



Santa Clara Valley Water District

File No.: 19-0953

Agenda Date: 1/28/2020

Item No.: 6.1.

BOARD AGENDA MEMORANDUM

SUBJECT:

Update on the Palo Alto Flood Basin Tide Gate Structure Improvements Project, Project No. 10394001 (Palo Alto, District 7).

RECOMMENDATION:

Receive an Update on the Palo Alto Flood Basin Tide Gate Structure Improvements Project.

SUMMARY:

Background:

The Palo Alto Flood Basin (PAFB) Tide Gate Structure was constructed in 1957 by the Santa Clara County Flood Control and Water Conservation District, Santa Clara County, and the City of Palo Alto. A map of the PAFB is included as Attachment 1.

In September 2012, Santa Clara Valley Water District (Valley Water) completed emergency repairs to stop seepage flow beneath the structure under U.S. Army Corps of Engineering (USACE) Regional General Permit #5. As part of that effort, staff submitted a post construction report to USACE which detailed the emergency work and attached evidence of initiation of a capital project to replace the existing tide gate structure within 5 years.

In 2014, Valley Water engaged the services of Mark Thomas & Co (MT) to perform structural inspections and prepare an assessment report for the tide gate structure. The report concluded that the structure was in generally good condition and recommended approximately \$180,000 in minor structural repairs.

In 2017, Valley Water contracted a construction contractor to perform minor maintenance repairs; however, the work was complicated due to cracks in the bottom slab and stopped during the dewatering process. A subsequent letter prepared by MT in October 2017 recommended the structure be replaced in the next couple of years.

In 2018, Valley Water management directed a new team to complete planning, design, and construction of a new tide gate structure.

On January 8, 2018, the project team met with the City of Palo Alto to coordinate ongoing efforts and

next steps. The team discussed Project alignment with the San Francisquito Creek Joint Powers Authority's (SFCJPA) Strategy to Advance Flood protection, Ecosystems and Recreation Project (SAFER Bay), the City of Mountain View's South Bay Salt Pond Restoration Project (Mountain View Ponds), and the South San Francisco Bay Shoreline Project (Shoreline Project). The team also discussed an inter-agency cost share agreement to fund the Project, PAFB data sharing, and preparation of an Emergency Action Plan (EAP) for the PAFB, Adobe Creek, Barron Creek, and Matadero Creek.

On October 29, 2018, the project team met with the City of Palo Alto, the City of Mountain View, and the SFCJPA to ensure inter-agency coordination and advance the planning, design, and construction of the Project. During the meeting the team learned that the SAFER Bay project is expected to complete planning within the next 10 to 12 years and that the Mountain View Ponds project is expected to begin construction in 2021 pending permitting. The team agreed that given the risk of failure of the tide gate structure, Valley Water should proceed with planning, design, and construction of the PAFB Gate Structure Improvements Project (Project).

A preliminary project design criteria memorandum was prepared, and it was reviewed and accepted by the City of Palo Alto, City of Mountain View, and the SFCJPA, on January 14, 2019.

In order to minimize the consequences of failure, staff prepared an Emergency Action Plan (EAP) which was reviewed and accepted by the City of Palo Alto.

Currently, Valley Water maintenance staff performs routine inspections of the PAFB levees, tide gate structure, and passive tide gates. In addition, the Project team monitors the PAFB tide gate structure every 3 to 6 months. The City of Palo Alto operates one motor driven sluice gate, and adjusts the water circulation as needed for vector control and salinity purposes.

Description

The structural engineering assessment completed in 2017 estimated that the tide gate structure should be functional for another two to three years. If the structure fails, tidal water could flood approximately 460 residences, 2 schools, 7 businesses, and Hwy 101 during two-year frequency peak high tide events. In addition to tidal flooding in low elevation areas, flooding from tributary creeks could worsen during high tide events as tidal water pushes upstream and reduces channel design capacity.

Meanwhile, the Project team engaged the same structural engineering consultant to conduct an updated structural assessment of the structure. The updated structural assessment was completed on January 13, 2020, and estimates the tide gate structure should be able to function for another couple years.

Schedule

The current schedule includes one year for obtaining permits and 18 months for preparation of CEQA documents. The goal is to begin construction of the Project by September 2021.

Alternatives Considered

The Project team evaluated three alternatives: No Action (Alternative A), New Structure Upstream of Existing Tide Gate Structure Location (Alternative B), and New Structure Next to Existing Tide Gate Structure Location (Alternative C).

