



US Army Corps
of Engineers®

Prepared by:

South Pacific Division
San Francisco District

Bel Marin Keys Unit V

(Preconstruction, Engineering and Design, Phase 1) Implementation Review Plan



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Section 1

Introduction

1.1 Purpose

This Review Plan (RP) for the Bel Marin Keys Unit V Project (P2 510278), will help ensure a quality-engineering project is developed by the Corps of Engineers in accordance with Engineer Regulation (ER) 1165-2-217, “Civil Works Review Policy” and ensures quality measurement in the Plan-Do-Check-Act delivery business process as prescribed by Engineer Regulation (ER) 5-1-11. As part of the Project Management Plan this RP establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products and lays out a value-added process and describes the scope of review for the current phase of work. ER 1165-2-217 outlines general levels of review: District Quality Control/Quality Assurance (DQC/DQA), Agency Technical Review (ATR), Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) Review, and Policy and Legal Compliance Review. This RP will be provided to Project Delivery Team (PDT), DQC/DQA, ATR, and BCOES Teams. This review plan (RP) is intended for the first design phase of the project which is the northern half of the bayfront wetland and does not include any levee design. The District Chief of Engineering will assess if life safety risk of this project is significant following a Risk-Informed Design Workshop (see Section 3), and if a Safety Assurance Review (SAR) is required, prior to commencing the second design phase of the project and this RP will be updated in compliance with ER 1165 - 2 - 217, see Paragraph 8.1.

1.2 Key References

- ER 5-1-11, USACE Business Process, 21 Jul 2019
- ER 1165-2-217, Civil Works Review Policy, 1 May 2021
- ECB 2022-7, Interim Approach for Risk-Informed Designs for Dam and Levee Projects, 20 October 2022
- ECB 2018-15, Technical Lead for E&C Deliverables, 10 September 2022
- ECB 2023-9, Civil Works Design Milestone Checklists, 20 July 2023
- ER 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January 2013
- EM 1110-2-1913, Design, Construction, and Evaluation of Levees, 30 April 2000
- ER 1110-1-8159, Engineering and Design, DrCheckssm, 10 May 2011

- ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- RMC-AD-2022-03 Standard Operating Procedure for Safety Assurance Reviews, 22 January 2022
- Project Management Plan (PMP)
 1. Clickable Link: [PMP Details - PMPBuilder \(army.mil\)](#)
 2. pw:\\PWINT-WPC.EIS.DS.USACE.ARMY.MIL:CESPN - San Francisco District\Documents\Civil_Works\Bel Marin Keys Unit V_510278\1.0 Project Info and Mgt_PMP\
- 08506-SPD, District Control/Quality Assurance (DQC) of Engineering Products ([Link: SPD DQC](#)). The file is located on SPD's ProjectWise drive, pw:\\PWINT-WPC.EIS.DS.USACE.ARMY.MIL:CESPD - South Pacific Division\Documents\SPD_Team_Data\CESPD-RBT\Quality Management\.
- Standard Operating Procedure – Project Execution, Design Through Construction Contract Award (In House Designed Projects) ([Link: SPN SOP](#)). The file is located on the District's ProjectWise drive, pw:\\PWINT-WPC.EIS.DS.USACE.ARMY.MIL:CESPN – San Francisco District\Documents\SPN_Team_Data\Orgs\CESPN-ET\CESPN-ET-E\CESPN-ET_E_Staff\TL_Guidance\.
- Bel Marin Keys Unit V General Reevaluation Report & Integrated Environmental Assessment ([Link: Final](#)). The file is located on the District's ProjectWise drive,.
- Final Supplemental Environmental Impact Report/Environmental Impact Statement: Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project (April 2003): ProjectWise link: [FEIR](#)

1.3 Review Management Organization

The USACE South Pacific Division (SPD) is the Review Management Organization (RMO) for this project. This RP will be updated for additional project phases and for the construction phase.

Section 2

Project Description

2.1 Project Description

2.1.1 Introduction and Purpose

Background. The Bel Marin Keys Unit V (BMKV) project is located 25 miles north of San Francisco in the City of Novato, Marin County, California, on the west side of San Pablo Bay. It constitutes Phase 2 of the Hamilton Wetland Restoration Project (HWRP). The first phase, Hamilton Army Airfield (HAAF), concluded construction in 2014 and is currently in the adaptive management and monitoring phase. Phase 1 encompassed the HAAF parcel and adjacent California State Lands Commission Area North Antenna Field (NAF). HAAF and NAF had been closed as an active military installation since 1974. The lower right corner of the NAF ultimately was not included in Phase 1 of the HWRP due to ongoing clean-up and is now planned for the last design and construction phases of BMKV, after the clean-up is scheduled to conclude.

Site Description. Bel Marin Keys Unit V is adjacent to the restored HAAF and adds 1600 acres to the restoration project, including 900 acres of tidal wetlands and 680 acres of non-tidal and freshwater wetlands, as well as upland, subtidal, and non-wetland tidal habitats, for a total acreage of approximately 2,600 acres for the expanded site. The BMKV site, still protected by levees, had subsided below the elevation of surrounding properties, which included the tidal wetlands that border on San Pablo Bay. This subsidence resulted in the loss of valuable habitat for varied waterfowl, fish and other wetland dependent vegetation and wildlife, including the federally listed California clapper rail and the salt marsh harvest mouse.

