PROJECT MANAGEMENT PLAN

Alki Coastal Erosion Control Project

Continuing Authorities Program Section 103
Seattle, WA

Design and Implementation Phase

Prepared by:
U.S. Army Corps of Engineers
Seattle District

In Coordination With:
The City of Seattle, Washington

April 2017

US Army Corps of Engineers®
Seattle District

Seattle District
April 2017

Project Management Plan

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The purpose of this Project Management Plan (PMP) is to provide common understanding of the process required for the Seattle District Army Corps of Engineers (USACE) and the City of Seattle, Washington to enter a Project Partnership Agreement (PPA), and complete design and construction of the Alki Coastal Erosion Control Project. This plan will be reviewed by the project team and updated by the Project Manager on a quarterly basis or as needed to reflect schedule, scope, and team member changes.

I. General Information

1. Project Name:
Alki Coastal Erosion Control Project

2. Authorization:
This project is authorized under Section 103 of the Rivers and Harbors Act of 1962. Recent WRDA changes (WIIN 16)have authorized up to a $10,000,000 maximum Federal Project Limit with implementation costs of 65% Federal and 35% Non-Federal Sponsor matching.

3. Non-Federal Sponsor:
The City of Seattle, Washington, Seattle Parks and Recreation

4. Feasibility:
The Alki Coastal Erosion Control Project Detailed Project Report/Environmental Assessment (DPR/EA) was approved by Northwestern Division (NWD) on August 26, 2016. A draft Finding of No Significant Impact (FONSI) was included. The document was made available for a 30 day public review period in December 2014. Four parties submitted comments which should be reviewed by the project delivery team (PDT) during design. Draft responses have been prepared; they will be posted with the revised DPR/EA once the FONSI is signed. The DPR/EA (and its appendices) includes detailed design of the seawall.

The recommended plan consists of a new soldier pile wall with precast concrete lagging constructed immediately in front of the existing seawall structure to a height of +22 feet MLLW; the height is two feet higher than the existing structure to account for increased storm wave heights and future sea-level rise. The project is approved to initiate design and construction of a + 20 foot MLLW structure; implementation of a +22 foot structure is contingent upon acceptance of additional economic justification for the +20 to +22 foot increment provided to NWD, and currently under review.

5. Project Location:

The project site is located along Puget Sound, within Emma Schmitz Memorial Overlook Park in the City of Seattle, Washington. The park is located approximately 1.3 miles southeast of Alki Point, the westernmost point in the West Seattle district of Seattle.

