BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

375 - 11th Street, Oakland, CA 94607 Office of the Secretary: (510) 287-0440

Notice of Time Change

PLANNING COMMITTEE
Tuesday, September 12, 2023
9:00 a.m.
Boardroom
375 11th Street
Oakland, CA 94607

Notice is hereby given that the Tuesday, September 12, 2023 Planning Committee meeting of the Board of Directors has been rescheduled from 9:15 a.m. to 9:00 a.m. The meeting will be held in the Administration Building Boardroom at 375 11th Street, Oakland, California.

Dated: September 7, 2023

Rischa S. Cole

Rischa S. Cole
Secretary of the District

W:\Board of Directors - Meeting Related Docs\Notices 2023\09122023_planning_notice_time_change.docx

This page is intentionally left blank.

BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

375 - 11th Street, Oakland, CA 94607 Office of the Secretary: (510) 287-0440

AGENDA
Planning Committee
Tuesday, September 12, 2023
9:00 a.m.
Boardroom
375 11th Street
Oakland, CA 94607

***** Please see appendix for public participation instructions*****

Committee Members: Doug A. Linney {Chair}, Lesa R. McIntosh, and Marguerite 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. Walnut Creek Water Treatment Plant Pretreatment Project Update and Availability of the Draft Environmental Impact Report (Yoloye)

2. Dam Safety Program Annual Report (Yoloye)

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.

APPENDIX

Planning Committee Meeting
Tuesday, September 12, 2023 – 9:00 a.m.

EBMUD Board committee meetings will be conducted in person and via Zoom.
These meetings are recorded and live-streamed.

*Online**
https://ebmud.zoom.us/j/94576194030?pwd=dWZlc3hNU3JNUVBQYmNKWjJSNVZQdz09
Webinar ID: 945 7619 4030
Passcode: 925293

By Phone
Telephone: 1 669 900 6833
Webinar ID: 945 7619 4030
Passcode: 925293
International numbers available: https://ebmud.zoom.us/u/kdmpbwwlg2

*****To familiarize yourself with Zoom, please visit https://support.zoom.us/hc/en-us/articles/201362193-Joining-a-Meeting

Providing public comment - *The EBMUD 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.*

- Each speaker is allotted 3 minutes to speak; the Committee Chair has the discretion to amend this time based on the number of speakers
- The Secretary will track time and inform each speaker when the allotted time has concluded
- Comments on **non-agenda items** will be heard at the beginning of the meeting
- Comments on **agenda items** will be heard when the item is up for consideration
- The Secretary will call each speaker in the order received

In person
- Fill out and submit a blue speaker card which is available in the meeting room

Via Zoom
- Use the raise hand feature in Zoom to indicate you wish to make a public comment https://support.zoom.us/hc/en-us/articles/205566129-Raising-your-hand-in-a-webinar
  - If you participate by phone, press *9 to raise your hand
- When prompted by the Secretary, please state your name, affiliation if applicable, and topic

Submitting written comments or materials
- Email written comments or other materials for the Board of Directors to SecOffice@ebmud.com
- Please indicate the meeting date and agenda item number or non-agenda item topic in the subject of the email. Contact information is optional.
- **Please email by 4 p.m. the day prior to the scheduled regular meeting**; written comments and other materials submitted to the Board of Directors will be filed in the record.

To *observe* the Planning Committee Meeting,
please visit: https://www.ebmud.com/about-us/board-directors/board-meetings/

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: September 7, 2023

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager

FROM: Olujimi O. Yoloye, Director of Engineering and Construction

SUBJECT: Walnut Creek Water Treatment Plant Pretreatment Project Update and Availability of the Draft Environmental Impact Report

SUMMARY

The Walnut Creek Water Treatment Plant (WTP) Pretreatment Project (Project) will add pretreatment and ozone facilities at the WTP to reliably treat a broader range of untreated water quality from various sources, increase the capacity to meet planned future demands, improve water system reliability and operational flexibility, and allow for the potential decommissioning of the Lafayette WTP. The Draft Environmental Impact Report (EIR) will be published on September 28, 2023. Staff will provide an update at the September 12, 2023 Planning Committee meeting.

DISCUSSION

Project Purpose and Description

The Project includes improvements at the Walnut Creek and Lafayette WTPs to support pretreatment and ozone facilities at the Walnut Creek WTP. The Walnut Creek WTP, located on an approximately 50-acre site in the City of Walnut Creek, is bounded by Alfred Avenue to the east, the Briones to Mt. Diablo Regional Trail to the north, and Acalanes Ridge Open Space to the south and west (see Figure 1). The Lafayette WTP, an approximately 24-acre site located in the City of Lafayette, is bounded by Mt. Diablo Boulevard to the south and west, Temple Isaiah to the east, and State Route 24 to the north (see Figure 2).

The Walnut Creek WTP serves approximately 225,000 customers in the District's East-of-Hills service area, which includes portions of Pleasant Hill, portions of Walnut Creek, Alamo, Lafayette, Danville, Blackhawk, and San Ramon Valley communities. The Walnut Creek WTP treats water from Pardee Reservoir and water stored locally in Briones Reservoir. The Walnut Creek WTP lacks pretreatment and ozone facilities that limit its ability to treat water from the Sacramento River or other water transfers via the Freeport facility and from neighboring water agencies via interties during planned and unplanned outages, and during droughts.

