



**E&O Committee**

T. Smith, Chair  
Vacant, Vice Chair  
R. Apodaca  
S. Blois  
M. Camacho  
D. De Jesus  
L. Dick  
S. Faessel  
R. Lefevre  
J. Morris  
J. Murray Jr.  
G. Peterson  
H. Repenning  
H. Williams

**Adjourned Engineering and Operations  
Committee**

Meeting with Board of Directors \*

**August 16, 2021**

**10:30 a.m.**

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[mwdh2o.com](http://mwdh2o.com) website ([Click to Access Board Meetings Page](#))

**Public Comment Via Teleconference Only:** Members of the public may present  
their comments to the Board on matters within their jurisdiction as listed on  
the agenda via teleconference only. To participate call (404) 400-0335 and use  
Code: 9601962.

**Monday, August 16, 2021  
Meeting Schedule**

09:30 a.m. - Adj. F&I  
10:30 a.m. - Adj. E&O  
12:00 p.m. - Break  
12:30 p.m. - Adj. WP&S  
02:30 p.m. - Adj. C&L  
03:30 p.m. - Adj. OP&T

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MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012

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\* The Metropolitan Water District's meeting of this Committee is noticed as a joint committee meeting with the Board of Directors for the purpose of compliance with the Brown Act. Members of the Board who are not assigned to this Committee may participate as members of the Board, whether or not a quorum of the Board is present. In order to preserve the function of the committee as advisory to the Board, members of the Board who are not assigned to this Committee will not vote on matters before this Committee.

**1. Opportunity for members of the public to address the committee on matters within the committee's jurisdiction (As required by Gov. Code Section 54954.3(a))**

**\*\* CONSENT CALENDAR OTHER ITEMS -- ACTION \*\***

**2. CONSENT CALENDAR OTHER ITEMS - ACTION**

- A. Approval of the Minutes of the meeting of the Engineering and Operations Committee held July 12, 2021

[21-320](#)

**Attachments:** [08162021 EO 2A draft minutes](#)

**3. CONSENT CALENDAR ITEMS - ACTION**

- 7-2** Award a \$492,440 procurement contract to Royal Industrial Solutions for equipment to upgrade the ozone control system at the Henry J. Mills Water Treatment Plant and authorize an agreement with Suez Treatment Solutions, Inc. in an amount not to exceed \$430,000 for specialized technical assistance to support the upgrade; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **[21-330](#)**

**Attachments:** [08172021 EO 7-2 B-L.pdf](#)  
[08172021 EO 7-2 Presentation.pdf](#)

- 7-3** Authorize an agreement with CDM Smith, Inc., in an amount not to exceed \$2.75 million, for support of engineering and technical studies at the advanced water treatment demonstration facility; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **[21-337](#)**

**Attachments:** [08172021 EO 7-3 B-L.pdf](#)  
[08172021 EO 7-3 Presentation.pdf](#)

**\*\* END OF CONSENT CALENDAR ITEMS \*\***

**4. OTHER BOARD ITEMS - ACTION**

None

**5. BOARD INFORMATION ITEMS**

None

**6. COMMITTEE ITEMS**

- a. Update on Emerging Water Quality issues **[21-359](#)**

**Attachments:** [08162021 EO 6a Presentation.pdf](#)

- b. Developments in Coatings and Materials selection for Metropolitan's projects **[21-358](#)**

**Attachments:** [08162021 EO 6b Presentation.pdf](#)

**7. MANAGEMENT REPORTS**

- a. Water System Operations Manager's report **[21-360](#)**

**Attachments:** [08162021 EO 7a Presentation.pdf](#)

- b. Engineering Services Manager's report

[21-361](#)

**Attachments:** [08162021 EO 7b Presentation.pdf](#)

## 8. FOLLOW-UP ITEMS

None

## 9. FUTURE AGENDA ITEMS

## 10. ADJOURNMENT

**NOTE:** This committee reviews items and makes a recommendation for final action to the full Board of Directors. Final action will be taken by the Board of Directors. Agendas for the meeting of the Board of Directors may be obtained from the Board Executive Secretary. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

Writings relating to open session agenda items distributed to Directors less than 72 hours prior to a regular meeting are available for public inspection at Metropolitan's Headquarters Building and on Metropolitan's Web site <http://www.mwdh2o.com>.

Requests for a disability related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting should be made to the Board Executive Secretary in advance of the meeting to ensure availability of the requested service or accommodation.

# **THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA**

## **MINUTES**

### **ENGINEERING AND OPERATIONS COMMITTEE**

**July 12, 2021**

Chair Smith called the teleconference meeting to order at 10:01 a.m.

Members present: Chair Smith, Directors Blois, Camacho, De Jesus, Dick, Faessel, Lefevre, Morris, Murray, Peterson (entered after roll call), and Williams.

Members absent: Directors Apodaca and Repenning.

Other Board members present: Chairwoman Gray, Directors Abdo, Ackerman, Atwater, Butkiewicz, Cordero, Dennstedt, Erdman, Fellow, Hawkins, Jung, Kurtz, Record, and Tamaribuchi.

Committee staff present: Bednarski, Hagekhalil, Okano, Scully, Upadhyay, and Yamasaki.

Chairwoman Gray welcomed Adel Hagekhalil, to his first official board committee meeting, as our new general manager.

#### **1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION**

None

#### **CONSENT CALENDAR OTHER ITEMS – ACTION**

#### **2. CONSENT CALENDAR OTHER ITEMS – ACTION**

- A. Approval of the Minutes of the meeting of the Engineering and Operations Committee held June 7, 2021.

#### **3. CONSENT CALENDAR ITEMS – ACTION**

- 7-3 Subject: Authorize four actions for the Desert region communication system including: (1) an agreement with Nokia of America Corporation in an amount not to exceed \$5,297,000 for equipment procurement and design support to upgrade the wide area network; (2) an amendment to an agreement with Hatfield & Dawson Consulting Engineers, LLC for a new not-to-exceed amount of \$730,000 to provide specialized technical support for the upgrade; (3) an amendment to the Capital Investment Plan for fiscal years 2020/2021 and 2021/2022 to include additional communication system improvements at the Colorado River Aqueduct's Gene



Pumping Plant; and (4) an agreement in an amount not to exceed \$275,000 with HDR Engineering, Inc. for design services related to the construction of a communication line; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA

Presented by: Brian Brenhaug, Information Services Team Manager  
Aida Garabetian, Engineering Services Team Manager

Motion:

- a. Authorize an agreement with Nokia of America Inc for a not-to-exceed amount of \$5,297,000 for furnishing wide area network equipment and design support to upgrade the Desert region wide area network;
- b. Authorize increase of \$250,000 to the agreement with Hatfield & Dawson Consulting Engineers, LLC for a new not-to-exceed amount of \$730,000 for specialized technical support for the upgrade;
- c. Amend current CIP to include upgrades to the communication system at Gene Pumping Plant; and
- d. Authorize an agreement with HDR Engineering, Inc. for a not-to-exceed amount of \$275,000 for design services.

The following Directors provided comments or asked questions:

1. Faessel
2. Lefevre
3. Smith
4. Peterson
5. Camacho

Director Murray made a motion, seconded by Director Camacho, to approve the consent calendar consisting of items 2A and 7-3:

The vote was:

Ayes: Directors Blois, Camacho, De Jesus, Dick, Faessel, Lefevre, Morris, Murray, Peterson, Smith and Williams

Noes: None

Abstentions: None

Absent: Directors Apodaca, and Repenning.

The motion for Items 2A and 7-3, passed by a vote of 11 ayes, 0 noes, 0 abstentions, and 2 absent.

## **END OF CONSENT CALENDAR ITEMS**

### **4. OTHER BOARD ITEMS – ACTION**

None

### **5. BOARD INFORMATION ITEMS**

None

### **6. COMMITTEE ITEMS**

- a.           Subject:           Power Operations and Planning update  
Presented by:   Jon Jontry, Water System Operations Interim Section Manager

Mr. Jontry reported on the following:

- Overview of Metropolitan's Energy Requirements
- CRA Transmission System
- Optimizing Power Management to Minimize Costs
- Summer 2021 Operating Conditions
- Planning for the Future

The following Directors provided comments or asked questions:

1. Butkiewicz
2. Faessel

- b.           Subject:           Apprenticeship Program Update  
Presented by:   Melissa Wassenaar, Water System Operations Training Administrator

Ms. Wassenaar reported on the following:

- Program Background and Structure
- Pandemic Virtual Classroom and Practical Lab Training
- Recruitment Process
- Apprentice Success Rates and Innovation

- Relocation of Training Center
- Upcoming Program Improvements

The following Directors provided comments or asked questions:

1. Lefevre
2. Butkiewicz
3. Dick
4. Murray
5. Blois

- c.           Subject:           Innovative approaches to seismic resilience for Metropolitan's pipelines and tunnels  
Presented by:   Ezequiel Montanez, Engineering Services Senior Engineer

Mr. Montanez reported on the following:

- Background Information on Seismic Hazard
- Seismic Risk Mitigation Approach
- Examples of Metropolitan's Strategies to mitigate Seismic Risk (Regional Recycled Water Program, Casa Loma Siphon #1, and Whitewater Tunnel #2)
- Next Steps

The following Directors provided comments or asked questions:

None

## **7. MANAGEMENT REPORTS**

- a.           Subject:           Water System Operations Manager's report  
Presented by:   Brent Yamasaki, Water System Operations Group Manager

Mr. Yamasaki reported on the following:

- Current operational conditions.
- June National Safety Month Events
- Drought Operational Challenges
- Sepideh Shirkhani and Sergio Escalante were recipients of the AWWA Source Magazine Editorial Award

The following Directors provided a comment or asked a question:

None

b. Subject: Engineering Services Manager's report

Presented by: John Bednarski, Engineering Services Chief Engineer and Group Manager

Mr. Bednarski reported on the following:

- The 2021 Member Agency Engineering Managers Forum was conducted on June 24<sup>th</sup> by the Engineering Services group
- The Advanced Purification Center in Carson was the recipient of ASCE Region 9 Award for Water and Wastewater Project of the Year

The following Directors provided a comment or asked a question:

1. Abdo

## **8. FOLLOW-UP ITEMS**

None

## **9. FUTURE AGENDA ITEMS**

None

Next meeting will be held on August 16, 2021.

Meeting adjourned at 11:36 a.m.

Tim Smith  
Chair



- Board of Directors  
*Engineering and Operations Committee*

8/17/2021 Board Meeting

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7-2

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## Subject

Award a \$492,440 procurement contract to Royal Industrial Solutions for equipment to upgrade the ozone control system at the Henry J. Mills Water Treatment Plant and authorize an agreement with Suez Treatment Solutions, Inc. in an amount not to exceed \$430,000 for specialized technical assistance to support the upgrade; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

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## Executive Summary

Ozone is used as the primary disinfectant at Metropolitan's five water treatment plants. Reliable operation of the ozone system at the Henry J. Mills Water Treatment Plant (Mills plant) is essential for Metropolitan to meet federal and state drinking water regulations and to comply with the plant's current operating permit. The existing ozone control system equipment at the Mills plant is outdated and is no longer supported by the manufacturer. The equipment needs to be replaced, and its control software requires updating to maintain reliable operation of the ozone system.

This action awards a procurement contract to replace outdated ozone control equipment and authorizes a new professional services agreement to update the software for the ozone control system at the Mills plant.

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## Details

### Background

The Mills plant was placed into service in 1978 and currently has a capacity of 220 million gallons per day (mgd). The plant treats water from the State Water Project and delivers it to the Eastern and Western Municipal Water Districts of Riverside County.

Metropolitan employs ozone as the primary disinfectant at each of its treatment plants to substantially reduce the formation of disinfection by-products (DBP) for compliance with the U. S. Environmental Protection Agency's Disinfectants/DBP rule, and to control taste-and-odor-causing compounds and algal toxins. The combination of these benefits allows Metropolitan to successfully treat any State Water Project supplies. The ozonation process involves numerous equipment items and support systems, such as liquid oxygen storage tanks, ozone generators, high-voltage power supply units, cooling system, ozone contactors, destruct system, and safety and water quality monitoring equipment. Operational control of these systems is performed by a series of networked programmable logic controllers (PLCs) that interact with the plant's Supervisory Control and Data Acquisition system.

Metropolitan's first three ozone systems at the Mills, Jensen, and Skinner plants were originally equipped with a type of PLC introduced to the commercial market in 1988. Computer hardware from that era is now outdated, and the PLC manufacturer no longer produces or supports this equipment. Going forward, inventories of spare parts will no longer be maintained by suppliers. The ozone control system equipment for the Jensen and Skinner plants were replaced in 2018 and 2021, respectively. Replacement of the control system at the Mills plant is the subject of this action. These upgrades include the procurement and installation of new control equipment, including PLCs and communication hardware. Additionally, existing process control software must be revised and updated to operate the new equipment.

In April 2020, the Board appropriated funds and authorized the General Manager to initiate or proceed with work on all capital projects identified in the Capital Investment Plan (CIP), subject to any limits on the General

Manager's authority and CEQA requirements. This project has been reviewed with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the Treatment Plant Reliability Program. Based on the current CIP expenditure forecast, funds for the work to be performed pursuant to the subject contract and agreement during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517).

### **Mills Ozone Control System Upgrades – Equipment Procurement & Installation**

The Mills ozonation control system consists of PLCs, software, and communication equipment that includes communication switches, input/output modules, and data communication cables. The system of equipment and software programming allows staff to efficiently and effectively control the operation of the plant's ozone generators, ozone contactors, and off-gas destruct system. This project will replace outdated PLC units and communication switches/modules for the ozone control system at the Mills plant. The project will also update the existing ozone control programming/software and its associated documentation to ensure that they are consistent with the newly installed equipment.

The Mills ozone control system upgrades require nine new PLCs and related communication hardware with spares. The PLCs and associated electronic components will be furnished by Royal Industrial Solutions through a procurement contract described below. Suez Treatment Solutions, Inc., under an agreement described below, will install updated ozone control software into the new PLCs and assist Metropolitan staff with the start-up and testing of the updated ozone control system. Metropolitan staff will perform final design, install the new PLCs and communication equipment, relocate electrical wiring outside the PLC cabinets as needed, perform software review, conduct system integration tests, and certify control system functionality following equipment tests.

