

Review Plan U.S. Army Corps of Engineers South Pacific Division San Francisco District

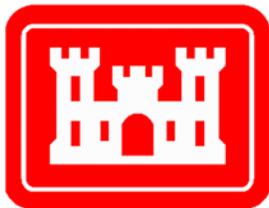
South San Francisco Bay Shoreline Review Plan

Plans, Specifications, and DDR

MSC Approval Date: *26 April 2019*

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1. Purpose and Requirements

a. Purpose

This Review Plan (RP) for the South San Francisco Bay Shoreline Project will ensure a quality-engineering project is developed by the Corps of Engineers in accordance with EC 1165-2-217, "Review Policy for Civil Works". The Review Plan shall layout a value added process that assures the correctness of the Plans, Specifications, and Design Documentation Report. This Review Plan describes the scope of review for the current phase of work, and is included in the Project Management Plan (P2 #458135). The District Chief of Engineering has assessed that risk of the project is significant; therefore a Safety Assurance Review (SAR) will be required. This review plan supplements previously approved Review Plan for Reach 1 of the Shoreline Project, extending review continuity through project conclusion.

a. Guidance and Policy References

- EC 1165-2-214, Civil Works Review, 15 December, 2012
- EC 1165-2-217, Review Policy for Civil Works, 20 February 2018
- ER 1110-1-12, Quality Management, 31 Mar 2011
- ER 1110-2-1150, Engineering and Design For Civil Works Projects, 31 Aug 1999
- EM 1110-2-1913 Design, Construction, and Evaluation of Levees, 30 April 2000
- South San Francisco Bay Shoreline Project PMP (Draft)
- 08506-SPD, District Control/Quality Assurance (DQC) of Engineering Products

b. Requirements

This review plan was developed in accordance with EC 1165-2-217, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines five general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), Bidability, Constructability, Operability, Environmental and Sustainability Review (BCOES) and Policy and Legal Compliance Review. The RP identifies the most important skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project. This Review Plan should be provided to PDT, DQC, ATR, and IEPR Teams.

c. Review Management Organization

The USACE Risk Management Center (RMC) is the Review Management Organization (RMO) for this project. Contents of this review plan have been coordinated with the RMC



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and the South Pacific Division, the Major Subordinate Command (MSC). In- Progress Review (IPR) team meetings with the RMC, SPD, and HQ will be scheduled on an “as needed” basis to discuss programmatic, policy, and technical matters. The SPD DST Lead (with support from the SPD Levee Safety Program Manager) will be the POC for vertical team coordination. San Francisco District will assist the RMC with management of the ATR and IEPR reviews and development of the draft ATR and IEPR funding requirements.

2. Project Description and Information

a. Project Description

The project is located in Alviso, California approximately 8 miles north of downtown San Jose, California. The project was recommended for implementation in the December 2015 Chief’s Report, and subsequently authorized for construction in WRDA 2016. The South San Francisco Bay Shoreline project is a multi-purpose flood risk management (FRM) ecosystem restoration (ER), recreation project. The FRM project features include approximately 4 miles of levee, including two flood closure structures. The FRM features will form a complete line of tidal flood risk reduction and connect to existing riverine FRM structures on the Guadalupe River and Coyote Creek. The ER project features will restore approximately 2,900 acres of former salt ponds to tidal action. The ER features will include in-pond structures and grading to facilitate tidal marsh restoration, and a transitional habitat fill (i.e. “ecotone”) abutting the waterside slope of the new FRM levee. The planned implementation sequence is (i.) construction of FRM features, (ii.) construction of transitional habitat fill, and (iii.) phased breaching of former salt ponds to tidal action.

