THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Report

Water System Operations Group

- **Operations Monthly Activities for March 2024**

Summary

This monthly report for the Water System Operations Group provides a summary of activities for March 2024 in the following key areas:

- Enhance Workforce Safety
- Develop Workforce and Prepare Employees for New Opportunities
- Develop New Solutions to Enhance Operational and Business Processes
- Ensure Accurate Billing and Support Revenue Generation
- Provide Reliable Water Deliveries and Manage Storage
- Develop New Supplies and Optimize System Flexibility
- Manage Power Resources and Energy Use in a Sustainable Manner
- Protect Source Waters and Ensure Water Quality Compliance
- Optimize Water Treatment and Distribution
- Protect Infrastructure and Optimize Maintenance
- Ensure Power and Environmental Regulatory Compliance
- Optimize Asset and Maintenance Management
- Prepare for Future Legislation and Regulations
- Advance Education and Outreach Initiatives

Purpose

Informational by the Water System Operations Group on a summary of key activities for the month of March 2024

Attachments

Attachment 1: Detailed Report – Water System Operations Group's Monthly Activities for March 2024

Date of Report: April 08, 2024

Operations

Water System Operations

Core Business Objectives

Enhance Workforce Safety

Safely isolating equipment from possible hazards is often the first step in maintenance. Working with high-voltage electrical circuits requires proper training and PPE. High-Voltage Switching and System Operating Orders Manual (SOOM) training refresher classes are held annually to ensure staff safety.

Staff racking out a 6.9kV circuit breaker at Gene pumping plant

Tunnel cleaning during the Colorado River Aqueduct (CRA) Shutdown requires support from multiple teams across Metropolitan. Before beginning the tunnel cleaning, a safety meeting was held with the Tunnel Cleaning Crew, Safety, Regulatory and Training (SRT), and Occupational Safety and Health Administration (OSHA) representatives.

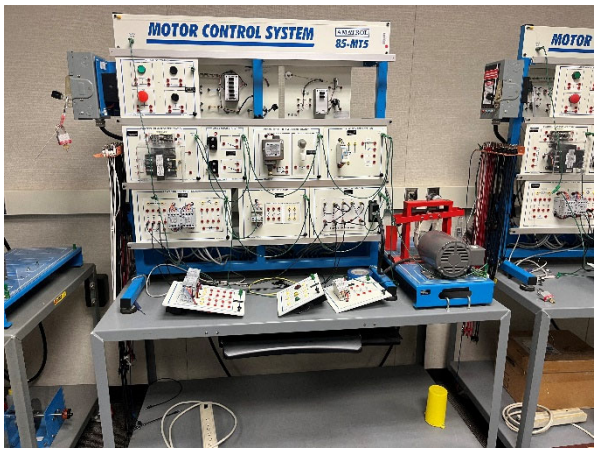
Safety meeting before starting annual tunnel cleaning on the CRA

During a field Safety Quarterly Committee meeting, staff suggested installing an Automated External Defibrillator (AED) on four utility trucks. The utility trucks are used during large field jobs and shutdowns where various employees are working together. An AED is used by a certified staff member to help someone experiencing a sudden cardiac arrest. If an AED is ever needed, staff now has ready access to it.

