PROGRAM IMPLEMENTATION AND DELIVERY
Report on MWDSC Board Workshop #1
August 7, 2019

PURPOSE OF WORKSHOPS

- Obtain Metropolitan Board input on program next steps
- Prepare for future Board actions following a full discussion of options
- Identify key issues and concerns before moving forward to next steps
BOARD WORKSHOPS

White Paper

Fall 2019

Workshop #1: Implementation and DPR Considerations

July 23, 2019

White Paper

Workshop #2: Planning, Agreements and Financial Considerations

Late 2019 – Early 2020

Board Letter

Board Action on Next Steps

TWO KEY QUESTIONS TODAY

1
Implementation Urgency?
What additional activities (if any) should Metropolitan undertake during the environmental review process in order to accelerate program implementation?

2
DPR Development?
How would Metropolitan proceed in developing raw water augmentation opportunities, considering DPR regulations are not currently in place?
OUTLINE

• Program Overview
• Treatment Plant Site Conditions
• Environmental Review Process
• Implementation Options
• Direct Potable Reuse (DPR) Considerations
• Wrap-up and Next Steps

PROGRAM OVERVIEW
PROGRAM BACKGROUND

• Pilot Scale Studies (2010-12)
• Progress Report (Sept. 2015)
• Board approval and appropriation for Demonstration Plant (Nov. 2015)
• Feasibility Study Report (Nov. 2016)
• Demonstration Plant
  – Completion of Final Design (Feb. 2017)
  – Construction Completion & Start-up (Sept. 2019)
• Conceptual Planning Studies Report (Feb. 2019)

PROGRAM APPROACH

• Primary objective indirect potable reuse for groundwater recharge
• Two-phase approach (100 mgd followed by 50 mgd or more)
• Built around backbone conveyance system
• Preserving flexibility for the future
  – DPR utilizing raw water augmentation
  – Additional effluent from JWPCP
  – Integration with City of Los Angeles and other purified water systems
LETTER OF INTENT
WITH CITY OF LOS ANGELES

• In place July 2019
• Intent
  – Provides a basis for collaboration between the City’s Hyperion Program and Metropolitan’s Regional Program
  – Supports development of a formal Memorandum of Understanding between the parties
• Benefits
  – Improves potential for integration between two systems
  – Allows for coordination in planning and regulatory process
  – Reduces potential conflicts/duplication of activities

ENVIRONMENTAL REVIEW PROCESS
APPROACHES TO THE CEQA PROCESS

- Programmatic EIR (PEIR) provides high-level analysis of effects of a multi-year, multi-phase program
- Project-specific tiered documents
  - can be prepared as part of the initial PEIR, or at later date
  - conducted when additional design and site information is available

TIERED PROCESS
IMPLEMENTATION OPTIONS

THREE OPTIONS

Traditional Option
- Programmatic EIR (PEIR)

Accelerated Construction
- Everything above plus:
  - Tiered project-level document for 3.5-mile pipeline

Accelerated Water Delivery
- Everything above plus:
  - Initial AWT plant (approx. 20 mgd)
  - Conveyance to West Coast Basin
TRADITIONAL PEIR APPROACH

ACCELERATED CONSTRUCTION WITH PRELIMINARY DESIGN
ACCELERATED DELIVERIES WITH PRELIMINARY DESIGN

Facilities included for Preliminary Design

TRADITIONAL

Environmental Planning

Conveyance

Advanced Water Treatment (AWT)

Scope and Budget Period

Duration | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030

Programmatic EIR | Tiered Documents | Board Approvals

CEQA Support | Preliminary Engineering | Final Design

CEQA Support | Preliminary Engineering (500 mgd) | Final Design (100 mgd)

Start Pipeline Construction | Initial Pipeline Complete | Start 100-mgd AWT Construction
### ACCELERATED CONSTRUCTION

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<tr>
<th>Scope and Budget Period</th>
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- **Programmatic EIR**
- **Tiered Documents**
- **CEQA Support**
- **Preliminary Engineering**
- **Final Design**
- **Start Pipeline Construction**
- **Initial Pipeline Complete**
- **Board Approvals**

### ACCELERATED DELIVERIES

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- **Programmatic EIR**
- **Tiered Documents**
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- **Preliminary Engineering**
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- **Start Pipeline Construction**
- **Initial Pipeline Complete**
- **Board Approvals**

**Notes:**
- **20-mgd AWT Construction**
- **Start 20-mgd AWT Construction**
- **20-mgd Complete**
### BENEFITS

<table>
<thead>
<tr>
<th>Accelerated Construction</th>
<th>Accelerated Deliveries</th>
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<tr>
<td>• Minimizes cost increases resulting from inflation</td>
<td>• All of the accelerated construction benefits</td>
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<td>• Reduces impacts of unexpected delays on final completion date</td>
<td>• Enables early acquisition of operational experience and knowledge</td>
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<td>• Launches preliminary design and risk management as early as possible</td>
<td>• Accelerates regional benefits of additional water supply</td>
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<td>• Accelerates project team learning curve</td>
<td>• Provides early water sales and cost recovery</td>
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<td>• Utilizes existing facilities made available by the Sanitation Districts for the program</td>
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### RISKS