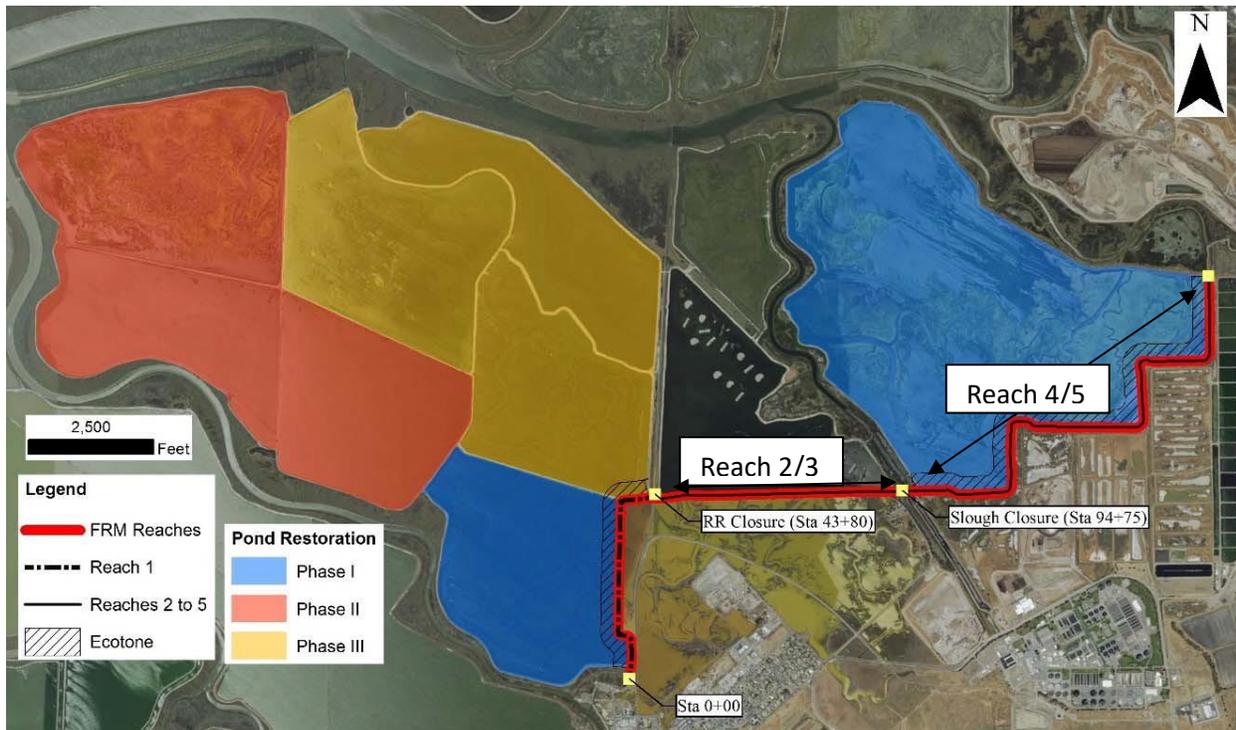


Figure 1: Location map of significant project FRM and ER features.

The implementation of project FRM elements is anticipated to occur in five distinct design and construction efforts as follows:

- Reach 1 Levee – Alviso County Marina Park to Union Pacific Railroad (UPRR) crossing
- Reach 2 & 3 Levee – UPRR crossing to Artesian Slough
- Reach 4 & 5 Levee – Artesian Slough to Coyote Creek FRM Levee
- UPRR Closure Structure
- Artesian Slough Closure Structure

The ponds will be restored by allowing tidal pond fluctuations to provide wetland habitat in order of Phase 1 to Phase 3 as shown on Figure 1. After the initial FRM features and ecotone (environmental berms) are constructed the ponds identified in Phase 1 will be breached to allow tidal pond fluctuations with the bay. Upon meeting certain performance criteria, the ponds identified in Phases 2 and 3 will be sequentially breached for the restoration.

The scope of this review plan is for the design of the Reach 2/3 Levees, Railroad Flood Gate and Pedestrian Bridge Crossing, Reach 4/5 Levees, Artesian Slough Flood Gate Crossing, and Ecotone fill. A brief description of each of the main project features is presented below:



Reach 1

Reach 1 consists of approximately 4400 feet of levee between the Alviso Marina and the UPRR. Reach 1 review is discussed in the previously approved Reach 1 review plan. Ecotone is planned on the bay side of the levee.

Reach 2/3 Levee

Reach 2/3 levee is approximately 4,000 feet long and will extend from the UPRR on the west edge to the Artesian Slough on the east. The levee will separate New Chicago Marsh from Pond A16. Ecotone is not planned for this reach of the project. The reach is divided by a water control structure that will allow some water from pond A16 to flow to the New Chicago Marsh wetland area. The levee will be designed with a final crest elevation of 15.2 feet, a crest width of 16 feet, and 3:1 (H:V) side slopes. This portion of the project is being designed by CESPEN Engineering Staff.