Figure 1. Project Location

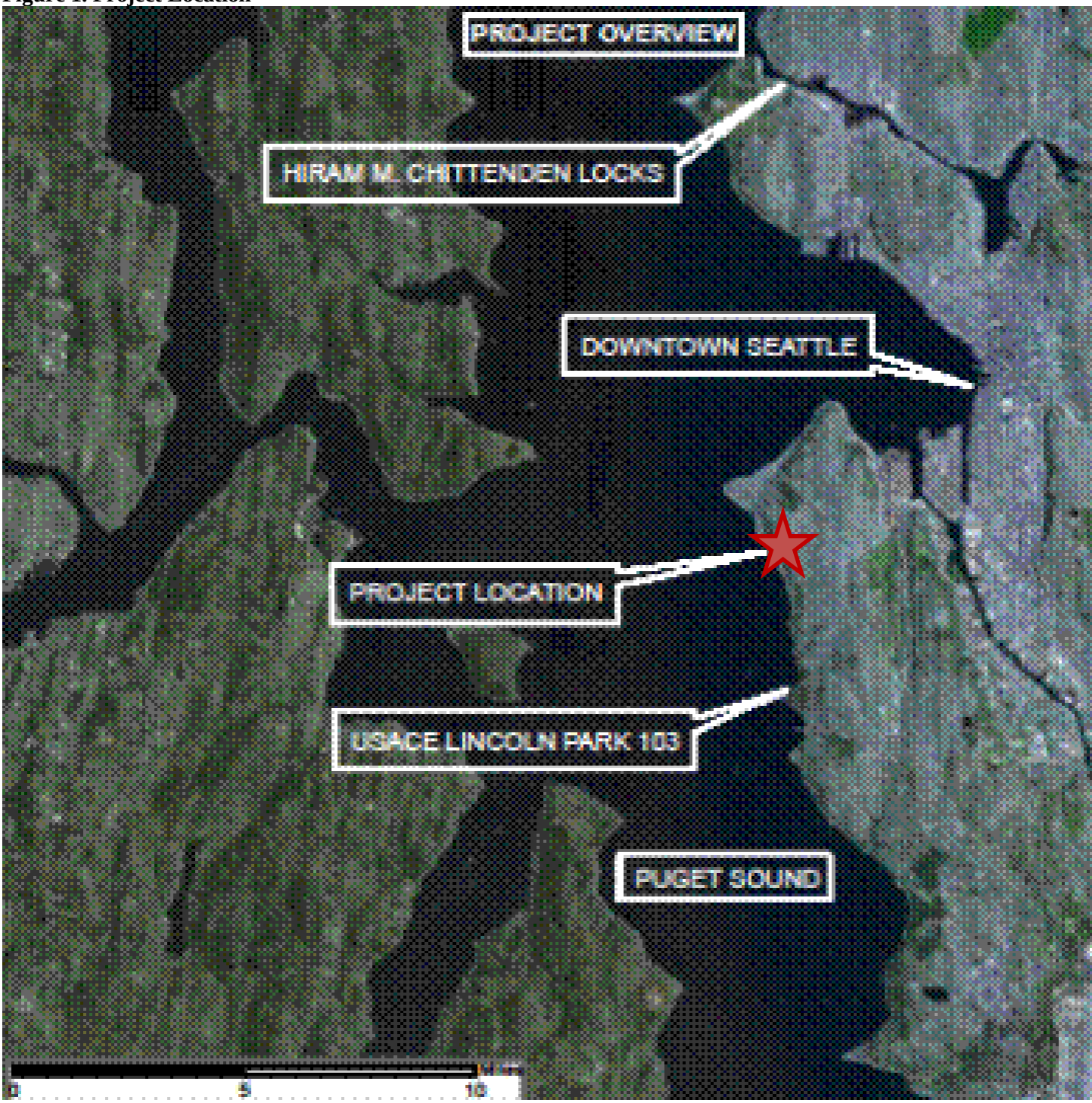

Figure 2. Site Overview

6. Project Background:

The seawall at the project site was originally constructed in 1927. The design of the original seawall included horizontal tiebacks which attached the top waler (i.e. horizontal steel trolley rails) of the seawall to concrete anchors embedded in the soil landward of the structure. These anchors were intended to provide structural support to the system, but over the years the tiebacks have detached and no longer serve their intended function. Additionally, steel trolley rails were originally embedded vertically into the concrete foundation to support the vertical concrete slabs. These rails have corroded such that the majority of the rails are now unstable. The failed vertical rails can be found along the beach during a low tide (Figure 3).

Also sediment scour has occurred adjacent to the concrete footing causing further destabilization of the structure. The degraded condition of the existing seawall is not attributable to insufficient maintenance, but rather to continuous cumulative impacts of nearly 100 years of normal and storm-related wear. Annual routine maintenance has been performed by the City throughout the life of the existing structure, including inspections and minor repairs as needed. Recently, the City reports weekly fill of multiple sinkholes that have opened up behind the structure in order to reduce further destabilization of the structure. Despite regular maintenance, the aging seawall and its components are at risk of failure, loss of infrastructure, contamination of the local marine environment, and erosion of public lands.

Coastal storm waves, storm surge, and storm-induced erosion continue to degrade the seawall and pose a significant risk to public infrastructure. A series of small winter storms in 1998 caused a 500 foot section of seawall to collapse just to the north of the project site, threatening infrastructure and the marine nearshore environment with potentially millions of gallons of raw waste-water discharging directly into Puget Sound. Emergency actions were taken by the City to stabilize the shoreline and prevent major utility damages. The failed section of seawall is located immediately to the north of the Federal study area (Figure 2).

As a result of the City's efforts, a catastrophic failure of the repair work is not anticipated to occur during the period of analysis based on the reliability of rubble mound revetments and the size of armor stone used in the emergency repair. Continued maintenance by the City is expected to be minimal and will ensure that the structure maintains its function and provides a continued level of storm protection adequate to allow the federal project to tie into the southern end. Additionally, the proposed seawall will tie into the riprap structure with sufficient overlap to prevent flanking or failure at this or other critical locations. The 1998 emergency repair work completed by the City is sufficient to provide an adequate level of storm protection to compliment proposed Federal action and is considered a permanent structure, thus no Federal action is proposed for this area.

The seawall and its components outside of the 1998 repairs have been impacted by years of storm events and corrosion caused by salt water in Puget Sound, and further deterioration could result in failure of the structure, loss of infrastructure, contamination of the local marine environment, and erosion of public lands.

The opportunity exists to reduce the risk of damages to public infrastructure, including the potential loss of critical utilities and transportation corridors, from coastal storm waves, storm surge, and storm-induced erosion that continue to threaten the project area. In addition, there is an opportunity to reduce the risk of potential environmental impacts that may result from collapse of the sewer main that could result in raw sewage discharging into Puget Sound.

II. PROJECT SCOPE

Major elements of the scope of work included in this PMP are the following:

- Prepare an MFR describing the economic justification to build the wall to 22 feet MLLW vs. 20 feet MLLW and subsequent submittal to NWD for concurrence.
- Finalize the design of the seawall as detailed in the Detailed Project Report, to include:
    - Plans
    - Specifications
    - Design Documentation Report
    - Environmental coordination
- Implement construction of the seawall.
    - Certification of Lands
    - Contracting
    - Construction Management

- Closeout of the Project
    - Physical completion of all activities
    - Financial closeout

1. Goals, Objectives and Constraints

The goal of the project is to prevent damages to public utilities and infrastructure resulting from failure of the seawall in the project area due to coastal storm events, storm surge, and storm-induced erosion.

Project Objectives:

- Appreciably reduce the risk of physical damages to public utilities and transportation infrastructure resulting from coastal storm events, storm surge, and storm-induced waves.
- Reduce the risk of erosion and loss of public lands due to storm damages.
- Reduce the risk of environmental impacts resulting from a sewer main failure.
- Reduce the risk of potential transportation delays and other emergency costs to residences, businesses and government entities resulting from coastal storm damages.
- Reduce risk to inhabitants and park visitors by replacing degraded structure

Project Considerations and Constraints:

- The recommended plan must not adversely affect existing infrastructure and utilities in the project area.
- The recommended plan, at a minimum, must provide an equivalent level of storm protection or greater than what was provided for utilities and infrastructure by the existing wall prior to its deterioration.
- Nearshore habitat, to the maximum extent possible, must be preserved and footprint intrusions waterward of the shoreline must be minimized to a reasonable extent.
- Constructed seawall must protect park visitors from falling hazards from the constructed replacement structure.
- Construction must consider adjacent residential neighborhoods and properties

2. Team Identification and Responsibilities

The Project Delivery Team (PDT) is an interdisciplinary group formed to execute the project in accordance with this PMP. The PDT is comprised of qualified staff from within the Seattle District and the City of Seattle. All team members are shown on Table 1. Roles, responsibilities and major deliverables are described below.

