



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

375 – 11<sup>th</sup> Street, Oakland, CA 94607

Office of the Secretary: (510) 287-0440

## **AGENDA**

**Planning Committee  
Tuesday, October 10, 2017  
9:15 a.m.  
Training Resource Center**

**(Committee Members: Directors Mellon {Chair}, Linney and Young)**

### **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.

### **DETERMINATION AND DISCUSSION:**

1. Main Wastewater Treatment Plant Digester Upgrade Project Phase 3 (White)
2. Inline Water Treatment Plants Project Update (X. Irias)
3. Pipeline Risk Model (X. Irias)
4. Dos Osos Reservoir Replacement Project Update and Final Mitigated Negative Declaration (X. Irias)

### **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).*



## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: October 5, 2017

MEMO TO: Board of Directors

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

FROM: Eileen M. White, Director of Wastewater *Eileen M. White*

SUBJECT: Main Wastewater Treatment Plant Digester Upgrade Project Phase 3

### INTRODUCTION

The District has been upgrading the eleven digesters at the Main Wastewater Treatment Plant (MWWTP) through a phased approach over the last 15 years. These upgrades have allowed the District to continue to receive and process high-strength waste and significantly increase the production of biogas and renewable energy. Upgrades to the eight first-stage digesters (Digester Nos. 5 through 12) were completed as part of Digester Upgrade Project Phases 1 and 2. Upgrades to the three second-stage digesters (Digester Nos. 2 through 4) will be completed as part of Digester Upgrade Project Phase 3 (Phase 3 Project), beginning in 2017. Staff will provide an overview of the components of the upcoming Phase 3 Project design to the Planning Committee on October 10, 2017.

### DISCUSSION

Solids from the primary and secondary treatment processes, along with trucked-in, high-strength waste, are sent to the District's anaerobic digesters for biological treatment resulting in stabilization to meet federal biosolids treatment regulations. The process of anaerobic digestion also produces biogas, which the District uses to produce onsite heat and power. Solids are sent to the eight first-stage digesters, where most of the active digestion process occurs, and from there to the three second-stage digesters, which allow for additional treatment as well as flow equalization prior to the dewatering process.

Beginning in 2005, the eight first-stage digesters were upgraded under the Digester Upgrade Project Phases 1 and 2. The original floating digester covers were replaced with fixed covers, the interior walls and covers were coated, and the biogas header piping was enlarged and relocated. In addition, a new high-strength waste receiving station and feed blend tanks were installed. The blend tanks provide preheating and mixing of municipal sludge with high-strength waste. These upgrades resulted in better digester performance and increased biogas production and utilization.

The three second-stage digesters, which are the oldest digesters at the MWWTP, will be upgraded under the Phase 3 Project. These digesters were originally constructed in the 1950s, and have a different structural design than Digester Nos. 5 through 12.

The scope of work includes four main components: (1) seismic retrofits to address life-safety and enhanced reliability, (2) replacement of the floating covers with dual membrane covers to increase biogas storage, (3) evaluation and design of potential improvements to the high-strength waste receiving station to prevent damage to downstream equipment and the digesters, and (4) improvements to the two odor control systems for the high-strength waste receiving station.

#### Seismic Retrofits

The walls on Digester Nos. 2, 3, and 4 are not securely attached to their foundations, increasing the potential for displacement in a major seismic event. Seismic retrofits will protect District staff by preventing displacement and a loss of liquid contents from these digesters, which could engulf the digester gallery area in a major seismic event. Retrofit options will consider the existing digesters' unique structural design.

#### Cover Replacement

Recent inspections of the floating covers on Digester Nos. 3 and 4 indicate that they are nearing the end of their useful life and must be replaced. Replacing them with dual membrane covers will triple the existing biogas storage capacity. As a result, flaring of biogas will be reduced and production of renewable energy will increase.