Rail Road Closure

The UPRR tracks located between Reach 1 and Reach 2/3 have a crest elevation of about 7 feet, and will need a flood gate to prevent flooding in large storm events. The gate will likely be a miter-gate type design spanning across the entire rail road right of way of approximately 90 feet. Additionally the rail road tracks will need to be crossable by pedestrians, and an ADA accessible pedestrian bridge is planned to cross the rail road right of way. The flood gate and pedestrian bridge will be designed by AE consultants under contract to USACE.

Reach 4/5 Levee

The Reach 4/5 levee is approximately 4,500 feet long and will extend from the Artesian Slough on the west to the Coyote Creek Levee on the east. The levee will form the southeast edge of Pond A18. Ecotone is planned for this reach of the project. It will be constructed on the bay side of the levee with a 30:1 H:V slope. The reach is divided 4 and 5 based on difference in foundation soil conditions. One contract package is planned for the 4/5 construction contract. The levee will be designed with a final crest elevation of 15.2 feet, a crest width of 16 feet, and 3:1 (H:V) side slopes. Reach 4/5 may be designed by an AE consultant or CESPEN staff depending on the CESPEN workload at the time of design.

Artesian Slough Closure

The line of flood protection will cross the Artesian Slough between Reach 3 and Reach 4 of the project. Artesian slough is used to discharge the San Jose Waste Water Treatment Plant (WWTP) effluent to the bay. The crossing, approximately 300 feet in length will be designed to minimize hydraulic impacts to the WWTP effluent flows utilizing gates that close only in flood events. The gates have not been designed yet, but are likely to consist of slide gates. The structure will be designed by an AE consultant under contract to USACE.

Ecotone

Ecotone will be designed by the non-federal sponsor (NFS) and will be constructed on the bay side of Reach 1 and Reach 4/5. Eco tone is a 30:1 slope constructed on the bay side

of the levees to provide habitat transition for ecosystem restoration. Ecotone will be largely constructed using on-site excavation spoils.

b. Project Sponsor

The non-federal sponsor for the FRM elements of the project is the Santa Clara Valley Water District (SCVWD). The California State Coastal Conservancy is an additional NFS for the environmental restoration portions of the project. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. In-kind contributions will be limited to the ecotone environmental restoration design.

c. USACE Project Design Team (PDT)

The engineering design of Reach 2/3 will be performed by USACE staff directly, with independent staff reviewers performing DQC. The Reach 4/5 engineering design is pending decision for contracted A&E firm or in-house design. UPRR Railroad Crossing and Artesian Slough will be contracted to an independent A&E firm. It is feasible and recommended to maintain the same ATR and IEPR staff across all Shoreline Project designs.

d. AE Project Design Team (PDT)

Any AE retained to provide parts of projects will be required to submit a Quality Control Plan. All AE products will require certificates of quality review, similar to consultant review plan and process provided for the Reach 1 A&E design effort. USACE District technical POCs for A&E contracts will be selected as the staff most experienced and qualified for the related work (e.g. structural background staff as POC for AE structural design work). The USACE District contracting officer will provide a contracting representative qualified to represent the USACE for the A&E contracts.

3. District Quality Control

a. Requirements

All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo a DQC. DQC activities will occur on the 30, 60, 90, and 100 % design submittals of each project element as well as the project Operations and Maintenance Manual. DQC will also be performed for the Engineer Considerations and Instructions to Field Personnel (ECIFP). All computations, drawings or sketches shall undergo a rigorous independent check as part of the standard Quality Control (QC) process. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, QC should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Quality Checks include a review of the alternatives considered, schedules, budgets, means and methods of construction, and to ensure that lessons learned are considered. DQC is ensuring the math and assumptions are correct by having a checker initial each sheet of the computations. Checking is accompanied by a red dot, check mark or similar annotation next to the item that has been checked. For drawings the checker shall place a red dot, check mark or similar annotation on each



dimension/elevation, note or reference showing concurrence with the correctness of the information shown. Additionally, the PDT is responsible to ensure consistency and effective coordination across all project disciplines during project design and construction management. Contracted AE firms are responsible for performing quality control review. The District will perform QA review of AE designs. The District DQC team consists of SPN District staff with relevant expertise. The USACE DQC team members are listed in Attachment 2.