Purpose. The purpose of the project is to: (i) prepare the expanded site through a system of levees, channels, and other structures, for the creation of saltwater marsh habitat by the introduction of sea water from San Pablo Bay to help remedy the regional decline in such habitat; (ii) to provide Federal and Non-Federal navigation projects in the San Francisco Bay Area a location to dispose of dredged material in a manner beneficial to the environment. The project will provide for ecosystem and wetland restoration through beneficial reuse of dredged material, and for recreation, and involves the construction of 21,000 feet of new levees; 36,400 feet of improved levees; 19,200 feet of phase containment levees; 18,200 feet of intertidal berms; and excavation of two tidal inlet channels. In addition, up to 13,800,000 cubic yards of dredged material will be placed to raise elevations suitable to a variety of habitats. The dredged material will come from nearby navigation projects and placed in an electric-powered hydraulic off loader in San Pablo Bay and delivered through a pipeline that would be installed to connect the off loader to the restoration site. The modified HWRP is also an integral part of the Long-Term Management Strategy (LTMS) for placement of dredged material in the San Francisco Bay region.

Authority. The governing authority for this study and project implementation (construction) is 1999 Water Resources Development Act, § 101(b)(3), Pub. L. No. 106-53, 113 Stat 269, modified by the 2007 Water Resources Development Act, § 3018, Pub. L. No. 110-114, 121 Stat. 1041. The Hamilton Wetlands Restoration project was first authorized for construction in the Water Resources Development Act (WRDA) of 1999. WRDA 2007 modified the Hamilton Wetlands Restoration Project (HWRP) and added the adjacent 1,612-acre parcel of Bel Marin Keys Unit V (BMKV), to increase the authorized project from 988 to approximately 2,600 acres.



Figure 1. Bel Marin Keys Unit V Project Area Map

2.1.2 The Selected Plan

The 2003 GRR recommended and the 2004 Chief’s Report authorized Revised Alternative 2 as the Selected Plan for the BMKV. The Selected Plan, in combination with the authorized HWRP, would restore wetlands on the NAF and BMKV parcels using dredged material and natural sedimentation. Before dredged material is placed in the area, perimeter levees would be constructed. The bayward levee would be breached after dredged material placement. Although wetlands on all parcels would be

restored, the HAAF parcel will be hydrologically separated from the NAF and BMKV parcels because of the need to continue operation and maintain access of the NSD outfall pipeline that will be reconstructed as part of the authorized HWRP. The Recommended Plan is summarized below and is illustrated in Figures 2 & 3.

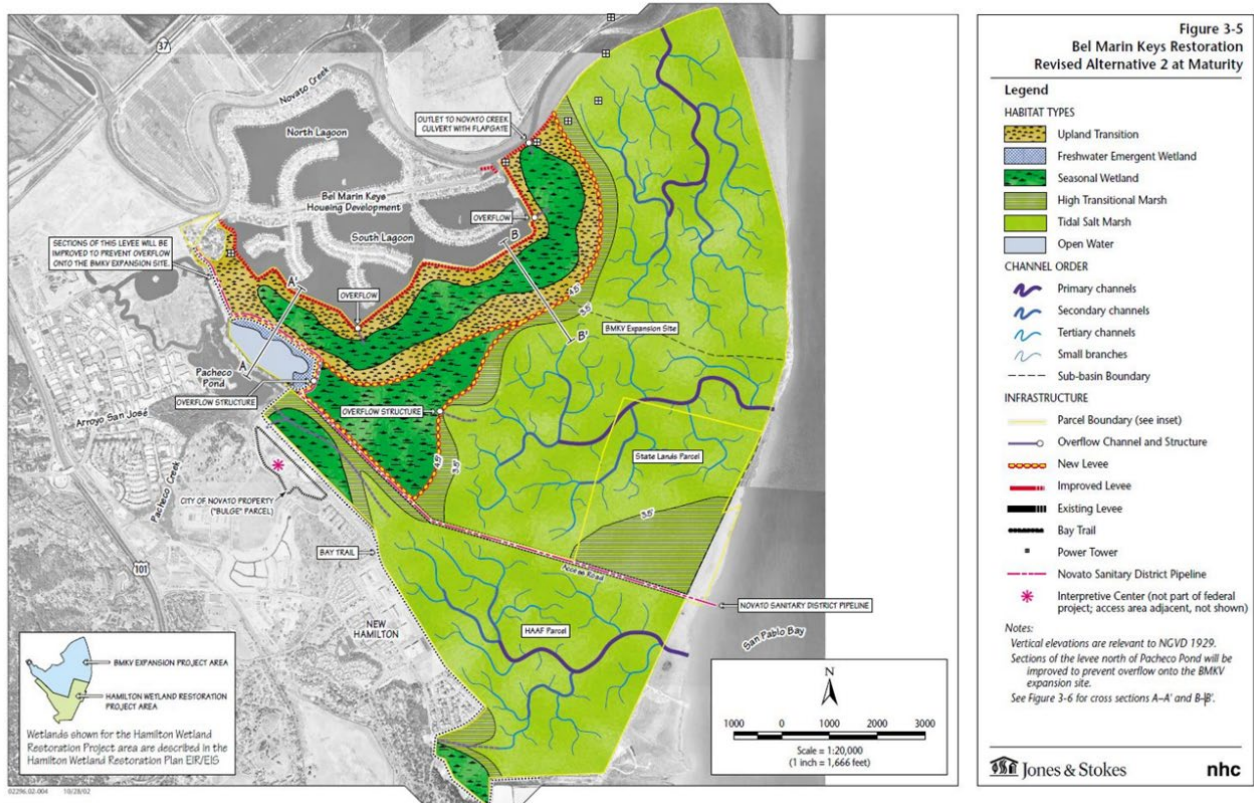


Figure 2. BMKV recommended plan.

2.1.2.1 Work in Kind (Levee and Portion of Seasonal Wetlands)

In 2017, a Section 221 Memorandum of Understanding (MOU) was executed for Work-In-Kind (Levee and portion of seasonal wetlands) by the non-federal sponsor, California State Coastal Conservancy (SCC). Levee design by SCC was completed in 2018 and the new bayfront levee and a portion of seasonal wetland ground preparation was constructed by SCC in 2019 – 2021. SPN started working on the Integral Determinations Report (IDR) for the new bayfront levee and will conclude the report once the Design Agreement is executed (due to insufficient funding at this time). SPN requested the following design and construction information to proceed and finalize the IDR. Receipt of all documentation listed below is pending.

