Menlo Park SAFER Bay

How the Mitigation Activity will be Implemented

The proposed project involves environmental permitting, design and construction over almost four years. The challenges facing a complex project at the margin of the San Francisco Bay, in an area of high-density residency and commerce, are significant and varied.

Below are significant challenges that are expected, and the approaches that will be taken to meet them. Later in this document are discussed pre- and post-implementation monitoring strategies and specific evaluation elements to measure progress and confirm project success.

The project partners have recently and successfully implemented similar projects in the local area. Examples are provided at the end of this document.

Potential Implementation Challenge – Budget

The project cost estimate is $67 million, without contingency. The project will be implemented with funding from a variety of stakeholders and the federal government. To be successful, the project must be executed within the expected budget. The great number of activities in the project scope and the extended duration create many opportunities for inefficiencies and cost overruns. The following strategies have been implemented, and will be implemented, to avoid cost overruns.

To ensure that realistic project costs were developed, the proposed project scope and cost estimates were developed by an engineering consultant who is familiar with the scoping and execution of this kind of project. This engineering consultant successfully completed the design and construction management for the San Francisquito Creek Flood Protection Project in 2018, and is the design engineer for the East Palo Alto SAFER Bay Project and the USACE South Bay Shoreline Levee Design Project.

Where feasible, partnership staff will execute activities within the scope of work. Partnership staff are typically more cost effective because their hourly rates do not carry the same mark-ups as consultants. For this project specifically, the public outreach and right-of-way negotiation activities have been identified as suitable for partner staff to conduct. Specifically, the San Francisquito Creek Joint Powers Authority (SFCJPA) will conduct public outreach. SFCJPA have conducted the public outreach for the SAFER Bay program and continue to do so (Attachment – Menlo Park SAFER Bay Outreach Activities). The City of Menlo Park (CMP) will conduct the right-of-way acquisition negotiations.

The single greatest cost driver of construction is the cost of levee fill material. To reduce this cost the project will source a proportion of fill material at no cost from local construction and development projects with surplus fill material. This approach was successful in constructing the San Francisquito Creek Flood Protection project levees built by the SFCJPA and other partners in 2018. The project construction schedule has been extended to two years in large part to support this approach – the quantity of local no-cost fill in any given year is finite, so by spreading construction across two years there is likelihood for a greater available quantity of no-cost fill.

When engaging consultants to execute the environmental and engineering scope a detailed and competitive proposal process will be executed. Proposers will be asked to explain in detail their approach to the work and any innovative approaches for efficiency or cost reduction. In this way it is possible that the project may be executed at a reduced cost. Proposers will also be required to provide detailed cost estimates to complete the project scope, which will then be used to track progress and identify risk and opportunities during execution.

When engaging contractors to execute the construction scope, the bidding process will invite contractors to propose innovative or alternate approaches to construction to reduce costs, schedule and/or community impacts. In this way it is possible that the construction project may be executed at a reduced cost. Bidders will also be required to provide detailed bids and schedules to complete the construction project, which will then be used to track progress and identify risk and opportunities during execution.

A Construction Manager (CM) will be engaged during final design in order to be available to support the bidding process and review contractor bids. The CM will advise on the feasibility contractor bids, schedules and proposed approaches to the work. By selecting the most realistic and cost-effective bid the project will avoid cost overruns through change orders and/or contractor failure to perform.

Potential Implementation Challenge – Permitting

The Environmental and Historic Preservation (EHP) section of this application details the real and potential impacts of the proposed project, and the many agencies that must approve the project. While the project will create valuable tidal marsh habitat and enhance breeding habitats for endangered species, the project will be constructed near to and on existing habitat at the edge of the San Francisco Bay and require detailed justification of conformance with the regulatory requirements of several agencies. Beneficially to this cause, the U.S Army Corps of Engineers; U.S. Fish and Wildlife Service; National Oceanic and Atmospheric Administration; San Francisco Bay Regional Water Quality Control board; CA Department of Fish and Wildlife; San Francisco Bay Conservation and Development Commission; U.S. Environmental Protection have teamed together to form the San Francisco restoration regulatory Integration Team (BRRIT), with the purpose of improving the permitting process for multi-benefit habitat restoration projects and associated flood management projects in the San Francisco Bay. In order to ensure that the project design meets the requirements of the permitting agencies, regular coordination with the BRRIT will be sought from the early stages of design. Partners involved in the proposed project have experience working with the BRRIT to