#### High-strength Waste Receiving Station Improvements

An evaluation of the high-strength waste receiving station will identify methods to capture contamination and grit before passage through equipment and into the digesters, resulting in more cost-effective operation and maintenance. This project will include preparation of recommendations to be considered by the District for inclusion in the final design.

#### Odor Control Improvements

Odor control upgrades are required for the two trucked-in, high-strength waste receiving stations. These facilities receive a variety of waste and present unique odor challenges for the District to manage. Upgrades will reduce undesired odors and impacts both within the MWWTP and the community.

### **NEXT STEPS**

A consultant agreement to support the design for Phase 3 Project will be presented to the Board for consideration on October 24, 2017. District staff will complement consultant expertise to prepare this large and complex design project. Construction is scheduled to begin in the third quarter of Fiscal Year 2019.

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## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: October 5, 2017

MEMO TO: Board of Directors

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

FROM: Xavier J. Irias, Director of Engineering and Construction *XJI*

SUBJECT: Inline Water Treatment Plants Project Update

### SUMMARY

Updates on actions taken by the District to mitigate rising levels of disinfection byproducts (DBPs), particularly trihalomethanes (THMs), and the latest sampling results were provided at the August 8, 2017 and June 13, 2017 Planning Committee meetings. A number of long-term treatment improvement alternatives have been evaluated to improve disinfection practices at the inline water treatment plants (WTPs) while reducing THMs. This memo provides an update on the District's recommended WTP improvement plans to reduce DBPs, mitigate future water quality challenges, and expand treatment capabilities at the inline plants. A presentation will be provided at the October 10, 2017 Planning Committee meeting.

### DISCUSSION

The District's inline WTPs (Walnut Creek, Lafayette, and Orinda) generally treat water from Pardee or Briones Reservoirs using a simple treatment process consisting of coagulation, filtration, and chlorine disinfection. This treatment process has served the District well and is cost- and energy-efficient. However, given changes in the regulatory environment and raw water quality, the current inline treatment processes are not well suited to reliably treat the following raw water quality challenges:

- Natural organic material: Organic material, often measured as total organic carbon (TOC) is a precursor to THMs and other DBPs. These materials are not removed by the inline filtration process. High levels of TOC lead to higher levels of DBPs, as the District recently experienced after years of drought followed by heavy runoff in the Pardee watershed. Without a method to remove TOC from the water, the inline WTPs have limited ability to reduce DBPs.
- Algae: Seasonal algae blooms in the Pardee and Briones Reservoirs clog filters, significantly limiting plant production, and can cause taste-and-odor issues that cannot be treated by the inline process. Algae are also associated with cyanotoxins that are an emerging concern.
- High turbidity: High rainfall can raise turbidity levels in Pardee above the treatment capabilities of the inline WTPs. For over 64 days during the winter of 2016-17, the inline

plants were removed from the Pardee supply. A similar event occurred in 1997 when a landslide caused elevated turbidity for over 65 days.

In response to these challenges, the District is pursuing long- and short-term actions:

1. ***Planning study for long-term improvements.*** On October 11, 2016, the Board approved a planning study to evaluate treatment technologies, address water quality challenges, and improve disinfection practices at each inline WTP. A number of technologies and site layouts were evaluated for each treatment alternative, including high-rate small-footprint pre-treatment technologies, ozone, and ultra-violet (UV) disinfection. Pilot testing showed very positive results for a coagulation/sedimentation technology called Actiflo. The planning study recommends Actiflo as the leading technology for inline WTPs to remove algae, turbidity, and TOC, and to rapidly respond to changes in raw water supply at the plants, and UV disinfection for the Orinda WTP as described below.
2. ***Disinfection improvements at Orinda WTP.*** In response to the recent increase in THMs, and as part of the inline WTP planning study discussed above, the District evaluated alternative disinfectants to chlorine at the Orinda WTP. UV disinfection with a chlorine contact basin, which can be constructed in a relatively small footprint, was found to be the best alternative to improve disinfection and reduce DBPs at the Orinda WTP. The primary challenge at this location is the constrained site which requires a large excavation to a depth of more than 30 feet resulting in high projected costs on the order of \$75-\$115 million. These costs are not included in the existing Capital Improvement Program budget for FY18-22. Other treatment plant projects' schedules will need to be adjusted to allow for this project to proceed.

