2023 NPDES SELF-MONITORING PROGRAM ANNUAL REPORT

NPDES PERMIT NO. CA0037869

East Bay Dischargers Authority City of San Leandro Oro Loma Sanitary District Castro Valley Sanitary District City of Hayward Union Sanitary District

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Section 1: Comprehensive Discussion of Treatment Plant Performance and Compliance

Major milestones and construction projects completed at the EBDA member treatment plants in 2023 included the following:

- Oro Loma/Castro Valley Sanitary Districts (OLSD/CVSan)
 - Installed new iron sponge vessel to remove H2S as a redundant system to chemical dosing. This was a proactive effort to maintain compliance with air board regulations due to the shortage in chemical supply experience throughout the industry.
 - Continuing to operate a full scale sidestream nitrification process using Microvi's biocatalyst. As constructed, approximately 100,000 gpd of belt press filtrate will be treated each day. The sidestream contains approximately 17% of the total influent nitrogen. To date, the process reduces ammonia concentrations by 70%. Staff continues to work to improve the performance with a 90% removal target. The process is designed to reduce ammonia to nitrite or nitrate, which is readily available for denitrification in the mainstream process.
 - Much of the Oro Loma Sanitary District's Capital Program spending has shifted to the collection system. The District is approximately 60% complete with its goal to replace 40 miles of sewer pipe by 2029 at an approximate cost of \$60M. The District has completed four of ten planned contracts in 2023 with two currently actively in construction, one out to bid and expects to award two more in 2024.
 - Oro Loma Sanitary District worked to improve chlorine dosing to EBDA by adding automation to the chlorine system that maintains a chlorine residual setpoint at the disinfection channel chlorine injection point and programming a minimum sodium hypochlorite feed rate to prevent low chlorine residual dips during low flow events. We have also relocated our sensor locations to better monitor chlorine residual more immediately.
- Union Sanitary District (USD)
 - Enhanced Treatment and Site Upgrade (ETSU) Program phase 1A construction is ongoing. The design for phase 1B has commenced and is expected to be out to bid mid calendar year 2024. Phase 1A will modify the existing aeration basins, add an 8th aeration basin, and relocate existing administrative/operations/maintenance buildings to allow for phase 1B to be built. Phase 1B will construct new secondary clarifiers, return activated sludge pump station (RAS), waste activated sludge pump station (WAS) and new effluent pump station, including new chlorine contact channels. The completion of the ETSU program will allow USD to be an earlier adopter of nutrient removal.

- New Standby Generator system is construction will be completed in 2025. Long lead times for electrical equipment have slowed the completion of this project. This project also upgrades a portion of the facility's electrical distribution system, by replacing Substation #2.
- WAS Gravity Belt Thickener is in design to replace aging solids process equipment.
- Rehabilitation of the district's Digester #6, which is the second largest digester, is underway.
- <u>City of Hayward</u>
 - The recycled water membrane treatment system had its first full year in service and distributed 60 million gallons of recycled water in total. Averaging 250K to 300K gallons of water per day during the peak season.
 - The Headworks project is substantially complete. In 2023 the contractor installed a permanent dewatering system for the foul-air line to reliably run the biofilter and punch list items to be completed in 2024. We are working with BAAQMD to permit the biofilter.
 - The 12KV Switch Gear replacement project was awarded to Carollo in late 2021. The project bid was awarded in summer of 2022, the design has begun, and construction was scheduled to begin in late 2023. Due to extremely long lead times the start date has been pushed to mid-2024.
 - The nutrient management upgrades and admin building project was awarded to Brown and Caldwell in August of 2022. Planning has begun and it will take 2 years to design the nutrient upgrades. The admin building design is 90% complete, the EQ basin design is 60% complete and the phase II nutrient upgrade design is in the early stages and will continue in 2024.
 - The effluent pump and motors will be replaced in 2024. The old concrete bases will be demolished. New anchors and rebar will be installed and new larger concrete bases will be poured before installing the new pumps and motors.
- City of San Leandro
 - "Micro-grid" battery system installation nearing completion. Other energy efficiency projects including digester mixing and aeration equipment expected to commence early 2024.
 - CEQA approval of the Treatment Wetland project is expected in early 2024. Phase I, including sludge stabilization and soil relocation, is expected to start in summer 2024 with final construction and commissioning expected in 2025. This project was selected for a \$2.975M grant from US EPA through the Water Quality Improvement Fund.
 - A Capital Improvement Plan project commenced in late 2023 and is expected to be completed in early 2024. The plan will delineate necessary