design similar projects. Specifically, the SFCJPA has engaged the BRRIT during 30% design for other reaches of the SAFER Bay Program, and received detailed feedback to guide the design toward being successfully permitted. Correspondence detailing these exchanges is provided in the EHP section of the application. When selecting consultant teams, attention will be paid to the experience that both environmental and engineering consultants have had with permitting local multi-benefit flood control projects, and working with the BRRIT in particular.

Potential Implementation Challenge – Constructability

Project Constraints

The project site is constrained by a major highway, an electrical substation, major commercial buildings, and a recreational trail which runs almost the entire length of the alignment (Attachment – Menlo Park SAFER Bay Site Plans and Sections). It will be challenging to design a project that minimizes permanent impacts to these facilities, and a challenge to minimize temporary impacts during construction. The project scope includes an initial public scoping meeting and allows for early, often and thorough community engagement throughout the project to solicit community and stakeholder feedback that can be incorporated into the design and into the construction approach (Attachment – Menlo Park SAFER Bay Outreach Activities).

The SAFER Bay Program Feasibility Study (Attachment – SAFER BAY Public Draft Feasibility Report, 2016) has already identified constraints and accompanying alternative alignments and design configurations for the reaches covered by this proposed project, so this project has a head start in this regard. For example, Reach 4 around the Facebook campus is particularly constrained between the tidal pond R3 and the paved parking lot. An alternative design solution already identified in the feasibility study is to combine a floodwall with an exterior transition zone and an elevated interior berm for the recreational bay trail, in order to minimize the width of the constructed footprint yet maintain the green infrastructure and recreational components.

Community Impact

In the densely populated area around the project, it is anticipated that the community will voice opposition to heavy haul truck and construction activity that disrupts their travel, work and home lives. The schedule for the proposed project anticipates the need to minimize impacts to the local community by staging construction over two years. By extending the schedule, the daily number of haul trucks and other vehicles that must enter the site is reduced, and the daily hours over which the site must operate are also reduced. Hence, traffic congestion, noise pollution and air pollution are reduced, and safety on the site and in the community is improved. A robust public outreach program though design and construction will help to further refine the construction schedule and sequencing.

Construction Schedule

Due to the regional and local conditions at the project site, there are periods of time in which construction activity will not be possible. Some constraints are unknown and must be assumed (such as wet weather precluding earthwork), while some constraints are clearly specified (breeding seasons of special-status species). The proposed project schedule shows continuous construction for twenty-two months, but anticipates that for several months of each year construction will pause entirely. As design progresses and construction phasing becomes more defined it is likely that certain construction activities will be identified that can continue and progress can be made, thus shortening the construction schedule or creating float to minimize risk.

Levee Fill Material

As discussed above in the context of budget, the proposed project cost estimate assumes that some levee fill material will be obtained at no cost from local construction projects with surplus fill. When bidding and contracting with a contractor, this requirement will be negotiated with the contractor and built into the contractor's bid schedule. In this way, the risk of obtaining sufficient no-cost fill is passed to the construction contractor, who is best-placed to mitigate that risk. As discussed below, a risk management process will be conducted throughout construction in which the entire project team will work to mitigate risks, and having the contractor directly incentivized to source no-cost fill is the best approach to this specific risk.

Potential Implementation Challenge – Resources and Skill Sets to Deliver a Complex Design and Construction Project

As discussed above in the context of budget, there are some tasks that can be effectively undertaken by the partnership staff, namely public outreach and right of way acquisition negotiations. Additionally, the sub-applicant will provide a qualified accountant and project controller to manage the project finances and contracting.