## **NEXT STEPS**

Staff initiated design work for the Orinda WTP Disinfection Improvements Project with the intent of expediting necessary studies and utility relocations so the project could begin in 2019. However, given the significant costs, staff is evaluating the disinfection improvements in the context of improvements needed for all of the water treatment plants. The project will also require a shutdown of the Orinda WTP and staff is considering how to advance this project in a manner that minimizes operational impacts to other large projects. Depending on the outcome of these evaluation efforts consultant agreements for design of the UV and chlorine contact basin facilities may be presented to the Board for consideration in late 2017 or early 2018.

ARC:XJI:SVT:mjh

## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: October 5, 2017

MEMO TO: Board of Directors

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

FROM: Xavier J. Irias, Director of Engineering and Construction *Xavier*

SUBJECT: Pipeline Risk Model

### INTRODUCTION

At the May 9, 2017 Planning Committee meeting, staff presented Fiscal Year (FY) 2016 and 2017 Pipeline Rebuild Program updates and accomplishments. The presentation included a summary of the new pipeline risk model that is used to select pipelines for replacement. The Committee requested a presentation to provide more information on how staff chooses and prioritizes pipelines for replacement. Staff will provide a presentation on the pipeline risk model to the Planning Committee on October 10, 2017.

### DISCUSSION

The District's pipeline risk model is an asset management software application that performs a risk analysis to identify and rank pipeline replacement candidates based on likelihood and consequence of failure. Likelihood of failure is the relative probability a pipeline will leak based on its leak history and observed condition. Consequence of failure is the impact of a pipeline leak in terms of repair cost, impairment to system operations, disruption to the public and economy, and potential damage to property or the environment.

The software uses an algorithm to rank the pipes from extreme to negligible risk. The model to date has identified approximately 360 miles as extreme and high risk, which constitutes the leakiest 10 percent of all pipelines. The 30 miles of pipeline selected for the Pipeline Rebuild Program for FY17/18 is primarily focused on replacing these pipelines, which are the most cost effective to replace.

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## EAST BAY MUNICIPAL UTILITY DISTRICT

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DATE: October 5, 2017

MEMO TO: Board of Directors

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

FROM: Xavier J. Irias, Director of Engineering and Construction *XJI*

SUBJECT: Dos Osos Reservoir Replacement Project Update and Final Mitigated Negative Declaration

### INTRODUCTION

The Dos Osos Reservoir Replacement Project (Project) will replace the existing Dos Osos Reservoir with new dual reservoirs and rehabilitate the existing Dos Osos Pumping Plant. A Mitigated Negative Declaration (MND) was prepared for the Project. The Final MND was made available on September 28, 2017. This memo provides an update on the Project, including an overview of the comments received on the MND, in advance of the Board's consideration of the Final MND for adoption and approval of the Project. A Project presentation was previously provided to the Planning Committee on May 9, 2017. Staff will provide a final presentation to the Planning Committee on October 10, 2017.

