



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Board Report

Engineering Services Group

- **Engineering Services Monthly Activities Report for December 2024**

Summary

This monthly report provides a summary of Engineering Services Group activities for December 2024 in the following key areas:

- Colorado River Aqueduct (CRA) Program
- Dams & Reservoirs Program
- Distribution System Program
- Information Technology and Control Systems Program
- Additional Facilities and Systems Program
- Prestressed Concrete Cylinder Pipe (PCCP) Program
- Water Treatment Plants Program
- Pure Water Southern California
- Drought Mitigation – State Water Project Dependent Areas
- Workforce Development

Purpose

Informational

Attachments

Attachment 1: Detailed Report - Engineering Services Group's Monthly Activities for December

Engineering Services Key Activities Report for December 2024

Engineering Services manages and executes projects within the Capital Investment Plan (CIP) to maintain infrastructure resiliency, ensure regulatory compliance, enhance sustainability, and provide flexibility in system operations to address uncertain water supply conditions. In addition, Engineering Services provides technical services to enhance reliable system operation and real property planning, valuation, acquisition, and disposition services to protect Metropolitan's assets. Engineering Services empowers our staff and partners with our business partners and the communities we serve to accomplish Metropolitan's mission.

Recent activities on CIP programs and other key engineering functions are described below.



Protect public health, the regional economy and
Metropolitan's assets

Colorado River Aqueduct (CRA) Program

The CRA program is composed of CIP projects to replace or refurbish facilities and components of the CRA system to reliably convey water from the Colorado River to Southern California.

- **CRA Domestic Water Treatment Systems Upgrade**—This project upgrades the domestic water treatment systems at all five CRA pumping plants, including the replacement of the water treatment units. The contractor is currently performing water quality testing of the temporary treatment skid system that was recently installed at the Intake Pumping Plant. The temporary skid will remain in operation until installation, testing, and commissioning of the new system is complete. Construction is 42 percent complete and is anticipated to be completed in March 2026.
- **CRA Storage Buildings**—This project furnishes and installs pre-engineered steel metal storage buildings at Hinds, Eagle Mountain, and Iron Mountain pumping plants and constructs associated site improvements. The contractor is currently performing site work at Iron Mountain and Hinds pumping plants and has initiated erecting the building at Eagle Mountain Pumping Plant. Construction is 57 percent complete and is scheduled to be completed in April 2026.
- **Main Transformer Procurement**—This project replaces 35 230 kV and 69 kV step-down transformers that are used to operate the main pumps at all five of Metropolitan's Colorado River Aqueduct pumping plants. Preliminary design was completed in June 2023. The transformer procurement was

advertised as a best-value procurement contract, and staff is currently negotiating the contract terms. A board action for award of a procurement contract and authorization of a consulting agreement for final design is scheduled for March 2025.

- **Eagle Mountain and Hinds Utilities Improvements**—This project will replace the existing potable water, non-potable water, and sewer lines at the Eagle Mountain and Hinds pumping plants. Final design is 95 percent complete and is scheduled to be completed in April 2025.



CRA Domestic Water Treatment Systems Upgrade —
Temporary Treatment Skid at Intake Plant



CRA Storage Buildings—Contractor staff installing overhead conduit at the interior of the Storage Building at Eagle Mountain Pumping Plant

Dams & Reservoirs Program

The Dams & Reservoirs Program is composed of CIP projects to upgrade or refurbish Metropolitan’s dams, reservoirs, and appurtenant facilities to reliably meet water storage needs and regulatory compliance.