b. Documentation

Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC. The 30% review comments will be captured in a memorandum for record (MFR) to the design team. All remaining DQC review efforts will capture substantive comments in DrChecks. Editorial or other than substantive comments will be consolidated into a single Word file and attached to a single DrChecks comment. Review comments will be evaluated/responded to by the design team prior to progressing to the next design submittal. Revisions that result from comment resolution will be backchecked by reviewers at each subsequent review effort. DQC will be certified following the submission of the 100% design submittal for each project element to demonstrate the resolution of all comments.

4. Agency Technical Review

a. Requirements

ATR is mandatory for all implementation documents (including supporting data, analyses, environmental compliance documents, etc.). ATR activities will occur on the 90 and 100% design submittals of each project element as well as the project Operations and Maintenance Manual. The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct, went through robust DQC, comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. The PDT should obtain ATR agreement on key data such as hydraulic and geotechnical parameters early in design process. The goal is to have early involvement of the ATR team, especially when key decisions are made. The ATR Lead should be invited virtually to all PDT meetings, in order to understand the design efforts and to know when to engage other ATR members for concurrence on key decisions. Value added Lessons Learned from the ATR team should be shared early on to have the best chance of being adopted by the PDT. Most of the ATR effort should be accomplished midway through the design effort; after completion of design the ATR effort will check that the agreed level of completeness at mid-point was accomplished. This is consistent with the requirement that the ATR members shall not be involved in the day-to-day production of the project/product. A site visit will be scheduled



ATR Staff with appropriate technical expertise, as provided by the RMC will be used for ATR review. The ATR team will be augmented with additional expertise added to the team as needed for various technical aspects. Proposed ATR team members are listed in Attachment 2.

b. Documentation of ATR

DrCheckssm review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments will be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

c. Comment Resolution

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist. The ATR documentation in DrCheckssm includes the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrCheckssm with a notation that the concern has been elevated to the vertical team for resolution and noted in the ATR Certification Report.

d. Products to Undergo ATR

The Plans, Specifications, and DDR for each project element will undergo ATR.

e. Required ATR Team Expertise and Requirements

ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC. The ATR team will be chosen based on each individual’s qualifications and



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experience with similar projects. All ATRreviewers will be certified in CERCAP:
https://team.usace.army.mil/sites/ERDC-CRREL/PDT/atr_certification/default.aspx.
See Attachment 2 for ATR members. Table 1 summarizes the review expertise for
anticipated to be needed each part of the project. Other reviewers will be added, as
needed.

Table 1. ATR Staffing Matrix

Specialty	Reach 2/3 Levee	Reach 4/5 Levee	RR Flood Gate	Artesian Slough Flood Gate	Pedestrian Bridge	Ecotone
Lead	x	x	x	x	x	x
Geotechnical	x	x	x	x	x	x
Civil	x	x	x	x	x	x
Cost	x	x	x	x	x	x
Structural			x	x	x	
Construction	x	x	x	x	x	
H&H	x	x	x	x		
Biology	x	x				x

ATR Lead: The ATR team lead is a senior professional outside the home MSC with extensive experience in preparing Civil Works documents and conducting ATRs. The lead has the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline, in this case:

Geotechnical Engineer - shall have experience in the field of geotechnical engineering, analysis, design, and construction of coastal FRM projects and experience in the field investigations for, and evaluation of, earth structures in marine environments. The geotechnical engineer shall have specific knowledge and experience with the analysis of seepage, stability, and consolidation settlement associated with the design and construction of levees on soft soil foundations. The Geotechnical reviewer should be a registered engineer and have a minimum of 10 years of experience.

Civil Engineer – Reviewer should be a senior level professional, with specific experience in the civil layout, design, and execution of horizontal civil works projects including experience with sequencing levee construction on soft soils. The reviewer should have a minimum of 10 years of experience.