### DISCUSSION

#### Project Purpose and Description

Dos Osos Reservoir, constructed in 1955, is a 0.24 million gallon (MG) reservoir located at 8 Los Norrabos in the City of Orinda. The reservoir will be replaced with new dual 0.12 MG reservoirs on District-owned watershed property approximately 70 feet higher in elevation and 300 feet southwest of the existing reservoir site. A new 12-inch pipeline will be constructed to connect the existing water distribution system to the new dual reservoirs and will be located in a new permanent access road approximately 800 feet long and 12 feet wide. The Dos Osos Pumping Plant, constructed in 1968, is a 0.3-million-gallon-per-day pumping plant located at 263 El Toyonal in the City of Orinda. The Dos Osos Pumping Plant will be rehabilitated at the same capacity; however, it will be upgraded with pump units that can supply the new higher-elevation dual Dos Osos Reservoirs. Upon construction completion and successful testing of the new facilities, the existing Dos Osos Reservoir will be demolished. All Project element locations are shown on Attachment A. Improvements at the new Dos Osos Reservoirs site are shown on Attachment B.

The Project will rehabilitate and/or replace aging infrastructure, improve water quality operations efficiency, and improve domestic and emergency water service reliability with an optimally-sized facility at a higher elevation.

### **MND Analysis and Mitigation Measures**

The MND for the Project was completed and circulated for a 31-day agency and public review period from May 19 through June 19, 2017. Postcards and notices were sent to approximately 90 residents and agencies; notices were also posted on the District's website, filed with the Contra Costa County Clerk, and published in the Contra Costa Times. One comment letter was submitted during the MND public review period by a City of Orinda resident. Key comments focused on agricultural resources, aesthetics, Project objectives, growth inducement, biological resources, construction impacts, and geology and soils. The comment letter in its entirety, responses to the comments, and text edits to be added to the MND are all included in Appendix C, "Response to Comments," of the Final MND. The responses to comments and text edits to the MND do not identify new significant impacts but merely clarify information already presented in the MND.

The MND determined that Project-related construction work could potentially generate environmental impacts to biological resources, and geology and soils. The MND analysis concluded that potential impacts exist for:

- Special-status and sensitive plant and wildlife species, including the state- and federally-endangered Alameda whipsnake.
- Potentially unstable soils resulting from seismic-related ground failure, including landslides.
- Potentially unstable soils resulting from on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse.

Appropriate mitigation measures will be implemented to reduce those potentially significant impacts to less than significant. Key mitigation measures include:

- Preconstruction training for construction personnel.
- Preconstruction surveys for special-status species.
- Species-specific avoidance and minimization measures during construction.
- Appropriate compensation for special-status species habitat impacts.
- Incorporation of geotechnical investigation recommendations into design and construction requirements.

A number of District standard construction specifications, standard practices from the District's Environmental Compliance Manual, Procedures, Design Guides, and Engineering Standard Practices will also be incorporated into the Project. These standard specifications and standard practices are designed to address typical characteristics of District construction projects and reflect generally applicable District standard operating procedures.

## **Public Outreach**

In December 2016, staff met with City of Orinda staff and presented the proposed Project elements and schedule for the MND to solicit input early in the planning phase. During the public review process, residents were notified of the Project and MND and were also provided an opportunity to request a meeting to discuss the Project; no meeting requests were received.

The District's website features a Project page with information including the proposed schedule and Project-related documents. This page will be updated throughout construction.

## **NEXT STEPS**

The Final MND will be submitted to the Board of Directors for consideration of adoption and Project approval on October 10, 2017. State and federal environmental permits, which may take two to three years to obtain, are required for special-status species protection before commencing Project design; the environmental permitting process is scheduled to begin in October 2017.