Field utility truck equipped with AED

Develop Workforce and Prepare Employees for New Opportunities

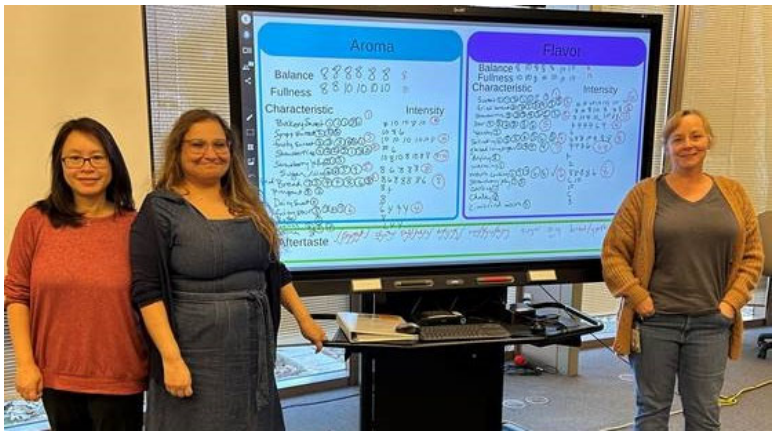
Staff began work on the modifications to the new Electrical Apprentice classroom that will be located at the former Diamond Valley Lake (DVL) Visitor Center. The previous location was at the DVL Administration building. In the new space, the apprentices will have increased room, leading to a better training and learning environment. The work includes installing new receptacles for the electrical apprenticeship trainers and emergency shut-off switches for safety.



Conduit preparation (left) and electrical apprenticeship trainer (right)

Develop New Solutions to Enhance Operational and Business Processes

Over 40 years ago, Metropolitan introduced the idea of Flavor Profile Analysis (FPA) for water. Since then, the practice has been adopted by drinking water agencies worldwide and is regarded as one of the most reliable methods for early warning detection of taste-and-odor issues in drinking water. In March, a benchmark was set when new FPA panel members were trained by Water Quality's certified trainers rather than by an external consultant. Achieving certified status is the culmination of a lengthy and rigorous training process and allows Metropolitan to be self-sufficient in ensuring that an adequate panel of trained analysts is always available.

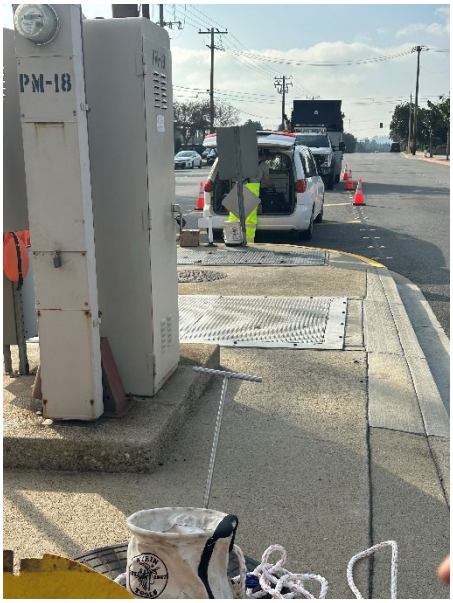


Water Quality's three certified FPA trainers led training of new panel members to analyze Metropolitan's treated water for tastes and odors

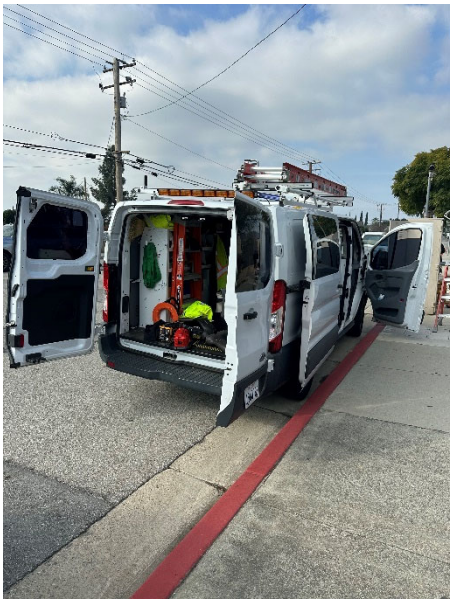
Ensure Accurate Billing and Support Revenue Generation

Staff performed inspections of member agencies' billing meter connections. Items inspected included venturi tubing, instrumentation connections, valve fittings, Victaulic ports, and overall meter condition. Billing meters are inspected, serviced, and calibrated at least annually for accuracy. During the Upper Feeder Shutdown, staff was able to perform a more extensive maintenance service on the billing meters that were out of service.