Hydraulics and Hydrology Engineer – Reviewer should be a senior level professional, with specific experience in the coastal flood protection projects including experience with sea level rise. The Civil reviewer should have a minimum of 10 years of experience.

Structural Engineer – Reviewer should be a senior level professional, with specific experience in the design of hydraulic structures including flood gates, and other closure structures. For the pedestrian bridge, the ATR review shall have experience in bridge design. The structural reviewer(s) should have a minimum of 10 years of experience.

Construction Engineer – Reviewer should be a senior level professional, with specific experience in the engineering construction field with particular emphasis on levee construction on soft soils. The Construction reviewer should have a minimum of 10 years of experience.



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Biologist – Reviewer should be senior level professional, with specific experience in federal and California laws/regulations as they relate to environmental compliance for construction permitting. The Biologist should have experience with the implementation of best management practices for care of water and wildlife exclusion in environmental sensitive areas. The Biologist should have a minimum of 10 years of experience.

Cost Engineering. At 100 design submittal(s) by phase, The ATR review will include a cost engineering review. SPN will coordinate with the ATR lead and Walla Walla Cost Engineering Center of Expertise to identify a cost engineer to review the consultant cost estimate.

f. Completion and Certification of the ATR

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- (1) Identify the document(s) reviewed and the purpose of the review;
- (2) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- (3) Include the charge to the reviewers;
- (4) Describe the nature of their review and their findings and conclusions;
- (5) Identify and summarize each unresolved issue (if any); and
- (6) Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR lead will prepare a completion of ATR and Certification of ATR to be included in the report. It will certify that the issues raised by the ATR team have been resolved (or elevated to the vertical team). The completion and certification should be completed based on the work reviewed to date for the project. A Sample Completion of ATR and Certification of ATR is included in Attachment 1.

5. Independent External Peer Review (IEPR)/Safety Assurance Review (SAR)

a. Decision on Type II IEPR

A Type II IEPR Safety Assurance Review (SAR) will be performed during the Implementation Phase on the design and construction activities associated with the following features: plans and specifications, the Design Documentation Report (DDR), supporting data, and analyses. IEPR will be performed for all project major features except ecotone. A risk-informed decision was made as to whether IEPR is appropriate based on the factors to consider for conducting a Type II IEPR review that are outlined in EC 1165-2-217, pages 46-47, Section (1) thru (3).

A risk informed decision was made that this project does pose a significant threat to human life (public safety) since failure and/or misoperation of the project features poses a significant threat to life safety, and to critical infrastructure. The town of Alviso, CA (population at risk ~ 2,000) occupies a floodplain of with average elevations below normal high tides (i.e. ~ 8 ft NAVD88). In addition, the planned levee will provide FRM for the City of San Jose Wastewater and Pollution Control Plant (WPCP) servicing a daily load of approximately 85 million gallons. The levee system acts as primary line of flood risk reduction to the full time residents of Alviso, CA, as well as transient daytime population to local businesses and the WPCP.

For a Type II IEPR the selection of IEPR review panel members will be made up of independent recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of expertise suitable for the review being conducted. The selection of IEPR review panel members will be selected using the National Academy of Science (NAS) Policy which sets the standard for “independence” in the review process. A site visit will be scheduled for the IEPR Team.

b. Scope of Safety Assurance Reviews

SARs will occur at the following project milestones: (i) Completion of plans by phase, specifications, and (ii) at the midpoint of construction (by phase).

c. Products to Undergo Type II IEPR

The plans and specifications, DDR, supporting data, and analyses will undergo IEPR panel will review for each element of the Shoreline project by phase.

d. Required Type II IEPR Panel Expertise

The following provides an estimate of the Type II IEPR panel member and associated expertise that should be represented on the review panel. The panel member shall be recognized as an expert in their field, and have specialized experience pertaining to the work being performed in this project. In addition the panel member should have an advanced degree and be professionally registered. It is intended that the same IEPR panel



will be utilized for all parts of the project, with additional expertise added as necessary for specialized project components (i.e. railroad flood gate).

Geotechnical Engineer - The Geotechnical Engineering panel member should be a senior-level geotechnical engineer with experience in the field investigations for, and evaluation of earth structures in marine environments in the field of geotechnical engineering, analysis, design, and construction of levees. The Panel Member should have specific knowledge and experience with the analysis of seepage, stability, and consolidation settlement associated with the design and construction of levees on soft soil foundations. The Panel Member should have field experience in methods, and proper oversight, construction activities to sequence and execute all efforts associated with the construction of levees in coastal/estuarine environments.