- Seepage analyses
- Coupled seepage-slope stability analyses
- Rapid drawdown stability analysis
- Complete daily QA construction observations reports
- QC laboratory original records for the proctors

- Instruments reports during construction

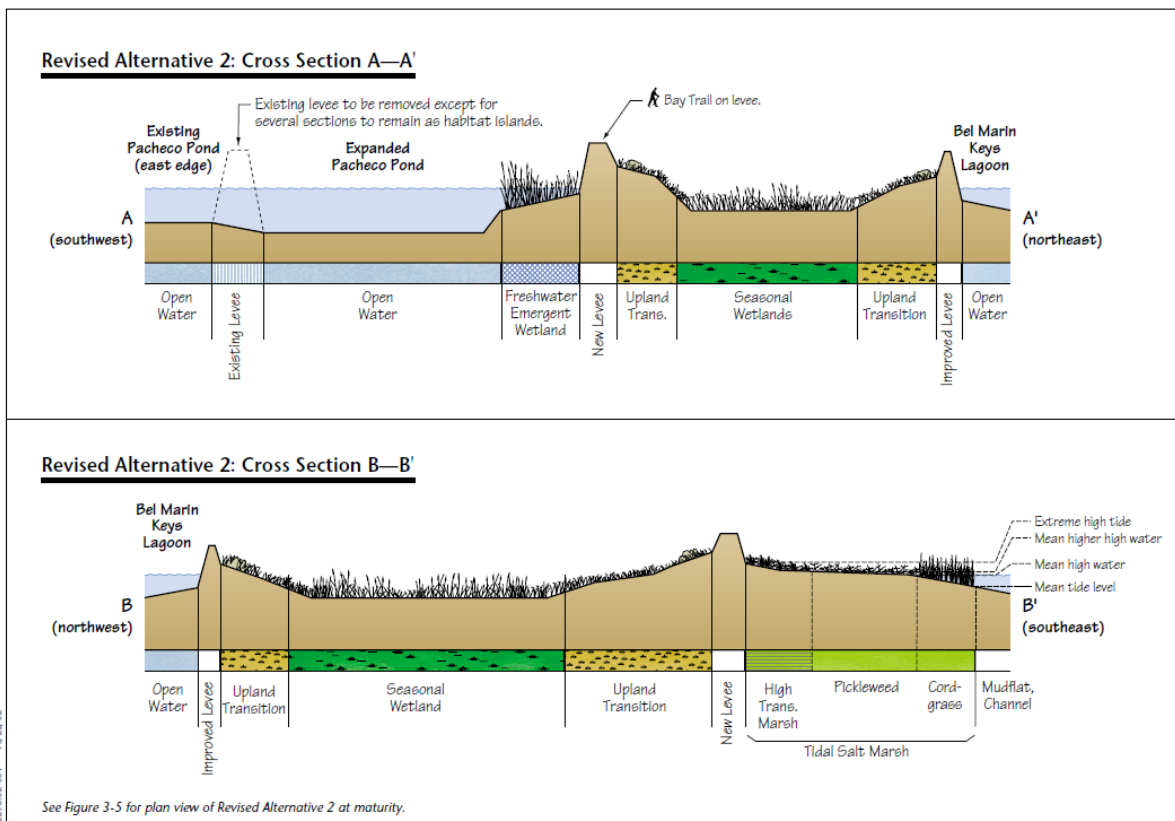


Figure 3. Cross section of the BMKV site improvements, See Figure 2 for reference.

2.1.3 Current Design Status and Sequencing

The conceptual design outlined in the GRR is at the 5-8% design level. The PDT is working to execute a Design Agreement (DA) with the SCC so the PDT can proceed to the design phase of the first construction contract. Although most of the design effort will be conducted in-house, SPN will contract out site surveys (lidar, ground surveys) and supplemental wetland design assistance through an AE. Design of this project will be conducted in six phases, described below, and illustrated in Figure 4.

1. Design: North Tidal Wetland (red) (FY24-25) (review schedule outlined in Table 1)
 - Internal berms and phase levee separating from South Tidal Wetland
 - Levee breach location on bay-side
 - Dredged material off-loader placement, infrastructure
 - Dredged materials Dewatering Plan