projects for the Water Pollution Control Plant and the collection system from 2024 through 2034. This plan will include options for further reducing nutrients.

 Disaster recovery from the 2022-23 floods, including rehabilitation of damaged facilities and replacement of damaged equipment. Upgrades to allow diversion of excess flow to the treatment pond will complete in January 2024.

EBDA's major projects in 2023 included the following:

- EBDA continues to implement its Asset Management Plan to ensure appropriate renewal and replacement of infrastructure. The estimated total restoration cost over 20 years is approximately \$11.3 million. This includes \$420,000 annually through 2030 (for a total of \$4.2 million) that EBDA is contributing for capital improvements to the Union Effluent Pump station, per EBDA's Amended and Restated Joint Powers Agreement.
- In 2023, EBDA replaced the emergency outfall weir at the Oro Loma Effluent Pump Station. This project involved removing the existing lumber weir and replacing it with a new permanent stainless-steel weir at an increased height, increasing system detention time and delaying or preventing an unanticipated bypass in the event of a catastrophic failure at OLEPS. EBDA also performed Wet Well Sluice Gate Repairs and Preventative Maintenance at OLEPS.
- EBDA continued to advance the Hayward Effluent Pump Station (HEPS) Pump Replacement project. This project to replace all four pumps and motors was awarded in January 2023, and pumps were delivered in December 2023. Installation is beginning in early 2024.
- EBDA substantially completed a project to replace the roofs on the EBDA Office Building, the Marina Dechlorination Facility (MDF) SBS Storage Building, and OLEPS. EBDA also completed interior upgrades to its Administration Building, including new flooring and paint.
- EBDA continued its key role in the Transforming Shorelines Project. This project, funded by an EPA Water Quality Improvement Fund grant, includes design of a full-scale horizontal levee south of Oro Loma ("First Mile" project), continued research at Oro Loma's horizontal levee pilot, advancement of pilot wetlands projects at San Leandro and Hayward, and building capacity for nature-based solutions among Bay Area wastewater agencies. In close coordination with East Bay Regional Park District, Hayward Area Shoreline Planning Agency, and San Francisco Estuary Partnership, EBDA has been managing the First Mile and Hayward projects. In 2023, the First Mile team completed a draft set of 30% design drawings. A design charette for the project is being held in January 2024, which will inform future project phases and partnerships.
- In late 2021, EBDA started a project to update programming and automation associated with sodium bisulfite (SBS) dosing at the MDF. These updates were

needed to implement the change to EBDA's effluent limit for total residual chlorine (TRC), which was adopted as a blanket permit amendment by the Regional Water Board in October 2021, and then again in November 2023. The new TRC effluent limit is expected to reduce SBS usage by approximately 85%, or a \$250,000 budgetary savings. Programming was completed in December 2023, and implementation began on January 2, 2024.