Staff replacing Victaulic meter port



Traffic control support



Control systems support vehicle

Provide Reliable Water Deliveries and Manage Storage

Metropolitan member agency water deliveries were 78,100 acre-feet (AF) for March with an average of 2,520 AF per day, which was about 500 AF per day higher than in February. Metropolitan has currently suspended Cyclic and Conjunctive Use Program deliveries to preserve State Water Project supplies. Treated water deliveries were 8,200 AF higher than February for a total of 36,700 AF, or 47 percent of total deliveries for the month. The Colorado River Aqueduct (CRA) pumped a total of 7,000 AF in March. Metropolitan reduced CRA flows to zero for the planned CRA shutdown which started March 5. State Water Project (SWP) imports averaged 1,030 AF per day, totaling about 31,900 AF for the month. The target SWP blend is 0 percent for Weymouth and Diemer plants, and 20 percent for the Skinner plant.

Metropolitan expects to have sufficient SWP and Colorado River supplies to meet demands in 2024. Water continues to be managed according to Water Surplus and Drought Management (WSDM) principles and operational objectives with an emphasis to position SWP supplies to meet future demands in the SWP-dependent area. Metropolitan has suspended deliveries to Desert Water Agency and Coachella Valley Water District. Deliveries will resume as supply conditions improve. Metropolitan is minimizing its use of Table A supplies this year to improve SWP Carryover supplies for next year.

Develop New Supplies and Optimize System Flexibility

During March staff began baseline monitoring for tertiary membrane bioreactor (MBR) nitrification-denitrification testing at the Napolitano Innovation Center demonstration plant. Following cleaning of the reverse osmosis (RO) membranes in February, staff achieved stable operating conditions at the target conditions for RO concentrate characterization. Staff also continued to optimize the carbon dosing system to efficiently achieve MBR filtrate nitrate targets. Monitoring of source water, RO concentrate, product water, and key intermediate process locations was completed for a thorough characterization of treatment performance of the treatment train.

On March 5 and 6, the seventh Independent Science Advisory Panel (ISAP) workshop was hosted at the Los Angeles County Sanitation Districts' (LACSD's) headquarters in Whittier, California, along with remote participation for additional attendees. The project team, comprising staff from Metropolitan, LACSD, and consultants, presented recent testing results to the ISAP and discussed the PWSC program's approach to direct potable reuse.

Staff installing a new RO membrane at the demonstration plant following an extraction for analysis

Staff engage with eight-member panel during the PWSC Independent Science Advisory Panel Workshop at LACSD's headquarters

Manage Power Resources and Energy Use in a Sustainable Manner

Energy markets in March 2024 reflected the mild winter of 2023–24 and relatively plentiful natural gas supplies. Natural gas prices fell from their normal winter price range of $5–10 per Metric Million British Thermal Unit (MMBtu) range into the $2–5 per MMBtu range, with electricity prices in the California Independent System Operator (CAISO) market following suit. Sunshine and longer daylight hours driving increased solar generation, coupled with relatively low springtime electricity demands, helped keep electricity prices in the $20–40 per megawatt-hour (MWh) range. No significant energy pricing events occurred either in the western US or nationwide. Summer electric and capacity price forecasts are also trending lower.

CRA energy consumption during March was minimal, as the aqueduct entered its annual shutdown. The net USBR generation exceeded CRA energy consumption, for a net income of about $300,000 for March. Reduced water demand and high storage levels at Lake Mathews continued to keep the overall CRA pumping costs trending well below budget. The CRA energy cost budget for fiscal year 2023/24 is $82.6 million; the current cost forecast for the 2023/24 fiscal year is significantly lower at $48.4 million, because of reduced pumping and lower forward cost curves. Monthly costs are forecast to increase after the scheduled CRA shutdown in March as the aqueduct returns to a higher scheduled flow and energy prices increase in anticipation of summer.