<table>
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<tr>
<th>Accelerated Construction</th>
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<tr>
<td>• Additional mitigation measures required</td>
<td>• All of the accelerated construction risks</td>
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<td>• Complex pipeline alignments must be revised</td>
<td>• Contingent on:</td>
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<td>• Engineering rework required</td>
<td>✓ MBR treatment process approvals</td>
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<td>✓ Nitrogen management strategy decision</td>
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<td>✓ Timing of need for replenishment water in the West Coast Basin</td>
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## BUDGET RANGES

### Estimated Budget Range (24 Month Duration)

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<tr>
<th>Option</th>
<th>Low</th>
<th>High</th>
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<tbody>
<tr>
<td>Traditional</td>
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## DIRECT POTABLE REUSE CONSIDERATIONS
CALIFORNIA RECYCLED WATER REGULATIONS

Non-Potable Reuse
Irrigation Industrial Uses
2000

Indirect Potable Reuse
Groundwater Augmentation
2014

Indirect Potable Reuse
Reservoir Water Augmentation
2018

Direct Potable Reuse
Raw Water Augmentation
2023

Direct Potable Reuse
Treated Drinking Water Augmentation
TBD

Increasing requirements for public health protection

RAW WATER AUGMENTATION OPPORTUNITIES
RAW WATER AUGMENTATION OPTIONS

RWA CONSIDERATIONS AND ANTICIPATED REQUIREMENTS

- Enhanced source control and wastewater treatment optimization
- Higher levels of advanced treatment and treatment redundancy through multiple independent barriers
- More rigorous monitoring and enhanced tools to respond to “off-spec” events
- System integration that minimizes impacts on blended water quality
TREATMENT FACILITY OPTIONS

• Additional RWA treatment processes could be:
  – Part of the AWT facility planned at JWPCP, or
  – At a potential satellite facility downstream; only flow to be used for RWA would be treated to more stringent requirements

• Further discussion with State Board is needed to determine potential acceptance of a satellite facility concept

BLENDING AT METROPOLITAN’S TREATMENT PLANTS

• State Board has expressed that blending requirements would be incorporated into future RWA regulations to the degree that it provides a “meaningful public health benefit” (SWRCB, 2018)

• Metropolitan may also establish blending requirements for introducing advanced treated water to Weymouth or Diemer plants to ensure water quality goals are met

• Blending percentage may increase with greater project experience and demonstration of public health protection
BLENDING SUPPLIES AT WEYMOUTH

State Project Water (SPW)

Colorado River Water (CRW)

Blend of SPW and CRW

Junction Structure

From Live Oak Reservoir (La Verne Pipeline)

From Lake Mathews (Upper Feeder)

To Diemer Plant (Yorba Linda Feeder)

Weymouth Aerial Location Map

POTENTIAL AWT FLOWS TO WEYMOUTH AND DIEMER PLANTS

Potential Full-Scale AWT Facility Capacity

AWT Flow (MGD)

Day of the Year
POTENTIAL AWT FLOWS TO WEYMOUTH AND DIEMER PLANTS

*Based on median daily average flow at the Weymouth and Diemer plants that ranged from 143 to 261 mgd and 120 to 293 mgd, respectively, in 2009-2018.

POTENTIAL AWT FLOWS TO WEYMOUTH AND DIEMER PLANTS

*Based on median daily average flow at the Weymouth and Diemer plants that ranged from 143 to 261 mgd and 120 to 293 mgd, respectively, in 2009-2018.
RAW WATER AUGMENTATION DEVELOPMENT ROADMAP

RWA SUGGESTED NEXT STEPS

• Begin RWA test plan development and treatment process design in 2021
  – Design and construction of RWA treatment processes at demonstration facility would require future Board action

• Begin RWA testing with draft regulatory criteria in 2023, prior to State Board’s final adoption of raw water augmentation regulations

• Support research and collaborate with regulators and stakeholders in development of raw water augmentation regulations
DEMONSTRATION FACILITY
TESTING OPTIONS FOR RWA

Secondary Effluent (non-nitrified) → NdN + Tertiary MBR → Reverse Osmosis → UV/AOP → Back to JWPCP

Example of additional processes for onsite treatment option

- Additional processes could be applied at pilot or demonstration scale in various treatment train configurations

DEMONSTRATION FACILITY
TESTING OPTIONS FOR RWA

Secondary Effluent (non-nitrified) → NdN + Tertiary MBR → Reverse Osmosis → UV/AOP → Back to JWPCP

Further discussion with State Board needed on additional processes for satellite treatment option

- Additional processes could be applied at pilot or demonstration scale in various treatment train configurations
## PRELIMINARY COSTS FOR RWA DEVELOPMENT

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<th>RWA Treatment Facility Type</th>
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<td>Onsite Treatment</td>
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<td>Demonstration Scale (0.5 mgd)</td>
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<td>Demonstration Scale</td>
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*Cost varies depending if pilot system is integrated/fixed or trailer-based
*Further discussion needed with State Board regarding potential satellite facility options
^Includes conservative assumptions for staff, O&M, chemicals, and analytical costs

NOTE: The costs above are not included in earlier Implementation Options budget estimates.
NEXT STEPS

• Receive input on implementation options and DPR opportunities
• Will compile Board’s ideas and suggestions
• Board Workshop #2 later this fall
  – White Paper #2: “Planning, Agreements, and Financial Considerations” prior to workshop
• Both workshops will contribute to preparation of potential Board actions
• Future potential actions related to RWA development will follow