The Project would add pretreatment facilities to the Walnut Creek WTP to more reliably treat a broader range of Pardee and Briones water impacted by high rainfall runoff, wildfires, algae blooms, climate change and emerging contaminants; improve the ability to treat supplemental supplies from Freeport or the interties during planned and unplanned outages and droughts; and improve treated water taste and odor by removing organics and by adding ozone treatment. The Project would increase the Walnut Creek WTP capacity to meet planned future demands, improve water system reliability and operational flexibility, and allow for the potential decommissioning of the Lafayette WTP.

The Project includes construction of staging areas, removal of vegetation including tree removal, grading, construction of new pretreatment facilities, ozone facilities, a consolidated maintenance building, buried pipelines, outdoor lighting, stormwater facilities, security fencing, retaining walls and paving, redirected social footpaths, demolition of existing facilities and maintenance facilities, and site restoration including new trees at the Walnut Creek WTP as shown on Figure 3. The Project also includes removal of vegetation including tree removal, grading, construction of new weir structures, buried pipelines, retaining walls and paving, demolition of an existing weir structure, and site restoration including new trees at the Lafayette WTP as shown on Figure 4.

The Project will be designed and constructed in two separate phases. Phase 1 and Phase 2 improvements include new pretreatment and ozone facilities to more reliably treat a broader range of untreated water quality and increase the capacity from 115 MGD to 125 MGD and 160 MGD, respectively. Phase 1 improvements are scheduled to be constructed from 2027 to 2030; the construction of Phase 2 improvements would depend on future untreated water quality conditions and the timing of future demands.

Review of Environmental Impacts

Pursuant to the California Environmental Quality Act, staff completed a Draft EIR that reviewed environmental impacts and proposes mitigation measures to reduce any potentially significant impacts to less than significant, if possible. Key mitigation measures include:

- Requiring that the Project Noise Control and Monitoring Plan include sound barriers at specific sites within the WTP to reduce on-site construction noise.
- Restricting soil and demolition off-haul and large equipment delivery trucks to the hours of 9:00 a.m. through 3:30 p.m. to and from the Walnut Creek WTP, prescribing additional Traffic Control Plan measures for heavy construction vehicle traffic safety monitoring, and requiring pre- and post-construction video monitoring of the truck haul route.
- Requiring coordination with schools in the Project vicinity and providing a flagger at the intersection of Larkey Lane and Alvarado Avenue at typical school start and dismissal times.

Even after implementation of mitigation measures, one environmental impact for noise is considered significant and unavoidable when extended concrete pours occur outside the City of Walnut Creek’s allowable construction time periods (7:00 a.m. to 6:00 p.m.) per the City’s

noise ordinance. Extended concrete pours at Walnut Creek WTP require a 6:00 a.m. start time to minimize disruptions that could affect the quality of the concrete work and service life of the structure being constructed; therefore, early morning noise from haul truck traffic at San Luis Road and Buena Vista Avenue before 7:00 a.m. is considered to be a significant and unavoidable impact. Based on the duration and location of all construction activities, no location (or receptor) would experience noise levels in excess of ordinance levels for more than a total of about 55 work days over the entire Project construction period (estimated at 40 days during Phase 1, and 15 days during Phase 2).

The District will also incorporate its standard construction specifications, District Procedures, and Engineering Standard Practices into the Project. These standard practices and procedures are designed to address typical characteristics of District construction projects and reflect generally applicable District standard operating procedures.

Public Outreach

Outreach meetings with staff from the City of Walnut Creek, City of Lafayette, East Bay Regional Park District, Temple Isaiah, Contra Costa Christian Schools, and Buena Vista Elementary School were held throughout 2021 and 2023. A community outreach and scoping meeting was held in March 2022 to present the conceptual site and landscape plans, discuss the potential environmental factors to be addressed in the Draft EIR, and receive community feedback. Postcards about the community meeting were sent to affected residents near the Project site and posted on NextDoor and the District's website. A project briefing was provided to the Walnut Creek City Council in March 2023. Issues and concerns raised by agency staff, the Walnut Creek City Council and the community included construction-related traffic, noise, and dust, and potential impacts on existing trails and open space, aesthetics, security fencing, and geology; all of which are addressed in the Draft EIR.

NEXT STEPS

The Draft EIR will be published on September 28, 2023, with a 45-day public review period ending on November 13, 2023. A virtual public meeting is scheduled for October 19, 2023, to solicit comments on the Draft EIR. The Final EIR, which will respond to any comments received during the public review period, is scheduled for Board consideration in June 2024. If the Board certifies the Final EIR in June 2024, design of the Project will begin in 2024 and construction will begin in 2027.

CCC:OOY:sjp

Attachments: Figure 1: Walnut Creek WTP Project Location
Figure 2: Lafayette WTP Project Location
Figure 3: Walnut Creek WTP Conceptual Site Plan
Figure 4: Lafayette WTP Conceptual Site Plan

This page is intentionally left blank.