Daily generation output from Metropolitan's small hydroelectric plants (HEPs) averaged around 20 MW during the month of March, for a total energy output of about 13,000 MWh. Metropolitan's solar facilities, totaling 5.4 megawatts of capacity, generated approximately 700 MWh in March.

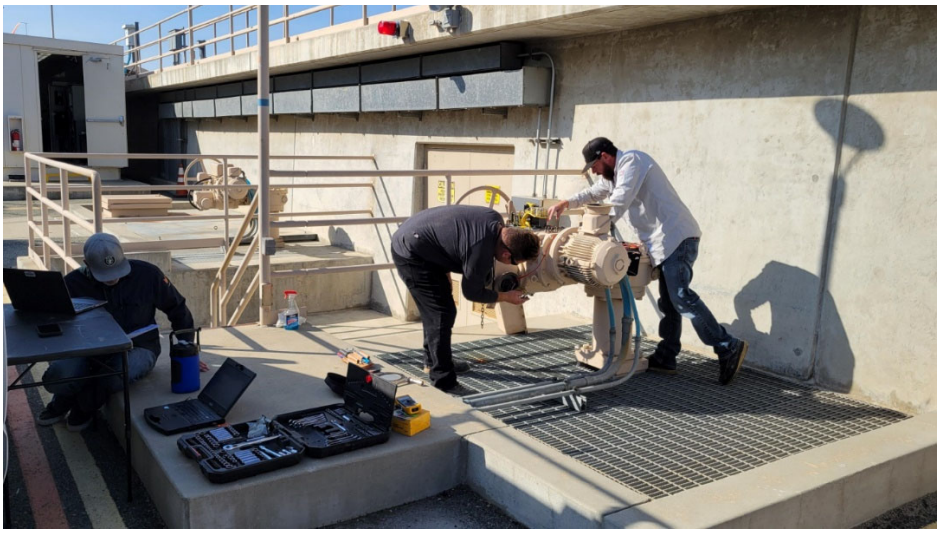
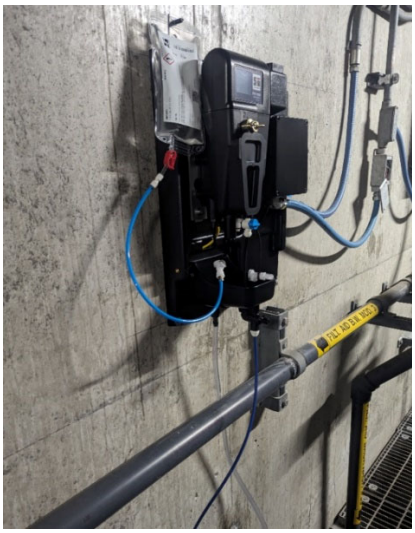
Protect Source Waters and Ensure Water Quality Compliance

Metropolitan complied with all water quality regulations and primary drinking water standards during February 2024.

Optimize Water Treatment and Distribution

To support the Lake Mathews shutdown, the SWP target blend entering the Weymouth and Diemer plants increased to 100 percent by March 11, then gradually decreased back to zero percent by March 20. The SWP target entering Lake Skinner was increased from zero to 100 percent (using DVL water) on March 7 to maintain water storage in the lake during the CRA shutdown. The SWP blend leaving the lake increased accordingly to approximately 50 percent in the month. Flow-weighted running annual averages for total dissolved solids from February 2023 through January 2024 for Metropolitan's treatment plants capable of receiving a blend of supplies from the SWP and the CRA were 352, 431, and 469 milligrams per liter (mg/L) for the Weymouth, Diemer, and Skinner plants, respectively.

The Mills plant recently underwent a zero-flow condition which allowed Department of Water Resources (DWR) the ability to isolate the second afterbay at Devil Canyon powerplant to repair a minor leak on a bypass line. Mills plant took this opportunity to perform preventative maintenance on several systems not normally available.

