INTRODUCTION

The Contra Costa Water District (District) and Local Agency Partners (LAPs) continue to evaluate the Phase 2 Los Vaqueros Reservoir Expansion Project (LVRE Project), which includes expansion of the Los Vaqueros (LV) Dam from 160 thousand acre-feet (TAF) to 275 TAF and construction of new conveyance facilities. The California Water Commission (CWC) has authorized $22,950,000 in early funding from the Proposition 1 Water Storage Investment Program.

On August 19, 2020, the Board of Directors (Board) authorized Amendment No. 2 to the Multi-party Agreement (Agreement) with the LAPs to provide funding for the LVRE Project planned work, including: obtaining permits, approvals, certifications, and agreements as required by the CWC to proceed to a final award hearing and secure a final funding award. Upcoming work on the LVRE Project facilities positions the District to meet CWC requirements and maintain the overall project implementation schedule. Work pursued by the District under the Agreement will be commensurate with funding received by the LAPs and additional funding provided by the CWC and the Bureau of Reclamation.

The purpose of this report is to provide an update on current design activities associated with the LVRE Project facilities. The Operations and Engineering (O&E) Committee was last briefed on the LVRE Project Facilities on May 27, 2020. Given the numerous LVRE Project Facilities scope items included in the Agreement, O&E Committee briefings are planned at each upcoming meeting as the design work progresses.

RECOMMENDATION

Receive report and comment.

DISCUSSION

The LVRE Project includes the design and construction of several new conveyance facilities, modifications to existing conveyance facilities and expansion of the LV Dam. The District
continues to progress technical work to support planning-related activities and associated LVRE Project decisions consistent with the existing LAP and CWC agreements, available funding, and project timeline (see Exhibit B), including the following:

- Design of the LV Dam expansion
- Conducting an Initial LVRE Project Risk Assessment
- Preliminary design of the Pumping Plant No. 1 (PP1) Replacement
- Planning and coordination for the Transfer-Bethany Pipeline
- Engineering analysis of key conveyance facilities and operations

This report will focus on recently initiated work and design activities including the LVRE Risk Assessment, PP1 Replacement, existing pipeline evaluations and the Transfer-Bethany Pipeline. Future O&E Committee briefings will include an update on dam design and coordination with the Technical Review Board and the Division of Safety of Dams as well as other key facility updates.

LVRE Project Risk Assessment

The District initiated a risk assessment to review the LVRE Project to support continued facilities planning and inform future agreements that will define expectations for delivery of LVRE Project benefits to the LAPs without impacting the District’s investments. The LVRE Project will increase the frequency of operation and flow rates conveyed through the District’s existing facilities, which may result in greater stress on those facilities and reduced flexibility to address planned operations and maintenance or to respond to unplanned events. Using a risk-based approach, the District will review the LAPs level of service expectations, identify conditions that could impact delivery of LVRE Project benefits, estimate the likelihood and consequence of those conditions, and develop appropriate mitigation strategies. The mitigation strategies could include a wide range of approaches, such as including additional facility improvements or design features within the LVRE Project, identifying modifications to the District’s approach to operations and maintenance, or including terms in the service agreements to appropriately describe level of service commitments. A key outcome of this work will be a Risk Register that identifies areas of risk, potential mitigation strategies, and recommendations for further assessment.

This initial assessment and Risk Register is being developed on a fast-track basis to provide initial information in advance of Joint Powers Authority formation. To meet that timeframe, an abbreviated competitive consultant procurement was implemented where a Request for Proposals was issued to three firms with current consulting agreements and who previously performed similar risk-based assessments for the District. Brown & Caldwell (B&C) was selected to initiate this work using remaining authority within the Untreated Water Renewal and Replacement (UWRR) Study consulting services agreement. The UWRR Study involved a
comprehensive risk analysis to identify and prioritize future improvements, which included assessment of some of the key facilities relied upon for the LVRE Project. B&C will apply a similar approach on the LVRE Project to efficiently and quickly provide this initial assessment. While the UWRR Study consulting services agreement includes remaining authority, an amendment is needed to complete the LVRE Project risk assessment, which will be presented for Board consideration on September 16, 2020. The estimated cost for this initial risk assessment is $100,000, which is included in the Agreement and eligible for CWC funding.