Figure 1: Walnut Creek WTP Project Location

Figure 2: Lafayette WTP Project Location

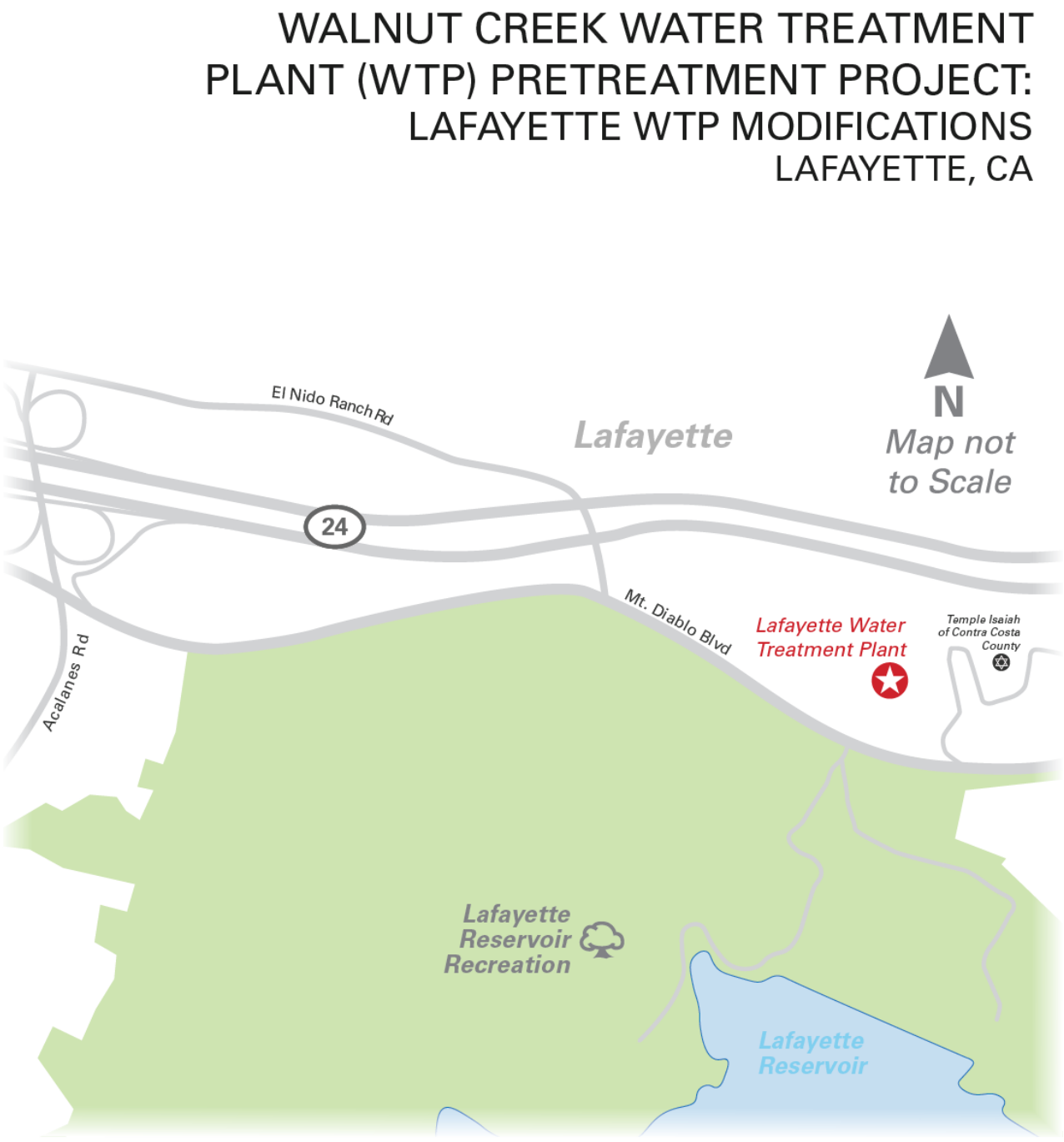