Table 1. Project Delivery Team Members

USACE - Seattle District

Name	Role	Phone	Email
John Hicks	Prog./Proj. Manager	(206) 764- 3652	John.A.Hicks@usace.army.mil

Chris Behrens	Planner	(206) 764-6917	christopher.behrens@usace.army.mil
Michael Gonia	Geotech. Engineer & Design Lead	(206) 764- 6194	Michael.J.Gonia@usace.army.mil
Michael Peele	Civil Engineer	(206) 764-6961	Michael.C.Peele@usace.army.mil
Dave Michalsen	Coastal Engineer	(206) 764-3705	David.r.michalsen@usace.army.mil
Farid Chouery	Structural Engineer	(206) 764-3792	Farid.A.Chouery@usace.army.mil
Ghassem Khosrownia	Structural Engineer	(206) 764-6552	Ghassem.Khosrownia@usace.army.mil
Manbir Singh	Cost Engineer	(206) 316-3163	Manbir.Singh@usace.army.mil
Mike Grzegorzewski	Specs	(206) 764-6554	Michael.J.Grzegorzewski@usace.army.mil
Kurt Noble	Survey	(206) 764-3535	Kurtis.D.Noble@usace.army.mil
Melissa Leslie	Biologist	(206) 764-6587	Melissa.l.leslie@usace.army.mil
Ashley Dailide	Cultural Resources	(206) 764-6942	Ashley.M.Dailide@usace.army.mil
Diane Hintz	Real Estate	(206) 316-4419	Diane.Hintz@usace.army.mil
Virginia Ryan	Office of Counsel	(206) 764- 3642	Virginia.Ryan@usace.army.mil
Bonnie Lackey	Contracting	(206) 764-4481	Bonilie.l.lackey@usace.army.mil
Peter Krembs	Construction	(206) 316-3338	Peter.N.Krembs@usace.army.mil
Bill Dowell	Public Affairs	(206) 764-3464	William.R.Dowell@usace.army.mil

City of Seattle

Rebecca Rufin	Park Engineer	(206) 233-3870	Becky.Rufin@seattle.gov
Scott Stevens	Engineer	(206) 615-0865	Scott.Stevens@seattle.gov
Garrett Farrell	Marine Construction	(206) 233-3870	Garrett.Farrel@seattle.gov

3. Roles and Responsibilities

The paragraphs below summarize responsibilities of USACE and the City of Seattle (the non-Federal sponsor) to design and implement the project.

Corps of Engineers (USACE)

The Corps of Engineers is responsible for designing and implementing the project. Per the Section 103 authority, the federal government will pay for 65% of the design and implementation costs, as detailed in the PPA.

Specific Corps Responsibilities during design include:

- Coastal engineering to account for known and projected marine impacts taking into account wave heights and frequency as well as projections of storm, debris and wind impacts.
- Geotechnical evaluation to guide appropriate structure design and construction
- Design of the seawall, to include a tie-in to the 1998 rock repair at the northwest end and a tie-in to the privately owned seawall at the southeast end, restoration of site conditions landward of the seawall, and detailing design specifications.

- Design review at 65% (DQC) and 95% (DQC and ATR). See Appendix II, design review sequence.
- Biddability, constructability, operability, and environmental and sustainability reviews (BCOES) at 65% and 95%. See Appendix II, design review sequence.
- Contracting services.
- Real estate evaluation.
- Project management coordination and reporting.
- Construction sequencing plan and construction management plan.
- Cost estimates and construction schedules for all phases of design.

During construction the Corps will provide the following:

- Supervision and administration of construction contract.
- Project management coordination and reporting.
- Construction of the seawall.
- Cultural resource monitoring during construction.

City of Seattle

Per the Continuing Authorities Program Section 103 Authority, the non-federal sponsor will pay for 35% of the design and implementation costs, as detailed in the PPA.

The non-Federal sponsor will, at minimum, provide project management support, such as regular meetings with the project team, site visits, technical reviews, and guidance. The non-Federal sponsor should inform the project team of local issues that may affect design and implementation of the project and provide coordination with other local entities.

The non-Federal sponsor is required to provide all necessary lands, easements, rights of way, relocations and disposal areas (LERRD) and rights of entry (if necessary) for the project site. The non-Federal sponsor is responsible for 100% of the project operations, maintenance (in accordance with the O&M manual), repair, rehabilitation, and replacement.

The non-federal sponsor's cost share requirements can be met with the assessed value of LERRD (currently expected to be $0), in-kind services and cash payments to the federal government. LERRD values are expected to be zero because, per the model PPA for Section 103, lands subject to shore erosion that are publicly owned on the effective date of the agreement are not creditable. The non-Federal sponsor may provide in-kind services with City staff or contractor staff. All tasks to be provided as in-kind services and the value of those tasks are outlined in this PMP.