PP1 Replacement

The Contra Costa Canal (Canal) PP1 is the first of four pumping plants along the Canal that delivers water from the Rock Slough Intake to the Main Canal in Antioch. Replacement of PP1 is a component of the District’s Canal Replacement Project to restore Rock Slough diversion capacity back to its original capacity. PP1 Replacement is also a component of the LVRE Project to supply Rock Slough diversions for storage in the expanded reservoir or direct delivery to LVRE Project LAPs. Construction of PP1 Replacement is an early LVRE Project element (refer to Exhibit B for schedule) to ensure the District is able to meet its demands during construction of other LVRE Project facilities.

The District initiated Preliminary Design of PP1 Replacement in May 2020 and initial efforts are focused on developing design criteria that will ensure the facility meets key design objectives, including:

- Ensuring the pump station conveys 350 cubic feet per second, the maximum allowed by existing water rights
- Conveying maximum capacity under the range of Delta tidal conditions
- Meeting long-term estimates for sea level rise
- Operating through the range of flows needed to match downstream pumping
- Enabling accurate measurement of District and LAP flows
- Meeting the District’s objectives for ease of long-term operation and maintenance
- Allowing for future modifications to meet the objectives of the Canal Modernization Project

The existing consulting services agreement of $400,000 includes the scope of work through preliminary design and is partially funded by remaining Canal Replacement Project grant funding. An amendment to the PP1 Replacement consulting services agreement will be needed to complete final design in January 2021. Final design and construction of PP1 Replacement is included in the LVRE Project and slated to receive CWC funding as part of the final funding agreement. Additional federal funding is also being pursued, which will be matched with LAP funding should the project proceed.
Existing Facility Assessment and Operational Analysis

On November 20, 2019, the Board authorized execution of an agreement amendment with Stantec to provide feasibility-level design work in support of planned facilities, including evaluation of use of existing facilities. As part of this design work, Stantec completed analyses that defined future operating pressures for the LV Pipeline and Transfer Pipeline. Hydraulic modeling and surge analysis consistent with these planned operations were used to identify the maximum pressures experienced by these pipelines. Detailed existing pipeline information from design, fabrication and testing during original construction were used to assess the strength of these critical pipelines. This analysis concludes that both pipelines are capable of operating under these future conditions.

Given the LV and Transfer pipelines are approaching 25 years old, an interior inspection program is being developed to allow for confirmation of existing pipeline conditions, which would take place as part of final design. In addition, Stantec is performing surge analyses to determine whether the existing facilities can meet the future operating conditions and to establish consistent hydraulic criteria between facilities. Stantec is also evaluating the necessary operations for deliveries through the District’s intertie with East Bay Municipal Utility District, which will be relied upon while the LV Reservoir is drained for expansion and refill activities.

Preliminary Design of Transfer-Bethany Pipeline

The Transfer-Bethany Pipeline is a key long-lead LVRE Project facility planned for early implementation (refer to Exhibit B for schedule). The District has met with County transportation agencies to coordinate the LVRE Project with future planned transportation improvements as well as with local environmental conservation agencies. Upcoming design work will progress planning and design efforts, including: finalizing pipeline alignment to balance cost, right-of-way conflicts and challenges, and environmental and permitting restrictions; finalizing preliminary designs, and estimates; developing a land rights acquisition plan and strategy; continuing coordination with regional transportation and conservation land planning agencies; coordinating the connection to the California Aqueduct with the Department of Water Resources; and, conducting geotechnical investigation and surveying. The District initiated a competitive procurement for consulting services in July 2020. Four Statements of Qualifications were reviewed by a selection panel consisting of four LAP members and three District representatives. Three firms have been invited to receive a Request for Proposals and Board consideration of the consulting services agreement with the selected firm is anticipated in November 2020.
FISCAL IMPACT

Consulting services are funded by the CWC through the Early Funding Agreement and by the LAPs through Amendment No. 2 to the Multi-party Agreement. The Fiscal Year 2021 (FY21)-FY22 budget includes sufficient funds to cover anticipated expenditures. The District will monitor work progress to ensure the consultant work does not exceed the funds available.