- EBDA has been working closely with Cargill, Inc. to develop a project that would deliver mixed sea salt brine from Cargill's solar salt ponds in Newark to EBDA's transport system for dilution and discharge. In 2023, EBDA's Commission approved an Environmental Impact Report (EIR) for the project, which is available here: https://ebda.org/projects/cargill-partnership/. Following EIR approval, Cargill made the decision to further evaluate an alternate pipeline route that goes along paths near the Bay instead of through City streets that are already congested with utilities. A project update meeting was held with regulatory agency representatives, including Regional Water Board staff, in December 2023 to discuss the proposed change. Cargill is now in the process of re-engineering the pipeline and consulting with landowners. They are also re-evaluating the connection to EBDA, assessing the feasibility of connecting downstream of MDF to avoid corrosion impacts to EBDA's system. Cargill's preliminary schedule shows revised CEQA analysis in 2025, and construction beginning sometime between 2027 and 2029 depending on permitting, with operation commencing between 2031 and 2033.
- EBDA's Member Agencies recycled approximately 1007 million gallons in 2023, a 23% increase over 2022. The increase is primarily attributed increases in Hayward's recycled water deliveries, both to the Russell City Energy Center (RCEC), and to other irrigation and industrial uses through their Phase 1 Recycled Water Project. For consistency with recycled water totals submitted through GeoTracker, the totals presented below include in-plant reuse.

As shown in the following table, including the LAVWMA agencies, water recycling accounted for more than 3 billion gallons, about 14% of EBDA's outfall discharge last year of approximately 22.1 billion gallons. Overall, this is consistent with last year's totals and ratio.

Agency	2023 Recycled Water Production (MG)
Hayward	541
San Leandro	74
EBDA Skywest Project	9
Oro Loma Sanitary District	18
Union Sanitary District	365
EBDA Total	1007
Livermore	506
Dublin San Ramon Services District (DSRSD)	1524
LAVWMA Total	2030
Grand Total	3037

Bacterial Compliance

The chart that follows presents pathogen data from samples through the year. Note that permit limits are calculated as monthly geometric means or monthly 90%ile samples. Sporadically, at random intervals, a high sample can be detected. This outcome is probably due to the sloughing of pipe biofilms into the sample line. These non-representative events are why permit compliance is determined by geometric means. EBDA and its member agencies worked hard over the past few years to improve chlorine dosing to prevent periodic increases in bacterial contamination, which had occurred in prior years. This increased attention to chlorine dosing has led to consistent compliance with limits.



Figure 1 – EBDA Bacterial Contaminant Performance

Treatment Plan Compliance – San Leandro

The Albertsons-Safeway milk processing plant at 2000 Adams Street is the biggest single discharger to the San Leandro WPCP. From mid-January to March 2023, repeated high strength discharges from the plant caused upsets to the plant processes. One of these discharges included 3000-5000 gallons of heavy cream, which recorded a grab-sample COD of 287,000. When operators notice a drop in dissolved oxygen in the aeration basin, they typically divert flow to wet-weather storage. However, during a three-week period in February, the discharges were so frequent that all available storage capacity was used. This resulted in an exceedance of the weekly average CBOD limit for the week of February 12-18, caused primarily by a CBOD result of 58 mg/L on February 15.

These problems continued in March 2023. Operations staff noted that the CBOD removal efficiency of the Fixed Film Reactor (FFR) was lower than normal. A brief FFR flush, in which the rotation of the distribution arms is slowed to remove excess biofilm, is normally scheduled daily. However, because of the wet weather and repeated discharges from the milk plant, the FFR had not been flushed in 8 days. In an effort to improve the removal efficiency, Operations staff initiated a flush of the FFR, in which the rotation of the arms is slowed to remove excess biofilm. This normally causes a temporary drop in dissolved oxygen in the aeration basin. However, the plant was experiencing excess loading at the same time. The low DO from the FFR flush masked the low DO from the influent, so Operations staff waited for several hours before starting to divert to the storage basins. This series of events resulted in a CBOD over 90 mg/L on March 16, 2023 and a weekly average of 55.1 mg/L for the week of March 12-18.

Plant management and pretreatment staff have been in communication with the milk plant leadership, including the issuance of multiple notices of violation. The plant has since installed additional tankage to capture accidental discharges and have improved their operations to limit these discharges. In addition, a Sentry biological activity sensor has been installed in the influent channel. This sensor converts biological activity into an electrical signal, which provides plant staff notices of high loading (or low activity, an indication of possible toxicity). This removes the dependence on DO as an indicator and allows staff to divert flow earlier in the process and limit the impact on the aerobic treatment process.