Staff troubleshooting contactor inlet butterfly valve (left) and new turbidity meters installed in the cross tunnel (right) at the Mills plant

Staff completed the replacement of the Module 1 surface wash valve at the Jensen plant. This work was required to address an actuator anomaly. Pre-shutdown work included installing temporary support and scaffolding, cutting welded support, and installing anchoring to limit the shutdown duration and optimize plant production. The shutdown work included removing the structure lid, removing and hoisting the defective valve and dresser coupling, and installing a temporary replacement valve while the original valve is being repaired.


Staff installing replacement valve (left) and hoisting valve with truck crane (right) at the Jensen plant

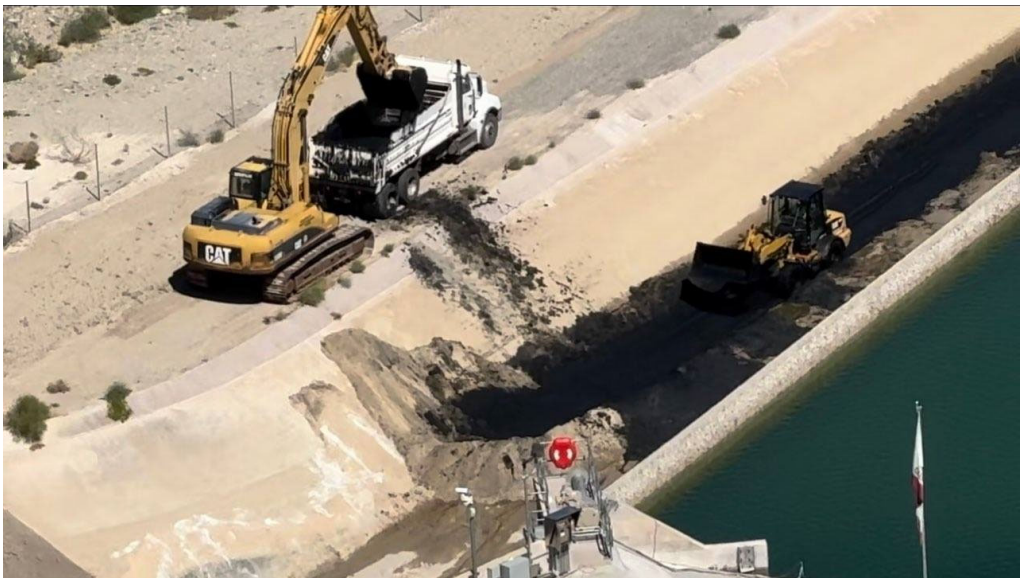
Protect Infrastructure and Optimize Maintenance

Dewatering the CRA requires planning, resources, and collaboration. Once the Copper Basin gates are closed, the Iron, Eagle, and Hinds pumping plants pump as much water as possible to minimize dewatering efforts. Radial gates are then used to release the excess water, and portable pumps are used for siphons and other low points along the aqueduct.

Staff dewatering the CRA using portable pumps

The layout of the CRA is open and allows for debris and sand to be blown into the canal during windy periods. Trash racks are used to collect the debris and prevent pumps and other equipment from becoming clogged. At the Eagle Mountain pumping plant, staff removed the trash racks to provide access for dredging and removal of sediment.