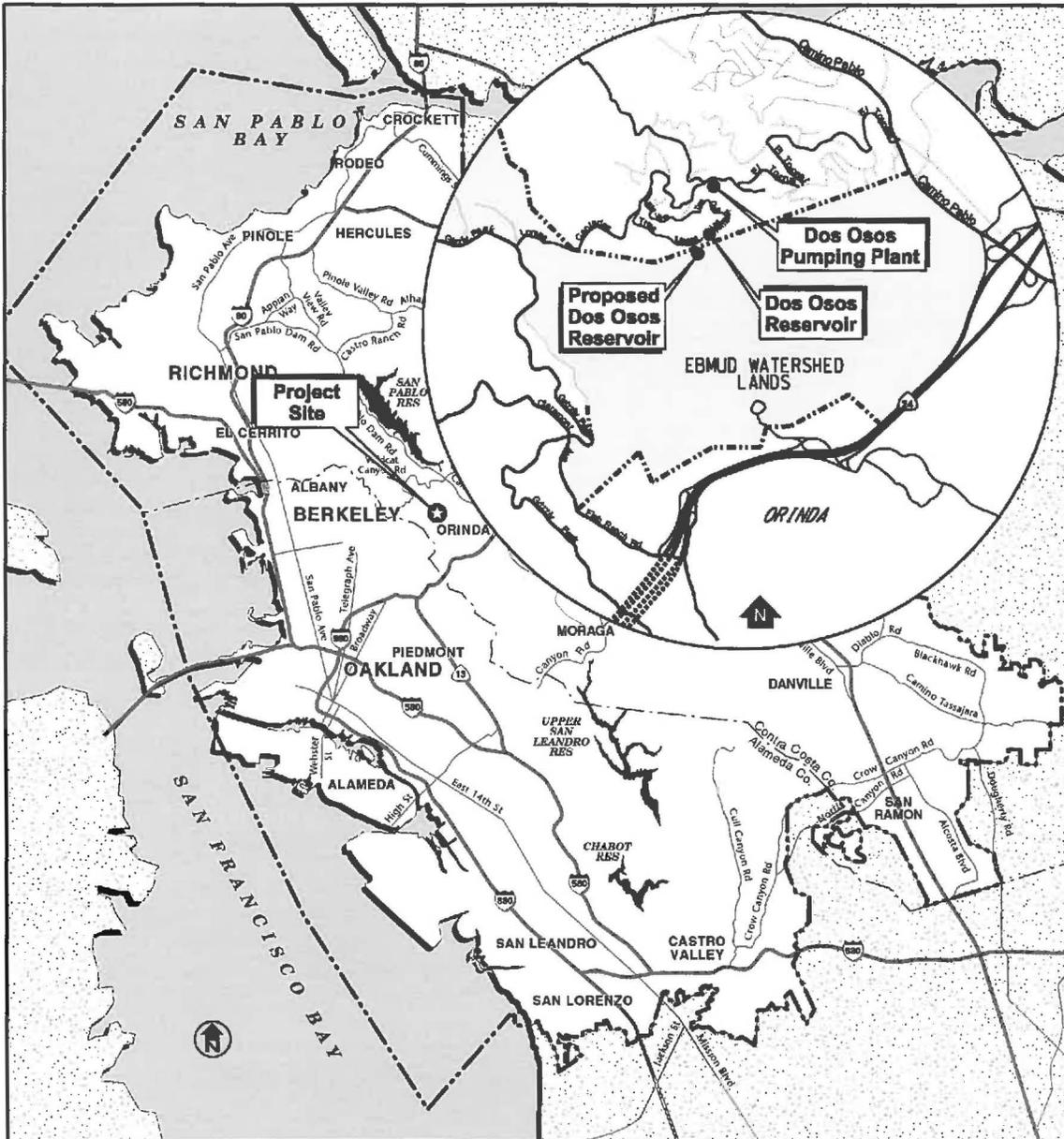
Assuming Board of Directors' approval of the Final MND and receipt of environmental permits by 2020, design and construction of the Project will begin in 2021 and 2023, respectively.

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## **Attachments**

- A – Dos Osos Reservoir Replacement Project Site Location Map
- B – Improvements at the New Dos Osos Reservoirs Site

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**PROJECT SITE  
LOCATION MAP**

NOT TO SCALE

**EAST BAY MUNICIPAL UTILITY DISTRICT**

**DOS OSOS RESERVOIR  
REPLACEMENT PROJECT**

**FIGURE 1**

**Improvements at the New Dos Osos Reservoirs Site**

