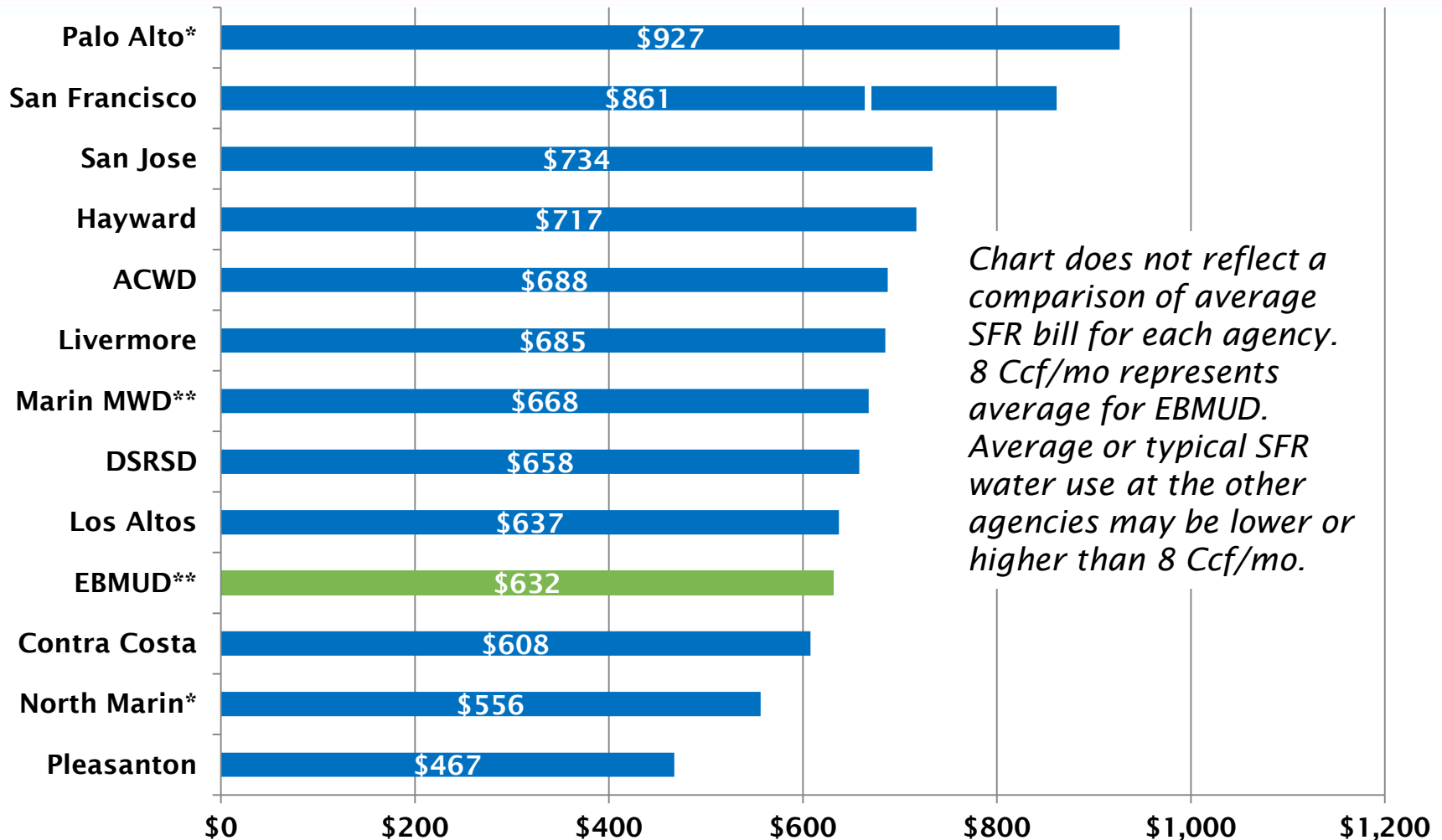


	Use (Ccf)	FY17 Current	FY18 Proposed	Change	FY19 Proposed	Change
Single Family Residential Avg	6	\$19.93	\$20.89	4.8%	\$21.95	5.1%
Single Family Residential Max	9	\$23.20	\$24.31	4.8%	\$25.55	5.1%

- The single family residential customer also pays an annual wet weather facilities charge of \$98.80 on their property tax bill

