



Engineering & Operations Committee

System-Wide Upgrade of Metropolitan's Control System – Mills Plant

Item 7-4

April 11, 2022

System-Wide
Upgrade of
Metropolitan's
Control System
– Mills Plant

Current Action

- Authorize an agreement with Stantec Consulting Services, Inc. for a not-to-exceed amount of \$8.5 million
- Authorize an increase of \$1.95 million to the agreement with CH2M Hill Engineers, Inc. for a new not-to-exceed amount of \$4.435 million

Distribution System



Background - Control System

Supervisory Control and Data Acquisition (SCADA)

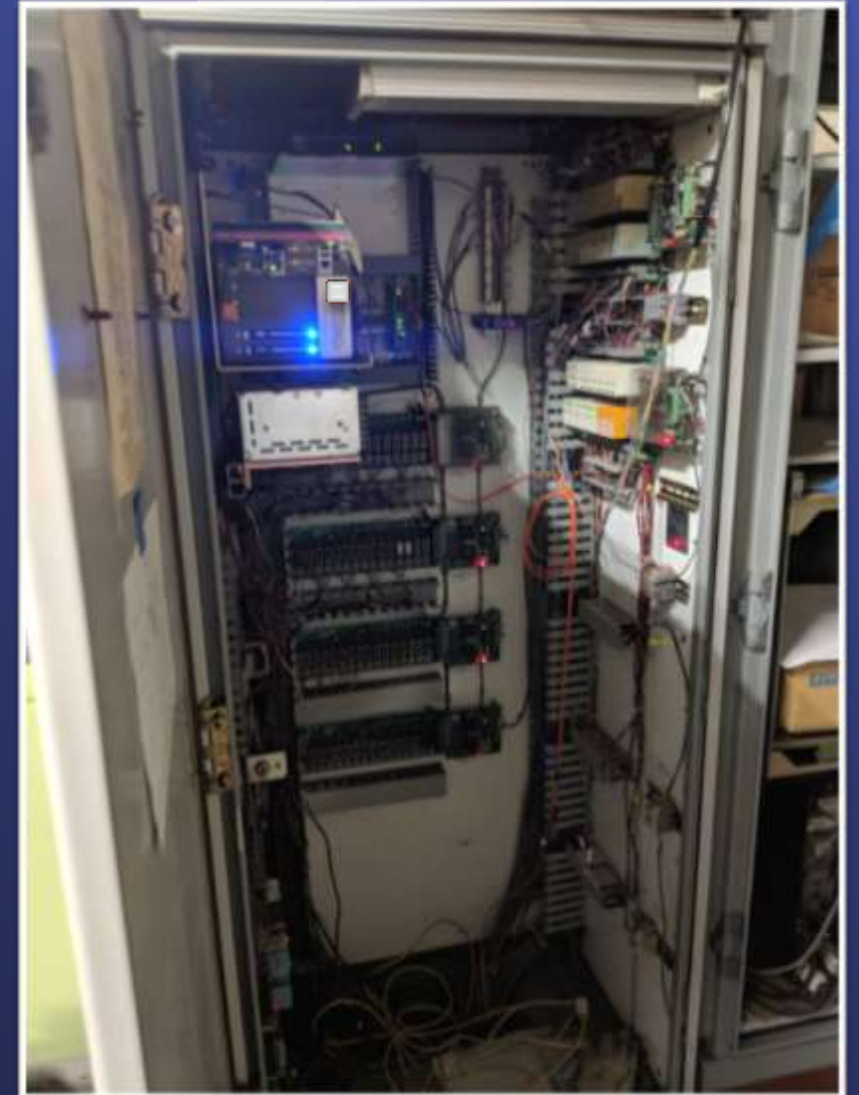
- Primary method to control facility operations
- Monitors pumping, conveyance, treatment & distribution of water
- Critical for safety, regulatory compliance & equipment monitoring
- Collects and transmits core business data



Background - Control System

Existing Equipment

- System architecture/design >20+ years old
- Increasingly difficult to support and maintain hardware/software
- Difficult to address cybersecurity risks
- Technological obsolescence leads to potential long-term reliability risks