- **Garvey Reservoir Rehabilitation**—This project will replace the aging reservoir floating cover and liner, structurally strengthen the outlet tower, upgrade the on-site water quality laboratory building, rehabilitate the junction structure, and replace the existing standby generator and a portion of the security perimeter fence. The final Environmental Impact Report (EIR) for this rehabilitation effort was certified by the Board in November 2024. Final design is approximately 60 percent complete and is scheduled to be completed in September 2025.
- **Lake Skinner Erosion Improvements**—This project replaces the 4,800-foot concrete v-ditch and rehabilitates the adjacent access road at the toe of the Lake Skinner Dam to improve stormwater drainage and provide long-term protection against erosion consistent with Department of Safety of Dams’ requirements. The Board awarded a construction contract in December 2024.
- **Lake Skinner Outlet Tower Valve Procurement**—This project replaces two 42-inch diameter butterfly valves and actuators to ensure that Lake Skinner can be fully dewatered if needed, consistent with Department of Safety of Dams’ requirements. The valve fabricator is preparing submittals for review. The valves are scheduled to be delivered in December 2026.
- **Copper Basin Discharge Valve Rehabilitation**—This project installs a new 54-inch fixed cone valve and actuator at the base of the dam, refurbishes a slide gate and the existing valve house, and upgrades all associated electrical systems and access ladders at the Copper Basin Reservoir. This project will also include the replacement of access ladders at the Gene Wash Dam. Final design is complete. Acquisition of environmental permits is in progress.

Distribution System Program

The Distribution System Program is composed of CIP projects to replace, upgrade, or refurbish existing facilities within Metropolitan’s distribution system, including pressure control structures, hydroelectric power plants, and pipelines, to reliably meet water demands.

- **Perris Valley Pipeline Tunnels**—This project will complete construction of the Perris Valley Pipeline and provide service connections to Eastern and Western Municipal Water Districts. This project installs 3,000 linear feet of tunnel that crosses the Interstate 215 freeway. The contractor has completed the installation of the 97-inch diameter welded steel pipe and continues to backfill and restore three of the four shafts. The contractor is installing the final connection at the last shaft west of Interstate 215. Overall construction is 95 percent complete and is scheduled to be complete in early 2025.
- **Red Mountain Pressure Control Structure (PCS) Sleeve Valve Procurement**—This project will furnish a replacement sleeve valve for the Red Mountain PCS facility. The Board awarded the procurement contract in October 2024. The notice to proceed was issued to the supplier in December 2024. The valve is expected to be delivered in the fourth quarter of 2025.
- **San Diego Canal Concrete Rehabilitation**—This project will replace damaged concrete lining at one location on the San Diego Canal near the interconnection with the Casa Loma Canal. The contractor is currently transmitting submittals for review. Rehabilitation of the liner will occur during the San Diego Canal shutdown scheduled from February to March 2025. The construction effort is approximately 5 percent complete and is scheduled to be completed in April 2025.
- **Foothill Hydroelectric Plant and Control Building Seismic Upgrade**—This project strengthens the Foothill Hydroelectric Plant and Control Building to withstand a significant earthquake by removing and replacing the roofing system, adding encasements to enlarge and strengthen concrete columns, and reinforcing shallow foundations. The contractor has completed installing the building’s roof and placing concrete around the lower half of the existing concrete columns. Construction is approximately 85 percent complete and is scheduled to be completed in February 2025.
- **Hollywood Tunnel North Portal Improvements**—The project will replace two sleeve valves operated by electric actuators for pressure control and two bonneted knife gate valves for flow isolation at the Hollywood Tunnel North Portal along the Santa Monica Feeder. The valve procurement is currently advertising and scheduled to open bids in January 2025.
- **San Gabriel Tower Gate Structure Improvements**—The San Gabriel Tower controls water flow in the Upper Feeder downstream of the Weymouth plant. It is also used to provide the required hydraulic grade at the turnouts located upstream from the San Gabriel Control Tower. The project will install three new electrically actuated slide gates in the tower. Value Engineering was recently completed, and the design team is taking the recommendations into consideration. Preliminary design is approximately 95 percent complete and is scheduled to be completed in February 2025.



Perris Valley Pipeline Tunnels—Backfilling and compacting at tunnel shaft site

Information Technology and Control Systems Program

The Information Technology and Control Systems Program is composed of projects to replace, upgrade, or provide new facilities, software applications, or technology that will enhance cybersecurity, reliability, flexibility, and capability of information, communication, and control systems.