Figure 3: Walnut Creek WTP Conceptual Site Plan

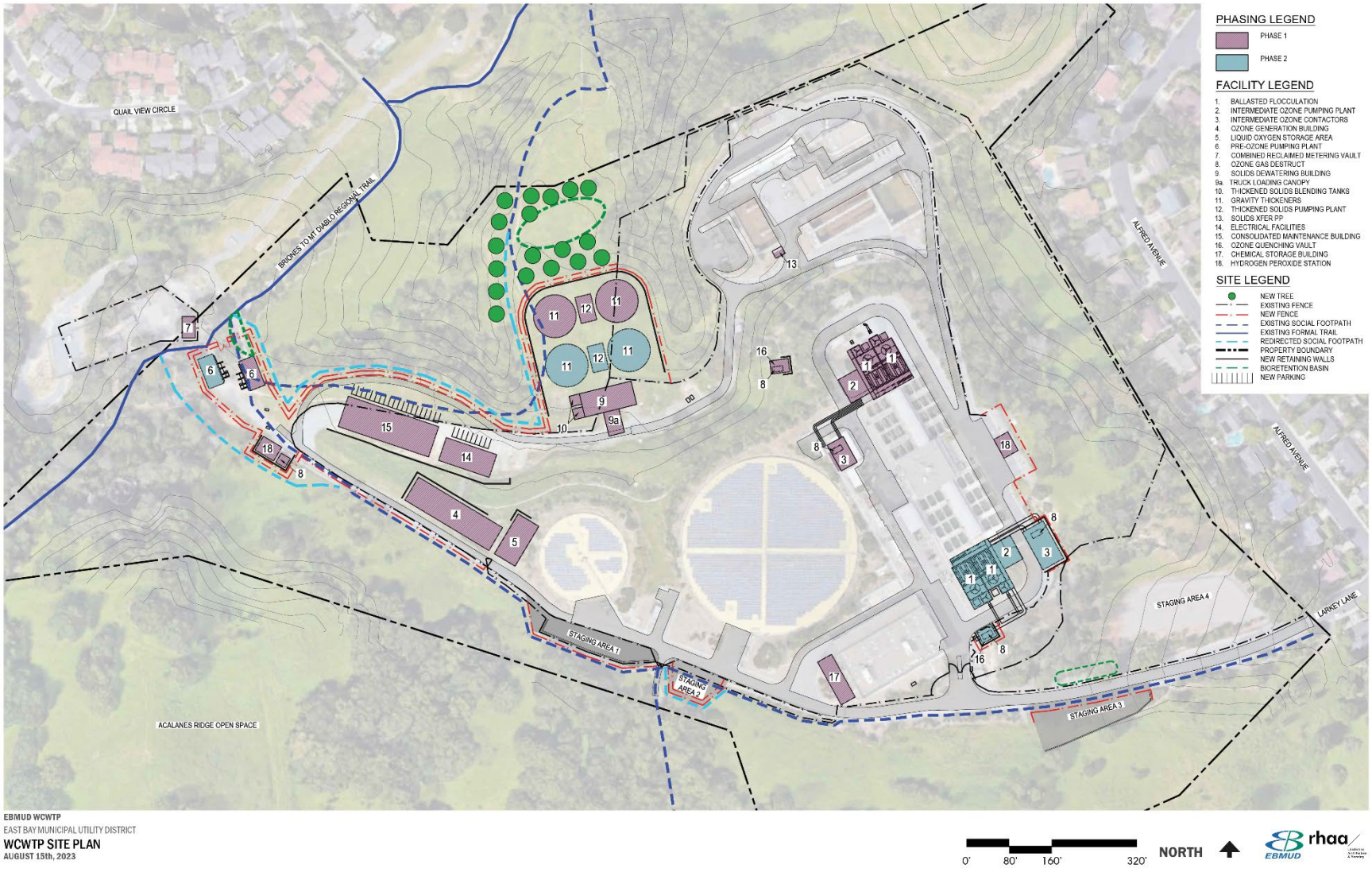
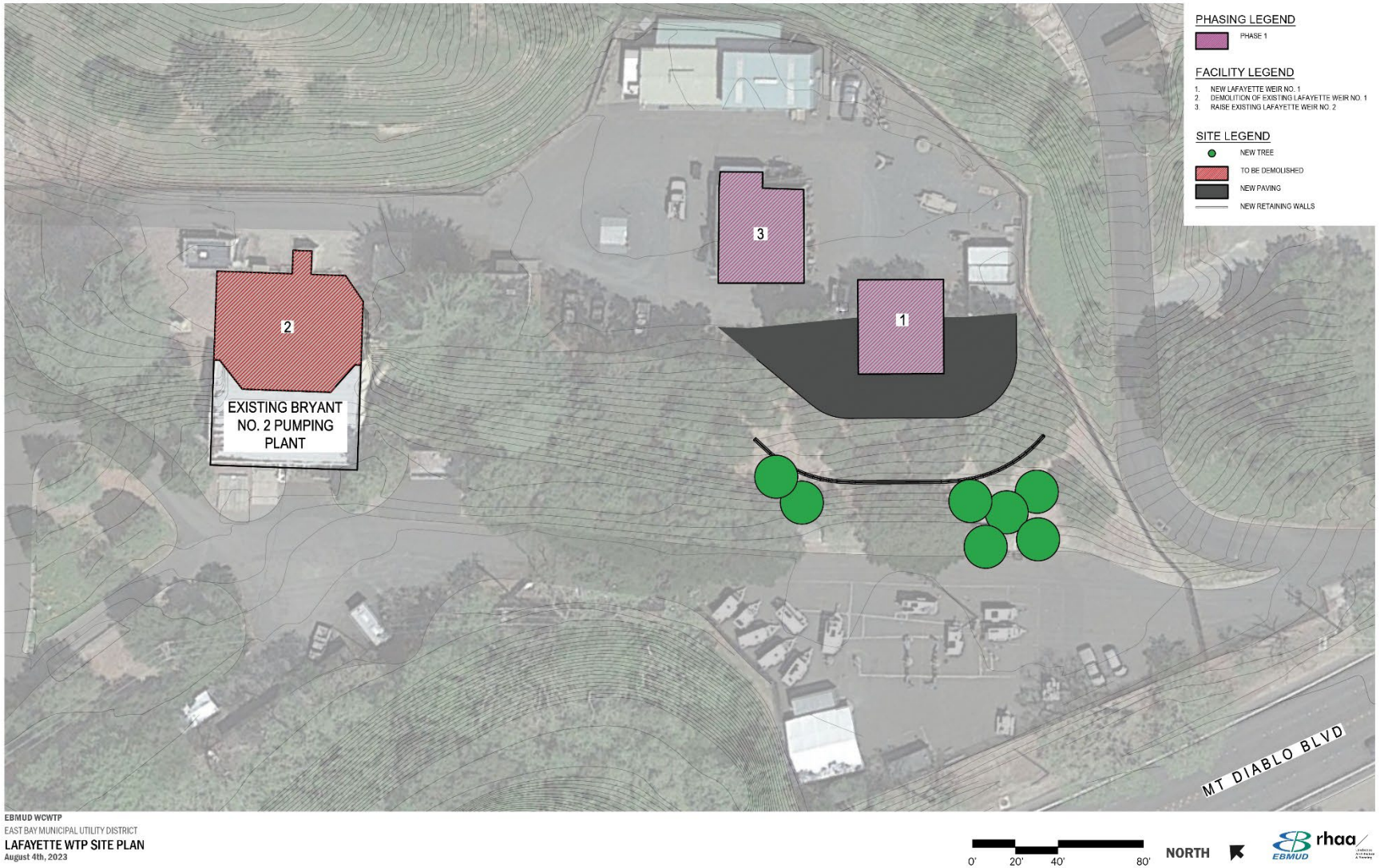