Existing Field Computer

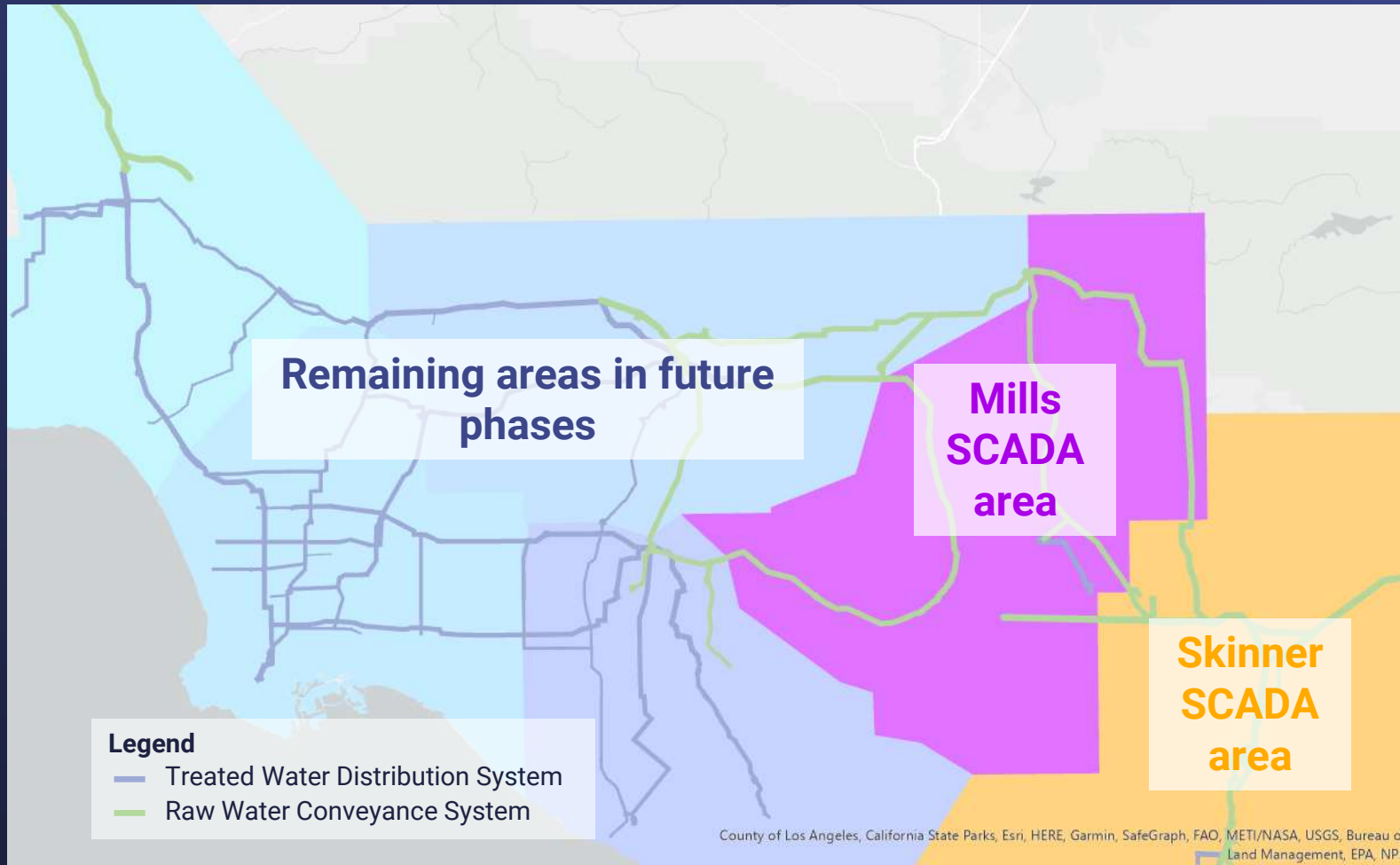
System-Wide Upgrade of Metropolitan's Control System – Mills Plant

Background

Recommendations

- Major control system upgrade recommended
 - Adopt industry-standard technology & programming
 - Enhanced cybersecurity capabilities
 - Focus on ease of support and maintainability
 - Include enhancements to the system's communications network
 - Facilitate increased integration with future business applications