Specific City of Seattle Responsibilities during design include:

- Survey work (in-house or contracted services)
- Geotechnical investigation services (in-house or contracted services as Work-in-Kind)
- Locate and mark utilities and provide guidance to construction activities
- Develop a planting plan for restored landward property
- A traffic plan for construction activities. This activity will have to be coordinated with the Seattle District Corps Civil Design Branch.

- Provide all lands, easements, right-of-ways, relocations, and disposal areas (LERRD), as necessary for the project.
- Provide adequate documents for Corps to certify real estate in time to award construction contract.
- Complete LERRD Submittal and any relocations of utilities

During construction the City agrees to:

- Provide site-specific project construction signage with Corps and City logos
- Locate utilities and move any utilities that need to be moved.
- Complete project planting, currently projected to be replacement of existing grass
- Physical monitoring of area behind existing seawall and adjacent properties

4. Overview of Design and Implementation Phase

Advanced Design, Plans, and Specifications
Cost shared 65% Federal, 35% non-Federal

- Sign Project Partnership Agreement (PPA) with Sponsor.
- Complete 95%, and 100% Plans and Specifications package.
- District Quality Control (DQC) and Agency Technical Review (ATR).
- Biddability, Constructability, Operability, Environmental (BCOE) Review.
- Technical Review of Form 1 package (construction documentation).
- Certify LERRDs available.
- Start pre-award activities.
- Prepare a Current Working Estimate (CWE) at 65% and 95%.
- Determine if additional funds are required from the non-Federal sponsor.
- The Corps will produce a Design Documentation Report.
- The Corps will produce an Operations and Maintenance Document created after seawall construction as part of the Implementation Phase.

Construction
Cost shared 65% Federal, 35% non-Federal

- Receive non-Federal sponsor funds.
- Advertisement for bid. The final design package will be advertised for bid, negotiated, and awarded by the Corps' Contracting Branch.
- Prepare an Independent Government Estimate (IGE).
- Award construction contract.
- The physical construction of the project and administration of the contract will be managed by the Corps' Construction Management division.
- Project Closeout. Following completion of physical construction, a letter from the Corps' District Engineer will be sent notifying the sponsor of operation and maintenance requirements. All financial, physical and other closeout duties will be completed to ensure the project has been fully completed and all financial responsibilities are completed.

Final Accounting and Project Close Out

- Project turned over to non-Federal sponsor for operation and maintenance. (100% non-federal).

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4. Major Tasks - Work Breakdown Structure

This project is managed in the USACE "P2" system, an automated scheduling, resourcing, and budgeting program. Information from P2 is linked into CEFMS, the USACE Financial Management System. CEFMS will only allow expenditures that have been scheduled, resourced, and budgeted in P2.

Task 1: Final Design (Plans and Specs)
Final design includes all the responsibilities mentioned above for both the Corps and City of Seattle. These activities include conducting a full design of the replacement seawall, restoration of grade and installation of a fence for project safety (fall protection).

Task 2: Implementation (Construction)
Project construction will be contracted, and contract administration will be overseen by the Seattle District Corps Construction Division. Construction is scheduled to start late in late 2018/early 2019 or alternatively July 2019 and following construction season. Work is only allowable during in-water work window which is set for protection of threatened fish species and is projected to be July 16-February 15. Final determination of in-water work window will be established during final consultation with resource agencies in late 2017.

Task 3: Environmental Permitting
The non-Federal sponsor must obtain a Shoreline Permit from the City of Seattle or appropriate Agency. The Corps will complete all required federal permits and complete consultations with State and Federal Agencies.

Task 4: Real Estate Coordination
All real estate must be owned or have allowable City use and certified for use by the Corps after completion of design, but prior to advertising of a contract.

III. DESIGN & IMPLMENTATION COST MANAGEMENT / COST SHARE

Disciplines expected to make up the PDT during the Design and Implementation phase include Coastal Engineering, Structural Engineering, Geotechnical Engineering, Civil Engineering, Cost Engineering, Environmental Resources, Real Estate, Project Management, Construction, and Contracting. Project Costs are in Table 1 and 2. Specific design tasks are listed in Table 3.

Table 1: Estimated Design and Implementation Costs

Task	Sponsor or Corps?	Cost	Notes
Preconstruction Engineering and design	Corps with Sponsor input	$492,500	Design phase PM, planning/environmental

			compliance, engineering & design, specs, cost estimating, technical reviews ($30K for contracting action)
Survey	Sponsor	$42,000	Establishing existing conditions and elevations for design
Geotechnical Investigations	Sponsor with Corps input	$99,500	Establishment of geotech conditions to help verify designed seawall is appropriate
Construction Contract	Corps	$1,922,000	Construction contract
LERRD	Sponsor	$0	Lands, Easement, Right of Ways, Relocations and Disposal. Possible $5K crediting to Sponsor for reports and required documentation
Construction Management	Corps	$285,000	Construction management, engineering during construction, S&A, PM
Contingency	Corps		Contract mods/contingency 21% included in above categories
TOTAL		**$2,841,000**	**Includes Contingency and PED including geotech and survey investigations**

Table 2: Allocation of Funds

PPA Federal/Non-Federal Allocation of Funds Date 4/13/2017
Alki Section 103 Project