Staff removing trash racks at Eagle Mountain pumping plant

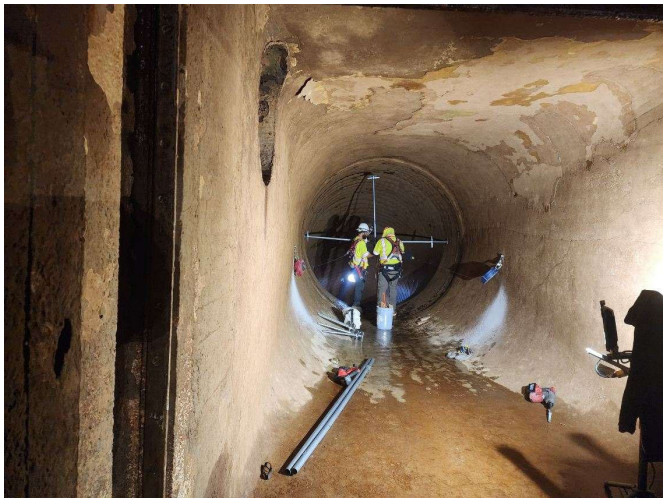


Staff removing sediment at the Eagle Mountain forebay

The tunnel cleaning machine was designed and built by Metropolitan. The custom-made machine is used to clean surfaces of the CRA tunnels to ensure that the aqueduct can be operated at maximum flows with minimum elevations throughout the year. During the 2024 shutdown, approximately 97 miles of tunnels were cleaned.

Tunnel cleaning machine being lowered into the CRA

Metropolitan's concrete structures require minimal maintenance; inspection and repair efforts are performed each year. At the Eagle Mountain pumping plant, the transition point between the steel delivery lines and the concrete structure is being rehabilitated. This work requires removal of the existing joint compound, surface preparation, and application of new sealants and coating to ensure the long-term reliability of the joint.



Staff repairing transition joint at Eagle Mountain pumping plant

Repair work at the Copper Basin outlet structure required deenergizing the 2,300V electrical circuit. Staff isolated the circuit to allow for a mobile crane to facilitate the repair to a slide gate.

Staff isolating a 2300V circuit at Copper Basin

Staff recently completed preventive maintenance at the Venice pressure control structure (PCS). The structure controls the downstream pressure in the Sepulveda Feeder. The PCS has twenty-four 16-inch diameter lines. Each 16-inch line contains three valves; one is a regulating valve and two are manually operated plug valves that are located on each side of the regulating valve.

Staff exercising a plug valve during routine preventive maintenance at Venice PCS

Staff discovered a leak on the 6-inch raw water line at Diemer plant. Staff responded quickly to excavate around the broken line to replace the affected section and return it to service.

Staff repairing a broken water line at the Diemer plant

Staff completed annual routine cleaning and maintenance during a scheduled shutdown of the San Diego and Casa Loma Canals between San Jacinto and Lake Skinner. The routine cleaning involves usng a long-reach excavator to

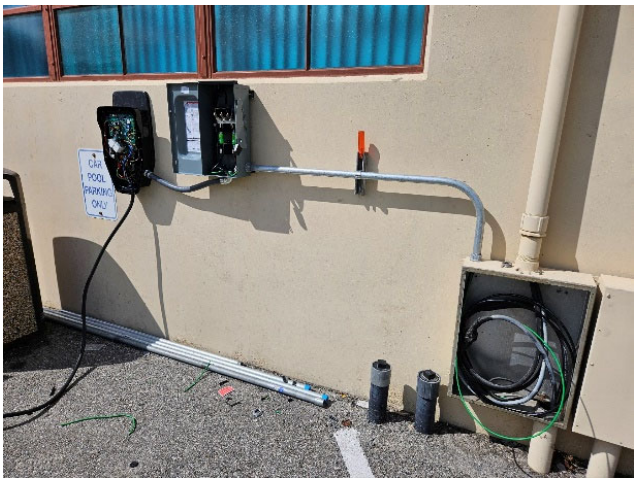
remove debris from the sand traps along the canal and skid steers to clean the debris from the siphons. Although heavy equipment is used, staff also needs to enter the siphons to manually scrape and shovel debris. Additionally, during this shutdown, a contractor replaced concrete panels and Metropolitan staff surveyed the canal.