Figure 4: Lafayette WTP Conceptual Site Plan



EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: September 7, 2023

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager CCC

FROM: Olujimi O. Yoloye, Director of Engineering and Construction OOY

SUBJECT: Dam Safety Program Annual Report

SUMMARY

This report is provided in accordance with Policy 9.07 – Dam Safety Program, whereby the District's Chief Dam Safety Engineer (CDSE) provides an annual update on dam safety issues, actions from the previous year related to dam safety, upcoming activities, and an assessment of the adequacy of the budget to cover the safety needs. These items will be presented at the September 12, 2023 Planning Committee meeting.

DISCUSSION

The Dam Safety Program is overseen by the CDSE in collaboration with the District's Dam Safety Steering Committee. The program covers 24 dams. Regulatory oversight of 18 dams is provided by the California Department of Water Resources Division of Safety of Dams (DSOD). San Pablo Clearwell has been demolished and DSOD placed the dam in inoperative status in May 2023. The Federal Energy Regulatory Commission (FERC) has joint jurisdiction over two dams, Pardee and Camanche, as they are hydroelectric power-generating facilities. Six District dams are not regulated by DSOD due to their small size. Based on the past year's dam-safety related activities and inspections, the District's dams are considered safe for continued operation.

NEXT STEPS

Progress will continue on all dam-safety related capital improvements, as detailed in the attached report, and the Dam Safety Steering Committee will continue to meet quarterly. Dam inspections will continue monthly, annual inspections will be conducted with DSOD and FERC, and Emergency Action Planning and Response drills and activities will be scheduled. Updates will be reported in the next annual report in accordance with the Dam Safety Program Guide.

CCC:OOY:EZB

Attachment: Dam Safety Program Annual Report – July 1, 2022 to June 30, 2023

This page is intentionally left blank.

DAM SAFETY PROGRAM ANNUAL REPORT
July 1, 2022 to June 30, 2023

HIGHLIGHTS

The Chief Dam Safety Engineer (CDSE) concludes the District's dams are considered safe for continued operation based on the CDSE's knowledge and review of dam-safety-related reports and activities and regular inspections of all facilities and specific engineering studies that were completed by trained engineers, technicians, and inspectors throughout the year, which has been confirmed by the California Division of Safety of Dams (DSOD) and additionally by the Federal Energy Regulatory Commission (FERC) for Pardee and Camanche. Highlights include:

- The construction of the seismic upgrade to Briones Tower continued with an estimated completion in the winter of 2023-2024, and the design of the seismic upgrade to Lafayette Tower continued with input from the City of Lafayette.
- The Emergency Action Plans for the District's terminal reservoirs were approved by California Governor's Office of Emergency Services (CalOES) in June 2023.
- The FERC five-year comprehensive dam safety reviews of Pardee and Camanche were completed. This is the Ninth Part 12D evaluation performed by an Independent Consultant (IC), as required by FERC. The resulting Potential Failure Mode Analyses Reports and Inspection Reports were transmitted to FERC in March and July 2023, respectively. The ICs concluded the facilities are safe for continued operation.
- The District conducted the annual emergency preparedness drills and seminars for Pardee and Camanche Dams with internal and external stakeholders. This year marked the first in-person seminar since the COVID-19 emergency was declared.

EMERGENCY RESPONSE AND PREPAREDNESS

District Policy 7.03 - Emergency Preparedness/Business Continuity requires an active Emergency Preparedness Program that includes an Emergency Operations Plan (EOP) to manage the District's critical functions during an emergency and protect people, property, and the environment. The EOP guides the District's response in the event of an emergency. Dam-specific Emergency Action Plans (EAPs) are hazard-specific response plan annexes of the EOP and contain more detailed instructions for staff response. The dam-specific EAPs are overseen by the CalOES and DSOD. FERC also oversees the EAPs for Pardee and Camanche. The District regularly updates these plans and conducts emergency preparedness drills. The following emergency response and preparedness activities took place last year:

- EAPs for all of the District's active jurisdictional local dams were updated and transmitted to CalOES in May 2023.
- CalOES approved the EAPs for San Pablo, Briones, Chabot, Upper San Leandro (USL), and Lafayette Reservoirs on June 9, 2023. EAPs for open-cut reservoirs are pending approval.
- On December 6, 2022, the District conducted its Annual Notification Drill for the FERC EAP. The Everbridge mass communication system was used to relay the dam incident information efficiently and effectively to relevant internal and external EAP holders.
- On February 7, 2023, the District conducted its Annual Seminar for the FERC EAP with

Emergency Management Agencies (EMAs) at the Mokelumne Hill Town Hall. EBMUD co-hosted the seminar with Jackson Valley Irrigation District (JVID) and Calaveras Public Utility District (CPUD). Attending participants included first responders; representatives from law enforcement, state office of emergency services, emergency management agencies, and local water districts; and staff from EBMUD, JVID, and CPUD. Staff from each host agency presented facility overviews and highlighted the EAP content of each respective project. The invited speaker from National Weather Service presented on support services for dam incidents, preparedness, and alert notifications. The invited speaker from CalOES presented on general flood safety and California's responses to recent floods.