During the latter half of the year, as the milk discharges subsided, the plant performed excellently, with TSS and CBOD removal rates frequently exceeding 99%.

Section 2: List of Analyses for Which the Discharger Is Certified

EBDA conducts no analyses of its own. Each member agency is certified by the State Water Resources Control Board for standard water quality tests such as BOD, TSS, pH, DO, enterococcus, and fecal coliform. City of San Leandro staff performs these analyses on the combined effluent. Beginning in 2024, Oro Loma Sanitary District is allowing their ELAP certification to lapse, and all compliance samples will be analyzed by certified contract laboratories.

All metals and organics analyses are performed by the Authority's contract laboratory, Caltest Analytical Laboratory. Caltest's lab is certified for these analyses. Caltest subcontracts for analytical work on some items, including dioxin and furan compounds and PCBs to other certified labs.

Pacific Eco-Risk (PER), also a certified laboratory, conducts the required acute and chronic toxicity testing for the Authority.

Copies of all laboratory reports are maintained on file at the Authority's office and are available for review upon request. Said reports are not included in this report.

Section 3: Plan View Drawing or Map Showing the Discharger's Facility, Flow Routing, Sampling and Observation Station Locations



Marina Dechlorination Facility

San Leandro Plant – Process Flow Diagram



San Leandro Plant – Sampling Locations



Effluent Sampling Point

OLSD/CVSan Plant – Process Flow Diagram



OLSD/CVSan Plant – Sampling Locations





Hayward Plant – Process Flow Diagram

Hayward Plant – Sampling Locations





USD Plant – Process Flow Diagram

USD Plant – Sampling Locations



Section 4: Results of Facility Report Reviews

The tables in this section summarize the status of reviewing and updating the following documents: Operations & Maintenance (O&M) Manual, Contingency Plan, Spill Prevention Plan, and Wastewater Facilities Status Report.

REPORTS	REVIEW DATE	REVIEW PROCEDURES	PLANNED ACTIONS	SCHEDULE	
O&M Manual	Jan 2024	Updated on an as-needed basis and reviewed annually by the EBDA O&M Manager.	The Authority maintains a comprehensive O&M Manual for the joint-use facilities. Chapters of the Manual are regularly reviewed and updated. EBDA's Wet Weather SOP is reviewed annually and updated as needed.	Performed annually	
			In January 2024, the O&M Manual was updated to incorporate a revised Chlorine Process Control Plan for the Marina Dechlorination Facility, consistent with Order No. R2-2023-0023. The Plan describes the process for ensuring that residual chlorine is zero at EBDA's discharge to the Bay, which occurs at the diffusers 37,000 feet offshore 23.5 feet under the water surface.		
Contingency Plan	Jan 2024	Updated annually by EBDA O&M and Administration Managers. EBDA is included in the Alameda County's Office of Emergency Service's Utility Unit.	The Emergency Operating Contingency Plan is supported by Operations & Maintenance Agreements between Member Agencies, which are compatible with their existing plans and known to all other local and county agencies for emergency purposes. Operation and maintenance activities are contracted with the Member Agencies for routine work. Emergency work is performed sometimes by Member Agencies and sometimes through contracts with private specialty firms.	Performed annually	
Spill Prevention Plan	The SPCC Plan was updated in April and July of 2022.	Reviewed annually by EBDA O&M Manager	No major changes planned for 2024.	Performed as needed	
Wastewater Facilities Status Report	Jan 2024	EBDA continues to implement a comprehensive Renewal and Replacement Program. The Authority has an Asset Management Plan that covers all critical equipment.	 In 2023, EBDA completed the following projects: UEPS payment #3 of 10 for a total of \$4.2 M OLEPS Emergency Outfall Upgrade Building Roof Replacements Administration Building Interior Improvements In 2024, the Authority is continuing work on the following upgrades to the EBDA system: HEPS Pump Replacement Project OLEPS ATS Replacement 	Anticipated Completion: HEPS Pump Replacements, June 2024 OLEPS ATS Replacement, June 2025	