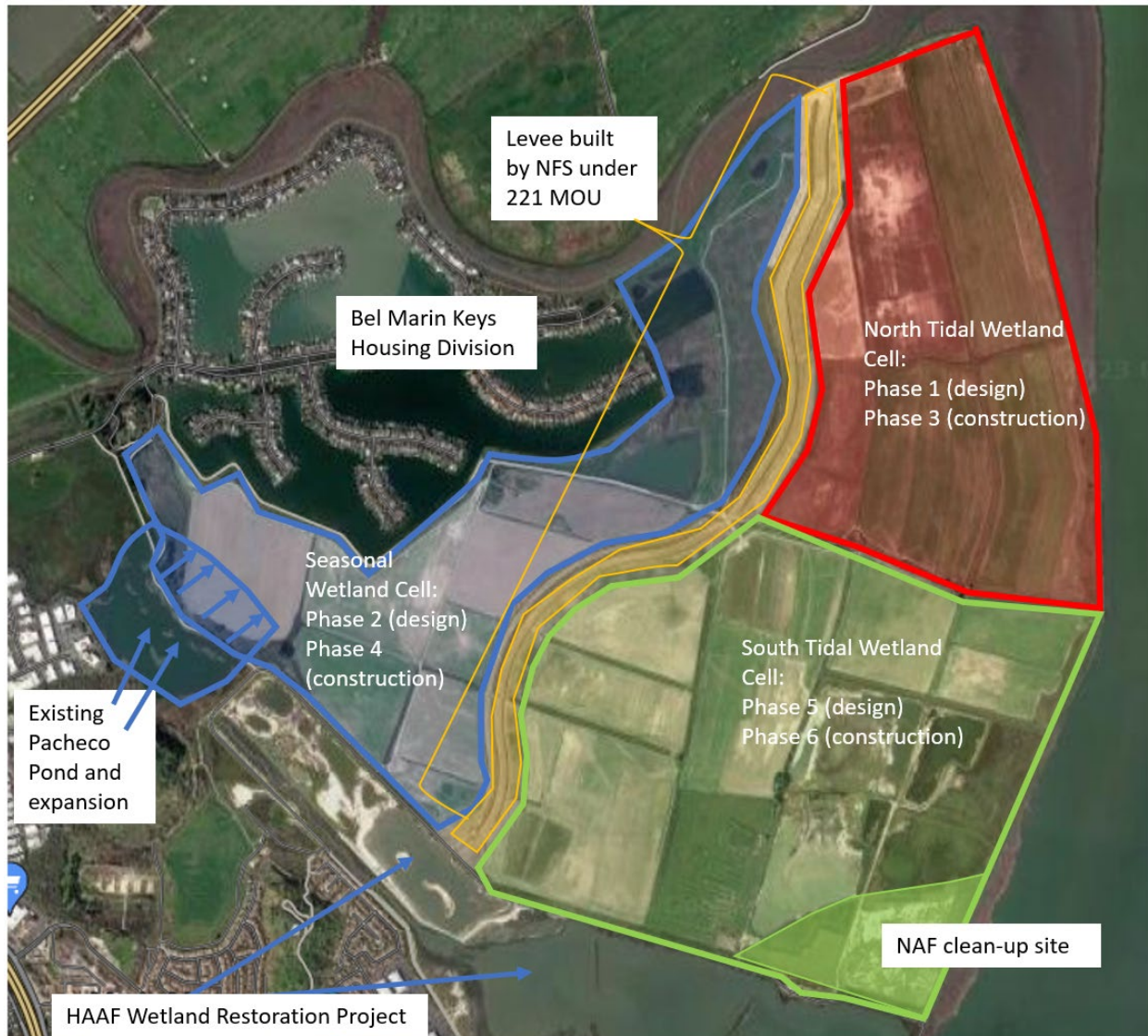


Figure 4. Map of Bel Marin Keys Unit V project site with six design and construction phases labeled according to geographical location.

2. Design: Seasonal Wetland Design (blue) (FY25-26)
 - Soil borings from S. Tidal cell to determine volumes of borrow material needed
 - BMK Lagoon perimeter levee improvement (if needed – TBD)
 - Pacheco Pond Expansion and perimeter levee
 - Novato Sanitary District (NSD) pipeline configuration
 - Water control structures

3. Construction: North Tidal earthwork (FY27-29)
 - Construct phase cells, levees, berms, and habitat shaping
 - Installation of off-loader to N. Tidal cell
 - Begin receiving material in N. Tidal cell
 - Dewatering

- Breach
4. Construction: Seasonal Wetlands earth work (FY27-29)
 - Excavate/shape Pacheco Pond,
 - Excavate borrow material from S. Tidal wetland for seasonal wetland earthwork
 - NSD pipeline relocation work
 5. Design: South Tidal Wetland & North Antenna Field earthwork (green) (FY26-28)
 - Surveys (post-borrow material excavation)
 - Internal berms and phasing cells
 - North Antenna Field (State Lands Commission parcel) design
 - Off-loader infrastructure and breach location
 6. Construction: South Tidal Wetland & North Antenna Field (pending HTRW cleanup) earthwork (FY29-32)
 - Construct phase cells, levees, berms, and habitat shaping
 - Construct NAF habitat if cleaned up
 - Off-loader infrastructure and breach location
 - Installation of off-loader to S. Tidal cell
 - Begin receiving material in S. Tidal cell

2.1.4 Scope for this Review Plan

The reviews detailed in this plan are for the design of the first construction contract (north tidal wetland earthwork) only. This Review Plan will be updated as the schedule progresses, and we prepare for the design of the seasonal wetland.

2.2 Project Sponsor

The non-Federal Sponsor (NFS) for the BMKV project is the California State Coastal Conservancy (SCC). Products and analyses provided by non-Federal sponsors as in-kind services are subject to reviews in compliance with the requirements of ER 1165-2-208, ER 1110-2-1150, ER 1110-2-12 in addition to all Technical, Policy and Legal Compliance. At this time, the NFS has designed and constructed the new bayfront levee and effort is ongoing in a separate task not included here to evaluate the design and construction of the levee in compliance with the USACE requirements for similar work. This section of the Review Plan will be updated when the exact extent of any other NFS in-kind contributions is determined and finalized.

2.3 Real Estate

The non-Federal Sponsor owns the land at Bel Marin Keys Unit V except for the State Lands Parcel, commonly referred to as the North Antenna Field, located within the lower southeast corner of the project site. The NFS has a lease with the State Lands Commission for use/restoration and access to this parcel. The lease expires in 2033 and will be renewed as needed. Since this qualifies as non-standard real estate ownership, SPN will complete a Real Estate Review through HQUSACE Real Estate Division prior to signing a Project Partnership Agreement (PPA), which is required for awarding the first construction contract. The Review Plan will be updated once design is underway for the next couple phases, and as we prepare to execute the PPA.

Section 3

Risk Assessment During Design

Bel Marin Keys Unit V is a coastal area wetland restoration project and includes perimeter levees. To assess potential impacts to neighboring developments, we will schedule a Risk-informed Design Workshop (RIDW) to occur one month after the PDT begins preparation of 35% Design of Phase 1 (Design of the North Tidal Wetland); Phase 1 is the area with lowest risk on the neighboring areas.