A total of \$2,093,000 is required to perform this work. In addition to the amount of the procurement contract described below, other funds to be allocated include \$430,000 for specialized technical support by Suez Treatment Solutions, Inc. as described below and \$158,000 for communication equipment and materials. Allocated funds for Metropolitan staff activities include \$183,000 for final design, software review, and programming; \$383,000 for Metropolitan force activities, including equipment installation, start-up, and testing; \$158,000 for contract administration, environmental support, and project management. Allocated funds also include \$288,560 for remaining budget.

**Attachment 1** provides the allocation of the required funds. The total estimated cost to complete the upgrades of the Mills ozone control system, including the amount appropriated to date and funds allocated for the work described in this action, is approximately \$2.111 million.

### ***Award of Procurement Contract (Royal Industrial Solutions)***

PLCs are used throughout Metropolitan's treatment and distribution system to provide localized process control, alarms, and monitoring. Prior to 2009, Metropolitan had over 100 PLC installations consisting of 18 different models by ten different manufacturers. The variety of PLC makes and models created challenges for technical support and coordination, spare parts, and training, as well as increased operational risks. To standardize PLCs throughout Metropolitan, Allen-Bradley was established as the sole brand for Metropolitan's PLCs in 2009. Royal Industrial Solutions is the sole authorized supplier of Allen-Bradley equipment for Riverside County. Pursuant to Section 8140(2)(e) of Metropolitan's Administrative Code, the Chief Operating Officer, as the General Manager's designee, has determined that the "upgrades, enhancements and additions to hardware and enhancements or additions to the software will not be as compatible as equipment or software from the original manufacturer/developer(s)." Staff recommends the use of a sole-source procurement of this equipment from Royal Industrial Solutions.

This action awards a \$492,440 contract to Royal Industrial Solutions to supply new ozonation system PLCs and associated components for the Mills plant. This amount is consistent with Metropolitan's previous purchases of Allen-Bradley equipment. As a procurement contract, there are no subcontracting opportunities.

### **Specialized Technical Support (Suez Treatment Solutions, Inc.) – New Agreement**

The predecessor firm of Suez Treatment Solutions, Inc., Ozonia North America, was previously selected through competitive bidding to furnish the ozone generation equipment for each of Metropolitan's five treatment plants, and to provide training, start-up, and testing services. In 2016, Suez Treatment Solutions, Inc. purchased Ozonia

and now owns the proprietary knowledge of its ozone and control system equipment. Additionally, Suez has exclusive experience with the software programming, testing, and integration of large-capacity ozone generation equipment at Metropolitan's treatment plants. The selection of Suez Treatment Solutions, Inc. to modify, upgrade, and install the Mills ozone control system software into the new PLCs, and to provide start-up assistance of the new equipment represents the most cost-effective and efficient means to complete this specialized work. Per Section 8140(1)(d) of Metropolitan's Administrative Code, conducting a new competitive procurement process for the needed services would not produce an advantage, and as a result, the Chief Operating Officer, as the General Manager's designee, has certified that the contract is exempt from competitive procurement. Staff, therefore, recommends a sole-source procurement of these services from Suez Treatment Solutions, Inc.

This action authorizes a new agreement with Suez Treatment Solutions, Inc. for a not-to-exceed total of \$430,000, to modify, upgrade, and install the control system software, and to provide start-up assistance for the new ozone control system at the Mills plant. Due to the unique nature of these services, no Small Business Enterprise participation level was established. There are no subconsultants planned for this agreement.

### **Alternatives Considered**

Early in the project development phase, staff considered two alternatives to improve the reliability and resiliency of the ozone control system at the Mills plant. The first alternative involved obtaining a license from Suez Treatment Solutions to upgrade/modify the ozone control system software. This alternative was not selected because the software was copyrighted, and Metropolitan staff does not have the same level of knowledge as the original developer. In the second alternative, Metropolitan would hire Suez Treatment Solutions, Inc. through a consulting agreement to update the software for the new PLC hardware to be installed by Metropolitan. This approach does not require Metropolitan to obtain programming rights or to have detailed knowledge of the software. Consequently, staff recommends the upgrade of the Mills plant ozone control system equipment software be conducted via a consulting agreement with Suez Treatment Solutions, Inc.

### **Summary**

This action awards a \$492,440 procurement contract to Royal Industrial Solutions and authorizes an agreement with Suez Treatment Solutions, Inc. for a not-to-exceed total of \$430,000 to upgrade the ozone system at the Mills plant. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Location Map.

### **Project Milestone**

December 2022 – Completion of ozone control system upgrades

### **Policy**

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Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 8140: Competitive Procurement

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 51962, dated April 2020, the Board appropriated a total of \$245 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

By Minute Item 50671, dated December 13, 2016, the Board authorized upgrades to the ozone control system at the Jensen Plant.

By Minute Item 51786, dated November 5, 2019, the Board authorized upgrades to the ozone control system at the Skinner Plant.

### **California Environmental Quality Act (CEQA)**

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#### **CEQA determination for Option #1:**

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving

negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. In addition, the proposed action includes the replacement and reconstruction of existing utility systems and facilities where the new structure will be located on the same site as the structure replaced and will have the same purpose and capacity as the structure replaced. Accordingly, the proposed action qualifies under Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

**CEQA determination for Option #2:**

None required

**Board Options**

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**Option #1**

- a. Award a \$492,440 procurement contract to Royal Industrial Solutions for the ozone control system equipment for the Mills plant; and
- b. Authorize an agreement with Suez Treatment Solutions, Inc. for a not-to-exceed total of \$430,000 for specialized technical support of the upgrade.

**Fiscal Impact:** \$2.093 million will be funded from capital funds. Approximately \$1.580 million will be incurred in the current biennium and have been previously authorized. The remaining \$.513 funds for this action will be accounted for and appropriated under the next biennial budget.

**Business Analysis:** This option will enhance the continued operational reliability of the Mills ozonation system.

**Option #2**

Do not proceed with this project at this time.

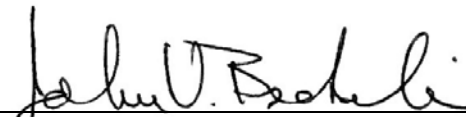

**Fiscal Impact:** None

**Business Analysis** This option will forgo an opportunity to enhance the operational reliability of the ozone system at the Mills plant. Ozone PLC and communication equipment would be replaced individually as they fail. An extended outage of the ozone disinfection system could occur if critical components of the control system were to fail and replacement parts could not be procured.

**Staff Recommendation**

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**Option #1**

 _____ John V. Bednarski Manager/Chief Engineer Engineering Services	7/22/2021 _____ Date
 _____ Adel Hagekhalil General Manager	8/3/2021 _____ Date

**Attachment 1 – Allocation of Funds**

**Attachment 2 – Location Map**

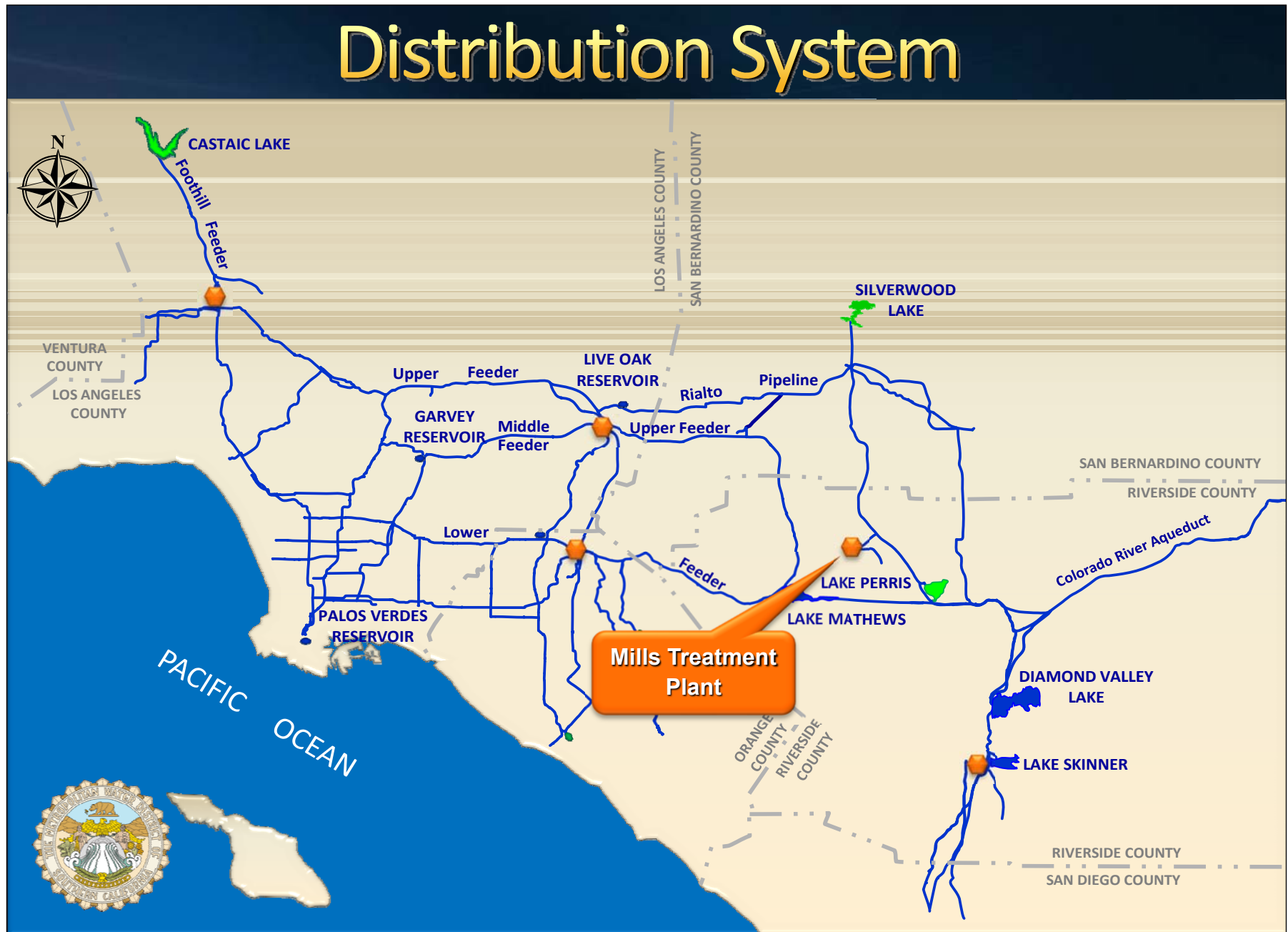
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### Allocation of Funds for Mills Ozone Control System Upgrades

	<b>Current Board Action (Aug. 2021)</b>
Labor	
Studies & Investigations	\$ -
Final Design	183,000
Owner Costs (Program mgmt., envir. monitoring)	158,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	383,000
Materials & Supplies	
Royal Industrial Solutions	492,440
Communication Equipment & Materials	158,000
Incidental Expenses	-
Professional/Technical Services	
Suez Treatment Solutions, Inc.	430,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	288,560
<b>Total</b>	<b>\$ 2,093,000</b>

The total amount expended to date to replace the Mills Ozonation Control System Upgrade is approximately \$18,000. The total estimated cost to complete the Mills Ozonation Control System Upgrade, including the amount appropriated to date and funds allocated for the work described in this action, is \$2.111 million. No future funding requests are currently anticipated for this project.





# Mills Ozone Control System Upgrade

Engineering and Operations Committee

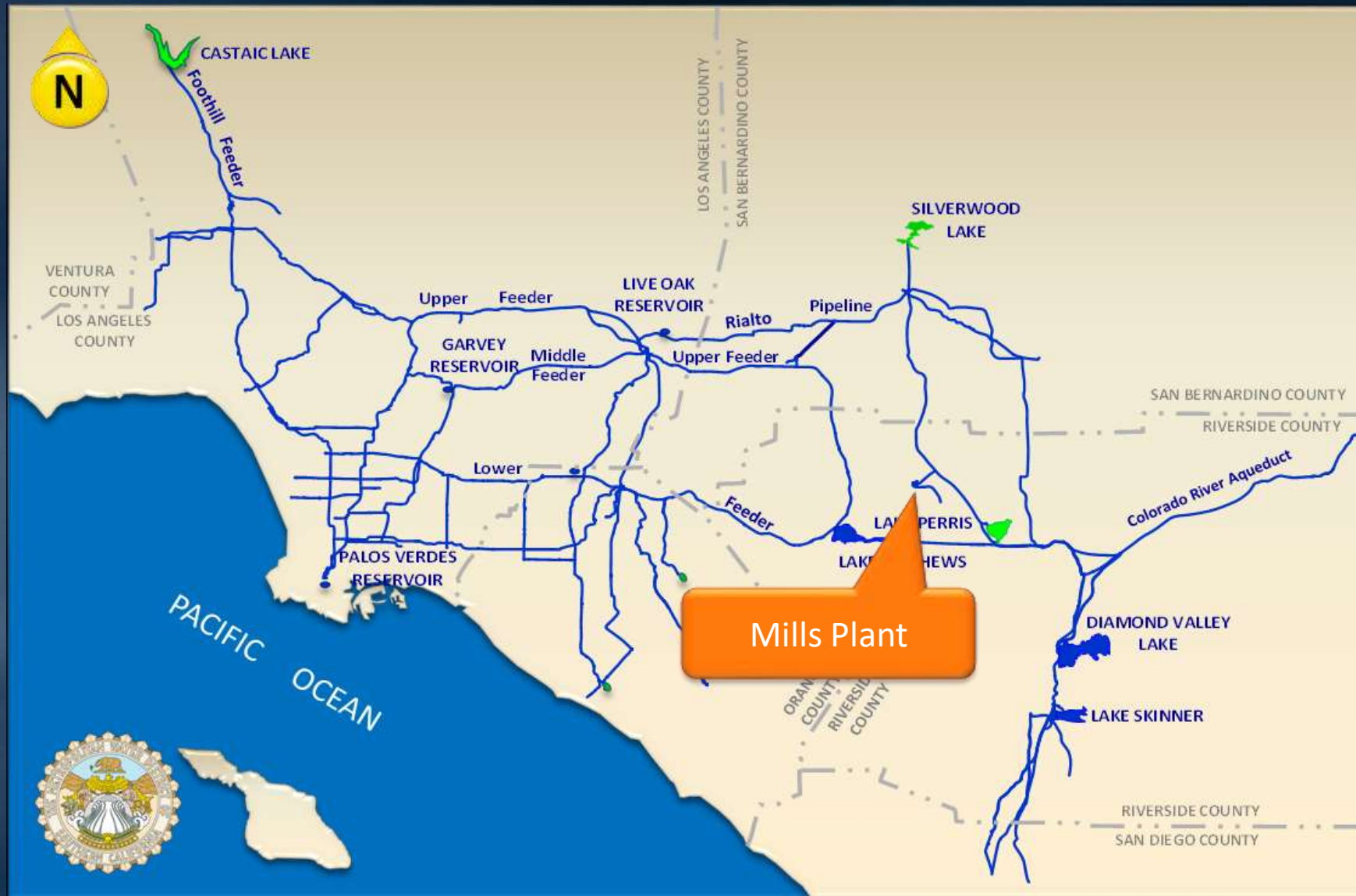
Item 7-2

August 16, 2021

# Current Action

- Award a \$492,440 procurement contract to Royal Industrial Solutions to upgrade the ozone control system equipment at the Mills plant
- Authorize an agreement with Suez Treatment Solutions, Inc. for a not-to-exceed total of \$430,000 for specialized technical assistance of the upgrade