Col	1	2	3	4	5	6	7	8	9
Year	TPC[1]	Non-Fed LERRD	Sched Design	Sched Const.	Scheduled Design + Const.	Percent[2]	Non-fed Cash and In-Kind[3]	Non-fed Total	Fed Cash
FY17 and Prior	$316,500	0	$316,500	0	$316,500	11%	$241,500	$241,500	$175,000
FY 18	$2,379,500	0	$317,500	$2,162,000	$2,379,500	84%	$702,100	$702,100	$1,577,400
FY 19	$145,000	0		$145,000	$145,000	5%	$50,750	$50,750	$94,250
Totals:	$2,841,000	0	$634,000	$2,207,000	$2,841,000	100%	$994,350	$994,350	$1,846,650

Givens Non-Fed LERRD (Col 2), Sched Design Cost (Col 3) and Sched Construction Cost (Col 4)

Notes:

1. TPC = LERRD cost (Col 2) plus Sched Design Cost (Col 3) plus Sched Construction Cost (Col 4).
2. The percentage is based on the proportion of scheduled design and construction cost to total design and construction cost.
3. Total Non-Federal Cash and In-Kind of $994,350 includes $141,500 for in-kind contributions, $852,850 cash, and the sponsor's contributions for Articles V and X of 0$. FY17 Non-Fed Cash and In-Kind includes WIK and cash.

SCHEDULE AND MILESTONE

The P2 system will be used to manage and update schedule, set dependencies and durations of individual tasks which includes milestones shown below representing major design and implementation tasks.

Milestone	*Projected Completion Date*	*Actual Date*	*Completion Criteria*	*Status*
DPR/EA		August 26, 2016		Complete
Negotiate PPA	March 15, 2017	March 13, 2017	Sponsor and City attorney review and acceptance	Complete
Execute PPA	May 16, 2017		NWD and City Approval	In-process
Start final design	16 May 2017		Can be completed only after PPA executed, to allow City reviews and initiation of survey and geotechnical studies (City provided)	
Receipt of Non-federal funds from City	June 10, 2017		Submittal of funds to appropriate processing center within the Seattle Distinct	
City provides LERRD for Corps review	September 5, 2017		Date of electronic submittal of documentation for LERRD crediting	
Corps certifies LEERD	October 10, 2017		Must be completed prior to award/procurement	
Supply Contract Advertised	December 13 2017		Contracting issues solicitation	
Award of Supply Contract	January 15, 2018		When contract is awarded, notice of award to supplier. Actual lead time to be developed by team (estimated 6 month lead time for manufacture and curing)	
Construction Presolicitation and Solicitation Documents completed	February 15, 2018		Invitation to bid (IFB) requires a 15 day presolicitation notice. After presolicitation period, solicitation is 30 days in duration.	
IGE for Construction Contract Award	February 20, 2018		Must be submitted to Contracting before award of construction contract	
Award Construction Contract	July 15,2018		Contract awarded	

Notice to Proceed issued	July 15 2018		Notice to Proceed to contractor	
Initiate Construction	July 30, 2018		Mobilization after any contractor submittals approved	
Complete Construction	February 2019		Physical completion of project construction	
Project Closeout and final accounting	June 2019		Full closeout and hand over of project to City	

IV. QUALITY CONTROL PLAN

The purpose of the Quality Control plan is to ensure that the design and implementation of the Alki Seawall replacement is performed using established techniques and approaches. All work is compared against established USACE regulations and engineering manuals by Seattle District staff as well as knowledgeable expert teams outside of the Seattle District. The full plan is found in Appendix 2 but is summarized below.

1. Purpose

The technical review process for this study will be in accordance with ER 1110-1-12 "Engineering and Design Quality Management". To ensure a quality product, all action will be documented in the PMP, including decisions, rejection or acceptance of alternatives, etc. This QC Plan defines the responsibilities and roles of each member on the project and the Agency Technical Review (ATR) team. The products to be reviewed by the ATR team are the design report and 95% plans, and supporting appendices. ATR will be independent of the technical production of the product/project. The Design and Implementation phase Review Plan includes more detail. BCOE will also occur at the 95% design.

2. QC Objectives:

The ATR will ensure and confirm that:

- The documents are consistent with established criteria, procedures and policy;
- Assumptions that are clearly justified have been utilized in accordance with established guidance and policy, with any deviations clearly identified and properly approved;
- The concepts, features, analytical methods, analyses, and details are appropriate, fully coordinated, and correct;
- The problems/issues are properly defined and scoped; and
- The conclusions and recommendations are reasonable.

3. Quality Control Process

3.1 Technical Coordination

Generally, product development shall be performed in accordance with established Corps criteria and guidance and with Corps and Federal policy. Meetings with the appropriate ATR team members during the planning process will be held at key decision making points. Meetings will also be held to discuss and resolve technical and/or policy issues that may arise during the course of product development. Technical issues and concerns raised during the ATR review process will be documented, as will the resolution of these issues and concerns. Telephone and personal

contacts with appropriate ATR team members will be used to informally discuss study issues throughout the process.

3.2 Product Quality Control

Product Quality Control is the ATR of a completed product. The USACE Project Manager will provide completed documents to the review team leader who will distribute them to the ATR team members for review. During the review, ATR team meetings will be scheduled as required to ensure that all components have been coordinated, there is consistency throughout the document, and there is a consensus on proposed revisions. Any issues on which a review team position cannot be reached will be referred through the Project Manager to the District Functional Chief for resolution. The ATR team leader will record the significant team comments in a written review memorandum that will be provided to the Project Manager for appropriate action. Comments that cannot be resolved between reviewers and PDT will be taken by the ATR team leader and Project Manager to the appropriate Functional Chief for final disposition. If resolution is not possible, the assistance of Northwest Division and HQUSACE will be requested, as needed.