To effectively execute the remainder of the project scope the sub-applicant intends to contract with qualified consultants through a competitive selection process. It is anticipated that not more than three separate consultant teams would be engaged, for environmental documentation and permitting, engineering and design, and construction management, respectively. It is possible that a single consultant team will perform both environmental and engineering services, and this may be beneficial from the perspective of coordination and efficiency in permitting. It is possible that a single Consultant team will perform engineering and construction management; this provides for efficiency of submittal and RFI management, but may be undesirable from a conflict point of view if significant changes are encountered during construction.

Each consultant team will need to show superior experience and skills, a track record of success with similar projects, and the available resources to successfully deliver this project. Each team will be required to explain in detail their understanding and approach to the project, in written proposal

and live interview. The project partners will look for innovative approaches to reduce cost, schedule and impacts.

Design Phase Monitoring and Evaluation Strategies

Several activities and processes will be incorporated into the design phase of the project to ensure that the project is designed to meet performance goals and the needs of the stakeholders.

- A public outreach plan will be developed immediately upon project commencement, and detailed public feedback will be sought throughout the design process. Additionally, a public scoping meeting will be held within 3 months of project commencement. By understanding the needs of the public and other stakeholders at early stages of design, the project can be deigned to accommodate those needs.
- Prior to the start of 30% design, a Design Criteria Memorandum (DCM) will be developed that summarizes the design criteria and performance metrics that will guide the development of plans, specifications, and cost estimates for the project. Design criteria will be defined for all project components. Additionally, the DCM will specify the codes and standards to be used for the project. The DCM will be finalized early in the design process and will serve as a benchmark to ensure that, as the design progresses, the design meets all project requirements and applicable standards.
- Quality management in design is key to project success. When considering proposals from engineering and environmental consultants, the sub-applicant will rank proposals based on proposers' approach to quality management. Upon receiving Notice to Proceed (NTP), consultants will be required to develop and submit a detailed Quality Management Plan (QMP) for their scope and deliverables. QMPs must detail the overall quality process, detail the work items and deliverables that will be subject to the process, and specify the reviewers for each item and the schedule for those reviews. QMPs will be subject to review and approval by the sub-applicant, to ensure that the adopted plan is suitable. Consultants will be responsible for implementing the approved QMP within their respective teams.
- Environmental and Engineering consultants engaged on the project will be required to submit monthly written reports summarizing the status of work progress, budget, schedule, quality management, upcoming activities, and any potential project issues or risks. The reports will identify and discuss any deviations from the baseline project budget, schedule and/or QMP. These monthly reports will be the primary tool for formal tracking of project progress, and the identification of deviations or issues.
- During final design the sub-applicant will conduct a Risk Workshop between the project partners and the environmental and engineering teams. The risk workshop will brainstorm and discuss potential risks to the project during construction. A risk register will be developed that, at a minimum, for each risk, describes the risk, categorizes the probability and impact severity of the risk, identifies the factors influencing the probability and impact severity, identifies potential mitigation actions, and assigns a risk owner to explore and execute those mitigation actions. The value of starting the construction risk mitigation process in final design is that it can inform the final contract documents and bidding process. It is likely that mitigation actions will include, for example, additional language in specifications, shifting certain responsibilities to the contractor, and/or ensuring that costs that might vary are captured as bid items. The risk register developed in final design can

form a basis for the risk management process that the Construction Manager (CM) is expected to conduct during construction

Construction Phase Monitoring and Evaluation Strategies

Several activities and processes will be incorporated into the construction phase of the project to ensure that the project is constructed in accordance with design as far as possible, where design deviations are required the design intent is met, and stakeholders and the community are not unduly impacted by the construction project.

- A qualified Construction Management (CM) Team will be engaged to oversee the implementation of the construction contract. Among other things, the CM will
    - Oversee the construction contract administration and assess change requests from the contractor,
    - Implement a Quality Assurance (QA) program to verify the construction quality,
    - Review contractor schedules and pay applications for accuracy and to identify issues, and
    - Provide staff on-site to ensure that the environmental permits are complied with and that community impacts are minimized.

  Engaging a qualified CM to focus on these activities minimizes the risk of schedule losses and cost overruns, unnecessary claims and litigation, sub-standard work, negative community perception, and permitting agency fines.