# Distribution System





# Background

- Ozone is primary disinfectant at all treatment plants
- Ozone PLC type used at Mills was first introduced in 1988
- Control & communication equipment is no longer supported by the manufacturer
- Similar upgrades completed
  - Jensen - 2018
  - Skinner - 2021



Ozone Generators



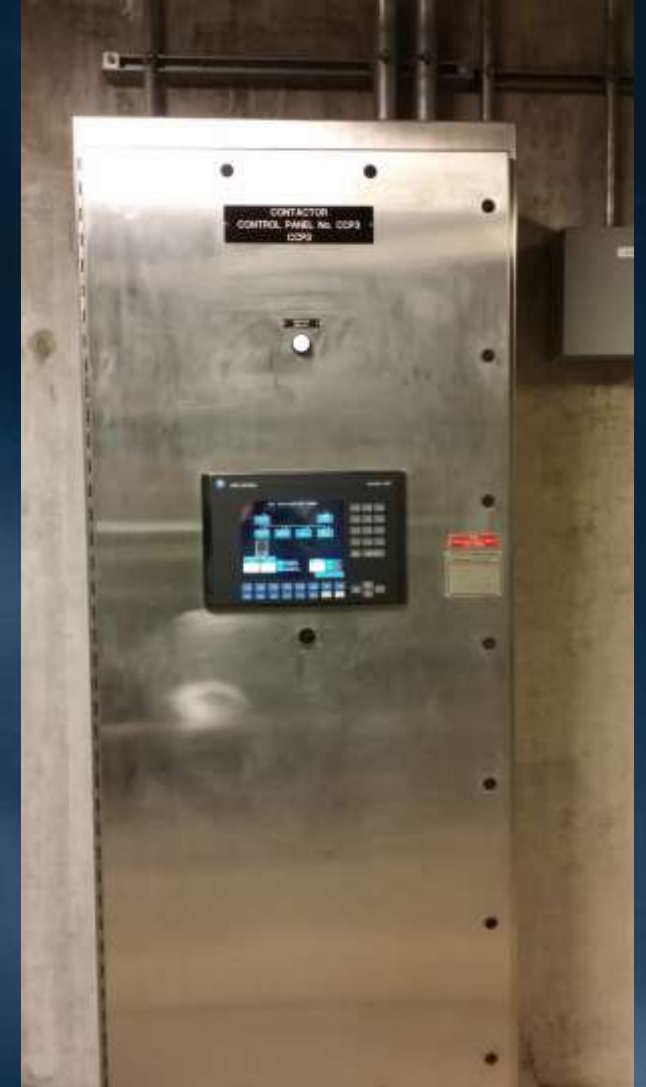
Power Supply Unit

# Alternatives Considered

- Utilize Metropolitan staff to update the ozone control system software
  - Requires license to modify proprietary software
- Contract with Suez Treatment Solutions to update the software
  - Selected option
  - Suez staff has in-depth knowledge of the software

# Scope of Work

- Replace ozone PLCs, operator interface panel (HMI), & computer communication equipment
- Key activities
  - Procure equipment
  - Install equipment
  - Update ozone control system software



Control Panel

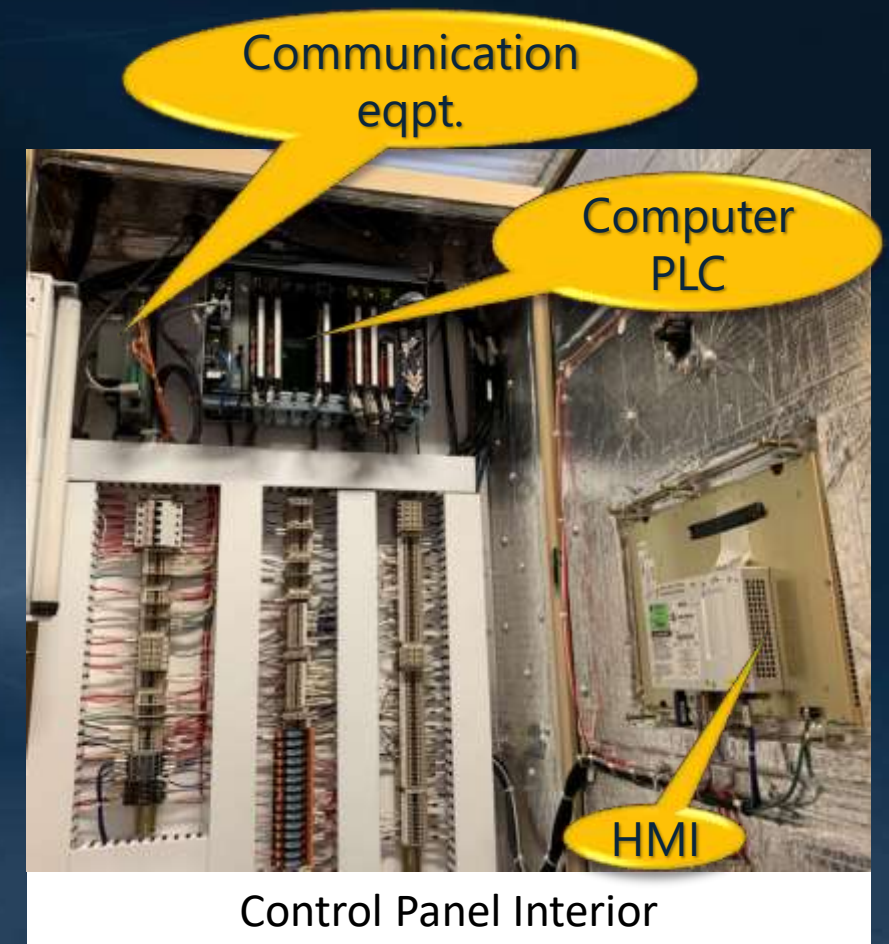


# Award of Procurement Contract

- Background
  - Metropolitan standardized on Allen-Bradley PLCs in 2009
  - Sole source procurement consistent with Admin. Code
- Scope of procurement - Royal Industrial Solutions
  - 9 Allen-Bradley PLCs, HMIs & related hardware
- Amount of contract \$492,440
  - Prices consistent with previous procurements

# Metropolitan Scope

- Install PLCs & HMIs
- Relocate wiring outside PLCs
- Perform integration tests & confirm functionality



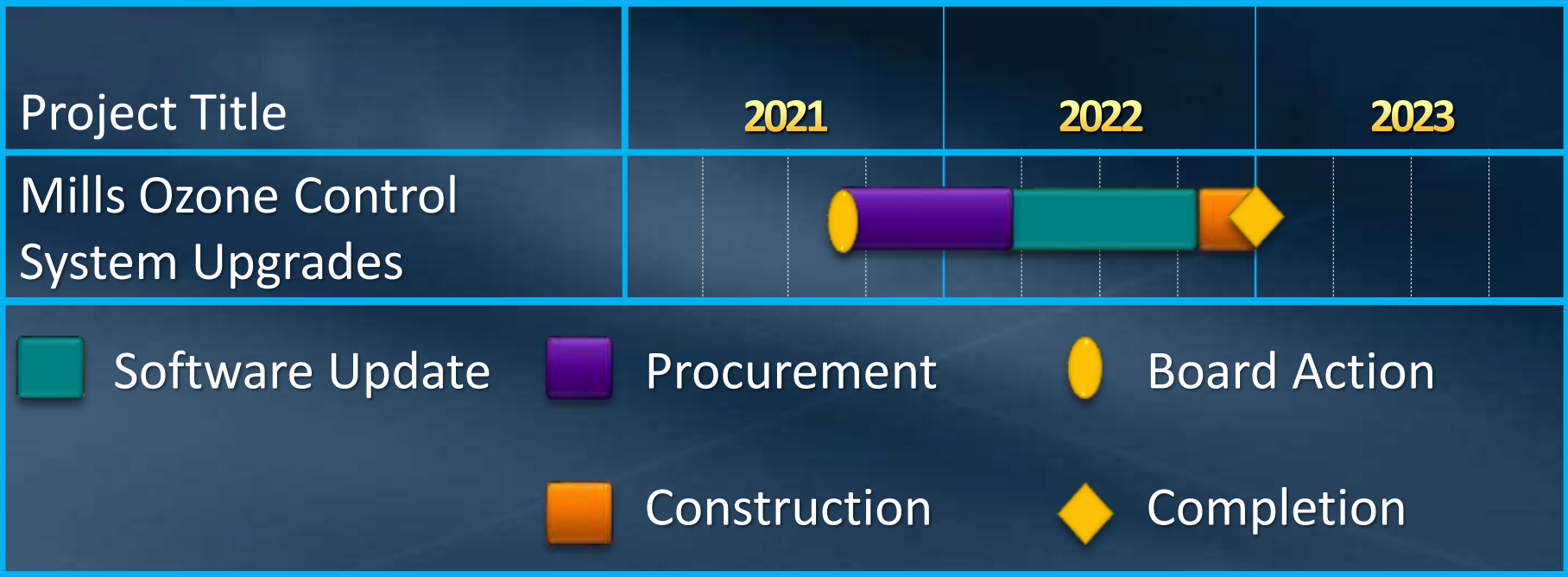
# Professional Services Agreement

- New Agreement with Suez Treatment Solutions, Inc.
  - Competitively selected in 1998 to supply original ozone equipment
  - Sole source procurement consistent with Admin. Code
- Scope of Work
  - Update ozone system software for Mills plant
  - Install the control system software, provide start-up, & software testing assistance
- Agreement amount NTE - \$430,000

# Allocation of Budgeted Funds

	Mills Ozone PLC Upgrades
Labor	
Program mgmt. & contract admin.	\$ 158,000
Force Construction	383,000
Submittal review & record drawings	183,000
Materials & Incidentals	
Royal Industrial Solutions	492,440
Communication equipment & material	158,000
Professional Services	
Suez Treatment Solutions, Inc.	430,000
Remaining Budget	288,560
Total	<u>\$2,093,000</u>

# Project Schedule





# Board Options

- Option #1

- Award a \$492,440 procurement contract to Royal Industrial Solutions for the ozone control system equipment for the Mills plant; and
- Authorize an agreement with Suez Treatment Solutions, Inc. for a not-to-exceed total of \$430,000 for specialized technical support of the upgrade.

- Option #2

- Do not proceed with this project at this time.

# Staff Recommendation

- Option #1







- Board of Directors  
*Engineering and Operations Committee*

8/17/2021 Board Meeting

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7-3

## Subject

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Authorize an agreement with CDM Smith Inc., in an amount not to exceed \$2.75 million, for support of engineering and technical studies at the advanced water treatment demonstration facility; the proposed action was previously determined to be exempt or otherwise not subject to CEQA

## Executive Summary

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During the past decade, California has experienced significant reductions in local surface supplies and groundwater production due to unprecedented drought conditions. The need for additional water resources and a more reliable water supply has become increasingly evident with the challenges from recurring drought, climate change, seismic risk, and uncertain availability of imported water supplies. Metropolitan's Regional Recycled Water Program (Program) was initiated to potentially develop a new local resource that would increase reliability of future water supplies in Southern California.

The goal of the Program is to produce up to 150 million gallons per day (mgd) of purified water for reuse applications, such as groundwater recharge, industrial uses, or future direct potable use (DPR) through raw water augmentation at Metropolitan's existing treatment plants. To obtain regulatory acceptance and develop the design criteria for a full-scale advanced water treatment (AWT) facility, in 2015 Metropolitan's Board authorized construction of a 0.5-mgd AWT demonstration facility at the Los Angeles County Sanitation Districts' (Sanitation Districts') Joint Water Pollution Control Plant (Joint Plant) in Carson. The demonstration facility began operations and testing in September 2019. The initial phase of technical studies treating the Joint Plant's secondary effluent is anticipated to be completed in October 2021. A second phase of studies treating the Joint Plant's primary effluent is scheduled to start in January 2022.

In November 2020, Metropolitan's Board authorized preparation of environmental documentation and technical studies for the Program. As part of the Program, this action authorizes engineering and technical services to support the ongoing studies at the AWT demonstration facility. Funds for these technical studies are included in the O&M budget for fiscal year 2021/22.

## Details

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### Background

In November 2015, Metropolitan's Board authorized an agreement with County Sanitation District No. 2 of Los Angeles County to implement a demonstration project that established a partnership between Metropolitan and the Sanitation Districts in developing a new local resource that would help address the effects of drought, climate change, seismic risks, and uncertainties of imported water supplies. The Sanitation Districts' largest treatment plant, the Joint Plant located in Carson, California, has a capacity of 400 mgd and an average daily flow of approximately 260 mgd. While the entire secondary effluent flow from the Joint Plant is currently discharged through outfall tunnels to the Pacific Ocean in accordance with ocean discharge regulations, the Program would instead capture that water and treat it for beneficial reuse. If approved, the Program would add a significant new water supply to Metropolitan's service area for either groundwater replenishment or DPR through raw water augmentation at Metropolitan's existing treatment plants.