Long-reach excavator (left) and skid steers (right) used to clean and remove debris from the San Diego Canal

Staff manually scraping debris in the low siphons of the San Diego Canal

Ensure Power and Environmental Regulatory Compliance

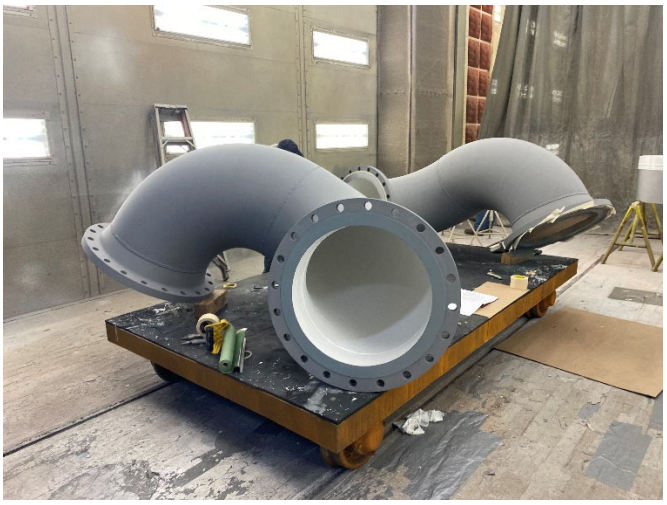
In support of Metropolitan's on-going effort to transition to Zero Emission Vehicles (ZEV), staff is diligently planning for and installing electric vehicle charging equipment at La Verne and other facilities. The Los Angeles Coatings Team will be receiving an electric vehicle and an electric charger will be installed at the Soto Street field facility. In preparation, Metropolitan electricians assessed the current electrical system to ensure adequate electrical capacity while a safe and reliable installation plan was developed. During a scheduled electrical outage at the Soto Street facility, electricians installed supporting equipment for the electric vehicle and charger and made the necessary connections to the power supply system.



Staff terminating conductors (left) and installing electrical equipment (right)

Optimize Asset and Maintenance Management

The La Verne Shops received an urgent request to manufacture a 24-inch bypass line within the OC-88 Service Connection Facility on the Allen-McColloch Pipeline (AMP). Staff manufactured the bypass line components in two phases to facilitate installation during a previously scheduled shutdown and eliminate the need to perform an additional shutdown to complete the bypass. With Phase 1 completed in January, Phase 2 components consisted of two 24-inch compound elbows, two spools, two thimbles, and the multiple structural components required to support the Cla-Val pressure control valve and its surrounding platform. Use of this bypass line will help reduce the operating pressure in the AMP while rehabilitation of this prestressed concrete cylinder pipe (PCCP) progresses over the next several months.




La Verne Shops completed 24-inch compound elbows (left) and thimbles (right) for the AMP bypass line at OC-88


Structural cross-member being fabricated (left) and completed main beam (right) for the AMP bypass line at OC-88

Prepare for Future Legislation and Regulations

On March 11, EPA released its final revisions to the Risk Management Plan (RMP) rule. Changes to the RMP include adding natural hazards (including climate change) and loss of power to the hazards that must be addressed; requiring a formal root cause analysis incident investigation when facilities have had an RMP-reportable accident; and other administrative changes. The RMP applies to approximately 2,000 drinking water and wastewater utilities using chlorine gas or anhydrous ammonia above certain amounts. Utilities will have approximately three years to make changes to their existing RMP plans and to make necessary changes to address new requirements. Staff worked with AWWA on comments to the proposed rule in 2022 and have taken steps to comply with the rule's new requirements. The rule goes into effect on May 10, 2024.

Advance Education and Outreach Initiatives

This month staff supported filming of scenes for a new Marvel television series at the Jensen plant. Staff worked with the production crews to ensure that filming could be completed without affecting plant operations. Months of planning and coordination were needed to allow the film studio to assemble sets, lighting, and camera equipment throughout the Jensen plant tunnels without damaging plant equipment or affecting contractor work being completed nearby. Filming was completed safely and without incident.