The chosen Alternative will be further refined during the design phase which will include incorporation of permit conditions.

Alternative A - No Action

Alternative A is included to identify expected impacts to the tide gate structure and areas affected by failure at the tide gate structure if no project is constructed. The EAP will be implemented in case of eminent failure.

Alternative B - New Structure Upstream of Existing Tide Gate Structure Location

Alternative B includes five stages (construction seasons) to construct a new tide gate structure upstream from the existing structure as shown in Attachment 2.

Stage 1 (September 2021 - January 2022) would include installation of dewatering system B-1 to dewater the work area, excavation of levee soils, and construction of the pile foundation for the first half of the new structure. The existing structure would function as is for flows.

Stage 2 (September 2022 - January 2023) would include complete construction of the first half of the new tide gate structure and tide gates, and construction of an outlet channel, while the existing tide gate structure functions as is for flows.

Stage 3 (September 2023 - January 2024) would include removal of dewatering system B-1, installation of dewatering system B-2 to dewater the second work area, and construction of the second half of pile foundation. The first half of the new structure would bypass flows out of the flood basin in lieu of the existing structure.

Stage 4 (September 2024 - January 2025) would include removal of the existing structure, completion of construction of the second half of the new structure and tide gates, and completion of necessary soil improvements for the new levee. The first half of the new structure would continue to serve as a bypass for flows.

Stage 5 (September 2025 - January 2026) would include complete construction of the new levee and removal of dewatering system B-2.

Alternative C - New Structure Next to Existing Tide Gate Structure Location

Alternative C includes four stages (construction seasons) to construct a new tide gate structure adjacent and approximately 50 feet east of the existing structure as shown in Attachment 3.

Stage 1 (September 2021 - January 2022) would include installation of dewatering system C-1 to dewater the work area, excavation of levee soils, and construction of the pile foundation for the entire new structure.

Stage 2 (September 2022 - January 2023) would include completing construction of the new tide gate structure and tide gates, and construction of an outlet channel, while the existing tide gate structure functions as is for flows.

Stage 3 (September 2023 - January 2024) would include removal of dewatering system C-1, installation of dewatering system C-2 to dewater the second work area, removal of existing tide gate structure, and completion of necessary soil improvements for the new levee.

Stage 4 (September 2024 - January 2025) would include complete construction of the new levee and removal of dewatering system C-2.

Recommended Alternative

The Staff Recommended Alternative was determined by comparing various criteria of Alternative B and Alternative C as listed in Attachments 4 and 5. Both feasible alternatives include a new tide gate structure but are different in the location of the structure. However, Alternative C is recommended for the below reasons:

1. Alternative C construction duration would be 12 months less than Alternative B.
2. Alternative C would include less construction risk for schedule and cost overruns.
3. Alternative C would be easier to permit compared to Alternative B due to a reduced construction footprint, and shorter construction duration.
4. The total approximate project cost of Alternative B and Alternative C is \$35,598,000 and \$30,436,000 respectively. Alternative C provides an estimated \$5,162,000 in cost savings.

The project team concluded that both Alternative B and Alternative C provides the same level of flood protection for three creeks while accounting for 2 feet of additional sea level rise. However, Alternative C has the least environmental impact and is the timeliest and most cost effective. The project team recommends that Alternative C be advanced to the design and construction phases.

FINANCIAL IMPACT:

This project is currently funded from the Watersheds and Steam Stewardship Fund 12 in the FY2020 - 24 Five-year Capital Improvement Program for \$12,230,000. The current estimated total project cost for implementing Alternative C is \$32M. The estimated total project cost has increased by

approximately \$20M due to recommendations from the geotechnical investigation report and multiple years of construction. The updated total project cost of \$32,765,000 has been included in the Preliminary FY2021 - 25 Capital Improvement Program.

The project team is currently pursuing Proposition 68 grant funding up to \$6M, and has received a letter of support from the City of Palo Alto for the grant application. A similar letter of support is being sought out from the San Francisquito Joint Powers Authority (SFCJPA).

CEQA:

A Mitigated Negative Declaration is being prepared for this project.

ATTACHMENTS:

- Attachment 1: Map
- Attachment 2: Alternative B Construction Staging
- Attachment 3: Alternative C Construction Staging
- Attachment 4: Feasible Alternatives Matrix
- Attachment 5: PowerPoint

UNCLASSIFIED MANAGER:

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