# Water Bills Calculated for 8 CCF/Mo

## Annual Charge for SFR – Effective 7/1/17

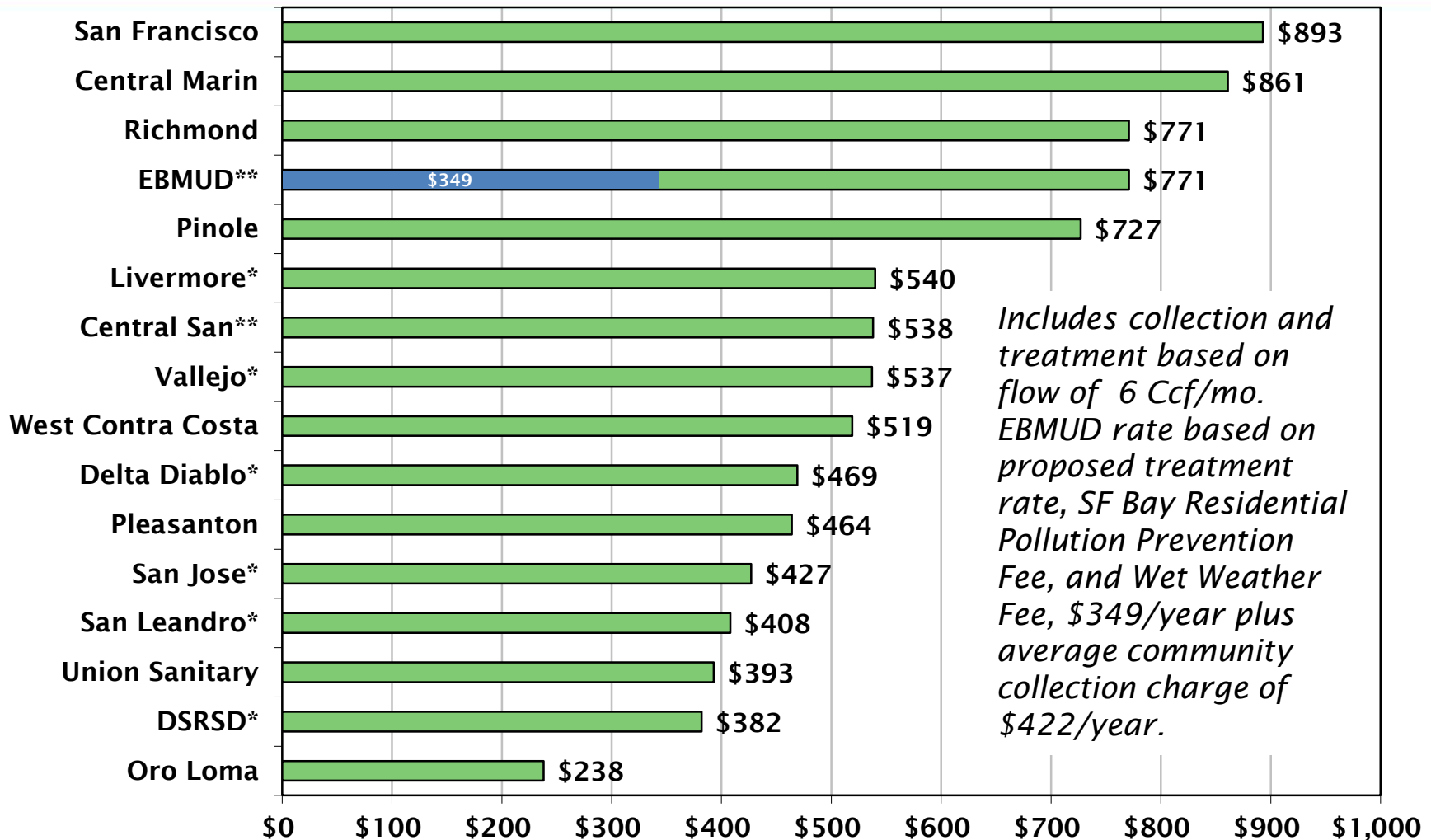


\*FY17 rates, possible rate increases for July 2017

\*\*Proposed FY18 rates

# Wastewater Bills Calculated for 6 CCF/Mo Discharge

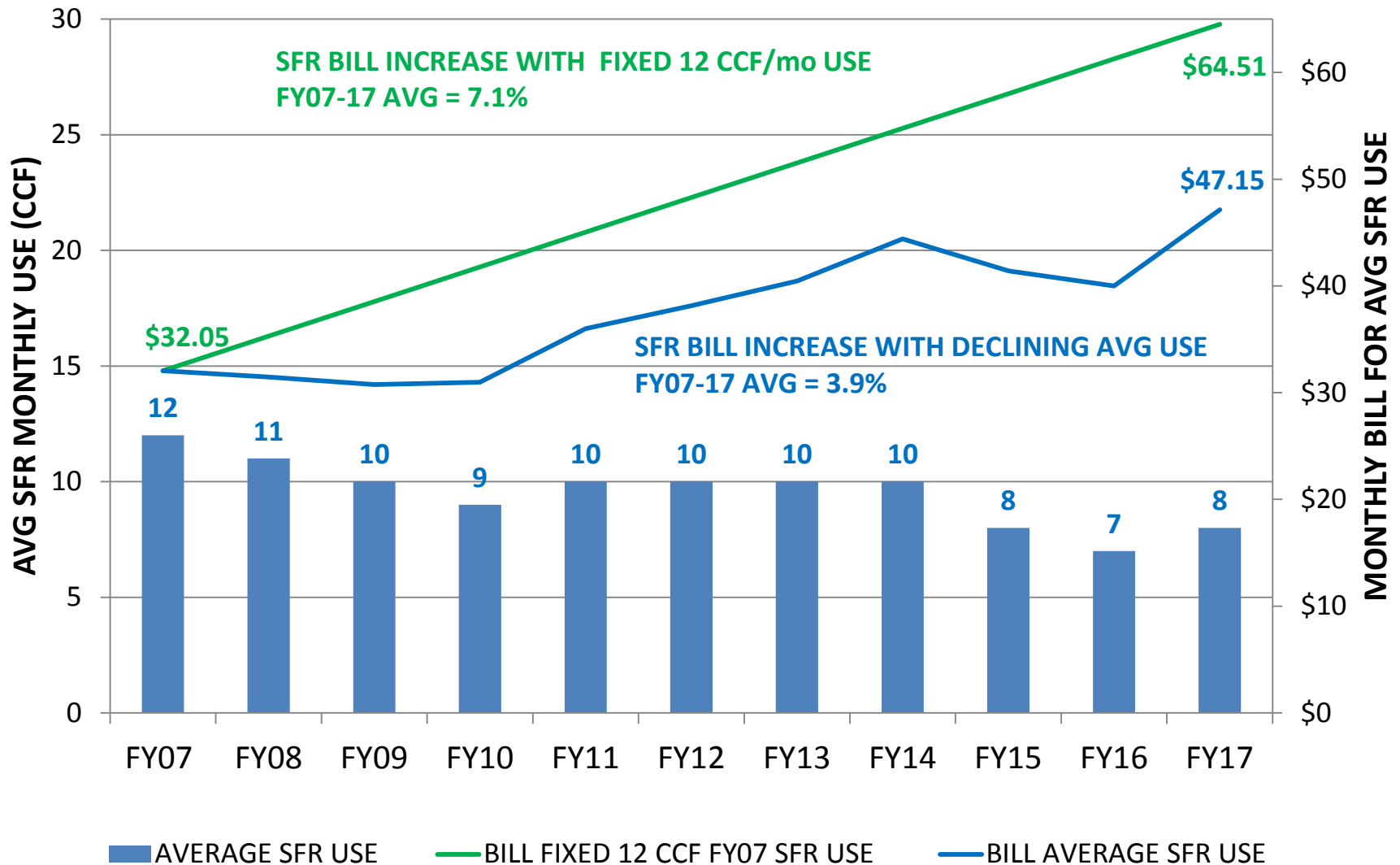
## Annual Charge for SFR – Effective 7/1/17



\*FY17 rates, possible rate increases for July 2017

\*\*Proposed FY18 rates

# Impact of Declining Average Water Use on SFR Bill



# Trends in CA Water Rates



- Average annual rate increase 2003-15 in CA: 6.3%
  - Average annual EBMUD increase 2003-15: 5.8%
- Average annual EBMUD water rate increase over past 10 years (FY07-17): 7.1%
  - EBMUD budgeted revenues over past 10 years have only increased 4.2% annually due to reduced sales
  - Some private water utilities in CA have been projecting 1% annual decrease in water sales in CPUC rate filings



# Draft Prop 218 Notice

# Workshop Conclusions

# Biennial Budget – FY18 & FY19



## Appropriation

- Total two-year budget of \$2.03 billion
- 65 percent capital investment-related

## Budget Priorities

- Increase investments in and maintenance of aging infrastructure
- Manage the financial and operational impacts of severely reduced consumption

## Proposed Rates

- Water System: 9.25% (FY18); 9.0% (FY19)
- Wastewater System: 5.0% (FY18); 5.0% (FY19)