The workshop will occur prior to the initiation of the Seasonal Wetland Design Phase (BMKV Phase 2), which includes the area adjacent to neighboring properties. The purpose of the workshop is to assess risk. The District Chief of Engineering will assess if life safety risk of this project is significant following the Risk-Informed Design Workshop, and if a Safety Assurance Review (SAR) is required, prior to commencing the second design phase of the project and this RP will be updated in compliance with ER 1165 - 2 - 217. SPN's Levee Safety Program Manager will facilitate the workshop with a small panel of engineers. The workshop will utilize System-wide Semi-Quantitative Risk Assessment (SQRA) to identify any adverse effects on the perimeter levees, which may impact neighboring developments. The estimated cost of the RIDW is \$150,000; an additional \$50,000 to \$80,000 is estimated for later phases of the project.

Section 4

Project Delivery Team Reviews

4.1 PDT Review Requirements

PDT Reviews are in addition to the independent DQC Reviews described in Section 5. The PDT Reviews are to ensure consistency and effective coordination across all project disciplines for the work product. For example, the PDT will perform a complete

reading of any reports and accompanying appendices prepared by the PDT to assure the overall coherence and integrity of the report, technical appendices, and the recommendations before approval. The PDT will normally include a variety of stakeholders, each with his/her own important project requirements and a different, but interlocking, review responsibility. The PDT Review may also include a plans-in-hand review at the end of development. PDT Reviews, as an extension of the DQC, will be conducted as directed in the MSC/District QMS processes.

4.2 Value Engineering Requirements

A Value Management Plan is currently being developed. A Value Engineering (VE) study is anticipated and will most likely be conducted using the 35% design, and then incorporated into the 65% design packages.

Section 5

District Quality Control/District Quality Assurance (DQC/DQA)

5.1 Requirements

All implementation documents (including supporting data, analyses, reports, environmental compliance documents, water control manuals, etc.) shall undergo DQC/DQA in accordance with ER 1165-2-217. Additionally, the South Pacific Division's (SPD) and the San Francisco District (SPN) have quality control/quality assurance procedures to follow for DQC respectively. SPD has 08506 – SPD DQC for Engineering Products (Link: [SPD DQC](#)) and SPN's DQC procedures are the Quality Management section of the District's Standard Operating Procedure (Link: [SPN SOP](#)) – Project Execution, Design Through Construction Contract Award (In House Designed Projects). The SOP was approved and published by SPN in September 2005.

Quality Control (QC) will be completed in-house for all the design work planned to be done in-house with D-B-B A-E contracts for site surveying(s), geotechnical explorations laboratory testing, and likely A/E contracts to assist in the design of the Tidal Area. SPN will provide Quality Control on the in-house products and Quality Assurance (DQA) on the A/E's products. The A/E's internal QC should meet SPN's review requirements and to be completed in accordance with their Quality Control Plan which would be a part of the A/E contract (Attachment 4). Additionally, DQC will be performed on all the NFS in-kind contributions. As was stated in Section 2.1.2, SPN started working on the Integral Determinations Report (IDR) for the new bayfront levee and asked the SCC for

additional design and construction information to proceed and finalize the IDR in compliance with ER 1165-2-208.

QC/DQC will be performed on all early release decision information (i.e., environmental, hydraulic conditions, geotechnical parameters, loading conditions, etc.) and certified complete down to the component or sub-component level prior to incorporation into the design.

The reviews of project document in the SOP include Inter-Discipline Reviews (IDRs), ATRs, and BCOES reviews which are in conformance with the requirements in ER 1165-2-217. Additionally, the SOP includes management reviews which are normally performed at monthly In-Progress Review (IPR) by the Branch Chiefs and at monthly Project Review Board (PRB) by the Division Chiefs. The management reviews will include discussion and resolution of the issues and tracking the project milestones.

IDRs are the District's quality control procedures performed by those producing the design. IDRs must be carried out at 30%, 60% and 90% completion levels as a routine management practice in each of the functional elements. These reviews are essential to the production of a quality product and must be carried out diligently to avoid issues and problems during ATR and BCOES reviews.

DrChecksSM (<https://www.projnet.org/projnet/>) is the software system used to track review comments, responses to comments, back checks and acceptance of the corrections or responses. The technical lead will facilitate the creation of a project portfolio in the system which allows PDT and DQC member access. An electronic version of the document or products for review (design drawings, specification, and DDR) will be posted on DrChecksSM or another file-sharing system to the team at least one business day prior to the comment period. SPN is looking for high quality reviews and experienced reviewers in their disciplines, therefore looking for DQC reviewers to be of qualifications similar or close to the qualifications of the ATR team as shown in Section 6.3 of this RP document.

5.1.1 The New Bayfront Levee IDR Review

The new bayfront levee was designed and built by the NFS as previously stated in this RP. SPN reviewed design and construction documents previously received from the NFS, and identified deficiencies in the design report, and deficiencies in the construction documentation. Seepage analyses, coupled seepage-stability analyses, and rapid drawdown analyses were not included in the design report and were requested in order for the design to comply with EM 1110-2-1913: Design and Construction of Levee dated 30 April 2000. Also, construction records are not complete as the daily QA reports are not complete, QC lab tests results for the proctors were not included, only the summary of results were tabulated, and the instruments readings and any associated issues during construction were not included, so they were requested.

All design and construction documents will be reviewed by SPN engineering, and if found in satisfactory compliance with the USACE practice, it will be recommended for

acceptance and eligibility for reimbursement according to ER 1165-2-208. SPN review, mainly the geotechnical discipline, will be by the project geotechnical lead, supervisory review, and the overall engineering branch chief review and the results will be documented in MFR to the Project Manager. The IDR document will be generated by Project Management with contribution from other disciplines including Planning, Engineering, Cost, and Office of Counsel before getting the Commander approval to be sent to SPD for review and approval.