- **Supervisory Control and Data Acquisition (SCADA) System Upgrades**—This project will upgrade Metropolitan’s entire control system in incremental stages, spanning the Colorado River Aqueduct, the five water treatment plants, and the conveyance and distribution system. The first stage of this project replaces the control system at the Mills plant, starting with a pilot effort on one of the plant’s remote terminal units to demonstrate the proposed technology and the consultant’s approach for the plant and the overall project. The pilot phase is 100 percent complete. Staff continued evaluating the results of the recently installed pilot equipment to determine the criteria for equipment implementation. The system upgrades at the Mills plant are scheduled to be completed in October 2026.

Additional Facilities and Systems Program

The Additional Facilities and Systems Program is composed of CIP projects to refurbish, replace, upgrade, or provide new facilities and systems that support Metropolitan’s business and district-wide operations.

- **Headquarters Physical Security Upgrades**—This project implements comprehensive security upgrades for the Metropolitan Headquarters Building. These upgrades are consistent with federally recommended best practices for government buildings. The work has been prioritized and staged to minimize rework and impacts on day-to-day operations within the building. Stage 1 work is complete and provides enhanced security related to perimeter windows and doors. Stage 2 work is complete and provides security system upgrades inside the building with a focus on the main entry rotunda

area, boardroom, executive dining lounge, and security control room. Construction of Stage 3 improvements provides security system upgrades around the perimeter of the building. Construction was completed in December 2024.

- **La Verne Shops Improvements**—This project improves the La Verne Shops building and installs Metropolitan-furnished shop equipment. The contractor continued installing electrical conduits for branch circuits, began installing reinforcing steel for the new blast booth foundation, continued installing maintenance holes for the new electrical ductbank, and began installing concrete formwork for the blast booth pit walls. Construction is approximately 95 percent complete and is scheduled to be completed in March 2025.
- **Diamond Valley Lake Wave Attenuator**—This project adds a second attenuator to the existing wave attenuating system at the East Marina in Diamond Valley Lake. The second attenuator will protect the boats and launch ramp from excessive wave action. As part of the improvements, the existing wave attenuator will be relocated to a new location and the new attenuator will be installed in its place. Additional anchors will be placed on the bottom of the reservoir to provide anchorage for the new, longer attenuator. The contractor completed the fabrication of new anchor blocks and began delivery. The project is 28 percent complete and is scheduled to be completed by May 2026.



La Verne Shops Improvements—Safety fencing installed around existing Horizontal Boring Mill



Diamond Valley Lake Wave Attenuator—Preparing Concrete Anchor Blocks for Installation

Prestressed Concrete Cylinder Pipe (PCCP) Program

The PCCP Program is composed of CIP projects to refurbish or upgrade Metropolitan’s PCCP feeders to maintain water deliveries without unplanned shutdowns.

- **Second Lower Feeder Valve Procurement**—This project will procure 13 long-lead-time, 48-inch and 54-inch diameter conical plug sectionalizing valves for the Second Lower Feeder. As PCCP portions of the Second Lower Feeder are rehabilitated, aging sectionalizing valves are being replaced with valves procured under this project. The last valve was delivered to Metropolitan’s Lake Mathews facility in December 2024. All 13 valves have now been received.
- **Allen-McColloch Pipeline (AMP) Urgent Relining**—This project will perform urgent relining of approximately three miles of distressed PCCP segments of the Allen-McColloch Pipeline (AMP) that were discovered during an inspection in 2023. The urgent relining of the AMP is being performed in stages. Stage 1 includes carbon fiber reinforced polymer (CFRP) lining of four segments and steel relining of approximately 4,500 feet of pipeline. Stage 1 upstream of OC-88 is complete. Downstream of OC-88, pipe installation and backfill is complete and site restoration will be complete by December 2024. Stage 2 work consists of 12,600 feet of steel liner installation and appurtenant work. Pipe installation at seven sites is complete, and pipe installation at the last access site began in October 2024. The Stage 2 work is approximately 80 percent complete. Bulkhead removal downstream of OC-88 is planned for January 2025, and site restoration is expected to be completed in March 2025.