- In March 2023, the District distributed the revised FERC EAP to all stakeholders. The revisions updated the EAP to incorporate CalOES's comments, including expanded narratives, additional references, formatting changes, revised emergency notification scripts, and updated factual data on the facilities.

DAM SAFETY STUDIES AND IMPROVEMENTS

The following are key highlights from the District's current and upcoming dam safety capital projects and studies.

Ninth FERC Part 12D Independent Consultant (IC) Inspection and Potential Failure Mode Analyses – As part of the FERC license to operate hydroelectric power at Camanche and Pardee Reservoirs, the District is required to retain an IC to inspect and evaluate the safety of the reservoirs on a five-year cycle. The IC also performs a Potential Failure Mode Analysis (PFMA) with District, FERC, and IC staff to review previous potential failures, develop new failure modes, and assign importance rankings to each failure mode. GEI Consultants Inc. served as the IC for the Ninth Part 12D Inspection, which took place from September 20 to 22, 2022 and involved a comprehensive and detailed evaluation of critical components of the Pardee and Camanche facilities. The PFMA Workshop was conducted in-person the week of October 17, 2022, and virtually on November 28, 2022, and involved internal and external subject matter experts in dam safety topics to discuss, evaluate, and identify potential vulnerabilities and develop related recommended mitigation measures. The PFMA Reports were transmitted to FERC in March 2023. The final Part 12D revised reports summarizing the findings were transmitted to FERC in July 2023. The District is currently developing a schedule and plan of actions to implement in response to the IC recommendations.

Dam Guide Updates – The Dam Guide, which is used for emergency planning, field inspections, and District-wide reference, was revised in May 2023. The 2023 edition of the Dam Guide includes new to-scale figures showing all instrumentation locations and access points, key information in a new tabular format, the addition of a new outlet works section for the terminal and upcountry dams, new geospatial coordinates for all dams, updated reservoir capacities, updated description of past studies, and removal of dams that are out of service.

Briones Tower Modifications – The construction of modifications to prevent damage to the tower in the event of an earthquake, and to add an onshore operating system for the valves to improve response time in an emergency, began in June of 2022. The main seismic improvements, including installation of steel strip reinforcement in the upper portion of the tower, were completed in August 2023. Three of the seven hydraulic power units for remote

valve operation will be installed by September 2023. The remaining four hydraulic power units and the debris catcher are scheduled to be installed from December 2023 through early 2024 during a winter outage of Briones.

Lafayette Tower Modifications – The tower at Lafayette Reservoir is unique in that it and the conduits at its base together function as a spillway and outlet works to control the reservoir levels. The tower, at 170 feet tall, was built in 1927 to serve a much larger dam, but that dam failed during construction. As a result, the tower is approximately 40 feet too high, which has resulted in operational challenges and now presents a dam safety concern. In the event of an earthquake, the tower is likely to sustain significant damage due to the lack of steel reinforcement in the concrete and the conduits, which are buried deep within the dam, and would sustain damage from internal forces such that the tower and conduits would not be able to perform their function as an outlet and spillway. There are at least three specific consequences that could occur. First, earthquake damage to the tower could occlude the outlet or prevent opening the valves, which would prevent lowering of the reservoir. Second, damage to the tower below the water surface level could drain the reservoir through the spillway down to the elevation of the damage, causing an uncontrolled high-flow release in the creek downstream. Third, damage to the spillway conduit could allow water to flow into the embankment, washing out soil and causing an embankment failure. These conditions present a dam safety concern and are not acceptable to the District or DSOD.

DSOD has required the District to address the seismic safety of the tower and conduit and to add an onshore valve operating system to improve response time in an emergency. The seismic deficiencies were identified in a comprehensive structural evaluation of the tower and conduit system using state-of-the-art finite element numerical modeling and dynamic response-spectrum analysis. Based on these results, and after conducting an alternatives analysis, the District and DSOD had agreed that the safest and most reliable way to address the seismic risk is to shorten the tower by 40 feet. Retrofit alternatives that would have preserved the current height of the tower were ultimately neither approved by DSOD, nor selected in the alternatives evaluation analysis, included infilling the tower with concrete, installing mid-height base isolators, installing post-tensioned anchors to the base of the structure, installing a steel jacket, and installing fiber wrap. The District is responding to technical questions from the City of Lafayette and local citizens regarding the analyses and is considering their input regarding ideas to maintain a taller tower height. Supplemental analyses are underway to determine if simply reinforcing the top of the tower would be structurally acceptable and results are expected by October 2023. Evaluations will also consider operational needs and worker safety.

USL Tower Modifications – The construction portion of the project was completed in June 2019. Monitoring of the revegetation of the reservoir bank disturbed during the construction and annual reporting on the revegetation will continue through 2023 under the requirements of the permits. The 2022 revegetation monitoring report was submitted to the California Department of Fish and Wildlife and the San Francisco Regional Water Quality Control Board in August 2022. The final revegetation monitoring took place in July 2023 and the corresponding monitoring report will be submitted in August 2023, which will complete the District’s mitigation monitoring requirement for the project.

Dam Spillway Condition Assessments **–** The Dam Spillway Condition Assessment program includes a comprehensive evaluation of each dam's spillways including underdrain evaluations, drone surveys, non-destructive testing, wall displacement evaluations, and the installation of survey monuments and other instrumentation. As part of the program, the District implemented a pilot program between 2021 and 2022 to rapidly assess spillway conditions at USL and Camanche spillways, using drones that acquire acoustic, thermal, and optical data to identify defects and use machine learning to process how they change between surveys. The District proposes to continue to perform an additional scan of USL spillway to compare the results before and after the spillway use in the winter of 2022-2023. If successful, the District may look at broader deployment of this technology.