Overall Control System Replacement Program



AMR is distributed throughout areas

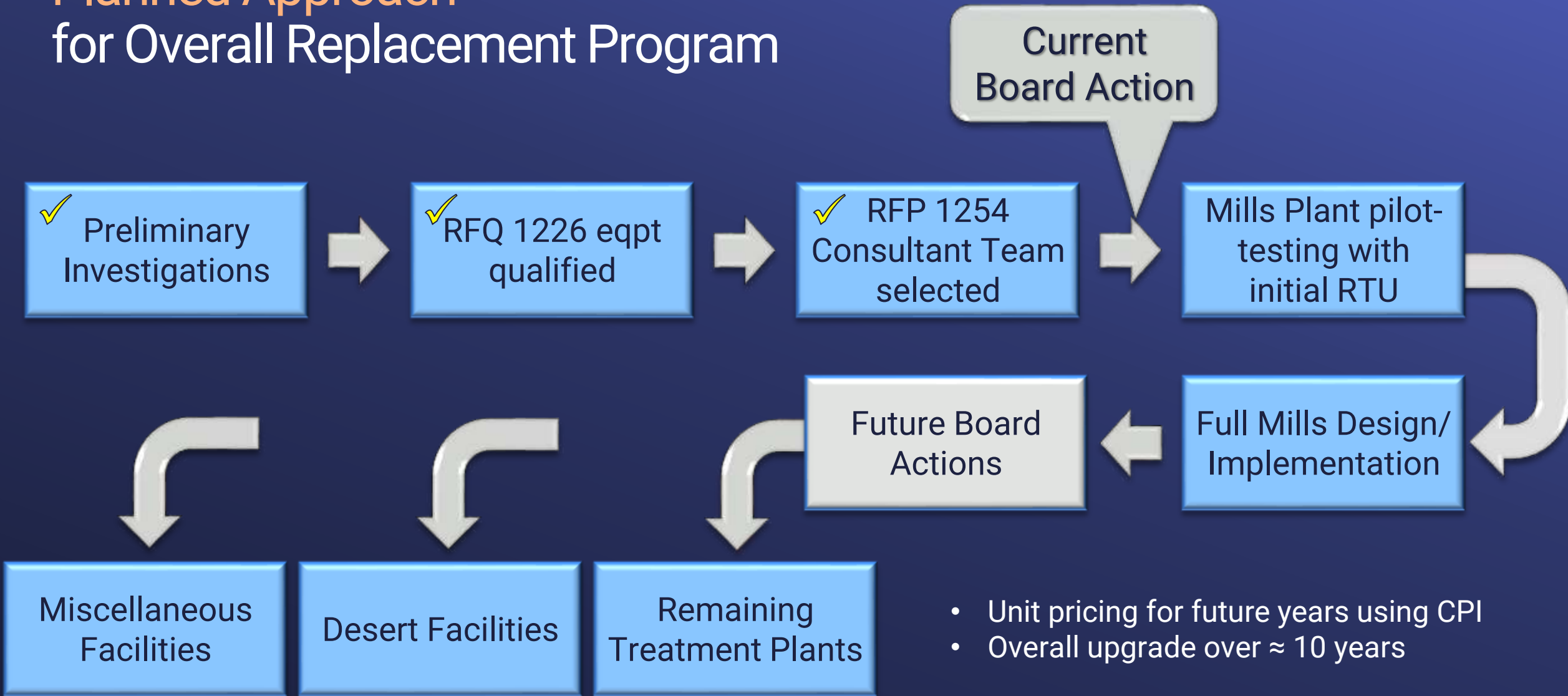
- System-wide upgrade will eventually replace entire existing SCADA system
 - Begin at Mills area
 - Follow on with Skinner area
 - Future phases likely in parallel
- Overall cost estimated at \$165M to \$195M

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Alternatives Considered

- Use traditional procurement design-bid-build procurement strategy
 - Approach attempts to ensure MWD receives the intended/specified equipment
 - Requires system integrator to resolve equipment/software interfacing issues
 - Potential risks remain between equipment provider/software preparer, installer, & MWD
 - Risks could jeopardize successful & timely completion of program
- Selected option - utilize RFQ/RFP approach

Planned Approach for Overall Replacement Program



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New Agreement – Stantec Consulting Services, Inc.

- Recommend under RFP 1254
- Best value selection
- Scope of work
 - Perform initial pilot test of the control system upgrade
 - Develop & implement a complete design for the Mills control system upgrade & support facilities
 - Furnish equipment and control system components to replace the existing control system at the Mills plant (Emerson Ovation platform)
 - Perform programming & configuration work
 - Lead testing, commissioning, training, support & warranty services
- SBE participation level: 25%
- NTE amount: \$8.5 million

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Agreement Amendment – CH2M Hill Engineers, Inc.

wholly owned by Jacobs Engineering Group, Inc.

- Recommend under RFQ 1153
 - Has provided system assessment, alternatives analysis, and RFQ & RFP preparation support
- Scope of work
 - Provide technical support during pilot demonstration & full plant retrofit
 - Review equipment & programming submittals
 - Recommend responses to requests for information
 - Provide cost & deliverable performance monitoring
 - Prepare design doc. for a new wide-area com. system
- SBE participation level: 25%
- NTE amount: \$4.435 million (\$1.95 million amendment this action)