Structural Engineer - The Structural Engineering panel member should be a senior-level engineer with experience in the design of hydraulic structures and bridges. If one member does not have experience in both areas different structural engineers will be used for flood gates and pedestrian bridge. The Panel Member should have specific knowledge and experience with the analysis of seepage, stability, and consolidation settlement associated with the design and construction of levees on soft soil foundations. The Panel Member should have field experience in methods, proper oversight, and construction activities to sequence and execute all efforts associated with the construction of levees in coastal/estuarine environments.

Additional specialists may be added if requested or recommended by the IEPR reviewers.

Table 2. IEPR Staffing Matrix

Specialty	Reach 2/3 Levee	Reach 4/5 Levee	RR Flood Gate	Artesian Slough Flood Gate	Pedestrian Bridge	Ecotone
Lead and Geotechnical	x	x	x	x	x	
Structural			x	x	x	
Other Specialists, as needed	x	x	x	x	x	

e. Documentation of Type II IEPR

The Type II IEPR will be managed by an AE firm or Government entity which meets the criteria set forth in EC 1165-2-217. DrCheckssm review software may be used to document the Type II IEPR comments and aid in the preparation of the Review Report but is not required.



Comments should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. Type II IEPR comments should generally include the same four key parts as described for ATR comments in Section 4. An A/E contractor or Government Entity will be responsible for compiling and entering comments into DrCheckssm.

No later than 60 days following each milestone, the Type II IEPR panel will prepare a Review Report that will accompany the publication of the final report for the project and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

This review report, including reviewer comments and a recommendation letter will be provided to the RMC as soon as they become available. Written responses to the IEPR Review Report will be prepared to explain the agreement or disagreement with the views expressed in the report, the actions undertaken or to be undertaken in response to the report, and the reasons those actions are believed to satisfy the key concerns stated in the report (if applicable). These comment responses will be provided to the RMC for concurrence. The revised submittal will be provided to the RMO with the USACE response and all other materials related to the review.

The San Francisco District's responses shall be submitted to the South Pacific Division for final MSC Commander Approval. After the MSC Commander's approval, the District will make the report and responses available to the public on the District's website located at the following <http://www.spn.usace.army.mil/Missions/Projects-and-Programs/Independent-External-Peer-Review-Reports/>.

6. Policy and Legal Compliance Review

All implementation documents will be reviewed throughout the project for their compliance with law and policy. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies.

7. Value Engineering

A value engineering study (VE) was performed February 28 to Mar 2, 2017. The study report is attached as Attachment 4 and was comprehensive for the entire project.

From the study, the RR crossing features are deferred until other phases of the project (VE recommendation 2a) are implemented. Also, the recommendation to reduce foundation excavation by using geo-grid is being incorporated to reduce project fill requirements (VE recommendation 3).

8. Review Schedule and Costs

a. Schedule of Reviews

To the extent practical, reviews should not extend the design schedule but should be embedded in the design process. Reviewers should be involved at key decision points and are encouraged to provide timely over the shoulder comments. It is planned that Reach 2/3 design will follow Reach 1 one by several months, with Reaches 4/5 and the closure structures approximately 1 year behind Reach 2/3. These schedules may be modified based on funding and other project constraints.