Additionally, the District is currently developing a Pardee Spillway Condition Assessment Program following the recommendations from the Ninth FERC Part 12D Report and plans to further study and perform field investigations of Pardee Spillway. At San Pablo and USL Spillways, the District performed wall deflection analyses and is developing a surveillance plan using terrestrial Light Detection and Ranging (LiDAR) survey techniques in conjunction with new survey monuments to ensure that measured deflections are acceptable after heavy storms, spilling, and/or large earthquake events. The Camanche Spillway Phase 2 Condition Assessment Program report, which included coring of the concrete-lined chute, detailed mapping of cold-weather joint inspection, and mapping of the extents of unobstructed subdrain lines and locations of subdrain obstructions, was transmitted to DSOD in June 2023. The next step is to finalize spillway work plans that prioritize and address spillway deficiencies and submit the plans to DSOD for review.

Probable Maximum Flood Studies – The District submitted an engineering study to FERC in April 2022 that updates the probable maximum flood (PMF) analysis for Pardee and Camanche Dams using the current National Weather Service Hydrometeorological Report for probable maximum precipitation. The District is waiting for FERC's comments prior to performing the dam breach hydraulic analysis and developing the inundation maps for the PMF scenario. The District is partnering with PG&E on a site-specific Mokelumne Watershed PMP study to have a more refined analysis of potential extreme hydrologic conditions in the watershed, which will include analyzing the effects of climate change. DSOD is also expected to develop new requirements for hydrometeorological analyses, which will include climate change sensitivity analysis. In advance of any formal requirements from DSOD, the District is planning to refine the hydrologic and hydraulic model of the Chabot and USL Watershed using updated PMF data and will perform analyses to determine the hydraulic adequacy of the spillways at Chabot and USL Reservoirs. The analyses will include developing a three-dimensional numerical and physical model to evaluate potential spillway alternatives.

Pardee Dam Crack Mapping – Evaluating cracks is a best practice for concrete dams, and Pardee Dam interior gallery cracks are equipped with crack meters that are routinely monitored and evaluated. The downstream face of Pardee Dam was manually inspected and mapped for surface cracks by Dames & Moore in 1992. In 2014, FERC requested that the District update the crack map to evaluate if any existing cracks have progressed or identify new cracks that may have developed, and include the updated concrete crack mapping within the next revision of the Supporting Technical Information Document (STID) and Dam Safety Surveillance and Monitoring Report (DSSMR). In November 2022, the District collected close-up, high-

resolution, drone-based aerial imagery of the downstream face of Pardee. These high-resolution aerial images enable the District to safely map out all the notable cracks by being able to closely inspect and perform measurements from the imagery; this work to update the 1992 crack map is currently underway. The updated crack map is anticipated to be completed in October 2023 and will be documented within the next revision to the STID and DSSMR.

Digital Earth Models and High-resolution Imagery of Upcountry Dams – The District retained the services of an aerial survey consultant who collected high-resolution photogrammetric imagery of the Pardee and Camanche facilities to support the Ninth FERC Part 12D inspection. The consultant developed a high-resolution Digital Earth Model (DEM) from the imagery that will serve as a baseline model for future data collection on a five-year cycle in anticipation of future FERC Part 12D inspections. Any unexpected terrain changes or deformations will be highlighted by comparing future surveys to the 2022 baseline DEM.

Camanche and Pardee Seismic Study – New developments in dam safety have identified the importance of assessing all related dam facilities. As a result and as recommended during the Eighth FERC Part 12D inspection, the District is performing a seismic stability study for a) Camanche valve house, b) Pardee Dam, c) Camanche and Pardee South Spillway crests, d) Camanche Spillway chute walls, and e) Camanche Spillway bridge, and to include PMF loading for the stability studies of Pardee Dam; Pardee South Spillway Crest, and Camanche Spillway crest, chute walls, and chute slab. The District retained a consultant in January 2023 to complete these studies. The seismic hazard analyses report, which is the initial document establishing the basis for the seismic loading, was submitted to FERC and DSOD in July 2023. The PMF loading is based on the April 2022 study that was submitted to FERC. The comprehensive study is scheduled to be completed by April 2024. The results of the program will be included in the next revision to the STID and will close the outstanding IC recommendations. If any facilities are found to have unsatisfactory performance, the District will plan, budget, and develop a program to address any deficiencies.

Camanche and Pardee Piezometer Evaluation Report and Piezometer Improvements Program – Much of the instrumentation at Camanche and Pardee date back to the 1960s and are beyond the planned service life. There are 279 piezometric surveillance instruments between Camanche and Pardee reservoirs. A number of them are malfunctioning or are redundant. DSOD and FERC requested the District re-evaluate and address them. The District performed a comprehensive evaluation and developed an instrumentation plan to abandon 121 piezometers, install new multi-level piezometers at 15 locations, update existing standpipe piezometers with modern electronic probes, and connect the surveillance system to automatic data acquisition systems for remote monitoring. The state of practice for dam safety piezometric surveillance has also improved significantly over the past several decades. These upgrades would improve dam safety by ensuring surveyed piezometric levels are located at the precise monitoring depth, improve the quality and reliability of instrument readings, allow for more frequent readings without incurring additional field time, and allow for rapid assessment for abnormal data remotely. The plan is currently pending FERC and DSOD approval.