- The CM will host weekly meetings with the sub-applicant to report on and discuss current and upcoming work activities and issues, active change order requests, submittals and RFIs, and any deviations from baseline schedule and budget. These meetings will allow the sub-applicant to understand and take action on any issues at an early stage.
- The CM will be tasked with implementing a risk management process through construction, involving project partners and the design and environmental teams. Similarly to the risk workshops undertaken in final design, this risk management process will develop a risk register and conduct regular workshops to discuss and update the risk register, and identify and new risks and appropriate mitigation actions and owners. The risk register will include, but not be limited to, risks associated with geotechnical issues, materials availability, contaminated soils, Caltrans conflicts, permit requirements, negative public perception, excessive weather impacts etc. By looking forward to anticipate risks and develop mitigation strategies before those risks are realized, the construction project has a greater chance of meeting goals of schedule, budget, quality, community support and stakeholder satisfaction.
- The CM will provide a Monthly Report containing, but not limited to, details of recent and current work activities, summary of work completed to date, schedule analysis, Contractor payment request with comment, construction budget analysis, status of submittals and RFIs, status of change order requests and summary of the project Risk Register. The monthly reports provide a record of project progress and issues that can be referenced for detail that may be missed in the weekly construction meetings, and can be shared with others who may not attend the weekly construction meetings.

Post-Construction Monitoring and Evaluation Strategies

- An Operations and Maintenance (O&M) Plan will be implemented by the sub-applicant following completion of construction. The O&M Plan will be developed by the engineering consultant during design, and will be reviewed and finalized by the engineering consultant close to substantial completion of construction to take into account the final as-built conditions of the project. The O&M Plan will identify and describe the activities required for thorough inspection of levees, floodwalls, floodgates, access roads and recreational paths, and will specify activities for typical maintenance of those facilities, such as vegetation repair, control and repair of animal burrows, corrosion prevention exercising of gates. The O&M Plan will provide recommended schedules for inspection and maintenance activities (**SOW Attachment 12– Menlo Park SAFER Bay Operations and Maintenance**).
- The sub-applicant commits to funding and implementing the O&M Plan. The sub-applicant does not currently employ appropriate staff for O&M of levees and floodgates, and intends to discuss with the other project partners the best way to provide such staff, which may be to make hires.
- The construction contract will include warranty for mechanical components such as floodgates (likely a 2 year period), and for establishment of vegetation such as hydroseed and transition zone plantings (likely a 1-year period). If the sub-applicant's O&M inspections identify deficiencies or deterioration of gates or vegetation in those warranty periods, the Contractor will be required to address those issues, promptly and at no additional cost.

Examples of Successfully Completed Projects

Project Name:	San Francisquito Creek Flood Protection project
Project Elements:	Removal of existing levees; construction of new levees and floodwalls to USACE criteria for flood protection including allowance for sea level rise near the river mouth; overflow channels for tidal marsh habitat enhancement; enhancement of the Bay Trail recreational trail.
Project Partners:	San Francisquito Creek Joint Power Authority (SFCJPA), City of East Palo Alto (EPA), Santa Clara Valley Water District (SCVWD)
Project Scope:	Environmental documentation and permitting, geotechnical investigation, design, construction, construction management, engineering during construction.
Project Schedule:	2009 - 2018

The San Francisquito Creek Project is just a few miles south of the proposed Menlo Park SAFER Bay Project. Completed in 2018, it provides flood protection to the community of East Palo Alto from the San Francisquito Creek. The creek was prone to flooding during storm events, so the project designed and constructed levees and floodwalls along the creek to protect against the 100-year storm event, and incorporated 100-year tidal flooding and sea level rise into the levee elevations near the creek's outfall to the bay. The project also replaced the pedestrian bridge across the creek and enhanced the recreational Bay Trail within the project area. Designing and constructing near the San Francisco Bay required the same regulatory permitting that the Menlo Park SAFER Bay Project

will require, and posed the same challenges to sourcing fill material. The San Francisquito Project was successful in obtaining a portion of their levee fill at no cost. The San Francisquito Creek Joint Powers Authority (SFCJPA) were a lead partner on that project, and contracted directly with the engineering firm who delivered it. The SFCJPA bring that recent and successful experience to the proposed Menlo Park SAFER Bay project.