SCHEDULE

Key near term milestones include:

- O&E Committee Briefing: November 12, 2020
- Award Bethany Pipeline Agreement: November 2020
- Complete PP1 Preliminary Design: December 2020
- O&E Committee Briefing: January 2021
- Amendment to PP1 Consulting Services Agreement: January 2021

RM/CH:mc

Exhibits:

A – LVRE Project Facilities
B – LVRE Project Schedule
C – Presentation Slides
AGENDA ITEM NO. 2
LOS VAQUEROS RESERVOIR EXPANSION PROJECT FACILITIES
Background

• California Water Commission (CWC) approved ~$23 million in early funding to advance the LVRE Project

• Multi-party Agreement Amendment No. 2 provides additional funds through December 2021

• Facilities design is progressing in parallel with environmental, permitting and partnership formation
FY21 Project Facilities Activities

- LVE initial risk assessment
- Pumping Plant No. 1 (PP1) Replacement preliminary design
- Evaluation of existing conveyance facilities
- Transfer-Bethany Pipeline

Future O&E Committee Topics

- LV Dam design update and technical review
- Regular updates on LVRE facilities
LOS VAQUEROS RESERVOIR EXPANSION
PROJECT FACILITIES

Risk Assessment

• Objectives:
  • Expedite initial assessment to inform agreements and service expectations
  • Support comprehensive LVRE facilities planning
  • LVRE Project will increase frequency and flows through existing facilities
  • Greater stress on facilities and operations
  • Reduced flexibility to address planned O&M and unplanned events
LOS VAQUEROS RESERVOIR EXPANSION PROJECT FACILITIES

Risk-Based Approach

• Define Local Agency Partner (LAP) level of service commitments
• Identify conditions that could impact LAP benefits
• Estimate the likelihood and consequence of service impacts
• Develop mitigation strategies, for example:
  • Additional facility reliability improvements
  • Modified maintenance approaches
  • Adjust service commitments and reflect in LAP service agreements
Risk Assessment Consultant Selection

• Conducted expedited competitive selection from existing consultants with the risk-assessment expertise

• Authorize as part of Brown & Caldwell’s Untreated Water Renewal and Replacement Study (UWRR) agreement
  • Similar risk-based approach
  • Knowledge of existing facilities

• UWRR agreement amendment to fully fund risk assessment will be considered at September 16 Board meeting
**PP1 Replacement – Preliminary Design**

- Restores pumping capacity to 350 cfs
- Provides District water supply during LVRE Project construction
- Enables diversions at Rock Slough for LVRE Project filling and delivery to LAPs
- Prop 84 grant funds from Canal Replacement Project used for preliminary design
PP1 – Consulting Services

• Competitively selected consultant for preliminary design

• Pursuing LVRE Project funding for final design from Reclamation, matched by LAP and CWC funding

• Amend consulting services agreement for final design in January 2021, if funding is secured
 existing Conveyance Facility Assessments

• Existing Los Vaqueros Pipeline and Transfer Pipeline will see increased pressures

• Hydraulic modeling defined maximum pressures

• Calculations using installed pipeline properties confirmed pressures are within design strength

• Inspections are needed to:
  • Confirm as-built conditions and assumptions
  • Determine whether additional cathodic protection is needed
Transfer-Bethany Pipeline Coordination and Planning

- Refine preferred pipeline alignment and define right-of-way needs
- Coordinate with Contra Costa Transportation Authority, the conservancies, and the County to minimize impacts
- Work with Department of Water Resources on the CA Aqueduct turn-in design
- Develop real property acquisition plan and strategy
- Conduct geotechnical investigations and progress preliminary design work
- Competitively procuring consulting services
LOS VAQUEROS RESERVOIR EXPANSION
PROJECT FACILITIES

AGENDA ITEM NO. 2
SEPTEMBER 9, 2020
OPERATIONS AND ENGINEERING COMMITTEE
LOS VAQUEROS RESERVOIR EXPANSION PROJECT FACILITIES

Schedule

• O&E Committee Briefing  November 12, 2020
• Award T-B Pipeline Agreement  November 18, 2020
• PP1 Preliminary Design  December 2020
• O&E Committee Briefing  January 2021
• Amend PP1 Agreement  January 2021
• 100 Percent Dam Design to DSOD  September 2021
• DSOD Approval  November 2021
**Fiscal Impact**

- Funding included in the Multi-party Agreement Amendment No. 2

- CCWD funds to match state funding are included in the adopted FY21/FY22 budget

- Work will be commensurate with funding from CWC, LAPs and Reclamation