Camanche and Pardee South Spillway Unlined Channel Erosion – The Eighth FERC Part 12D Report recommended the District perform further studies at the unlined spillway channel at Camanche Spillway and the unlined channel at Pardee South Spillway. The District collected

aerial drone-based LiDAR survey data of the Pardee Spillway unlined channel in fall 2019 and 2021 and found there was no appreciable scour or erosion that occurred within that timeframe because the Pardee Spillway was not operated. The spillway was operated for over 120 days from December 2022 through July 2023, and therefore the District is retaining the services of an aerial consultant to collect a third LiDAR data set in November 2023. The results will allow the District to evaluate the scour and erosion that occurred due to the 2022-2023 spillway operation and to begin planning for further analyses. Since Camanche Spillway was not operated, the District is planning to develop two-dimensional and three-dimensional hydraulic models of Camanche Spillway under a variety of flow-levels to analyze potential scour and backwards erosion that could undermine the concrete-lined chutes.

DAM INSPECTIONS, SURVEILLANCE, AND REPORTING

Staff performs monthly dam inspections, including those of the appurtenances and surveillance instrumentation data collection. Geotechnical engineers review the inspections and issue maintenance work orders or develop capital projects as necessary and evaluate the instrumentation data to ensure there are no concerns about dam performance. In addition, the District conducts annual inspections and submits annual reports to DSOD and FERC.

The dates for the DSOD inspections, valve exercises, and reports for the last year are shown in Table 1, and the dates for the FERC inspections and reports are shown in Table 2. Except for routine maintenance, such as vegetation clearing and concrete patching, no major problems were identified.

DISTRICT POLICY UPDATES

In accordance with a two-year recurring policy review schedule, District Policy 9.07 - Dam Safety Program was updated effective June 27, 2023 to comply with CalOES requirements and to maintain proactive updates to the physical and cybersecurity programs.

UPCOMING ACTIVITIES

In addition to the seismic retrofit work at the Briones and Lafayette towers, the upcoming dam safety activities for next year will focus on spillway evaluations, including the start of a new Pardee South Spillway Condition Assessment program. Dam safety activities will also include performing rehabilitation, repairs, and upgrades to the surveillance and monitoring programs, following recommendations from the Eighth and Ninth FERC Part 12D inspections and performing corrective maintenance in response to FERC and DSOD inspection report comments on routine maintenance.

As part of its ongoing innovation efforts, the District is working with the University of California at Berkeley Center for Smart Infrastructure to perform research studies related to dam safety. Working with academic researchers, the District plans to undertake a study of the stability and scour potential of the unlined channel at Pardee South Spillway and development of additional Rapid Post-Earthquake Dam Inspection Criteria. These research projects will assist the District and advance the state-of-practice in dam safety.

FISCAL IMPACT

Funds from ongoing capital and operating budgets have sufficiently supported the efforts of the Dam Safety Program to date. The Dam Safety Program Steering Committee reviews the budget as part of its ongoing work and will recommend adjustments as needed.

California Senate Bill 122 was signed into law effective June 28, 2023 and substantially increases project fees for dam repair, alteration, and removal. In addition, DSOD sent a notice in March 2023 that the annual dam fee schedule will increase by eight percent. These increases were not foreseen when developing the FY2024/2025 budget. However, staff will adjust overall expenditures in order to meet budget targets.

Table 1: FY23 DSOD Dam Inspections, Reports, and Valve Exercises

Dam Name	DSOD Inspection Date	DSOD Report Date[(a)]	DSOD Valve Exercise[(b)]
Almond	2/21/2023	6/27/2023	3/16/2021
Argyle #2	2/14/2023	6/27/2023	3/8/2021
Briones	10/6/2022	6/27/2023	2/22/2022
Camanche	10/25/2022	6/23/2023	9/24/21
Central	2/21/2023	6/27/2023	3/11/2021
Chabot	9/14/2022	6/27/2023	12/15/2021
Danville	9/8/2022	6/27/2023	3/11/2021
Dunsmuir	2/21/2023	6/27/2023	3/16/2021
Lafayette	9/8/2022	6/27/2023	12/9/2021
Leland	9/8/2022	6/27/2023	3/17/2021
Maloney	2/14/2023	6/27/2023	3/10/2021
Moraga	9/8/2022	6/27/2023	3/17/2021
North	2/14/2023	6/27/2023	3/10/2021
Pardee	10/25/2022	6/23/2023	10/25/2022
Piedmont	2/21/2023	6/27/2023	(c)
San Pablo Clearwell	2/14/2023	(d)	(d)
San Pablo	10/6/2022	6/27/2023	12/17/2019
Sobrante Clearwell	2/14/2023	6/27/2023	3/8/2021
Upper San Leandro	9/14/2022	6/27/2023	12/14/2021

Notes:

a) The annual DSOD report for local dams is up to date with the next report planned for July 1, 2024.
b) Valves are required to be exercised every three years. The valve exercise program is up to date.
c) Reservoir is out of service and is empty.
d) DSOD placed San Pablo Clearwell in inoperative status in May 2023. The dam has been removed and construction is underway to replace the reservoir with two tanks. Upon completion, District will submit documentation to DSOD to remove the facility from jurisdiction.

Table 2: FY23 FERC Dam Inspections and Reports

Dam Name	FERC Inspection Date	Report Date
Camanche	09/20/2022 to 09/21/2022	03/30/2023
Pardee	09/21/2022 to 09/22/2022	03/30/2023