5.2 Products to Undergo QC/DQC

Work products that will undergo QC/DQC include:

- Environmental Restoration Design & Implementation of 2003 GRR
- Environmental Compliance Documents: Supplemental EAs (NEPA), ESA Biological Assessment and Essential Fish Habitat, Regional Water Quality Control Board Permit, BCDC Consistency Determination, Section 404(b)(1) Analysis, Section 106 (NHPA) Review
- Coastal/H&H Analysis
- Plans & Specifications
- Design Documentation Report (DDR) – including Geotechnical, Civil, Structural, Hydrology & Hydraulic, and Environmental reports and analyses
- Cost Estimates
- Engineering Considerations and Instructions to Field Personnel
- Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual
- Monitoring and Adaptive Management Plan

5.3 Schedule and Estimated Cost of QC/DQC

Although QC/DQC is always seamless, milestone reviews are tentatively scheduled for the first phase, i.e. design of the North Tidal Wetland. Subsequent phases would follow a similar schedule in future RP updates. Under the current approach, DQC will be completed prior to ATR. Any A-E product will be subjected to DQC and ATR like any in-house product. See Attachment 5 for a schedule of all design submittals and reviews. The cost for DQC for design of the North Tidal Wetland Cell (Phase 1) is \$250,000.

The estimated cost is based on the current Total Project Cost estimate for Reviews, ATRs, IEPRs, and VE during PED, and further broken down into separate phase review costs based on past experiences from comparable Review Plans. The cost to review the design package includes the plans, specifications, cost updates, and project design documents.

Section 6

Agency Technical Review

6.1 Requirements

All implementation documents (including supporting data, analyses, reports, environmental compliance documents, water control manuals, etc.) shall undergo ATR in accordance with ER 1165-2-217. ATR reviews will occur seamlessly, including early involvement of the ATR team for validation of key design decisions, and at the scheduled milestones as shown in Section 6.5. Documentation of ATR will occur using the four-part comment structure and the use of DrChecksSM.

An informal geotechnical review by the ATR geotechnical team member is added at 30% design document to confirm/validate early decisions.

6.2 Products to Undergo ATR

The same products that will undergo QC/DQC will undergo ATR. All QC/DQC will be completed prior to the start of the ATR:

- Environmental Restoration Design & Implementation of 2003 GRR
- Environmental Compliance Documents: Supplemental EAs (NEPA), ESA Biological Assessment and Essential Fish Habitat, Regional Water Quality Control Board Permit, BCDC Consistency Determination, Section 404(b)(1) Analysis, Section 106 (NHPA) Review
- Coastal/H&H Analysis
- Plans & Specifications
- Design Documentation Report (DDR) – including Geotechnical, Civil, Structural, Hydrology & Hydraulic, and Environmental reports and analyses
- Cost Estimates
- Engineering Considerations and Instructions to Field Personnel

- Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual
- Monitoring and Adaptive Management Plan

6.3 Required Team Expertise and Requirements

The following disciplines will be required for ATR of this project. Table 2 summarizes the involvement of ATR team member at each PED milestone. All reviewers are expected to have a minimum of 10 years' experience in the required field of expertise.

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. The ATR Lead will be an engineer/geologist with levee safety background, and general geotechnical engineering practice, preferably including wetlands and coastal restoration using dredged materials.

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. The Civil reviewer should have a minimum of 10 years of experience. Once we begin design of the Seasonal Wetland (phase 2 of the design), we will require a Civil or structural engineer with expertise on pipelines relocations. This effort will involve civil, geotechnical, structural, mechanical engineering.

Structural Engineer– shall have experience and be proficient in performing stability analysis, finite element analysis, seismic time history studies, and external stability analysis including foundations on floodwall, levee closure, hydraulic structures. The structural engineer shall have specialized experience in the design, construction and analysis of concrete floodwall, levee closure, weirs, and hydraulic structures. Once we begin design of the Seasonal Wetland (phase 2 of the design), we will require a Civil or structural engineer with expertise on pipelines relocations. This effort will involve civil, geotechnical, structural, mechanical engineering.

Environmental/Wetland Restoration Design Specialist – Reviewer should be senior level with experience in coastal area restoration and the use of dredged materials in the process of land reclamation, designing coastal wetland to receive dredged material and satisfy the environmental functional requirements.

Geotechnical Engineer - The reviewer shall have expertise in soil mechanics, foundation engineering, levee and other earthwork design and construction, and

geotechnical design, construction practice in coastal or soft ground areas, and coastal restoration using dredged materials.

Coastal/H&H Engineer – The reviewer shall have expertise in coastal, hydraulic, and hydrologic engineering and shall have a thorough understanding of coastal processes (i.e., tides, waves, and currents), marsh processes and sediment processes, and application of HEC computer modeling programs to a coastal-fluvial estuarine system.

Biologist/Environmental Compliance – 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.

Construction Engineer – Reviewer should be a senior level, professionally registered engineer with extensive experience in the engineering construction field with particular emphasis on levee and earthworks projects. The Construction reviewer should have a minimum of 10 years of experience.

Cost Engineer – The reviewer for cost estimating shall be a registered or certified cost engineer with a BS degree or higher in engineering or construction management, and should have experience estimating complex, phased multi-year civil works construction projects and levee systems. The reviewer shall have extensive knowledge of MII software, and the Total Project Cost Summary (TPCS) as required during ATR. A certification from the Cost Directorate of Expertise (DX) in Walla Walla District may be required.