3.3- Value Engineering

Value Engineering (VE) is a conscious and explicit set of disciplined procedures designed to seek out optimum value of a project, for both initial and long-term investment, by defining and examining the required project functions. It focuses on improving value by identifying the most resource-efficient means of reliably accomplishing the functions that meet the performance expectations of the customer. Value, as defined, is the ratio of function to cost. Value can therefore be increased by either improving the function or reducing the cost. This is a requirement found in 41 USC 432–Section 432 and in Corps Manuals and Regulations. Project Managers are assisted in the creation of the Value Management Plan (VMP) by the District Value Engineering Officer. In order to insure that a quality project is being built, the project will be evaluated using the USACE Value Engineering Screening Tool. If the project is a likely candidate based on the Screening Tool results, a full VE study will be conducted at the 35% level and after PPA signature.

V. ACQUISITION PLAN

All work necessary to develop plans and specs was completed by the Corps of Engineers-Seattle District. No supply or construction contracts can be issued without sufficient funding in place at the Corps from the federal through Congressional/Continuing Authorities Program (CAP) appropriations and non-federal sponsor funds provided as their cost share contributions. Also, no contracts for site work can be solicited unless all LERRD are completed and certified. There will be two contracting actions involved in the building of this project. The first contracting action is a Supply contract to have critical components manufactured. The second action is a Construction Invitation to Bid (IFB) for installation of the components and associated site work.

In order to be able to construct the replacement seawall in summer of 2018, it will be crucial to account for the long lead time for components that will be composed of prestressed concrete such as the panels and potentially, the soldier piles. It is estimated that these components have a six month lead time from contract to delivery of the pieces to the worksite. These components will be considered government furnished materials that will be installed by a construction

contractor. Contract vehicle will be a material/supply contract and award based on lowest price for providing materials that meet the quality and delivery timeframes.

The Construction contract will be competitively bid with a 15-day presolicitation notice to notify potential contractors that a contract is coming out soon and subsequent 30-day solicitation period. This portion of the project will encompass all site work, any fill materials, appropriate gravel for the toe of the new seawall to reduce future damage, backfilling, heavy equipment as needed, environmental monitoring and assembly of components to make a completed replacement seawall. The placement of the seawall is directly seaward of the existing seawall.

Project construction contract will be administered through the Corps Construction division with construction oversight provided by Corps staff.

VI. RISK MANAGEMENT

The sponsor has supported design of the locally preferred plan through 35% design. While the outcome of that effort will be utilized to the maximum extent during USACE design, there may be design elements developed by the sponsor that are not included in the final Federal Plan. These elements may be related to compatibility of Hurricane and Storm Damage Reduction (Beach Erosion) features with recreation features or relocation of recreation features. Elements that are not included in the Federal Plan will be funded 100% by the sponsor. In addition, the sponsor will bear the costs of non-restoration based features (i.e., incidental recreation features) that exceed the limit of USACE cost share appropriation.

Risk management is accomplished through extensive assessment, monitoring and determination of risk elements and subsequent consequences and impacts in a risk register. This matrix is updated at least monthly by the Corps project manager

Refer to Appendix 1 for current risks identified in a summary risk register. Two possible construction scenarios are outlined in the appendix. .

1. Cost

Expenditures by the non-federal sponsor for the design of betterments will not be included in project work in-kind crediting.

2. Project Benefits

The monitoring and adaptive management plan to be further developed during design, will outline steps to determine if project benefits are being achieved, and steps to take if it is determined that benefits are not being achieved. If necessary, adaptive management will be conducted by the non-Federal sponsor and not cost-shared.

3. Scope Changes:

All scope changes in the period of design (governed by this PMP and the PPA) will be coordinated in accordance with the Change Management process described below. Additional scope elements must be approved through the Change management process.

4. Implementation Schedule

There is a risk that small delays in the project will seriously affect the implementation schedule. The design and construction schedules will be closely monitored through status updates to the

overall project schedule. Construction funding from congressional avenues is uncertain at this time which could impact schedule of project implementation.

VII. SAFETY AND OCCUPATIONAL HAZARD ANALYSIS AND MONITORING

Worker and environmental safety is critical to every construction project. The overall project risk increases greatly when construction activities are in changing and at times energetic environments such as bordering Puget Sound. All appropriate Health and Safety precautions will be employed using personal protective equipment including fall protection, water safety devices, hard hats and protective eyewear as well as engineering safety, including lighting as applicable, exclusion zones to prevent falls, overall site cleanliness and traffic control to name a few.

VIII. CHANGE MANAGEMENT

The decision-making processes for the project will be highly dependent upon various issues. For the most part, the USACE and Sponsor Project Managers will make decisions in coordination with their management/supervisory chains and the City of Seattle. If any issues cannot be resolved at the staff level, the management team will become involved to develop a solution. Change management is closely related to risk management and resolution. It is essential for the Project Manager to check in on a weekly basis to the Construction and Design team to insure project continues on schedule. If project schedule or costs are projected to deviate up to 10% from proposed time and financial targets, the Project Manager will call together the appropriate team members (including the City) and management to resolve the issue. Program Management and upper Corps management will be informed for situational awareness. If the deviation is greater than 10%, the project team will develop a remedy plan to focus the team on the recovery plan. The following people will be members of the management team. In the event this team cannot resolve issues, the parties will proceed according to Article VII of the Project Partnership Agreement.