- **Foothill Feeder Acoustic Fiber Optic (AFO) Installation**—This project will install an acoustic fiber optic monitoring system within the 201-inch diameter Foothill Feeder to allow continuous monitoring of the 6.5 miles of PCCP portions, minimizing the need for expensive prolonged shutdowns. Final design is approximately 45 percent complete and is planned for completion by April 2025. The project team is evaluating options for dewatering the pipeline now that quagga mussels have been discovered in the West Branch of the State Water Project. Installation of the AFO system is currently scheduled to occur during the Foothill Feeder shutdown in January 2026.



Allen-McColloch Pipeline (AMP) Urgent Relining—Steel Liner Pipe Installation

Water Treatment Plants Program

The Water Treatment Plants Program comprises CIP projects to replace or refurbish facilities and components at Metropolitan’s five water treatment plants and the chemical unloading facility to continue to reliably meet treated water demands.

- **Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation**—This project rehabilitates major mechanical and structural components of Basins 5–8 and Filter Building No. 2 at the Weymouth plant, including the flocculation/sedimentation equipment, sludge pumps, baffle boards and walls, launders, inlet gates, and outlet drop gates. Rehabilitation work also includes seismic upgrades of basin walls and inlet channel, hazardous material abatement, and replacement of filter valves and actuators in Filter Building No. 2. The contractor completed all rehabilitation work in Basins 7 and 8 and continued construction activities including structural wall modifications, mechanical piping, and equipment installation in Basins 5 and 6 and Filter Building No. 2. Construction is approximately 85 percent complete and is scheduled to be completed in September 2025.

- **Weymouth Administration Building Upgrades**—This project upgrades the Weymouth Administration Building to withstand a significant earthquake. The planned upgrades include structural strengthening consistent with current seismic standards for essential facilities as well as accessibility and fire/life safety improvements, architectural modifications near the areas of structural upgrades, and improvements associated with the preservation of historic architectural features. The project constructability review workshop was completed in July 2024. Final design is approximately 90 percent complete and is scheduled to be completed in May 2025.
- **Diemer Filter Rehabilitation**—This project rehabilitates the 48 filters at the Diemer plant to enhance filter performance, minimize filter media loss, and rehabilitate or replace aging components. Planned upgrades include replacing filter media, filter valve actuators, and instruments; modifying the filter upstream influent weir and surface wash laterals; and improving the coal grit removal facilities for the east and west sides of the plant. Final design is approximately 95 percent complete and is scheduled to be completed in January 2025.
- **Mills Electrical Upgrades, Stage 2**—This project upgrades the electrical system with dual-power feeds to key process equipment to comply with current codes and industry practice, improve plant reliability, and enhance worker safety. Stage 1 construction is complete. Stage 2 improvements will add a second incoming 12 kV service from Riverside Public Utilities, reconfigure the existing 4.16 kV switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller. The contractor completed installation of the switchgear doors inside the Ozone Switchgear Building and is preparing for installation of the switchgear doors inside the Standby Generator building. Construction is approximately 75 percent complete and is scheduled to be completed in August 2025.



Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation—
Basin 6 Flocculator Shaft Installation



Adapt to changing climate and water resources

Pure Water Southern California

The Pure Water Southern California (PWSC) Program is a large regional recycled water program that will provide a new local source of safe and reliable drinking water for Southern California. PWSC currently focuses on four areas: demonstration testing, environmental planning, technical studies, and preliminary design of initial pipeline reaches. PWSC will produce up to 150 million gallons per day (mgd) of purified water from the Advanced Water Purification Facility (AWPF) in Carson, for indirect potable reuse (IPR) and direct potable reuse (DPR) applications.