# FY18 & FY19 Budget and Rates Schedule

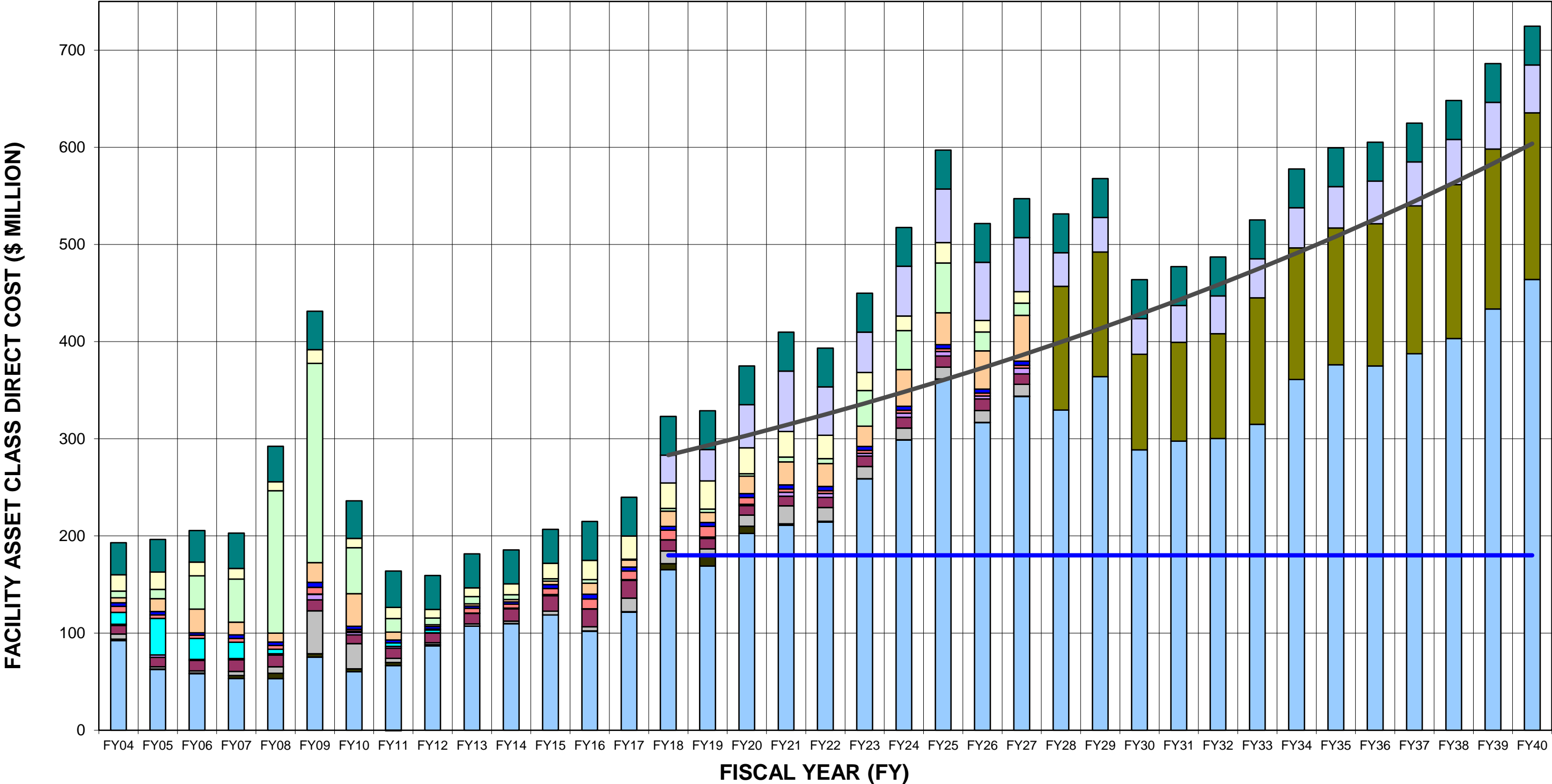


- Board Workshop 1 1/24/17
- Board Workshop 2 3/14/17
- Final Board Workshop 3 Today
- Print and Mail Notice 4/12 to 4/29/17
- Public Hearing/Adoption 6/13/17

# Board Discussion



LONG-TERM INFRASTRUCTURE INVESTMENT NEEDS



## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: April 6, 2017

MEMO TO: Board of Directors

FROM: Alexander R. Coate, General Manager *ARC*

SUBJECT: FY18 and FY19 Recommended Revisions to the Water and Wastewater Systems' Schedule of Rates and Charges Subject to Proposition 218

### INTRODUCTION

The District updates the Water and Wastewater Systems' rates and charges biennially in conjunction with the development of its budget. The rates and charges are designed to cover the expenditures identified in the proposed FY18 and FY19 operating and capital budgets and to meet Board policy goals. The District is recovering from the financial and operational impacts of the most severe multi-year drought it has experienced, followed closely by significant regional storms producing above-average precipitation. Significant beneficial water conservation was achieved during the drought, however, in combination with recent precipitation and resulting low outdoor water use, the District is experiencing record low water sales. While the District experienced significant reductions in its water revenues, it continues to experience increases in the costs of operating and maintaining its Water and Wastewater Systems.

To determine the appropriate rates needed to recover these cost increases, the District engaged an independent rate consultant to perform a cost of service (COS) study. Based on the results of the study, the District has determined that rate increases are necessary for the District's water and wastewater service charges to enable it to:

- recover current and long-term projected costs of operating and maintaining the Water System;
- fund capital infrastructure improvements needed to repair and update the District's aging Water and Wastewater Systems;
- maintain the operational and financial stability of the utilities;
- comply with state-mandated regulatory requirements;
- meet and comply with annual debt service requirements; and
- avoid operational deficits and depletion of reserves.

The proposed FY18 and FY19 rates and charges were developed based on the COS study.

The proposed water and wastewater rates and charges shown in this memorandum are recommended to be effective on bills issued on or after July 1, 2017 for FY18 and on or after July 1, 2018 for FY19.

The proposed FY18 and FY19 water rates, and resulting customer bills, are higher than originally projected two years ago due to significantly reduced water sales. The multi-year drought has

resulted in both temporary and permanent changes in water demand by our customers. These changes have impacted not only water revenues, but the costs of providing water service. For example, the average residential water user (the majority of water users within the District) now consumes only 8 hundred cubic feet (CCF) per month (about 200 gallons per day) as compared to 10 CCF in 2013. The reduced consumption of the average user has partially offset the bill impact of recent rate increases. The average 8 CCF user will see an increase of \$4.34 per month in FY18 and an increase of \$4.63 per month in FY19. The budget draws upon Rate Stabilization Funds to lessen the rate impact on our customers as the District recovers from the financial impacts of the multi-year drought.