Metropolitan's Board authorized the design and construction of the demonstration facility in 2016 and 2017, respectively. Construction of the 0.5-mgd AWT demonstration facility, consisting of a membrane bioreactor

(MBR), reverse osmosis (RO), and ultraviolet light with an advanced oxidation process (UV/AOP), was completed in October 2019. The MBR was added as an optimal means to manage nitrogen in the Joint Plant's effluent and, if implemented full-scale, would be the first application of this technology in a potable reuse treatment train in California. The MBR system was designed with flexibility to allow different operating modes to treat either primary effluent ("secondary MBR") or secondary effluent ("tertiary MBR") from the Joint Plant.

Metropolitan obtained regulatory approval of a testing and monitoring plan from California's State Water Resources Control Board, Division of Drinking Water (DDW) in February 2019, which detailed the technical studies to be conducted at the demonstration facility treating the Joint Plant's secondary effluent in a tertiary MBR mode, followed by RO and UV/AOP. Testing began in October 2019 and is anticipated to conclude in October 2021. Results to date show that all water quality targets are being achieved through the process train, and pathogen removal through the MBR system surpasses the target minimum removal sought. Metropolitan continues to engage the regulators and an independent science advisory panel in the review of plans and results of testing performed at the demonstration facility.

One of the Program's primary treatment objectives is to remove nitrogen from water received from the Joint Plant to ensure it can be efficiently treated and used for groundwater recharge and other reuse applications. In 2018, a Metropolitan and Sanitation Districts workgroup evaluated several nitrogen management options that could be implemented at either a potential full-scale AWT facility or at the Joint Plant. Sanitation Districts staff are currently conducting in-depth technical analyses to further examine the nitrogen management options that could be implemented at the Joint Plant, which would significantly reduce the downstream treatment requirements at an AWT facility and provide potential cost savings for the Program.

Preliminary assessments conducted to date identify secondary MBR as a potentially viable treatment process to achieve biological nutrient removal through the Joint Plant and efficiently meet overall nitrogen removal goals for the Program. Therefore, in the next phase of studies starting later this year, the demonstration facility will treat the Joint Plant's primary effluent with the MBR configured in a secondary mode (secondary MBR), followed by RO and UV/AOP. The demonstration testing and monitoring plan for this next phase is anticipated to be submitted to DDW in August 2021 and describes the tasks required to evaluate treatment of primary effluent and the ability of the treatment train to meet all regulatory requirements. The plan builds upon the lessons learned and data from the previous tertiary MBR studies, will obtain the technical data that would be required for regulatory approval, and will help establish engineering design criteria for a potential full-scale AWT facility.

In November 2020, the Board authorized an amendment to the existing agreement with County Sanitation District No. 2 of Los Angeles County to support continued evaluation and development of the Program, including preparation of environmental documentation, technical studies, and public outreach activities. In accordance with the April 2020 action on the biennial budget for fiscal years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the major activities related to the planning phase of the Program using Metropolitan's O&M funds budgeted for this purpose. The total estimated cost to complete engineering and technical studies, environmental review, and the Program Environmental Impact Report is \$30 million.

### **Engineering and Technical Services (CDM Smith Inc.) – New Agreement**

CDM Smith Inc. (CDM Smith) is recommended to provide engineering and technical services as required to execute the secondary MBR testing and monitoring plan, including supporting operations of the AWT demonstration facility. CDM Smith was selected through a competitive process via Request for Proposals No. 1274 based on the firm's experience in engineering and technical activities of a similar scope to the one planned for the next phase.

The planned activities for engineering and technical services for the next phase of studies at the demonstration facility include: (1) operating the facility to test AWT technologies; (2) executing the secondary MBR testing and monitoring plan to treat Joint Plant primary effluent; (3) training Metropolitan operations staff; (4) developing engineering design and operating criteria for a full-scale facility; and (5) preparing documents for regulatory approval and Program permitting. Metropolitan staff will oversee and coordinate the work performed by CDM Smith and, along with Sanitation Districts staff, will conduct additional technical analyses to complement these activities.

This action authorizes a new agreement with CDM Smith, for a not-to-exceed amount of \$2.75 million, for support of engineering and technical studies at the AWT demonstration facility for the Program. For this agreement, Metropolitan has established a small business enterprise participation level of 25 percent. CDM Smith has agreed to meet this level of participation. The planned subconsultants for this work are listed in **Attachment 1**.

### **Alternatives Considered**

In developing the recommended approach to perform the engineering and technical studies, several alternatives were considered. The alternatives included utilizing Metropolitan's staff to perform all the work or conducting the work with a combination of Metropolitan and consultant staff. With staffing constraints and the need for specialized technical expertise with AWT facilities, staff recommends the use of consultants to perform the specific work identified in this board letter. Metropolitan staff will oversee the consultant's work, as well as perform technical activities consistent with in-house staff's core competencies. This hybrid staffing approach will allow for timely completion of the technical studies for review by the regulators without impacting the Program's overall schedule. This approach also allows for staff training on AWT facility operations, as it is anticipated that Metropolitan staff would be operating and maintaining a potential future full-scale facility. Overall, this hybrid staffing approach ensures that the work is conducted in the most cost- and time-efficient manner possible.

### **Summary**

This action authorizes a new agreement with CDM Smith Inc., for a not-to-exceed amount of \$2.75 million, for support of engineering and technical studies at the AWT demonstration facility. See **Attachment 1** for the listing of Subconsultants for Agreement and **Attachment 2** for the Location Map.

### **Project Milestone**

February 2023 – Completion of the second phase of AWT demonstration testing

### **Policy**

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Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Metropolitan Board Report No. 01122016 IRP 8-3 B-L, "2015 Integrated Water Resources Plan Update," adopted January 2016

By Minute Item 42287, dated February 11, 1997, the Board adopted a set of policy principles on water recycling.

By Minute Item 50299, dated November 10, 2015, the Board authorized an agreement with County Sanitation District No. 2 of Los Angeles County for development of a potential regional recycled water supply program and a demonstration project.

By Minute Item 50410, dated March 8, 2016, the Board authorized agreements for design of the demonstration scale recycled water treatment plant and feasibility studies of recycled water delivery system.

By Minute Item 50884, dated July 11, 2017, the Board authorized construction of the advanced water treatment demonstration plant.

By Minute Item 51962, dated April 14, 2020, the Board appropriated a total of \$2,810.9 million for miscellaneous Metropolitan O&M costs, including costs associated with supply programs, for Fiscal Years 2020/21 and 2021/22.

By Minute Item 52174, dated November 10, 2020, the Board authorized preparation of environmental documentation and technical studies, and public outreach activities for the Regional Recycled Water Program.

By Minute Item 52210, dated December 8, 2020, the Board authorized an amendment to the agreement with Los Angeles County Sanitation Districts for development of a potential regional recycled water supply program and a demonstration project.

By Minute Item 52404, dated June 8, 2021, the Board authorized an agreement with Black & Veatch Corporation, Inc. for engineering and technical studies to support environmental planning activities of the Regional Recycled Water Program.

### **California Environmental Quality Act (CEQA)**

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#### **CEQA determination for Option #1:**

This project was previously determined to be categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The Board found this project to be exempt under Class 1, Class 3, Class 4, and Class 6 of the State CEQA Guidelines on November 10, 2015. A Notice of Exemption (NOE) was filed at that time, and the statute of limitations has ended. With the current action, there are no substantial changes proposed to the project since the original NOE was filed. Hence, the environmental documentation previously prepared in conjunction with the project fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act with regard to the proposed action.

#### **CEQA determination for Option #2:**

None required

### **Board Options**

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#### **Option #1**

Authorize an agreement with CDM Smith Inc., in an amount not to exceed \$2.75 million for support of engineering and technical studies at the advanced water treatment demonstration facility.

**Fiscal Impact:** \$2.75 million will be funded from Operations and Maintenance funds. Approximately \$1.4 million will be incurred in the current biennium and have been previously authorized, and the remaining funds for this action will be accounted for and appropriated under the next biennial budget.

**Business Analysis:** This option would facilitate the development of water reuse in Southern California and the augmentation of regional supplies for Metropolitan's entire service area to respond to droughts, climate change, seismic risks, and uncertainties of imported water supplies.

#### **Option #2**

Do not proceed with the new agreement.

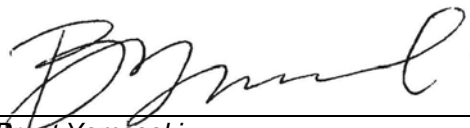
**Fiscal Impact:** None

**Business Analysis:** This option would forego an opportunity to utilize needed technical expertise to refine projected treatment approaches and costs and could impede development of recycled water resources to meet the increasing need for the region's water supply to respond to droughts, climate change, seismic risks, and other emergencies.

**Staff Recommendation**

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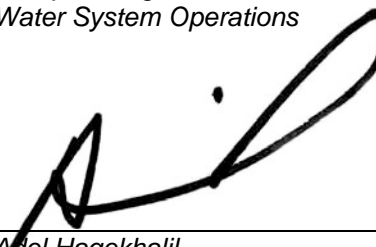
Option #1



7/22/2021

Brent Yamasaki  
Group Manager  
Water System Operations

Date



8/4/2021

Adel Hagekhalil  
General Manager

Date

**Attachment 1 – Subconsultants for Agreement with CDM Smith****Attachment 2 – Location Map**

Ref# wso12680673

**The Metropolitan Water District of Southern California****Subconsultants for Agreement with CDM Smith Inc.****Engineering and Technical Services for the Advanced Water Treatment Demonstration Facility  
for the Regional Recycled Water Program**

<b>Subconsultant and Location</b>
Black & Veatch Corporation, Inc., Los Angeles, CA
DRP Engineering, Inc., Alhambra, CA
DR Consultants & Designers, Inc., Los Angeles, CA
MARRS Services, Inc., Fullerton, CA

# Location Map





# Regional Recycled Water Program

Authorize Agreement for Engineering and Technical Studies at  
the Advanced Water Treatment Demonstration Facility

Engineering and Operations Committee

Item 7-3

August 16, 2021



# Current Action

- Authorize an agreement with CDM Smith Inc., in an amount not to exceed \$2.75 million, for support of engineering and technical studies at the advanced water treatment demonstration facility

# Location Map





# Regional Recycled Water Advanced Purification Center



APC Demo  
Facility

Future Potential  
AWT Facility

JWPCP  
Site  
(LACSD)

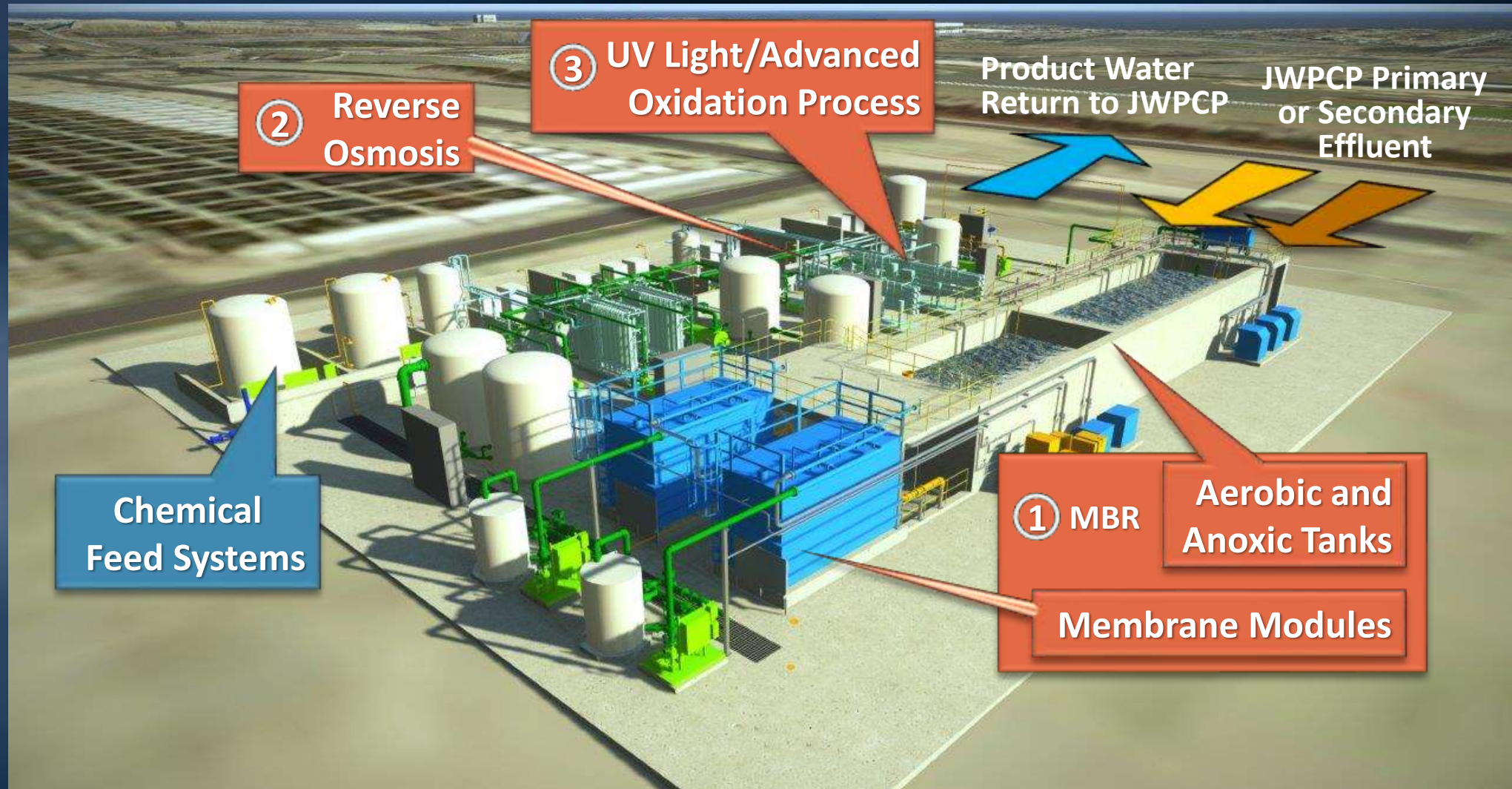
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N