- **Environmental Planning**—The environmental planning phase began in 2020. Biological surveys and resource technical studies have been completed to support the effort, and staff continues to prepare and review individual draft technical sections. The draft EIR is currently scheduled for publication in early 2025, with board certification of the document in early 2026.
- **Program Management**—PWSC program management efforts lead the planning for the PWSC Program, including project controls, scheduling, budget development, risk management, coordination with program partners and stakeholders, grants and funding, and preparation of various plans and studies.
 - Metropolitan received notice in May 2024 that it was one of the recipients of the U.S. Bureau of Reclamation (USBR) Large-Scale Water Recycling Program (LSWRP) grant. The USBR announced that they intend to grant Metropolitan up to \$99,199,096 to advance the PWSC planning and design efforts. A second grant application to the LSWR program was submitted to the USBR in May for up to \$26 million dollars, or the difference between the initial grant request of \$125 million and the amount awarded. On November 15, 2024, USBR announced that they intend to award Metropolitan an additional \$26,273,759. The Board adopted resolutions in November to support the USBR grant applications and development of the subsequent grant agreement. In December 2024, the Board authorized entering into an agreement with USBR to accept up to \$125,472,855 in grant funding.
 - Program internal governance and program plans are currently being developed. The first workshop was held on October 29. Technical studies are underway to support planning of DPR implementation, EIR analysis on per- and polyfluoroalkyl substances compounds, and development of program phasing options, including treated water augmentation.
 - Metropolitan and LACSD are developing a work plan and gathering information to pursue certification for PWSC under State Senate Bill 149. This certification makes critical projects, which are necessary for the State to meet its climate and clean energy goals, eligible for expedited judicial review.
- **Advanced Water Purification Facility**—The AWPF will purify treated wastewater from LACSD's A.K. Warren Water Resource Facility using membrane bioreactors (MBRs), reverse osmosis, and

ultraviolet/advanced oxidation. With its expertise in biological wastewater treatment, LACSD will assume the responsibility of implementing the AWPf pretreatment, including the MBR facilities.

- A draft conceptual facilities plan has been prepared to document key assumptions of AWPf components. The final draft plan is currently being prepared.
- Southern California Edison is performing a Method of Services (MOS) study to identify infrastructure needed to meet AWPf power requirements. The MOS investigation has been completed.
- Staff is preparing a Request for Qualification document for the procurement of a Progressive Design Build (PDB) entity to progress the design of the AWPf.
- **Direct Potable Reuse (DPR)**—The California Division of Drinking Water (DDW) published the final DPR regulations in December 2023. On August 6, 2024, the California Office of Administrative Law approved these DPR regulations, which took effect on October 1, 2024. Metropolitan has completed bench-scale testing to screen the potential DPR treatment processes that could be used for the program. Planning of pilot-scale and demonstration-scale testing is in progress. Information documented in the DPR white paper was presented at the September 2024 PWSC Subcommittee.
- **Conveyance Pipeline System**—The PWSC conveyance system consists of the backbone pipeline, which extends over 40 miles from the AWPf in the city of Carson to as far north as the city of Azusa; repurposing an existing pipeline owned by the San Gabriel Valley Municipal Water District; and a new DPR pipeline to convey water from the backbone eastward for raw water augmentation at Metropolitan’s Weymouth plant in the city of La Verne. It also includes several pump stations, service connections, isolation valves, and other pipeline appurtenances. As part of the current environmental planning phase efforts, the project team is preparing the Conveyance Facilities Conceptual Design Report to support the environmental studies and permitting processes required by CEQA. The final draft report was completed in September, with the final report anticipated by early next year. In addition, Metropolitan’s Board authorized two consulting agreements for preliminary design of the first two pipeline reaches in March 2023, and preliminary design of these two reaches is anticipated to be complete by mid-2025. Additional progress updates are provided below.
 - **Reach 1**—This reach is approximately 6.3 miles long, primarily within public rights of way in the city of Carson, with service connections for LADWP and West Basin MWD. Current work includes utility field investigation and geotechnical work, incorporating value engineering comments and assessing the need for more tunneling to minimize project risks. Additional investigations will be conducted over the next couple of months to optimize the extent of tunneling.
 - **Reach 2**—This reach is approximately 7.5 miles long, primarily within public rights of way in the cities of Long Beach and Lakewood, with a service connection for Long Beach Utilities District. Current work includes utility field investigation and geotechnical work, incorporating value engineering comments, as well as coordination with Long Beach Utilities District, Caltrans, and other permitting entities for the major tunnel crossing of the I-710 and Los Angeles River.

Drought Mitigation—State Water Project Dependent Areas

The Drought Mitigation—State Water Project Dependent Areas Program is composed of CIP projects to replace, refurbish, upgrade, or construct new facilities, which are identified to mitigate the vulnerability experienced by specific member agencies that are affected during shortages of State Water Project supplies.