Table 3. Estimated Review Schedule

	Project Phase	Review Start Date	Review End Date
Reach 2+3	DQC Review (30%, 60%, 90%, and 100%)	JAN 2019	NOV 2019
	ATR Review (60% and 90%)	MAR2019	NOV 2019
	IEPR (60% Design)	APR 2019	NOV 2019
	BCOES	JAN 2019	DEC 2019
	IEPR (Construction)	NOV 2019	NOV 2019
Reach 4+5	DQC Review (30%, 60%, 90%, and 100%)	MAR 2020	JAN 2021
	ATR Review (60% and 90%)	AUG 2020	FEB 2021
	IEPR (60% Design)	AUG 2020	FEB 2021
	BCOES	MAR 2020	DEC 2021
	IEPR (Construction)	FEB 2021	FEB 2021
Artesian Slough	DQC Review (30%, 60%, 90%, and 100%)	DEC 2019	JAN 2021
	ATR Review (60%, 90%)	OCT 2020	JAN 2021
	IEPR (60% Design)	OCT 2020	JAN 2021
	BCOES	DEC 2019	SEP 2021
	IEPR (Construction)	JAN 2021	JAN 2021
Railroad Crossing	DQC Review (30%, 60%, 90%, and 100%)	JUN 2019	JUL 2020
	ATR Review (60%, and 100%)	DEC 2019	JUL 2020
	IEPR (60% Design)	DEC 2019	JUL 2020
	BCOES	JUN 2019	JAN 2022
	IEPR (Construction)	JUL 2020	JUL 2020
Ecotone Fill + Breach	DQC Review (30%, 60%, 90%, and 100%)	MAR 2020	APR 2021
	ATR Review(60%, 90%)	AUG 2020	JAN 2021
	BCOES	MAR 2020	NOV 2023

b. ATR Schedule and Cost

The preliminary review schedule is listed in the provided in the table in paragraph a. of this section. ATR will be funded as appropriate to allow reviewers appropriate time to review and coordinate responses and backchecks. For updates to the schedule and cost of the ATR please see the monthly p2 schedule. Total ATR costs are estimated to be on the order of \$200,000.

c. IEPR Schedule and Costs

A Type II IEPR will be required for this project. Initial indications are that the estimated cost for the Type II IEPR during design is about \$25,000 to \$50,000 for each design feature to scope, procure, and execute, for a total of about \$200,000. The IEPR Type II contractor will be involved with the project through the construction phase and into the OMRRR phase. More specific milestone dates will be added in the future during the construction phase, but it can be assumed to occur near the mid-point of construction and near the end of construction.

9. Public Participation of Review Plan

As required by EC 1165-2-217, the approved Review Plan will be posted on the District public website (<http://www.spn.usace.army.mil/Missions/Projects-and-Programs/Project-Review-Plans/>). The public will have an opportunity to provide comments on the documents; after all comments have been submitted, the comments will be provided to the technical reviewers. This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. This engagement will ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the federal government.

10. Review Plan Approval and Updates

The MSC for this is the South Pacific Division. The MSC Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving the San Francisco District, MSC, and RMC) as to the appropriate scope and level of review for the study and endorsement by the RMC. Like the Project Management Plan, the Review Plan is a living document and may change as the study progresses; the district is responsible for keeping the Review Plan up to date. Changes to the review plan since the last MSC Commander approval will be documented in an Attachment to this plan. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-endorsed by the RMC and re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the District's webpage <http://www.spn.usace.army.mil/Missions/Projects-and->



[Programs/Project-Review-Plans/](#) and linked to the HQUSACE webpage. The latest Review Plan should also be provided to the RMO and home MSC.

11. Engineering Model Certification and Approval

The use of certified or approved engineering models is required for all activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required). The following engineering models are anticipated to be used:

MODEL	STATUS
Slope/W	Approved
Seep/W	Approved

12. Review Plan Points of Contact

NAME/TITLE	ORGANIZATION	EMAIL/PHONE
Tech. Lead	CESPN	(415)503-6915
Senior Reviewer	CEIWR-RMC	304-399-5217



ATTACHMENT 1: COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the plans, specifications, and DDR for the South San Francisco Bay Shoreline Project – Reach 1 Levee in Alviso, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name
ATR Team Leader
Office Symbol/Company

Date

SIGNATURE

Name
Project Manager (home district)
Office Symbol

Date

SIGNATURE

Name
Architect Engineer Project Manager¹
Company, location

Date

SIGNATURE

David E. Carlson, P.E.
Chief, Eastern Division
CEIWR-RMC-E

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution. As noted above, all concerns resulting from the ATR of the project have been fully resolved.

Son Ha
Chief, Engineering Branch
CESPN-ET-E

Date

Susan Kelly
Chief, Engineering and Technical Services Division
Levee Safety Officer
CESPN-ET-E

Date

¹ Only needed if some portion of the ATR was contracted
² Only needed if different from the Chief, Engineering Division.