<u>USACE</u>

Jessie Winkler	Chief, Civil Projects Branch
Evan Lewis	Chief, Environmental Resources Branch
JoAnn Walls	Chief, Engineering Division

<u>Sponsor</u>

Becky Rufin	City of Seattle

IX. COMMUNICATION PLAN

Communication between the USACE and the sponsor shall occur both formally and informally. Communication with the sponsor will occur on an as needed basis to ensure that the USACE and the sponsor are informed of all pertinent project decisions. Periodic meetings between the USACE and sponsor management will facilitate mutual project oversight. In addition, the design team, made up of USACE and sponsor staff will meet on a regular basis to discuss design progress and resolve product development issues. Communication with agencies and stakeholders will occur as required for NEPA coordination, and other regulatory requirements. Formal communications will be supported with assistance from the Seattle District Public Affairs

Office (PAO) and assistance from the City of Seattle Public Affairs Group. In addition to written outreach, the Seattle District will make use of social media and other media sources.

Major press releases will be coordinated from the Corps PAO.

X. DATA MANAGEMENT

Data Management will be overseen by the Seattle District Project Manager, using Corps-only shared drives that receive daily backup offsite to insure data integrity is maintained. Any documents that are submitted to the non-federal sponsor will be archived and maintained on the Corps servers.

Format of documents shall be in Microsoft Word, Microsoft Excel, GIS-compatible formats or using CAD formats compatible to Micro Station or AutoCAD. Documents shall be open and editable until final documents are approved by the team and will then be converted to Adobe PDF format. File notation particulars and other data requirements will be coordinated after signing of the PPA but in a mutually beneficial format and content between federal and nonfederal sponsor.

XI. CLOSEOUT PLAN

Throughout the project, expenditures will be monitored in CEFMS to ensure Federal/non-federal contributions and expenditures are in balance. After the PPA is signed, in-kind contributions from the non-Federal sponsor will be monitored and in-kind approvals by the project manager will be submitted to the USACE Chief of Finance and Accounting (F&A) on a quarterly basis. In addition, accounts in CEFMS will be de-obligated as needed as the project progresses. This will ensure a timely and smooth closeout procedure for the project.

APPROVALS

Review and approval of this PMP will be conducted by USACE Seattle District and Northwestern Division and sponsor team members.

Appendix 1: Risk Management Plan

Identified ***Risk Categories***	Risk Category Description
COST	Risks from the budget and actual costs of processes, product, or departments and the variances and profitability.
SCHEDULE	Risks that relate to planning work or achieving allotted time for each of these risks.
STAKEHOLDER	Anyone who has a share or interest in the enterprise.
TECHNICAL	Risks related to or characteristic of the field of Ecosystem restoration.

Risk ***Impact Definition*** & Criteria

Three types of impacts were identified: low, medium, and high.

Impact criteria are as follows:

- Low: Given the risk is realized, there would be minimal or no impact.
- Medium: Given that the risk is realized, there would be a moderate performance shortfall but workarounds would be available.
- High: Given that the risk is realized, the performance would be unacceptable with no known workarounds.

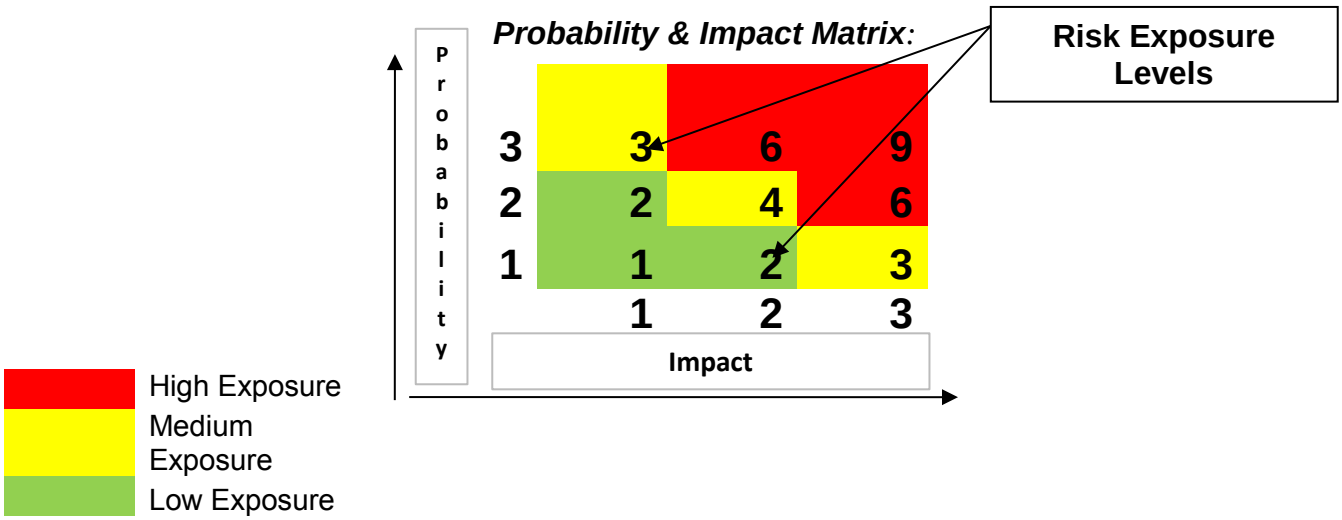
Risk ***Probability Definition*** & Criteria

Three types of probabilities were identified: not likely, possible, and highly likely.
Probability criteria are as follows:

- Not likely: Will effectively mitigate this risk based on standard practices.
- Possible: May mitigate this risk, but workarounds are required.
- Highly Likely: Cannot mitigate this risk, but a different approach may be possible.