39



# Demonstration Facility Processes



# Summary of Work to Date

- Pilot Studies (2010-2012)
- Demonstration Facility online (2019)
- Tertiary MBR testing (2019-2021)
  - Treating secondary effluent
  - Evaluating treatment performance
  - Assessing pathogen removal through MBR
  - Supporting LACSD in concentrate and residuals characterization





# Nitrogen Management Studies

- Nitrogen management committee (2017-2019)
  - LACSD and Metropolitan joint effort
  - Comprehensively evaluated approaches to meet nitrogen targets
  - Recommended treatment process trains for further evaluation
- Analysis of JWPCP process enhancements (2020-Present)
  - LACSD nutrient removal study to refine potential alternatives
  - Treatment options include tertiary and secondary MBR



E&O Committee



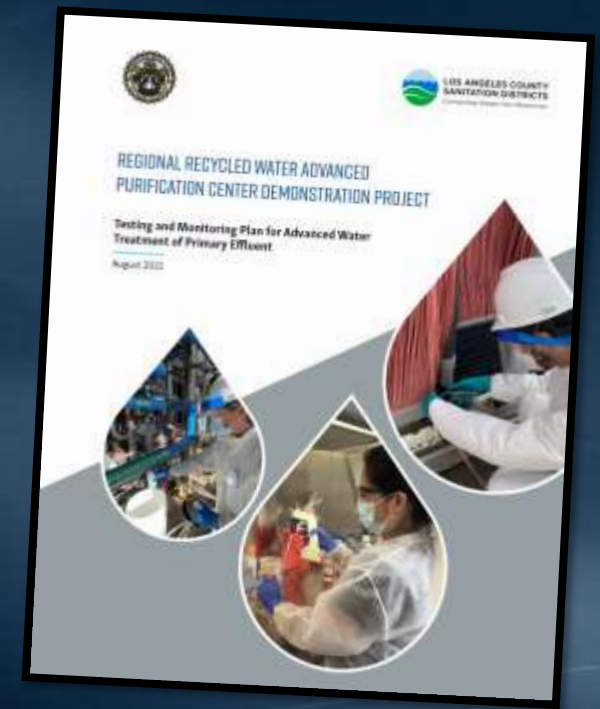
Item 7-3 Slide 7



August 16, 2021

# Secondary MBR Testing

- Treat primary effluent in common non-potable reuse configuration
- Potential for operational efficiencies and cost savings
- Secondary MBR demonstration testing results will inform treatment process selection
  - Builds on tertiary MBR testing results
  - Supports LACSD's technical evaluations for JWPCP
- A test plan is completed and will be submitted to DDW



# Alternatives Considered

- Alternatives for engineering & technical studies
  - All work by Metropolitan staff
  - All work by Consultant
  - Hybrid staffing approach (selected option)
- Metropolitan's role
  - Project management, technical oversight, laboratory analyses, LACSD coordination, and other activities that support staff's core competencies
- Consultant's role
  - Operations and testing, supplemented by Metropolitan staff
  - Specialized technical expertise









# New Agreement – CDM Smith Inc.

- Competitively selected under RFP No. 1274
- Scope of Work
  - Operate the facility to test AWT technologies
  - Execute the secondary MBR testing and monitoring plan to treat JWPCP primary effluent
  - Train Metropolitan operations staff
  - Develop engineering design and operating criteria for a full-scale facility
  - Prepare documents for regulatory approval and permitting
- SBE/DVBE participation level – 25%
- NTE amount – \$2.75 million

# Project Schedule



-  Board Action
-  Tertiary MBR Testing
-  Completion
-  Secondary MBR Testing

# Board Options

- Option #1

- Authorize an agreement with CDM Smith Inc., in an amount not to exceed \$2.75 million, for support of engineering and technical studies at the advanced water treatment demonstration facility

- Option #2

- Do not proceed with the new agreement at this time

# Staff Recommendation

- Option #1







# Emerging Water Quality Issues

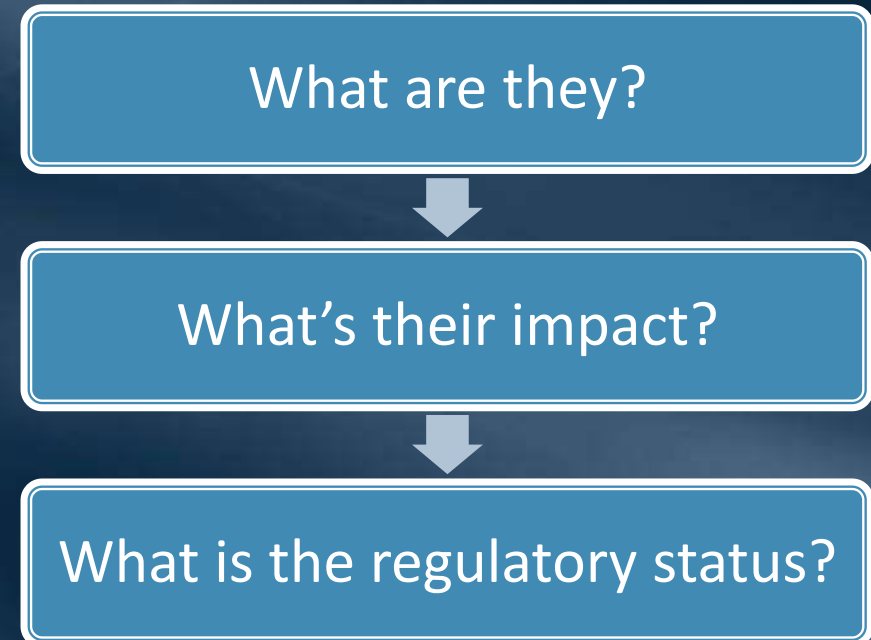
Engineering and Operations Committee

Item 6a

August 16, 2021

# Outline

- A visit to the past
- What is an emerging issue or contaminant?
- Per- and Polyfluoroalkyl Substances (PFAS)
- Microplastics
- Cyanotoxins
- Preparing for the future



# An Emerging Water Quality Issue in 1980s

MEMORANDUM

December 7, 1989

To: Principal Microbiologist

From: Senior Microbiologist M. H. Stewart

Subject: Update on Cryptosporidium Outbreak in London by Tony Rachwal of the Thames Water Authority

1. On Tuesday, November 21, 1989, Tony Rachwal of the Thames Water Authority met with staff of Metropolitan's Water Quality Division to discuss the recent Cryptosporidium outbreak in London, England. The following paragraphs summarize the highlights of this meeting and examines implications for Metropolitan.

Summary of London's Cryptosporidium Outbreak

2. From January through March 1989, the Oxford and Swindon areas outside of London experienced a waterborne disease

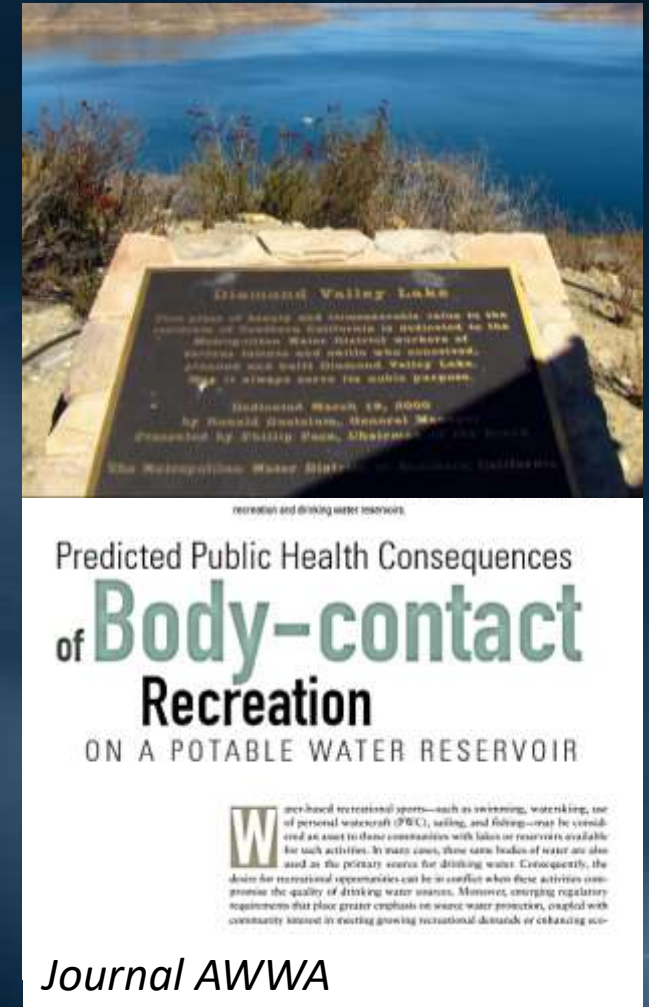
- 1976: First recognized as human pathogen
- 1976 – 1982: Seven cases reported in humans
- 1984: First waterborne outbreak (Texas)





# 30 Years of Research, Regulation, and Monitoring including actions at Metropolitan

- 1993: Milwaukee outbreak (~400,000 cases)
- 1995: MWD's *Cryptosporidium* Research Action Plan
- 1997: 1<sup>st</sup> Intl. Conf. on Waterborne *Cryptosporidium*
- 1997: Routine pathogen monitoring
- 1998: SWTRs require  $\geq 99\%$  removal
- 2002: No body-contact recreation at DVL
- 2003: Ozone disinfection at treatment plants
- 2006: Mandated monitoring under LT2ESWTR
- 2019→: Evaluating removal at Advanced Purification Center



# What Makes an Emerging Water Quality Issue?

- Non-regulated chemicals and microbes
- New or developing regulations
- New occurrence data
- New health effects information
- Legislative action
- Increased public awareness

*Regulated  
Contaminants*

*Emerging  
and  
Unknown  
Contaminants*

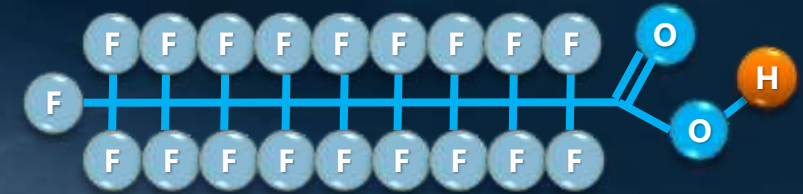


*Image credit: Uwe Kils, Wiska Bodo;  
[www.ecoscope.com/iceberg/](http://www.ecoscope.com/iceberg/)*

# Per- and Polyfluoroalkyl Substances (PFAS)

# Per- and Polyfluoroalkyl Substances (PFAS)

- First developed in the 1940s “*Miracle chemicals*”
- >7,800 chemicals used in products that resist oils, stains, and water
- PFOA and PFOS are the most common
  - Voluntary phase out started in 2000
- Extremely stable in environment “*Forever chemicals*”
  - Soil, air, surface water, groundwater, wastewater plant effluent, sewage sludge and landfills





# PFAS: Impacts and Consequences



Source: SWRCB

- Enter water supplies mainly from industrial discharges and stormwater runoff
- Detected in some groundwaters above California Notification and Action Levels
  - Detected in Metropolitan's service area
- PFOA and PFOS not detected in Metropolitan's source and treated waters
- Can cause high cholesterol, thyroid and liver disease, low birth weights
  - More human health information needed

# PFAS: Regulatory Status

- No national or state drinking water regulations (no MCLs)
- 2016: USEPA Health Advisory for PFOA + PFOS = 70 ng/L

California Actions	PFOA (ng/L)	PFOS (ng/L)
Notification Levels (2019)	5.1	6.5
Response Levels (2020)	10	40
Public Health Goals (2021, proposed)	0.007	1

- State mandated monitoring of various facilities, industries, and water utilities

# Microplastics



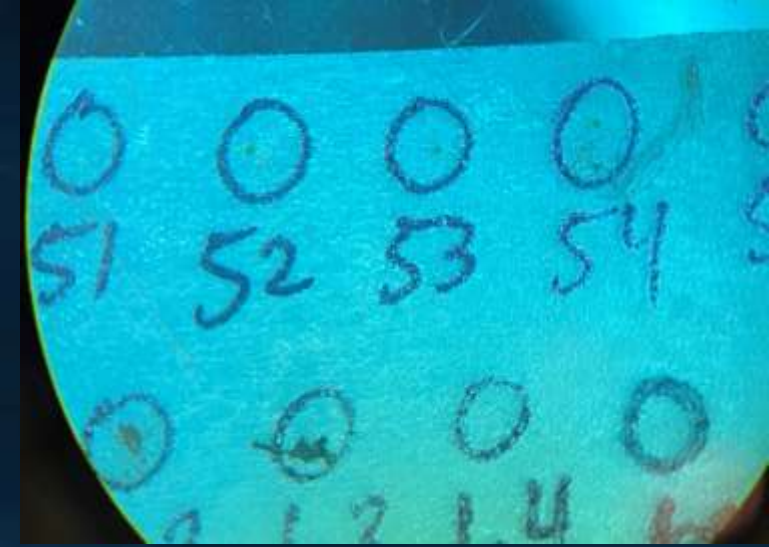
# Microplastics

- Plastic particles 1 nm to 5 mm in size
- Sources of microplastics
  - Car tires, clothing fibers, cosmetics, personal care products
  - Industrial discharges, atmospheric deposition, surface runoff, wastewater discharges
- WHO: *“low or no concern of human health hazards”*
  - Additional research needed on potential health effects
- Water treatment processes typically achieve >90% removal
- Science on microplastics in water is still developing