Table 1. ATR Teams for Milestone Reviews

Milestone Reviews	Env./Wetland Specialist	Civil	Geotech	H&H/Coastal	Structural	Biologist/Env. Compliance	Construction	Cost
Environmental Restoration Design & Implementation of 2003 GRR (30%, 60%, 90%, Final)	X		X					
Supplemental Environmental Compliance Documents						X		
Coastal/H&H Analysis	X			X				
35% Review	X		X	X		X		X
65% P&S Review	X	X	X	X	X	X	X	X
95% P&S Review	X	X	X	X	X	X	X	

Milestone Reviews	Env./Wetland Specialist	Civil	Geotech	H&H/Coastal	Structural	Biologist/Env. Compliance	Construction	Cost
100% P&S Review	X							X
During Construction	X	X	X	X	X	X	X	

6.4 Statement of Technical Review Report

At the conclusion of each ATR effort, the ATR team will prepare a review report using a completion and a certification memo.

6.5 Schedule and Cost of ATR

Although ATR is always seamless, the preliminary ATR milestone schedule is listed in Attachment 5. Under the current approach, ATR will follow each QC/DQC. The cost for the ATR is approximately \$205,000.

The estimated cost is based on the current Total Project Cost estimate for Reviews, ATRs, IEPRs, and VE during PED, and further broken down into separate phase review costs based on past experiences from comparable Review Plans. The cost to review the design package includes the plans, specifications, cost updates, and project design documents.

Section 7 BCOES Review

7.1 Requirements

All implementation documents (including supporting data, analyses, reports, environmental compliance documents, water control manuals, etc.) shall undergo BCOES review in accordance ER 415-1-11 and ER 1110-1-12. BCOES reviews are done during design for a project using the design-bid-build (D-B-B) method or during development of the request for proposal (RFP) for a design-build (D-B) project. The BCOES review results are to be incorporated into the procurement documents for all construction projects. The BCOES review will be documented in DrChecksSM. The BCOES reviewers are encouraged to include local sponsors' facility operators and

maintenance staff. The BCOES roster is provided in Attachment 1, Table 9. The estimated cost for BCOES for the first phase is \$205,000.

Section 8

Safety Assurance Review

Bel Marin Keys Unit V is a coastal area wetland restoration project and includes perimeter levees. However, to assess potential impacts to neighboring developments, we will schedule a Risk-informed Design Workshop (RIDW) to occur one month after the PDT begins preparation of 35% Design of Phase 1 (Design of the North Tidal Wetland); Phase 1 is the area with lowest risk on the neighboring areas.

The workshop will occur prior to the initiation of the Seasonal Wetland Design Phase (BMKV Phase 2), which includes the area adjacent to neighboring properties. The purpose of the workshop is to assess risk. The District Chief of Engineering will assess if life safety risk of this project is significant following the Risk-Informed Design Workshop, and if a Safety Assurance Review (SAR) is required, prior to commencing the second design phase of the project and this RP will be updated in compliance with ER 1165 - 2 - 217. The SPN's Levee Safety Program Manager will facilitate the workshop with a small panel of engineers. The workshop will utilize System-wide Semi-Quantitative Risk Assessment (SQRA) to identify any adverse effects on the perimeter levees which may impact neighboring developments. This initial assessment is documented and approved by the SPN Chief of Engineering in a Memorandum for Record, Attachment 6 (pending SPD review and Engineering Chief signature).

Section 9

Review Plan Approval and Updates

The MSC Commander, or delegated official, is responsible for approving this RP. The Commander's approval reflects vertical team input (involving the District, MSC) as to the appropriate scope, level of review, and endorsement by the RMC. The RP is a living document and should be updated in accordance with ER 1165-2-217. All changes made to the approved RP will be documented in Attachment 3, Table 14 RP Revisions. The latest version of the RP, along with the Commanders' approval memorandum, will be provided to the RMO.

Section 10

Engineering Models

The use of certified, validated, or agency 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 QC/DQC, ATR, BCOES, Policy and Legal Compliance review, and SAR (if required). Where such approvals have not been completed, appropriate independent checks of critical calculations will be performed and documented. The following engineering models, software, and tools are anticipated to be used:

Table 4 Engineering Models and Status

Model Name	Version	Approved/Certified
GeoStudio 2021 suite (Slope/W)	2021.4	Certified
GeoStudio 2021 suite (Seep/W)	2021.4	Certified
HEC-RAS	6.4.1	Approved
Rocscience Settle3	5.015	Approved
Ensoft 2019 – APILE/LPILE/GROUP		Approved
Enercalc	20.23.05.01	Approved
CivilTech AllPile	7.23	Approved
Civiltech Shoring Suite - Allpile	Version 8.21	Approved

Section 11

Review Plan Points of Contact

Table 5 RP POCs

Title		Organization	Email
Allison Conn	Project Manager	CESPN-PMI	allison.conn@usace.army.mil

	Title	Organization	Email
Andy Farhan	Technical Lead	CESPN-ETE-G	andy.farhan@usace.army.mil

Attachment 1

Team Rosters (CUI)

(To be Removed Prior to Posting on District Website)

Table 6 PDT

Discipline/Role	Name	Email
Project Manager	Allison Conn	Allison.conn@usace.army.mil
Geotechnical Engineer	Andy Farhan	andy.farhan@usace.army.mil
Biology / Environmental Compliance	Eric Jolliffe	Eric.f.jolliffe@usace.army.mil
Civil Engineer/Structural Engineer	David Demko	David.e.demko@usace.army.mil
Environmental/Wetland Design	supplemented with AE	
Coastal/H&H Engineer	Tiffany Cheng	Tiffany.k.cheng@usace.army.mil
Cost Engineer	TBD (<i>new hire</i>)	TBD
Legal Counselor	Jesse Anderson	Jesse.l.anderson@usace.army.mil
Construction Engineer	Gerry Prado	Gerardo.c.prado@usace.army.mil
Levee Safety Program Manager	Cyrus Yaghobi	Cyrus.m.Yaghobi@usace.army.mil