EBDA Facilities

Document	Review	Review Procedures	Planned Actions	Schedule
	Date			
O&M Manual	Sections assigned and updated throughout the year	O&M manuals and SOPs are written and revised as necessary by designated Plant Operators and reviewed by the Operations Supervisor and Plant Manager	Review O&M chapters and SOPs as needed. Continue developing and revising SOPs for plant processes. O&M is a mix of electronic and older paper as we transition; we have fewer and fewer paper versions per year.	Performed continuously
Contingency Plan	January 2023	WPCP management reviews, edits and approves	Current contingency plan updated as needed with changes. A significant revision is planned for 2024 with more detailed plans for specific scenarios.	Performed annually
Spill Prevention Plan	November 2023	WPCP management reviews, edits and approves	Currently up to date.	Performed annually
Wastewater Facilities Status Report	January 2024		Capital Improvement Planning project will complete in early 2024, with implementation of urgent projects expected to start late 2024 Annual Street Overlay and Sewer Point Repair Project Construction will be completed for microgrid battery backup system and other energy efficiency improvements. Treatment Wetland project will receive regulatory approval, and the City plans to begin construction in summer 2024. This project will treat approximately 20% of the ADWF to remove nitrogen and other contaminants through both technological and biological processes. Design and bid, rehab. and upgrade of 3 sewer lift stations and force main in 2024 and 2025	Maintenance and project schedule for 2024

San Leandro Treatment Plant

Document	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	Ongoing	Continual reviews and revisions as necessary when new processes come online or when modifications are made to current processes.	The District has completed developing a computer based training program for the 25 unit processes in the treatment plant (including the EBDA OLEPS pump station). Staff will continue to train on the modules.	Ongoing
Contingency Plan	September 2023	Management team completed its review and updated document to reflect changes in contact information or equipment/facility changes.	Continue to make updates as needed, at least annually.	Annually
Spill Prevention Plan	December 2022	The District performed a significant update to its plan in 2022 to reflect administrative audit findings from CUPA.	Currently up to date and will update as necessary.	As needed
Wastewater Facilities Status Report	January 2023		The District continues to execute its planned 10-year, \$168M capital program. The program includes extensive sewer pipe renewal (1.5% of system/year; the District is working to replace 40 miles (15%) of its 271-mile collection system by 2029), Digester Construction in 2025, and Cogeneration System Replacement in 2030. By the end of 2023, the District had completed 60% of the construction to replace 40 miles of the collection system and began the design for the Digester Rehabilitation Project.	10-Year Capital Plan (Updated December 2023)

Oro Loma/Castro Valley Sanitary District Treatment Plant

Hayward Water Pollution Control Facility

REPORTS	REVIEW	REVIEW	PLANNED ACTIONS	SCHEDULE
	DATE	PROCEDURES		
O&M Manual	Ongoing	COH WPCF electronic O&M manuals, including SOP's, are reviewed, and updated throughout the year by staff. Revisions are made to Sections and SOP's	Create new SOPs as required and review and update older SOPs throughout the year. Continually review and update O&M sections. Brown and Caldwell will be looking into a fully revised O&M as part of the nutrient management project.	SOP's and O&M sections are reviewed continuously
Contingency Plan	January 2024	The entire plan is reviewed by the WPCF manager with updates and edits made by the Senior Secretary.	Continue to make updates as needed.	Performed annually
Spill Prevention Plan	January 2024	Plan reviewed by WPCF Manager every January. Changes made by Senior Secretary.	Make updates as needed.	Performed annually
Wastewater Facilities Status Report	Jan 2024	The phase II Facilities Plan was completed in 2020. The city will implement projects as recommended in the 2020 Phase II Facilities Plan.	 Complete Capital Improvement Projects according to the 10-year Master Plan CIP. In 2023, The City of Hayward WPCF completed the following projects: Headworks Project substantially complete with the installation of the biofilter Dewatering system complete. Punch list items to be completed in 2024. Design of the 12KV switchgear project. Planned for 2024: We are working with BAAQMD to permit the biofilter and working with the contractor on punch list items for the dewatering system. The replacement of the effluent pumps will begin in 2024. Construction of the new 12KV switchgear replacement project will begin in 2024. The admin building project design will be complete in 2024 and the RFP will go out. The EQ basin design will be complete and the RFP will go out in 2024. The phase II nutrient upgrade design will continue in 2024. 	10-year Master Plan CIP planning changes are made every year in July with mid-year adjustments made in January/February