The wastewater rate increases will be exactly as previously projected as the Wastewater System is less affected than the Water System by the challenges associated with drought. The average single family residential bill for wastewater treatment based on the average use of 6 CCF will increase by \$0.96 per month in FY18 and \$1.06 per month in FY19. Wastewater customers also pay a Wet Weather Facilities Charge collected on the property tax bill. Depending on lot size, in FY18 this charge will increase between \$4.70 to \$16.80 per year, and in FY19 between \$4.94 to \$17.64 per year.

The recommendations in this memorandum cover the water and wastewater charges subject to California Constitution article XIII D, section 6 (commonly referred to as Proposition 218). In compliance with Proposition 218, which established specific rules for implementing new or adjusting existing charges, the District will hold a public hearing on June 13, 2017 to consider the adoption of the charges, and mail notices to the owners of record of parcels upon which the proposed charges will be imposed and tenants directly liable for the payment of the proposed charges (i.e., "customers" who are not property owners) at least 45 days prior to the scheduled public hearing.

Any owner of record and any customer may submit a written protest to the proposed rates and charges increases; provided, however, only one written protest will be counted per identified parcel. Each protest must: (1) be in writing; (2) state that the identified property owner or customer is in opposition to the proposed increases to the rates and charges; (3) provide the location of the identified parcel by assessor's parcel number or street address; and (4) include the original signature of the property owner or customer submitting the protest. Written protests against the proposed increases may be personally delivered to the District, submitted at the hearing, or mailed to the District. To be tabulated, however, any written notice must be received by the District prior to the close of the public hearing. If a majority of the affected parcel owners or customers submit written protests, the proposed increases may not be imposed. A draft copy of the Proposition 218 notice for the recommended increases will be provided for Board review at the April 11, 2017 budget workshop.

Fees not subject to Proposition 218, including capacity charges, recreation fees, installation charges, and other one-time fees and charges, will be included in the General Manager's Memorandum of Rates and Charges that will be presented at the May 9, 2017 Board meeting.



## RECOMMENDATIONS

Recommended changes to Water and Wastewater Systems rates and charges are:

- Increase revenue from water rates and charges (meter, volume, elevation charges, non-potable/recycled water, and private fire service) 9.25 percent overall for FY18 and 9.0 percent overall for FY19. These rate increases support the proposed FY18 and FY19 operating and capital expenses and meet Board policy goals.
- Increase revenue from wastewater treatment rates and charges (service, volume, and strength) and the Wet Weather Facilities Charge 5.0 percent overall for FY18 and 5.0 percent overall for FY19. These rate increases support the proposed FY18 and FY19 operating and capital expenses and meets Board policy goals.

## DISCUSSION

### Water Rates and Charges

Increase revenue from Water System rates and charges by 9.25 percent in FY18 and 9.0 percent in FY19 – Revenue from water rates and charges needs to increase by 9.25 percent overall in FY18 and 9.0 percent in FY19 in order to cover the expenditures identified in the proposed FY18 and FY19 operating and capital budgets, and to meet Board policy goals. The FY18 and FY19 proposed rate increases are based on assumptions of water sales of 137 million gallons per day (MGD) for FY18 and a slight increase to 141 MGD for FY19. These assumptions of water sales are 9 percent and 7 percent lower than the budgeted water sales of 151 MGD for FY16 and FY17, which were already lowered significantly from previous projections. Despite the fact that the recent drought has ended and water use restrictions have been lifted, the budget assumes that customers will maintain many of their conservation habits. The projected water sales for FY17 is 133 MGD, which is a slight increase from the 128 MGD experienced during FY16 when the District was in a Stage 4 drought emergency.

The details of the FY18 and FY19 budget objectives, operating budget, capital expenses, and debt expenses are contained in the FY18 and FY19 Biennial Budget and Capital Project Summaries. The proposed operating and capital budgets, combined with the decreased water consumption projections, contribute to the increased FY18 and FY19 water rates and charges in roughly the following proportions:

- Operations – additional funded positions, increases in labor and benefits, and increases in non-labor expenses drive approximately 35 percent of the additional rate revenue required in FY18 and FY19.
- Capital – increases in rate-funded capital and debt service drive approximately 35 percent of the additional rate revenue required in FY18 and FY19 .

- Reduced Water Sales – reductions in assumed water sales drive approximately 30 percent of the additional rate revenue required in FY18 and FY19.

Table 1 shows the calculation of the rate adjustment required over the two-year period between FY17 and FY19. It starts with the operating, debt service and capital cash flow expense identified in the multi-year budget and nets out other revenue sources which include bond proceeds, property taxes, capacity charges and use of reserves to pay for capital. Comparing the FY19 revenue requirement with estimated revenues under existing rates, the table identifies a revenue deficiency of \$78.5 million, and a necessary rate revenue adjustment of 18.25 percent over the period – 9.25 percent (FY18) and 9.0 percent (FY19).