Table 7 DQC Reviewers

Discipline/Role	Name	Email
DQC Review Lead	TBD	@usace.army.mil
Geotechnical Engineer	Bernard Wair	Bernard.r.wair@usace.army.mil
Biologist/Env. Compliance	Julie Beagle	Julie.r.beagle@usace.army.mil
Civil Engineer	Andy Chamberlain	Andrew.j.chamberlain@usace.army.mil
Structural Engineer	Jimmy Chen	Jimmy.c.chen @usace.army.mil
Coastal/H&H Engineer	Patrick O' Brien	Patrick.s.o'brien@usace.army.mil
Environmental (Wetland Design)	Elizabeth Murray	Elizabeth.o.murray@usace.army.mil
Cost Engineer	Warren Tan	Warren.h.tan@usace.army.mil
Legal Counselor	Merry Goodenough	merry.goodenough@usace.army.mil
Construction Engineer	Yosef Ahmadi	mohammad.y.ahmadi@usace.army.mil

Table 8 ATR Team

Discipline	Name	Email
ATR Lead	TBD	TBD@usace.army.mil
Geotechnical Engineer	TBD	TBD@usace.army.mil
Biologist / Env. Compliance	TBD	TBD@usace.army.mil
Civil Engineer	TBD	TBD@usace.army.mil
Structural Engineer	TBD	TBD@usace.army.mil
Coastal/H&H Engineer	TBD	TBD@usace.army.mil
Environmental (Wetland Design)	TBD	TBD@usace.army.mil
Construction Engineer	TBD	TBD@usace.army.mil
Cost Engineering	William Bolte (Walla Walla CX)	william.g.bolte@usace.army.mil

Table 9 BCOES Team

Review	Name	Email
Biddability	Mary Fronck	mary.fronck@usace.army.mil
Constructability	Son Ha	son.ha@usace.army.mil
Operability	Nick Malasavage	nicholas.e.malasavage@usace.army.mil
Environmental	Tessa Beach	Tessa.e.bernhardt@usace.army.mil
Sustainability	Tessa Beach	Tessa.e.bernhardt@usace.army.mil

Attachment 2

Project Flood Risk Information (CUI)

Bel Marin Keys Unit V is a coastal area wetland restoration project and includes perimeter levees. However, to assess potential impacts to neighboring developments, we will schedule a Risk-informed Design Workshop (RIDW) to occur one month after the PDT begins preparation of 35% Design of Phase 1 (Design of the North Tidal Wetland); Phase 1 is the area with lowest risk on the neighboring areas.

The workshop will occur prior to the initiation of the Seasonal Wetland Design Phase (BMKV Phase 2), which includes the area adjacent to neighboring properties. The purpose of the workshop is to assess risk. The District Chief of Engineering will assess if life safety risk of this project is significant following the Risk-Informed Design Workshop, and if a Safety Assurance Review (SAR) is required, prior to commencing the second design phase of the project and this RP will be updated in compliance with ER 1165 - 2 - 217. The SPN's Levee Safety Program Manager will facilitate the workshop with a small panel of engineers. The workshop will utilize System-wide Semi-Quantitative Risk Assessment (SQRA) to identify any adverse effects on the perimeter levees which may impact neighboring developments.

Attachment 3

Review Plan Revisions

Table 10 RP Revisions

Revision Date	Description of Change	Page/Paragraph Number

Attachment 4

A/E Contractor Quality Control Plan

This attachment will vary depending on the type and objectives of the A/E contract.

Attachment 5

Design Submittal and Review Schedule

Project Phase/Submittal	Dates
Environmental Restoration Design & Implementation of 2003 GRR	1 OCT 23- on going
Coastal/H&H Analysis	1 OCT 23- on going
35% In-house Design and Cost Estimate	1 MAR 24-1 MAY 24
Risk-Informed Design Workshop	1 APR 24-15 APR 24
Supplemental Environmental Compliance Document - draft	31 MAY 24-31 DEC 24
35% In-house Design, Cost Estimate, and Env. Comp. Review (DQC)	1 MAY 24-31 MAY 24
Conduct VE Study (if necessary)	31 MAY 24-31 JUL 24
35% ATR (Informal)	31 MAY 24-30 JUN 24
65% In-house P&S & DDR, Cost Estimate	31 MAY 24-31 DEC 24
65% In-house P&S & DDR, Cost Estimate Review (DQC)	31 DEC 24-15 FEB 25
65% ATR	15 FEB 25-15 MAR 25
95% In-house P&S and Cost Estimate	15 FEB 25-1 MAY 25
Supplemental Environmental Compliance Document - Final	1 JAN 25-1 MAY 25
95% In-house P&S, Cost Estimate, and Env. Comp. Review (DQC)	1 MAY 25 – 31 MAY 25
95% ATR	31 MAY 25-14 JUN 25
100% In-house P&S and Cost Estimate	31 MAY 25 -28 JUN 25
100% In-house P&S and Cost Estimate review (DQC)	28 JUN 25-14 JUL 25
Final P&S ATR	14 JUL 25-7 AUG 25
BCOES	17 JUL 25-7 AUG 25
Finalize Plans and Specs	8 AUG 25-21 AUG 25
Update Review Plan	8 AUG 25-8 SEP 25
ATR During Construction	TBD
Monitoring and Adaptive Management Plan	TBD
Monitoring and Adaptive Management Plan DQC	TBD
Monitoring and Adaptive Management Plan ATR	TBD
OMRR&R Manual	TBD
OMRR&R Manual DQC	TBD
OMRR&R Manual ATR	TBD

Attachment 6

SAR Assessment MFR

See separate PDF attachment.