- **Foothill Pump Station Intertie**—This project will connect Metropolitan’s Inland Feeder to San Bernardino Valley Municipal Water District’s (SBVMWD) Foothill Pump Station. The project is one of four Rialto Pipeline service area supply reliability improvement projects. Foothill Pump Station will provide the hydraulic lift needed for direct water delivery from Diamond Valley Lake to Rialto Pipeline. The project will install supply and discharge bypass pipelines, isolation valves and their vault, and a surge protection system. Final design for the project is anticipated to be complete by late 2024. The project requires permits from CA Fish and Wildlife and U.S. Fish and Wildlife Service (USFWS) to address impacts to endangered species found at the project site. The project is to receive a \$5M US Bureau of Reclamation (USBR) grant, and USBR will assist Metropolitan with permit consultation with USFWS. USBR is currently preparing National Environmental Policy Act documentation and a funding agreement for the grant. It is anticipated that USBR’s consultation with USFWS will begin in January 2025.
 - **54-Inch Valve for Foothill Pump Station Intertie**—Materials for the actuator and valve body are being procured by the manufacturer. The vendor will begin full production by Fall 2024. Valve delivery is anticipated by June 2025.
 - **132-inch Valve for Foothill Pump Station Intertie**—The vendor is preparing submittal documents for Metropolitan’s review and approval.
- **Sepulveda Feeder Pump Stations**—This project installs new pump stations at the existing Venice and Sepulveda Canyon pressure control facilities, providing the ability to reverse flow in the Sepulveda Feeder and deliver 30 cubic feet per second from the Central Pool to portions of the Jensen plant-exclusive area. This project uses a PDB project delivery method. The Board awarded a Phase 1 PDB agreement in September 2023. Phase 1 includes preliminary design and development of a Guaranteed Maximum Price for completion. The contractor is proceeding with the purchase of long lead items, including pumps, large valves, and electrical switchgear and transformers recently authorized by the Board. The 70 percent design package has been submitted by the Design-Builder for staff review. Authorization of Phase 2 final design and construction is anticipated in Spring 2025.



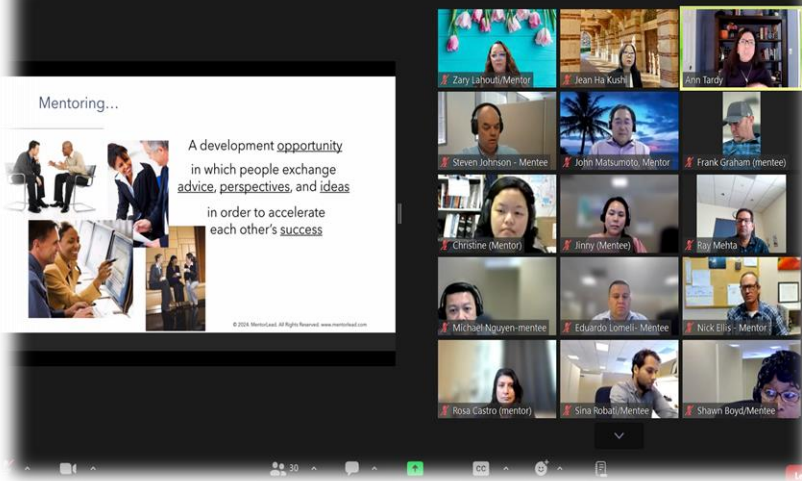
54-Inch Valve for Foothill Pump Station Intertie—Surface Preparation of Valve Interior before Rubber Lining



Empower the workforce and promote diversity, equity, and inclusion

Workforce Development

Engineering's Annual Mentoring Program successfully culminated in its twelfth year with a total of 26 mentoring pairs participating. This six-month program included one-on-one mentoring sessions and a range of core activities, including goal setting, meet and greet sessions, and flash mentoring, in addition to specialty sessions entitled Navigating Conflict and AI—Wave of the Future.



Virtual Meeting—Kickoff Meeting



Mentor Pairs—
Wade Takeguchi and Michael Nguyen



Virtual Meeting—Flash Mentoring



Mentor Pairs—
Judith Martinez and Rosa Castro