**Table 1 – Revenue Shortfalls (In Million\$) Addressed Through Rate Increase**

	FY17	FY19	2-Yr Δ
<b>Revenue Requirement</b>			
+ O&M expense	\$262.2	\$292.5	11.6%
+ Debt service expense	180.2	210.0	16.5%
+ Capital expense	236.1	269.8	14.3%
Total expenses =	678.5	772.3	13.8%
- Other revenues	-225.5	-264.8	17.4%
Revenue requirement =	\$453.0	\$507.5	12.0%
<b>Revenue Adjustment</b>			
+ Revenue requirement		\$507.5	
- Revenue from existing rates		-429.0	
Difference =		78.5	
<b>Total Rate Revenue Requirement Adjustment</b>		<b>18.25%</b>	

### Wastewater Rates and Charges

Increase revenue from overall Wastewater System rates and charges by 5.0 percent in FY18 and 5.0 percent in FY19 – Revenue from wastewater rates and charges needs to increase by 5.0 percent overall in FY18 and 5.0 percent in FY19 in order to cover the expenditures identified in the proposed FY18 and FY19 operating and capital budgets, and to meet Board policy goals. These proposed rate increases are based on the assumption that billed water use (used to calculate wastewater flows) will be only slightly reduced as recent conservation efforts have mostly affected outdoor water use. This slight reduction in billed water use will lower wastewater treatment revenue.

The proposed operating and capital budgets combined with the reduced billed water use contribute to the FY18 and FY19 wastewater rates and charges increases in roughly the following proportions:

- Operations – increase in non-labor costs and increase in labor and benefits drive approximately 15 percent of the additional rate revenue required in FY18 and FY19.
- Capital – increases in rate-funded capital and debt service drive approximately 75 percent of the additional rate revenue required in FY18 and FY19.
- Reduced Water Sales – reduction in assumed billed water use decreases the billed treatment revenue and drives approximately 10 percent of the additional rate revenue required in FY18 and FY19.

Table 2 shows the calculation of the rate adjustment required over the two-year period between FY17 and FY19. It starts with the operating, debt service and capital cash flow expense identified in the multi-year budget and nets out other revenue sources which include bond proceeds, property taxes, Resource Recovery revenues, capacity charges and the use of reserves to pay for capital. Comparing the FY19 revenue requirement with estimated revenues under existing rates, the table identifies a revenue deficiency of \$9.3 million, and a necessary rate revenue requirement adjustment of 10 percent over the period – 5 percent (FY18) and 5 percent (FY19).

**Table 2 - Revenue Shortfalls (In Million \$) Addressed Through Rate Increases**

	FY17	FY19	2-Yr Δ
<b>Revenue Requirement</b>			
+ O&M expense	\$70.7	\$73.1	3.4%
+ Debt service expense	29.9	31.9	6.7%
+ Capital expense	36.7	39.6	7.9%
Total expenses =	137.3	144.6	5.3%
- Other revenues	-44.2	-44.0	-0.5%
Revenue requirement =	\$93.1	\$100.6	8.1%
<b>Revenue Adjustment</b>			
+ Revenue requirement		\$100.6	
- Revenue from existing rates		-91.3	
Difference =		9.3	
Total Rate Revenue Requirement Adjustment		10%	

### **FY18 and FY19 Proposed Rates**

State law mandates public utility rates and charges be based on COS. District policy also requires COS-based rates and charges. The COS study allocates operating and capital costs to customer classes based on both customer class usage characteristics and facility design and operations. This nexus between usage and cost forms the financial and legal basis for setting utility rates and charges. The District's most recent COS study was completed in 2015. The proposed FY18 and FY19 rates were developed using the rate model of the COS study, adjusting for the projected rate revenue requirement for the ensuing two fiscal years.

Water fees have five customer classes: single-family residential, multi-family residential, non-residential, private fire customer, and non-potable/recycled. Together, the rates for the components of the water fees are structured to proportionately recover the costs of providing water service among the various customer classes. The rates for EBMUD's water fees have five components: (1) a Water Flow Charge, (2) a Water Service Charge, (3) an Elevation Charge, (4) a Private Fire Service Charge, and (5) a Drought Surcharge.

The wastewater fees have three customer classes: residential, multi-family residential, and non-residential. Non-residential customers are further classified based on the type of business operated. Together, the rates for the components of the wastewater service fees are structured to proportionately recover the costs of providing wastewater services among the various customer classes. The rates for the wastewater fees have up to five components: (1) a Treatment Service Charge, (2) a Treatment Flow Charge, (3) a Treatment Strength Charge, (4) a Pollution Prevention Charge, and (5) a Wet Weather Facilities Charge.