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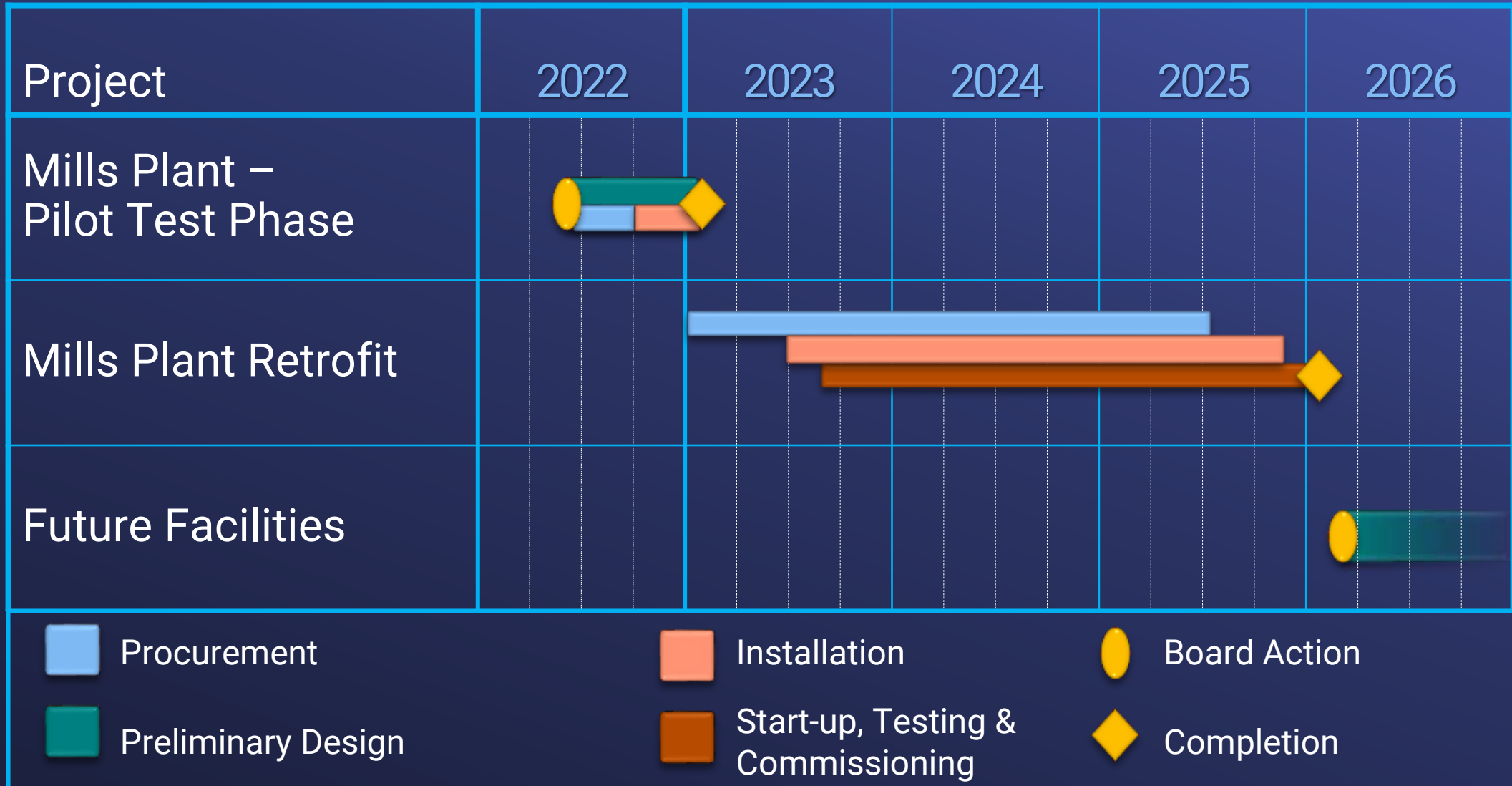
Metropolitan Scope

- Decommission and remove all obsolete control system equipment
- Install the new control system equipment
- Review and concur with system programming
 - MWD staff imbedded in software development process
 - Provides for in-house staff to support & maintain the programs going forward
 - Staff is currently responsible for programming of control logic applications of existing systems
- Project management

Allocation of Budgeted Funds

	Mills Pilot & Plant Cost
Labor	
Final Design	\$ 552,000
Owners Costs (PM & Proj. Controls)	1,035,000
Submittal Review & Record Drawgs.	125,000
Inspection & Testing	1,681,000
Force Construction	5,118,000
Materials & Supplies	201,000
Professional Services	
Stantec Consulting Services, Inc.	8,500,000
CH2M Hill Engineers, Inc.	1,950,000
Remaining Budget	783,000
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Total	\$19,945,000

Control System Upgrade - Project Schedule



Board Options

- Option #1
 - a. Authorize an agreement with Stantec Consulting Services, Inc. for a not-to-exceed amount of \$8.5 million for design and equipment procurement to upgrade the control system at the Mills plant.
 - b. Authorize an increase of \$1.95 million to an agreement with CH2M Hill Engineers, Inc. for a new not-to-exceed amount of \$4.435 million to provide specialized technical support for the upgrade.
- Option #2
 - Do not proceed with the project at this time.

Staff Recommendation

- Option #1