Document	Review	Review Procedures	Planned Actions	Schedule	
	Date				
O&M Manual	Ongoing	Plant O&M documents are incorporated into the District's Competency-Based Training Program. USD utilizes Microsoft Sharepoint software to track document review.	Plant management reviews training documents and SOP's as changes occur (i.e., following construction) or as scheduled.	Each individual training module and SOP has a review frequency of 3 years.	
Contingency Plan	December 2023	Plant Manager reviews and updates the Contingency Plan annually.	None. Contingency Plan was updated in December 2023.	e. Contingency Plan updated in ember 2023. Complete next review by December 2024.	
Spill Prevention Plan	December 2023	Spill Prevention Plan is incorporated into our Contingency Plan and is reviewed at the same time.	None. Spill Prevention Plan was reviewed in December 2023.	Complete next review by December 2024.	
Wastewater Facilities Status Report	December 2023	USD's Master Plans address most of the Facilities Evaluation requirements. Our Plant Master Plan is updated every 5 years and Pump Station and Collection System Master Plans are updated as needed. Asset management data is updated on an ongoing basis. CIP and Operating plans and budgets are reviewed and revised annually. 2023 Projects Completed/in- progress: • Standby Power Upgrade (Construction in progress) • Plant Miscellaneous Improvements (Construction in progress) • ETSU: Phase 1A • Aeration Basin Modification (Construction in progress) • Campus relocation (Construction in progress)	Complete capital improvements in accordance with 20-year CIP plan. Implement annual rate adjustments for Sewer Service Charges and Capacity Fees in accordance with 10-year financial plan. 2024 Projects Planned: • WAS Gravity Belt Thickener (In Design) • Anaerobic Digester #6 Rehab (In Design) • Electrical Switchboard and MCC Replacements (In Design) ETSU: Phase 1B • New Secondary Clarifiers. (In Design) • New Effluent Pump Station (In Design) • New RAS/WAS Pump Station (In Design)	 20-year CIP annual update in June. Master Plans: Alvarado Basin MP 2023-25 Newark Basin MP 2025-27 Irvington Basin 2027-29 Pump Station Asset Condition Assessment 2028-31 Plant Asset Condition Assessment 2025-27 Plant Solids System/Capaci ty Assessment 2032-34 	

Union Sanitary District Treatment Plant

Section 5: BACWA Watershed Permitting and Monitoring

EBDA participates in a number of group processes coordinated by the Bay Area Clean Water Agencies (BACWA) to fulfill permit requirements, including Receiving Water Quality Monitoring, TMDL/SSO Support, Mercury and PCBs Watershed Permit Support, Nutrients Watershed Permit Support, and Implementation of Copper Action. Participation in these items is described in an annual BACWA letter to the Regional Water Board found here:

https://bacwa.org/document/bacwa-npdes-permit-letter-2024/

Section 6: Effluent Characterization Study and Report

EBDA regularly monitors and evaluates discharges from the common outfall and each contributing plant's effluent to identify any concerning trends. No significant increases over past performance were noted in 2023 data.

As shown in Figure 2, five years of metals data continue to show flat trends. Cyanide is rarely detected.





EBDA's five-year trend for copper shows that while individual member agency effluent concentrations have varied, EBDA's common outfall concentration consistently averaged less than 20 ppb, versus a permit limit of 53 ppb (see Figure 3).

Figure 3 – Effluent Copper Trend



EBDA's effluent mercury concentrations also continue to be well below permit limits, as shown in Figure 4.



Figure 4 – Effluent Mercury Trend