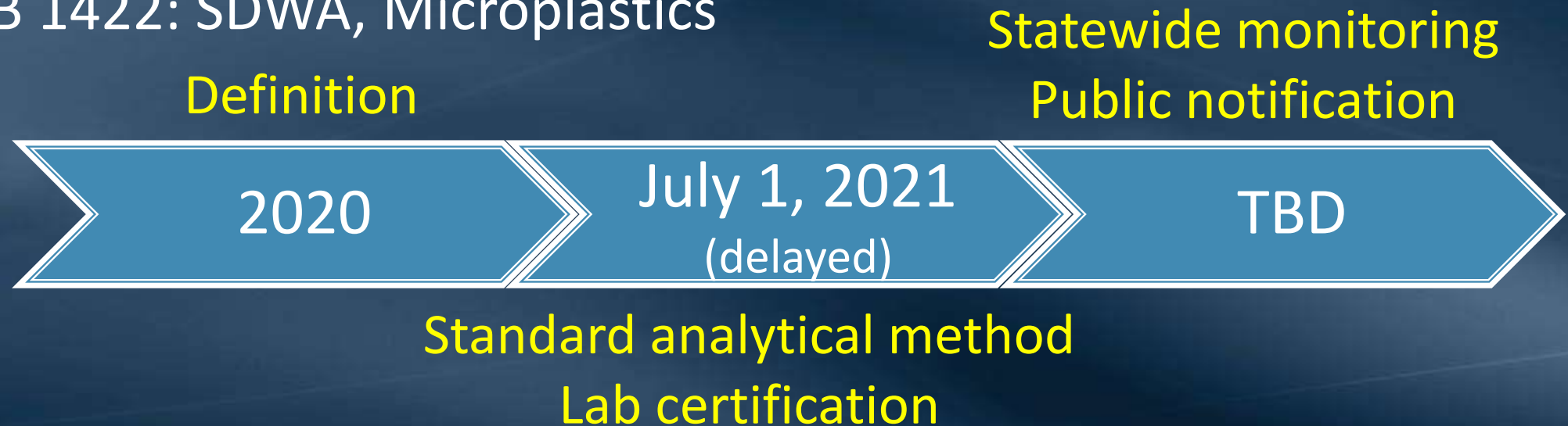
# Microplastics Analytical Methods

- No standard or validated sampling, extraction, and identification methods
- False-positives, method interference
- Time consuming and potentially costly methods
- Metropolitan participated in SWRCB-funded methods evaluation study (2019-2021)
  - Study results being used to inform statewide monitoring program



# Microplastics: Regulatory and Legislative Activities

- No national drinking water regulations
- CA, AB 888: Waste Management
  - Prohibits plastic microbeads in personal care products
- CA, SB 1263: Statewide Microplastics Strategy
  - Risk assessment, occurrence data, source reduction
- CA, SB 1422: SDWA, Microplastics

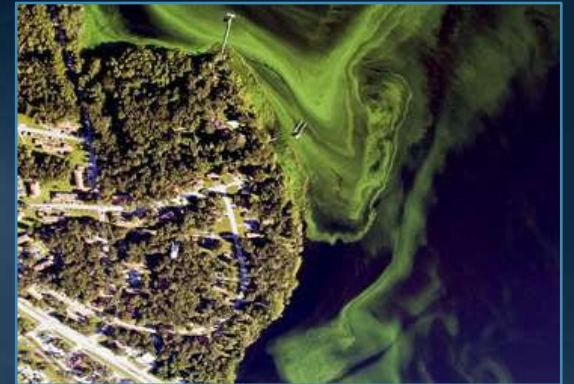


# Cyanobacterial Toxins- Cyanotoxins



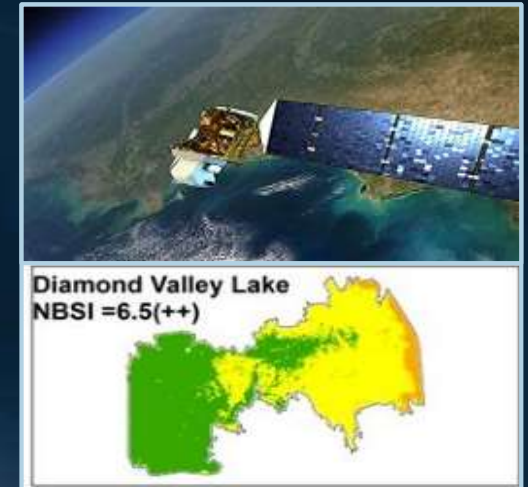
# Cyanobacterial Toxins- Cyanotoxins

- Cyanobacteria occur naturally in all bodies of water
  - Photosynthetic bacteria, not contaminants
- Some cyanobacteria produce taste and odor compounds (MIB/Geosmin)
- Some cyanobacteria produce cyanotoxins
  - Can cause a variety of illnesses
- Livestock/pet deaths linked to cyanotoxins in untreated water



# Cyanotoxins: Impacts and Consequences

- Human illnesses linked to recreational water
- 2014, Toledo: “Do Not Drink”/“Do Not Boil”
- 2018, Salem, Oregon: “Do Not Use”
- Metropolitan’s Cyanotoxin Monitoring Program
  - Year-round monitoring in source water lakes
  - Developing and improving detection methods
  - Diamond Valley Lake closed for 5 weeks in 2018 based on California voluntary recreational guidelines  
*(no impact on drinking water- recreational water only)*



# Cyanotoxins: Regulatory Status

- No national or state drinking water regulations

USEPA 10-day HA*	< 6 yrs old	6 yrs and above
Microcystins	0.3 µg/L	0.6 µg/L
Cylindrospermopsin	0.7 µg/L	3 µg/L

\* HA, Health Advisories (2015)

- California 2021: Proposed drinking water Notification Levels (NL)

Cyanotoxin	CA NL
Microcystins	0.03 µg/L
Cylindrospermopsin	0.3 µg/L
Saxitoxin	0.6 µg/L
Anatoxin-a	4 µg/L



# Preparing for the Future

# Preparing for the Future

## Potential Emerging Constituents

- Pharmaceuticals and personal care products
- Disinfection by-products
- Antibiotics and biocides
- Microbial pathogens
- Industrial chemicals
- Biological toxins
- Nanoparticles
- Microplastics
- Hormones
- Pesticides

### 2021: EPA Draft Fifth Contaminant Candidate List (CCL5)

66 chemicals (including PFAS, cyanotoxins, DBPs), 12 microbes

*Unregulated contaminants that may be present in water and may be harmful*

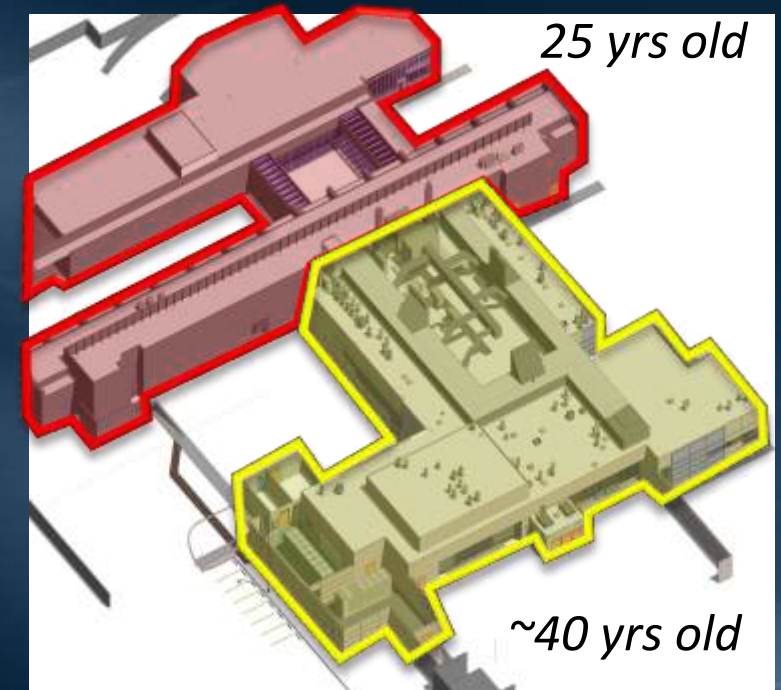
# Emerging Area: RRWP Reuse Research

- 2019→: Testing at Advanced Purification Center
  - Tertiary MBR (completing Oct. 2021)
  - Secondary MBR (starting Jan. 2022)
- Developing and optimizing detection methods for future monitoring
  - Toxicity (bioassays), PFAS, low molecular weight compounds
- Optimizing treatment and DPR research (future)
  - Blending strategies



# Water Quality: Preparing for Emerging Challenges

- Engaged in national and state efforts to improve knowledge on emerging issues and contaminants
  - Water Quality is participating in methods development
- Detection and testing requires state-of-the-art facilities
  - Clean rooms, dedicated instruments, proper separation of work areas
- Current WQ facilities may not be adequate for future needs
  - Planning for laboratory improvements

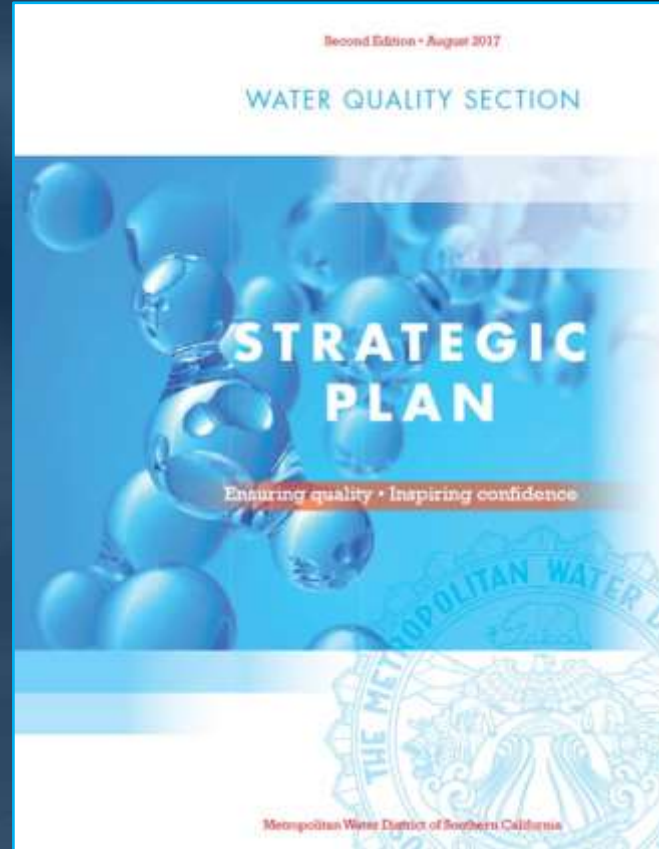
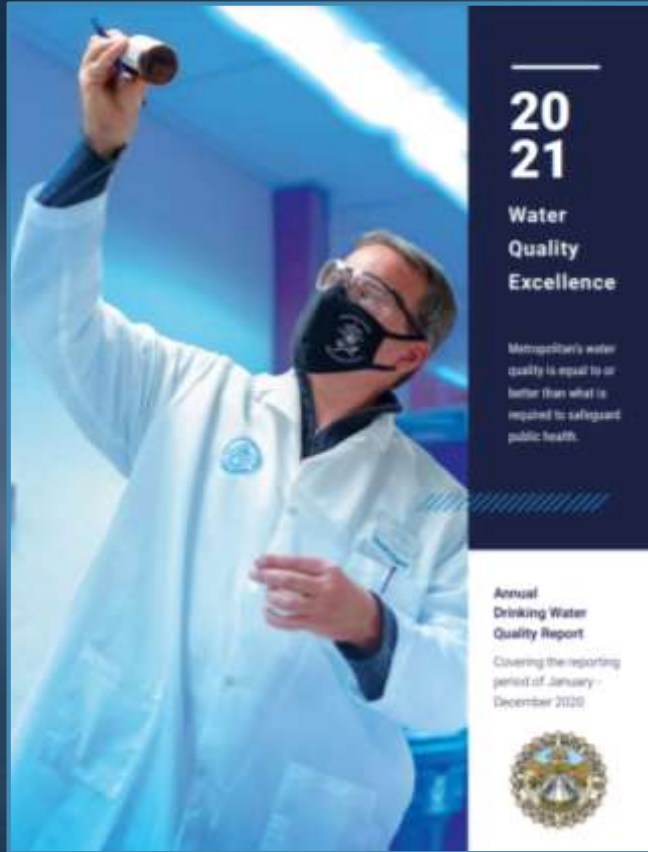


Water Quality Laboratory, La Verne



# Water Quality's Mission

To safeguard the public's drinking water









# Developments in Coatings & Materials Selection for Metropolitan's Projects

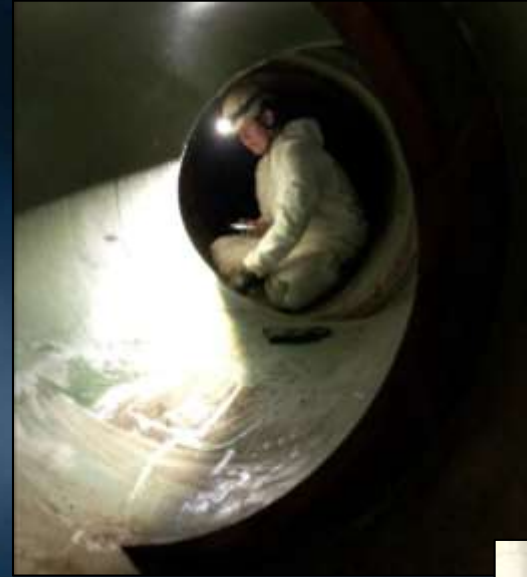
Engineering and Operations Committee

Item 6b

August 16, 2021

# Outline

- Services Provided
- Condition Assessment Examples
- Innovative Developments
- Summary