Risk ***Exposure Level Definitions***

Risk Exposure Value	Exposure Level
1 or 2	Low Exposure Levels (Possible acceptance): Will be added to possible risks watch list
3 or 4	**Medium Exposure Levels (Review risk):** Issues will be defined and root causes identified Review of issue will increase Responsibility will be assigned
6 or 9	**High Exposure Levels (Mitigate risk):** Issues will be defined and root causes identified Risk response defined and in place Reviews will increase Responsibility will be assigned



Risk Register

#	Risk Description/ Impact	Probability	Impact	Exposure	Owner	Mitigation Strategies	Contingency	Trigger
Cost								
1	Overall 103 authority cost exceedances	1	2	**2**	Corps, City	City pays above and beyond 103 authority to finish project	None	Cost identified at 65% and 95%, very unlikely based on initial construction estimates
2	Not enough funding in section 103 authority	3	3	**9**	Corps, City	City works with congressional delegates for more authorization funding	City procures materials or services	Project meets cost ceilings during cost estimates or inability to award
3	Construction Materials	2	2	**4**	Corps, City	City purchases suitable construction materials (panels)	Delay of project	Very long lead time for concrete panels or soldier piles
4	Bidding climate	1	3	**3**	Corps	Conduct an Independent Government Estimate (IGE) for pricing baseline	Allow for a 20% bidding contingency in prices	high bids
Schedule								
5	PPA Execution	2	3	**6**	Corps	Include contingencies in schedule, concurrent PDT and NWS reviews		Critical path delays, funding delays for federal share
6	Adverse construction season	2	2	**4**	Corps, City	Start construction early in summer (July) to account for in-water work windows and good construction weather	Authorize overtime to finish construction before fall, contract contingencies	Form 1 routing date
7	Seawall construction	1	3	**3**	City	Allow for slack in schedule, but still within in-water work window	Await better construction conditions	Issues occur with construction season

								due to tides and adverse weather.
Stakeholder								
8	Expiring City Grant or Budget funds	2	3	**6**	City	Ensure project adheres to project schedules	Begin some form of Seawall construction in Summer of 2018	Timelines approaching within three months of expiration will be monitored.
9	Public Perception	1	1	**1**	City	Public outreach at focused town meetings	City purchases properties of interest	Public complaint
10	Real Estate	1	3	**3**	City	City obtains easements well in advance of Corps construction	Include room in schedule	Easements not obtained near construction time frame
Technical								
11	Change in Seawall Design	1	2	**2**	Corps	Use proven designs that have defined, achievable components that can be adapted to any unexpected geotechnical or coastal modeling	Adjust design for Coastal, geotechnical or economic constraints. Increase modularity by outreach to prestressed concrete companies	Economic or technical requirements determined during geotechnical investigation
12	New Seawall settlement	1	2	**2**	Corps	Perform terotechnology investigations and adhere to strictest engineering requirements	Model wall performance using coastal models and various scenarios	Seismic activities or poor structural conditions of supporting soils
13	Seawall Failure before construction completed	3	3	**9**	Corps/ City	Accelerate Schedule and anticipate material lead times	Split contract into a supply portion for long-lead items, and construction contract for installation	Sewer Main Breach, unconsolidated material control
14	Permitting	1	2	**2**	City	City submits for shoreline permits early	Allow for schedule lag	City permits not meeting project schedules

15	Environmental Requirements	1	2	**2**	Corps	Ensure Seawall alignment doesn't affect environmental features	Set aside $15K	Alignment changes substantially

Risk **Exposure** Legend:

1,2	**L**	Low/Med or Low/Low
3,4	**M**	High/Low, Med/Med or Low/High
6,9	**H**	High/High, High/Med or Med/High

Appendix 2: Design Review Sequence

Alki Design Phase Review Steps

There will be 3 Dr. Checks sessions: DQC & Sponsor, ATR and BCOES

PDT prepares 65% Plans, Specs and DDR, then…

1. DQC team, BCOES team, and Sponsor review 65% plans, specs and DDR, submits comments in DrChecks.
2. PDT responds to comments in DrChecks. May attach revised report language or drawing(s) to comment response as needed.
3. DQC team, BCOES team, and Sponsor review PDT responses; back and forth until review teams and Sponsor OK proceeding to 95%. 65% review comments closed in DrChecks.

PDT prepares 95% Plans and DDR, then…

1. DQC team, BCOES and Sponsor reviews 95% plans, specs and DDR, and:
    a. Reviews how 65% comments were addressed in 95% submittals.
    b. Submits any new comments in DrChecks.
2. PDT responds to comments in DrChecks. Revises DDR and plans accordingly.
3. DQC team reviews PDT responses; back and forth until DQC team closes all comments.
4. ATR, Sponsor and BCOES team reviews DQC'd 95% plans, specs and DDR. Submits comments in DrChecks.
5. PDT responds to comments in DrChecks. Revises plans, specs and DDR accordingly.
6. ATR team/BCOES/Sponsor reviews PDT responses; back and forth until all comments closed. Product is 100% design.