A draft Proposition 218 notice for FY18 and FY19 with each of the proposed rates will be presented to the Board at the April 11, 2017 budget workshop. Note that due to rounding of the individual rate components to the nearest whole cent, the actual rate increases and bill impacts may vary slightly from the overall FY18 and FY19 rate increases of 9.25 percent and 9.0 percent for water and 5.0 percent and 5.0 percent for wastewater. A summary of the proposed rates and the resulting customer impacts are presented below:

**Table 3 - Proposed Monthly Water Service Charges (Meter) and Private Fire Service Charges - (\$/Meter Size)**

<b>Monthly Meter and Private Fire Service Charges on Water Bill</b>					
	<b>FY17</b>	<b>FY18</b>	<b>Percent Change</b>	<b>FY19</b>	<b>Percent Change</b>
Private Fire Service Charge					
4"	\$107.36	\$117.29	9.2%	\$127.85	9.0%
6"	209.87	\$229.28	9.2%	\$249.92	9.0%
8"	332.87	\$363.66	9.2%	\$396.39	9.0%
Water Service Charge					
Single Family Residential 5/8" & 3/4"	\$20.69	\$22.60	9.2%	\$24.63	9.0%
Multi-Family Residential 2"	89.32	\$97.58	9.2%	\$106.36	9.0%
Other 4"	268.83	\$293.70	9.3%	\$320.13	9.0%

**Table 4 - Proposed Water Flow Charges and Elevation Charges - (\$/CCF)**

<b>Water Flow and Elevation Charges on Water Bill</b>					
<b>Flow Charges</b>	<b>FY17</b>	<b>FY18</b>	<b>Percent Change</b>	<b>FY19</b>	<b>Percent Change</b>
Single Family Residential					
Tier 1 up to 7 CCF	\$3.16	\$3.45	9.2%	\$3.76	9.0%
Tier 2 up to 16 CCF	\$4.34	\$4.74	9.2%	\$5.17	9.1%
Tier 3 over 16 CCF	\$5.74	\$6.27	9.2%	\$6.83	8.9%
Multi-Family Residential	\$4.46	\$4.87	9.2%	\$5.31	9.0%
Other (commercial/industrial)	\$4.44	\$4.85	9.2%	\$5.29	9.1%
Non-potable/Recycled Water	\$3.46	\$3.78	9.2%	\$4.12	9.0%
Elevation					
Band 2	\$0.64	\$0.70	9.4%	\$0.76	8.6%
Band 3	\$1.33	\$1.45	9.0%	\$1.58	9.0%

**Table 5 - Single Family Residential Customer Monthly Water Bill Impacts – Includes Proposed Water Service and Flow Charges**

<b>Single Family Residential Water Charges on Water Bill</b>								
	Use (CCF)	FY17 Bill	FY18 Bill	Increase from FY17	Percent Change	FY19 Bill	Increase from FY18	Percent Change
25 <sup>th</sup> Percentile	4	\$33.33	\$36.40	\$3.07	9.2%	\$39.67	\$3.27	9.0%
50 <sup>th</sup> Percentile (median use)	6	\$39.65	\$43.30	\$3.65	9.2%	\$47.19	\$3.89	9.0%
75 <sup>th</sup> Percentile	10	\$55.83	\$60.97	\$5.14	9.2%	\$66.46	\$5.49	9.0%
95 <sup>th</sup> Percentile	22	\$116.31	\$127.03	\$10.72	9.2%	\$138.46	\$11.43	9.0%
Average Single Family Residential Use*	8	\$47.15	\$51.49	\$4.34	9.2%	\$56.12	\$4.63	9.0%

\*8 CCF/month represents recent average single-family residential use. Previous comparisons used 10 CCF/month, which represented historic average single-family residential use prior to recent drought conditions.

**Table 6 - Other Customer Monthly Water Bill Impacts – Includes Proposed Water Service and Flow Charges**

<b>Multi-Family Residential and Non-Residential Water Charges on Water Bill</b>									
	Meter (Inches)	Use (CCF)	FY17 Bill	FY18 Bill	Increase from FY17	Percent Change	FY19 Bill	Increase from FY18	Percent Change
Multi-Family Residential 4 dwelling units	1	25	\$142.74	\$155.88	\$13.14	9.2%	\$169.95	\$14.07	9.0%
Multi-Family Residential 5+dwelling units	1	50	\$254.24	\$277.63	\$23.39	9.2%	\$302.70	\$25.07	9.0%
Commercial	1	50	\$253.24	\$276.63	\$23.39	9.2%	\$301.70	\$25.07	9.1%
Industrial	2	500	\$2,309.32	\$2,522.58	\$213.26	9.2%	\$2,751.36	\$228.78	9.1%

Table 7 shows the proposed wastewater treatment unit rates that are used to calculate the total wastewater flow and strength charges for each of the wastewater customer classes based on the specific characteristics of their wastewater discharge.