# Services Provided

## Corrosion Engineering

Condition  
Assessments

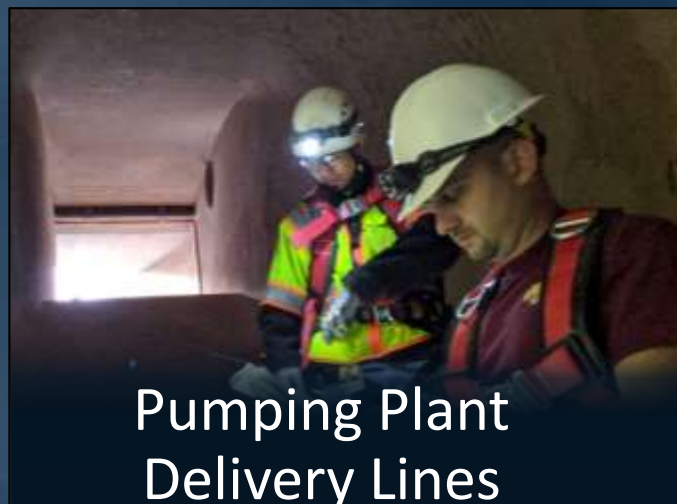
Material  
Performance Testing

Recommendations for  
Coatings & Material  
Selection

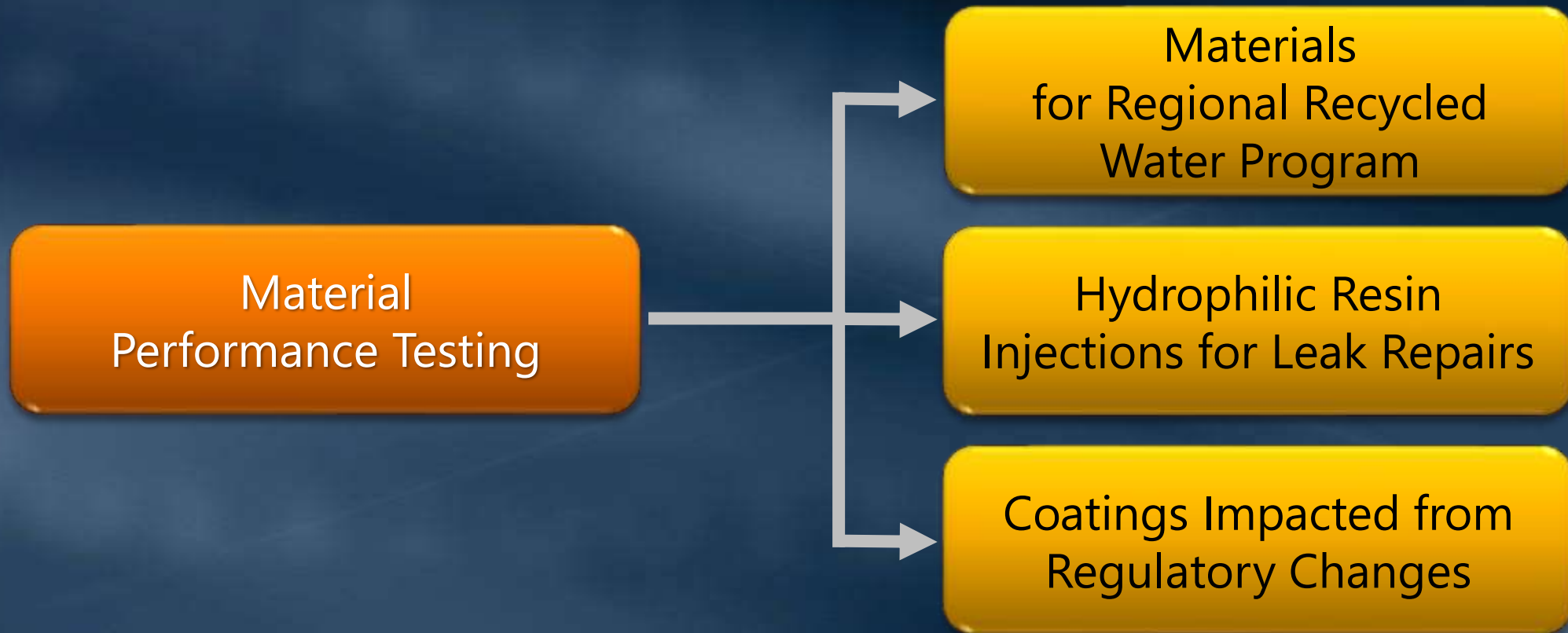




# Condition Assessment Examples



# Innovative Developments





# Development: Testing for RRWP





# Development: Testing for RRWP



# Development: Testing for RRWP

- Currently Testing
  - Various Metals
- Developing Test Plans
  - Cementitious Products
  - Coatings
  - Linings
  - Sealants
  - Adhesives
  - Plastics





# Development: Testing for RRWP

## Reoccurring Corrosion Testing



# Development: Hydrophilic Resin Injections

## Pipelines



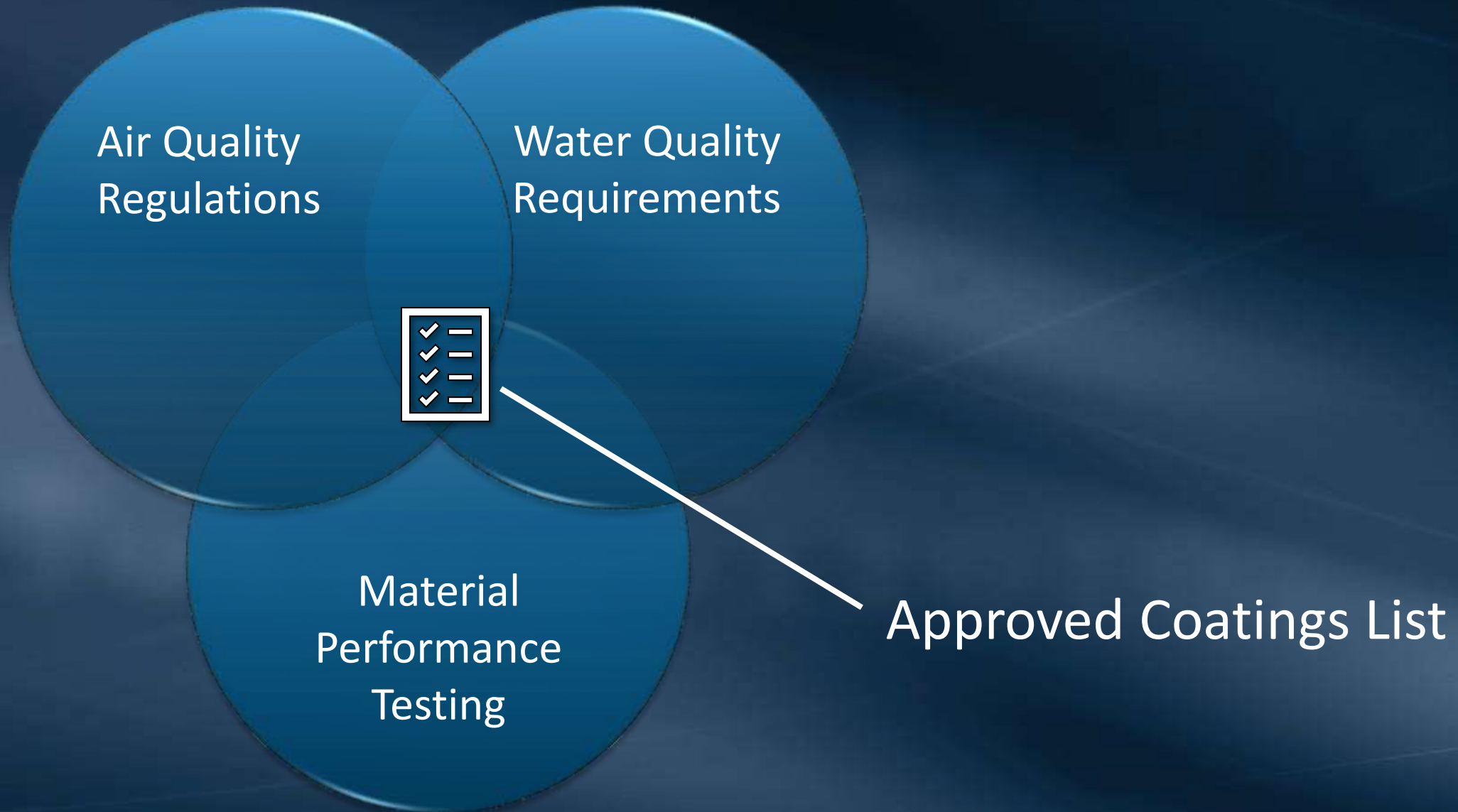
Internal Application



External Application



# Development: Regulatory Changes



# Development: Regulatory Changes



- NSF 600
  - Health Effects Evaluation and Criteria for Chemicals in Drinking Water

# Development: Regulatory Changes



Laboratory Application



Coated Test Samples



# Development: Regulatory Changes



Cathodic Disbonding Test



Examples of Failed Coatings

# Development: Regulatory Changes

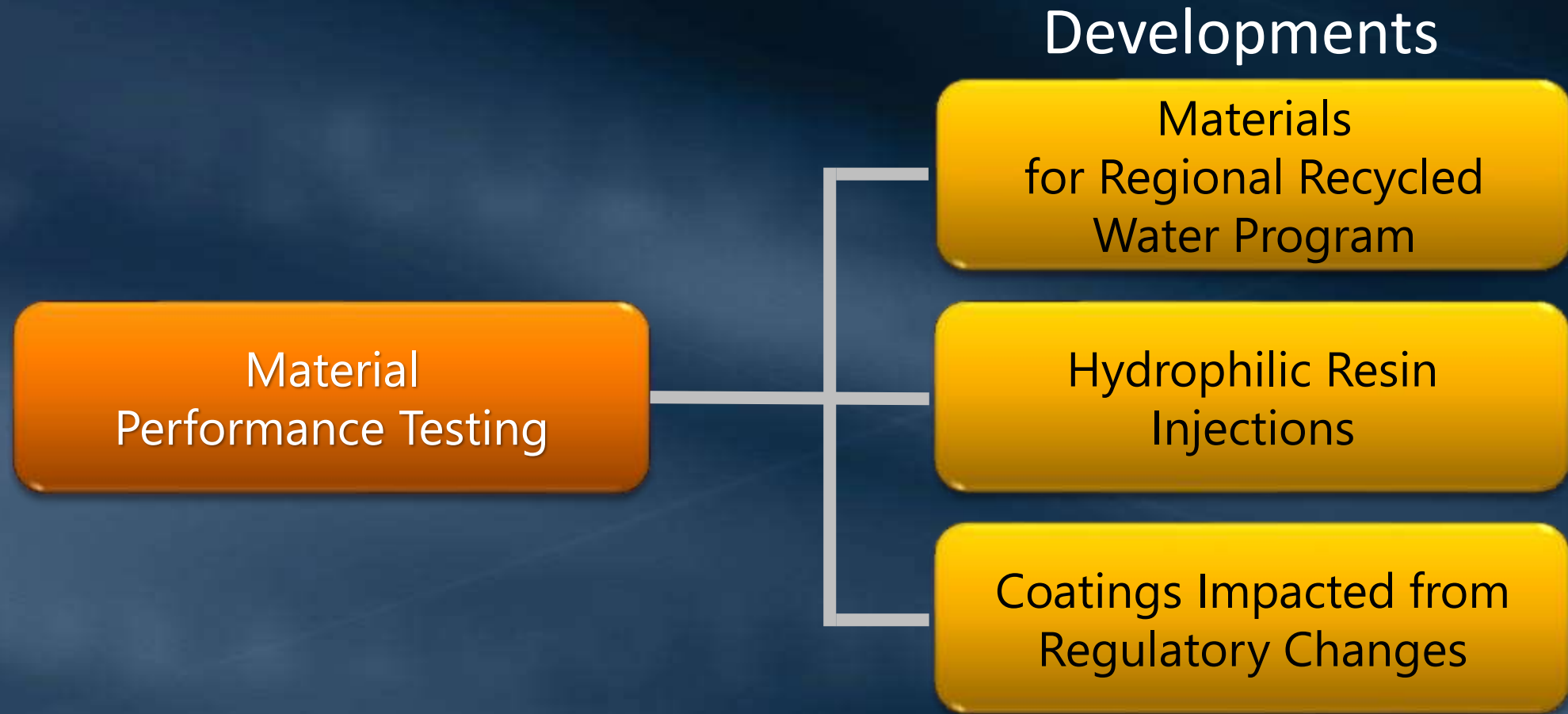
- Approved Coatings List
  - Available to
    - Staff
    - Contractors
    - Member Agencies

## SECTION 1: ALPHABETICAL LISTING OF APPROVED COATINGS & MATERIALS

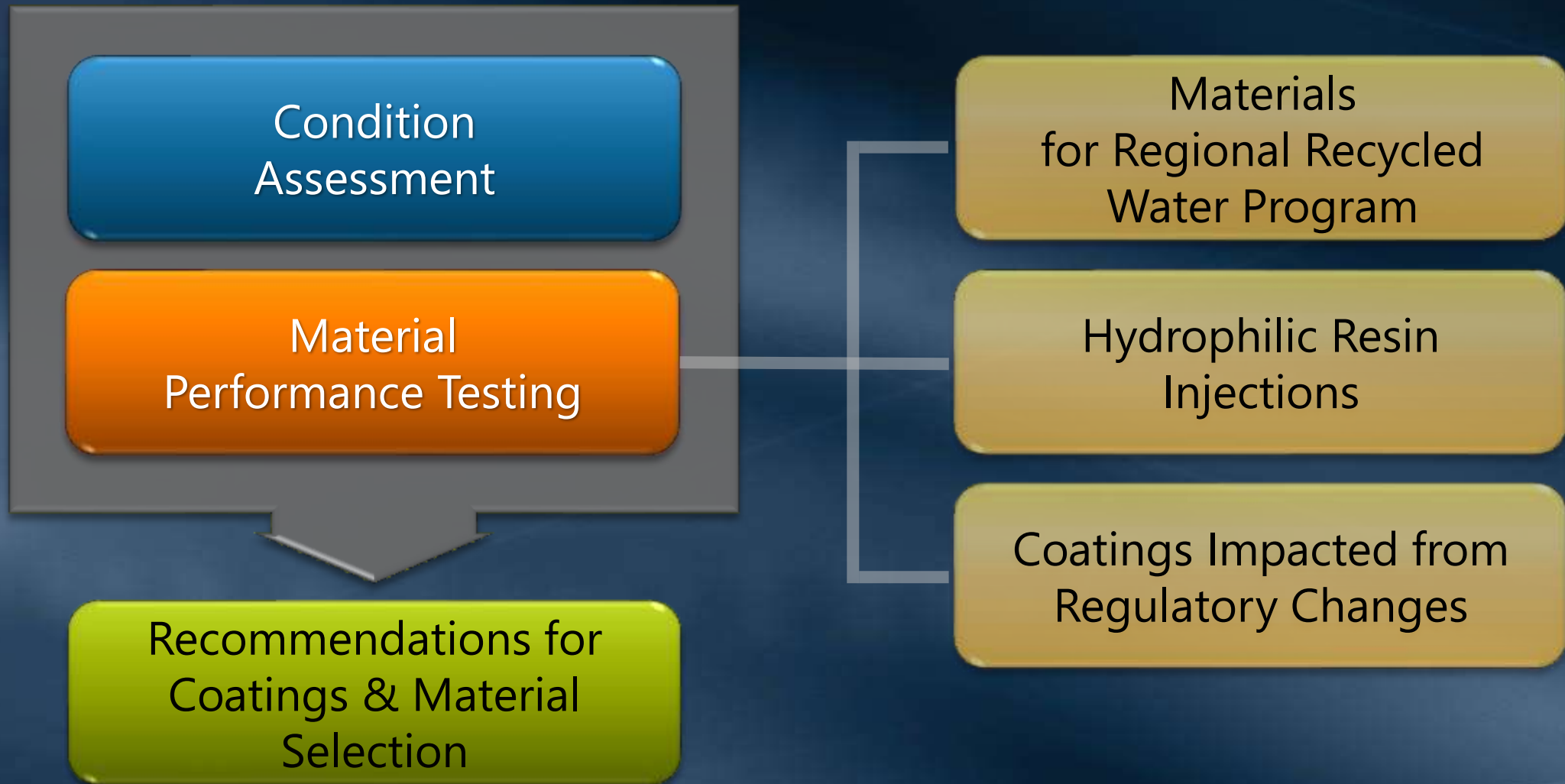
Manufacturer & Product	09900 Category	Service Section
<u><b>3M</b></u>		
7600 3M Classic Roofing Granules Light Grey, 11 Grade		16
Scotchkote 134 Fusion Bonded Epoxy Coating	CS-3S CE-2	15
Scotchkote 203 (206N) Fusion Bonded Epoxy Coating	CE-2	15
Scotchkote 413 Spray Grade Fusion Bonded Epoxy (Blue)		15
<u><b>Adhesives Technology Corp.</b></u>		
Ultrabond HS200 Epoxy Gel		18
<u><b>Aervoe</b></u>		
MRO Cold Galvanize Coating 147	NS-3	5
Upside Down Marking Paint		2
<u><b>Akzo Nobel</b></u>		
10-7208 Corvel Gray Epoxy Powder Coating	CE-2	15
Interpon 100 HR AJ128QF (formerly 10-5112) Corvel Blue Fusion Bonded Epoxy	CE-2	15
Interzone 954 High Solids Modified Epoxy Coating	CS-1	15
<u><b>Ameron International Coatings</b></u>		
See PPG Protective & Marine Coatings		
<u><b>Arkema</b></u>		
Primgreen 2 Acid Etchant	CE-2	15
Rilsan 1464 ES, EC Nylon 11 Powder Coating	CE-2	15
Rilsan 2117 MAC ES Nylon 11 Powder Coating	CE-2	15
Rilsan Waterborne Primer		15
Rilsan1488 CM-FB Nylon 11 Powder coating	CE-2	15
<u><b>Ashland Chemical</b></u>		
Hetron 922		4



# Summary



# Summary







# Water System Operations Manager's Report

Engineering and Operations Committee  
Item 7a

August 16, 2021



# Current Operational Conditions

- 2021 SWP Allocation is 5%
- SWP blend targets are 0% at Weymouth, Diemer, and Skinner plants
- CRA is at 7-pump flow
- DVL to Mills drought operation continues to perform well
- Managing storage based on WSDM principles
- July 2021 deliveries of 168 TAF were 30 TAF higher than July 2020



# First CRA 8-Pump Operation Since 2015



- Discharge gates pinched to reduce flow
- Increased coordination, patrols, and monitoring
- Balancing act with changing conditions
- 8-pump operations for 4 months and minimized SWP deliveries help meet EOY storage targets

# Maximizing Reliability: Extraordinary Drought Actions

## LADWP Operational Shift Cost Offset Program



- Shift to CRW connections (started 7/15)
- Anticipate shifting over 20 TAF in 2021



# DWR Seepage Repair on California Aqueduct



- On August 9, DWR discovered a seep in aqueduct upstream of San Luis Reservoir
  - Interim repair reduced seepage flow from 450 gpm to ~1gpm
- DWR shutting down section of aqueduct to complete permanent repairs by Oct 2021
- No impact to supplies or water deliveries







# Engineering Services Manager's Report

Engineering and Operations Committee

Item 7b

August 16, 2021

# Construction and Procurement Contracts

## June 2021

Construction & Procurement Contracts Through June 2021	
Number of Contracts at end of June 2021	37
Total Bid Amount of Contracts in Progress at end of June 2021	\$354M
Contracts Awarded in June 2021	0
Contracts With Notice To Proceed Issued in June 2021	1
Contracts Completed in June 2021	2
Contract Gross Earnings in June 2021	\$3.3M

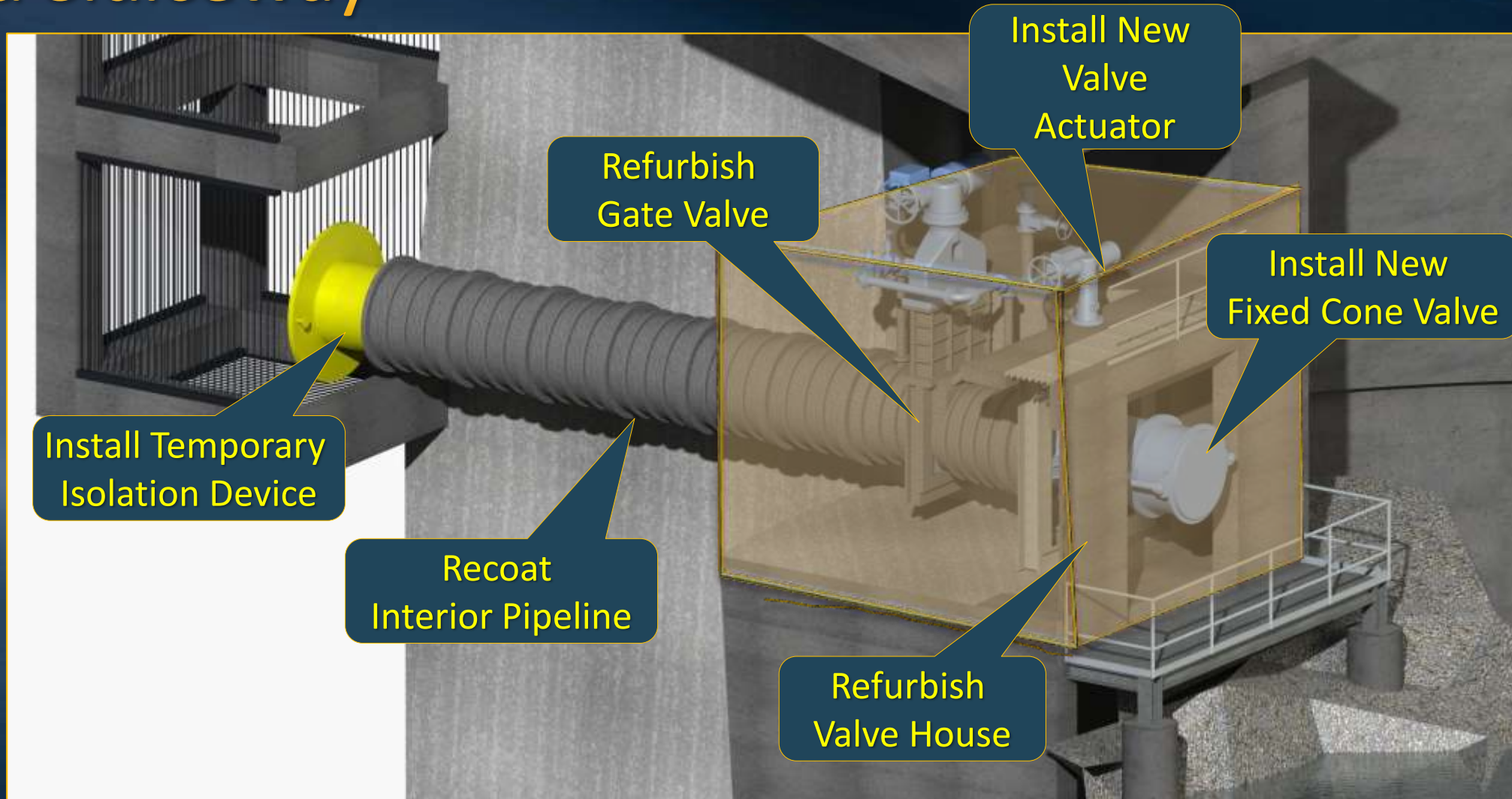
# Gene Wash Reservoir Discharge Valve Replacement

- Contract Amount:
  - \$5,316,900
- Contractor:
  - Gracon LLC
- Paid to Date:
  - 43 %
- On-Going Construction Tasks:
  - Installation of the isolation device.





# Gene Wash Discharge Structure Valve House and Sluiceway





# Gene Wash Reservoir Isolation Valve Installation



Barge Operation to Lower Isolation Device

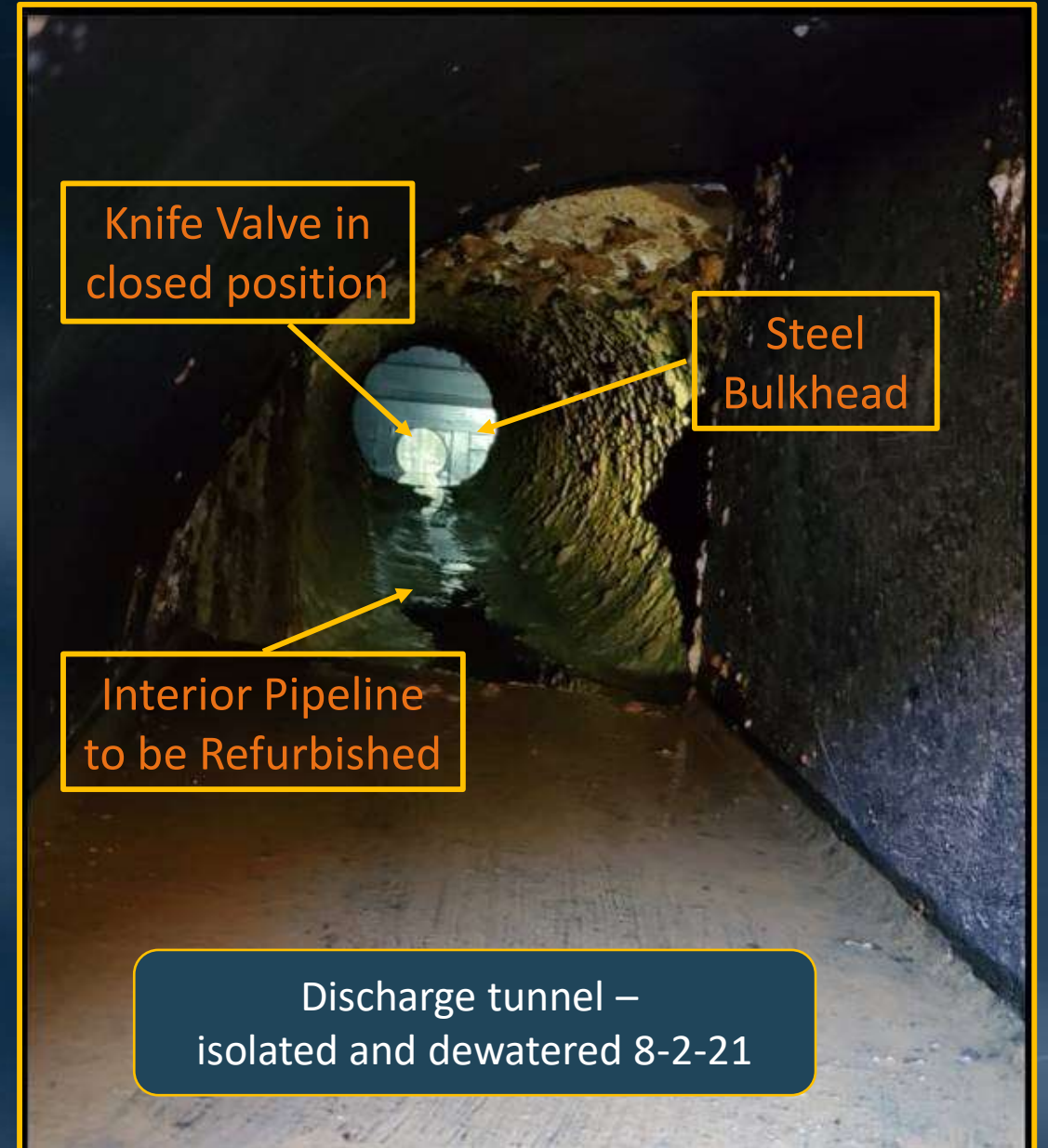


Knife gate valve in place – water side

# Isolation Device Installed



Draining Discharge Tunnel





# CRA – Pumping Plant Sump Rehabilitation

- Original Contract Amount:
  - \$ 26,900,000
- Contractor:
  - Michels Corporation
- On-going Activities:
  - Negotiated settlement credit for deleted work
  - Continued fabrication of the new pumps, and piping
  - Pump delivery September 2021



Inspection of the 12" and 16" diameter Pipe

# On-going Work at Headquarters Building



Headquarters  
Security Phase 2



Main Fire Control Room



Headquarters Smoke  
and Fire Alarm Project



# 2021 E&O Inspection Trip

- Inspection Trip Date:
  - October 21, 2021
- Facilities to be Visited:
  - La Verne
  - Diamond Valley Lake
  - Lake Mathews
- Format:
  - In-person
  - Virtual, as back-up approach



2019 Inspection Trip to CRA Facilities

# Women Leaders in Water Forum

- Hosted by:
  - Asian American Architects/Engineers Assoc.
- Theme:
  - Preparing Leaders for Tomorrow
- Conducted on:
  - July 29, 2021