**Table 7 - Proposed Wastewater Treatment Unit Rates**

<b>Wastewater Treatment Unit Rates</b>					
<b>Unit Rates</b>	<b>FY17</b>	<b>FY18</b>	<b>Percent Change</b>	<b>FY19</b>	<b>Percent Change</b>
Service Charge (\$/account)	\$5.55	\$5.83	5.0%	\$6.12	5.0%
Flow (\$/CCf)	1.09	1.14	4.6%	1.20	5.3%
Strength - CODf (\$/pound)	0.321	0.337	5.0%	0.354	5.0%
Strength -Total Suspended Solids (\$/pound)	0.469	0.492	4.9%	0.517	5.1%

**Table 8 - Customer Monthly Wastewater Treatment Bill Impacts - Includes Service, Flow and Strength Charges and Pollution Prevention Fees**

<b>Wastewater Charges on Water Bill</b>									
	<b>Meter (Inches)</b>	<b>Use (CCF)</b>	<b>FY17 Bill</b>	<b>FY18 Bill</b>	<b>Increase from FY17</b>	<b>Percent Change</b>	<b>FY19 Bill</b>	<b>Increase from FY18</b>	<b>Percent Change</b>
Average Single Family Residential	5/8	6	\$19.93	\$20.89	\$0.96	4.8%	\$21.95	\$1.06	5.1%
Single Family Residential	5/8	9	\$23.20	\$24.31	\$1.11	4.8%	\$25.55	\$1.24	5.1%
Multi-Family Residential 4 dwelling units	1	25	\$64.16	\$67.21	\$3.05	4.8%	\$70.64	\$3.43	5.1%
Multi-Family Residential 5+dwelling units	1	50	\$130.55	\$136.33	\$5.78	4.4%	\$143.62	\$7.29	5.3%
Commercial	1	50	\$135.03	\$140.81	\$5.78	4.3%	\$148.10	\$7.29	5.2%
Industrial	2	500	\$7,261.03	\$7,621.31	\$360.28	5.0%	\$8,006.60	\$385.29	5.1%

**Table 9 - Proposed Wet Weather Facilities Charge - (\$/Lot Size)**

<b>Wet Weather Facilities Charge on Property Tax Bill</b>							
	<b>FY17 Bill</b>	<b>FY18 Bill</b>	<b>Increase from FY17</b>	<b>Percent Change</b>	<b>FY19 Bill</b>	<b>Increase from FY18</b>	<b>Percent Change</b>
Small Lot 0-5,000 sq. ft.	\$94.10	\$98.80	\$4.70	5.0%	\$103.74	\$4.94	5.0%
Medium Lot 5,001 - 10,000 sq.ft.	\$147.00	\$154.34	\$7.34	5.0%	\$162.06	\$7.72	5.0%
Large Lot >10,000 sq. ft.	\$336.00	\$352.80	\$16.80	5.0%	\$370.44	\$17.64	5.0%

### **Drought Rates**

The District does not anticipate a water shortage in FY18 or FY19 as a result of the high levels of water currently in storage due to recent storms and reduced customer demand. However, the previously adopted schedule of drought rates will remain in effect for FY18 and FY19 as a contingency plan in the unanticipated event of a water shortage. In the FY16 and FY17 budget, the Board adopted a staged system of drought rates to recover water shortage-related costs.

The District's COS study developed drought surcharges for volumes of water use of up to 8 percent, 20 percent and 25 percent to be levied during water shortage Stages 2, 3 and 4, respectively. Drought surcharges would be applicable to all potable water customer accounts only if the EBMUD Board of Directors declares a Stage 2, 3, or 4 water shortage based on factors such as system water storage and the need to purchase supplemental supplies of water to meet customer demand. The drought surcharges correspond to increasingly severe stages of water shortages, are charged on each unit of water used during the billing period, and are calculated to recover costs such as costs of providing supplemental water, costs of water shortage-related customer service, and losses of revenue, which increases with each water shortage stage. For example, under a Stage 4 water shortage, an average single family customer using 8 CCF per month would pay a drought surcharge of up to \$7.88 per month in FY19.

Prior to implementing the drought surcharges, EBMUD will update the drought related costs and develop and adopt surcharges consistent with the COS study, not to exceed the drought surcharge percentages listed above. The District's Proposition 218 notice will continue to include information regarding these surcharges so that they remain available to the Board to implement the next time the District is in a water shortage that requires reductions in water use by its customers.



### **Customer Bill Impact of Recent Rate Increases with Reduced Consumption**

Due to conservation efforts and the recent drought, the average single-family residential (SFR) monthly water use has dropped from as high as 12 CCF per month in FY07 to 8 CCF per month in our current projections, and the overall water sales have dropped by one third over the same time period. The drastic reduction in water sales is a key driver in our recent water rate increases.

Over the last 10 years the District has raised water rates on average 7.1 percent per year. Attachment 1 shows that while rates have increased, conservation actions have reduced average water use for SFR customers and resulted in less impact on monthly bills. Over the last 10 years, the actual monthly water bill using the average SFR customer water use increased just 3.9 percent per year. Looking at the last five years, the SFR bill increased 4.3 percent per year while the overall water rates increased 8.0 percent per year.

Attachment 2 shows how the overall budgeted water revenues have only increased 4.2 percent per year while the overall water rates have increased 7.1 percent per year due to the financial impact of reduced water sales.

### **Attachments**



