

REVIEW PLAN

***Dungeness River Ecosystem Restoration
Puget Sound and Adjacent Waters, Section 544
Clallam County, Washington***

Detailed Project Report

Seattle District

MSC Approval Date: *June 22, 2011*

Last Revision Date: *January 2011*



**US Army Corps
of Engineers ®**

REVIEW PLAN

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Dungeness River Ecosystem Restoration Project, Clallam County, Washington – Detailed Project Report (DPR) and Environmental Assessment (EA).

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-407, Planning Models Improvement Program: Model Certification, 31 May 2005
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) Project Management Plan (PMP) for Dungeness River Ecosystem Restoration Project, Puget Sound and Adjacent Waters Program
- (6) Program Management Plan for the Continuing Authorities Program, Northwestern Division, April 2010

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, 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 four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-407).

2. STUDY INFORMATION

a. **Study/Project Authority.** Section 544, WRDA 2000 (P.L. 106-541).

b. **Decision Document.** The DPR and EA for Dungeness River Ecosystem Restoration Project, Clallam County, Washington, is being undertaken to determine and evaluate alternatives related to ecosystem restoration and reconnection of the Dungeness River from RM 0.9 to RM 1.75, creating wetland habitat through the reconnection of the river with its floodplain. The DPR and EA will require approval from Major Subordinate Command (MSC). The EA will satisfy all requirements under the National Environmental Policy Act (NEPA).

c. **Study/Project Description.** The Dungeness River flows north 31.9 miles and drops 3800 feet from the Olympic Mountains to the Strait of Juan de Fuca. Today the lower 2.6 miles are highly impacted by levees along both banks of the river. The levees and other constrictions increase aggradation and sediment transport, prevent the formation of wetlands and degrade native plant communities. This has resulted in reduced channel stability and fish habitat and a natural delta no longer occurs in Dungeness Bay.

The project is needed to restore a portion of the natural resources of the Dungeness River to as close to historic conditions as possible. Alternatives may provide for levee setback to allow 4800

feet of river to be reconnected to approximately 100-150 acres of floodplain. The Corps will consider various locations for setback levees as well as the addition of additional features such as meanders, large woody debris (LWD), engineered log jams, native plantings, etc. All features must be justified, fall within the 544 study authority cost limits, and must include risk analysis.

Clallam County is the non-federal sponsor.

Total project cost is estimated to be \$5 million.

- d. Factors Affecting the Scope and Level of Review.** The Project Delivery Team (PDT) made a risk informed decision that Agency Technical Review (ATR) is necessary for major deliverables for this project. Furthermore, the team determined that Type I Independent External Peer Review (IEPR) is not required. However, a Safety Assurance Review will be required to address potential life safety issues associated with this project. These risk informed decisions regarding ATR and IEPR were guided by criteria presented in EC 1165-2-209, Section 15, Risk Informed Decisions on Appropriate Reviews. Below are identified aspects of the project that will affect the scope and level of review:
- Life safety risks are low and there is no significant threat to human life.
 - The total project cost is less than \$45 million.
 - The Governor of an affected state has not requested an independent peer review.
 - The project is not likely to have a significant adverse impact on environmental, cultural, or other resources.
 - The project/study is not likely to be highly controversial, it is not anticipated that there will be public dispute to the size, nature, economic costs, environmental costs and other factors associated with the project.
 - Information in the decision document will not be based on novel methods, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices.
 - The project/study will not include an EIS.
 - The DPR will not be based on novel methods, present complex challenges or interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practice.
 - Significant interagency involvement is expected from the following groups:
 - Jamestown S’Klallam Tribe
 - WA Department of Fish & Wildlife
 - Dungeness Flood Hazard Advisory Committee
 - North Olympic Peninsula Lead Entity
 - WA Department of Transportation
 - Washington Recreation & Conservation Office

The recommended plan will likely include the construction of a setback levee. The project must retain the original intent of the Federally authorized Section 205 flood project (referenced per the 1964 Detailed Project Report). A safety assurance review will be required to ensure the project (specifically the setback levee) will provide the same level of flood protection to adjacent properties, utilities, and infrastructure as is currently provided by the existing levees while updating levee design and crest height to current engineering standards. The Corps will communicate residual flood risk to the sponsor as well as neighboring properties.

e. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include, but are not limited to, the following:

- Project Management
- Permitting
- Geotechnical analysis
- Cultural resources
- Design
- Monitoring plan
- Real estate/title reports
- Land classification and ownership

Clallam County (non-federal sponsor), the Jamestown S’Klallam Tribe, and multiple resource agencies have been working on this project for several years and have completed preliminary feasibility scoping activities. Under Section 544 of the Puget Sound and Adjacent Waters Ecosystem Restoration Program, the Corps will use existing studies and plans to identify critical restoration projects, including the Dungeness project. However, any work completed by the non-federal sponsor before the FCSA is signed will not be credited as in-kind contributions. Total study cost will be reduced based on these activities.

3. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. Documentation of DQC. DrCheckssm review software will be used to document all DQC comments, responses, and associated resolutions accomplished throughout the review process. Relevant DQC records will be provided to the ATR team during each ATR event and the ATR team will provide comments as to the adequacy of the DQC effort for the associated product. A final review of the products will be conducted by Office of Counsel.

- b. **Products to Undergo DQC.** The following products will be submitted for DQC review:

Product	Date
Without Project Conditions Report	April 2011
Draft DPR & EA	October 2011

4. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). 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 and 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. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. 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.

ATR reviewers will be from outside the home District. For Section 544 projects, it is not mandatory for the ATR lead reviewer to be from outside the home Division.

- a. **Products to Undergo ATR.** Products requiring ATR include but are not limited to:

Product	Date
Draft DPR & EA	May 2012

Where practicable, technical products that support subsequent analyses should be reviewed prior to being used in the study and may include: surveys & mapping, hydrology & hydraulics, geotechnical investigations, economic, environmental, cultural, and social inventories, annual damage and benefit estimates, cost estimates, etc.

- b. **Required ATR Team Expertise.** The current ATR plan is to include 6 team members. The expertise represented on the ATR team reflects the significant expertise involved in the work effort and generally mirrors the expertise on the PDT. The following table lists the disciplines that will be included on the ATR team as well as descriptions of the expertise required.

ATR Team Members/Disciplines	Expertise Required
ATR Lead/Planning	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have 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 (such as planning, economics, environmental resources, etc). The ATR lead will also be the Plan Formulation reviewer. The

	Planner should be a senior water resources planner with at least 5 years of experience and familiarity with ecosystem restoration projects for riverine and estuarine systems.
Economics	The Economics reviewer should have 5 years of CE/ICA experience and ecosystem restoration benefits calculation.
Environmental Resources	The Environmental Resources reviewer should have at least 5 years of experience and significant knowledge of salmon lifecycles as well as riverine, estuarine, and wetland habitats. Additionally, must have NEPA/EA and experience and knowledge of hazardous, toxic and radiological waste compliance.
Cultural Resources	The Cultural Resources reviewer should have at least 5 years of experience and significant knowledge of northwest historic and archeological resources. Additionally, must have Section 106 experience.
Hydrology & Hydraulics	The hydraulic engineering reviewer will be a subject matter expert in the field of hydraulics with at least 5 years of experience and familiarity with HEC modeling and riverine systems.
Civil/Geotechnical Engineering	The Civil/Geotech reviewer will have at least 5 years of experience and familiarity with construction & evaluation of levees.
Real Estate	The Real Estate reviewer should have 5 years of experience.

c. **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should 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 be 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.

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 DrChecks will include 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 DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

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:

- Identify the document(s) reviewed and the purpose of the review;
- 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;
- Identify and summarize each unresolved issue (if any); 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.

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 Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

5. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction

activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

- a. **Decision on IEPR.** The Project Delivery Team (PDT) made a risk informed decision that Type I Independent External Peer Review (IEPR) will not be required for this project. This risk informed decision was guided by criteria presented in EC 1165-2-209, Section 15, Risk Informed Decisions on Appropriate Reviews. Furthermore, the proposed project authority under Section 544 establishes the programmatic review plan model to be derived directly from Section 206. According to Section 206 programmatic review guidance, the project covered under this RP is excluded from IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis.

As described in Section 2.C. of this RP (“Factors Affecting the Scope and Level of Review”), this project does not have any of the mandatory IEPR triggers listed below:

- No significant threat to human life.
- Total project cost is less than \$45 million.
- The Governor of an affected state has not requested an independent peer review.
- The project is not likely to have a significant adverse impact on environmental, cultural, or other resources.

Additionally, the project will not include an EIS, there are negligible negative impacts on threatened and endangered species or their critical habitat, negligible negative impacts on tribal, cultural or historic resources. Furthermore, the project/study is not likely to be highly controversial and information in the decision document will not be based on novel methods, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices.

Although the project will not undergo Type I IEPR, the PDT has made a risk informed decision that a Safety Assurance Review (SAR) will be required during the Design & Implementation Phase of this project. Although life safety risks are low, a SAR will be required to ensure the setback levee will provide the same level of flood protection to adjacent properties, utilities, and infrastructure as is currently provided by the existing levees while updating levee design and crest height to current engineering standards.

6. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. 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, particularly policies on analytical methods and the presentation of findings in decision documents.

7. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The DX will also provide the Cost Engineering DX certification.

8. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-407 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. 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).

EC 1105-2-407 does not cover engineering models used in planning. 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. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. 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).

a. Planning Models. As the study progresses an ecosystem restoration model may be developed to measure the number of acres of floodplain restored and the functions and processes provided by floodplain wetlands. Once an ecosystem restoration model has been identified the RMO (NWD) will be coordinated with and a determination will be made on the appropriate review/certification process. In addition the RP will be revised to reflect the models used for the project and the review process that will be followed once it has been coordinated with the RMO. The Institute for Water Resources (IWR) Planning Suite, a certified Corps Planning Model, will be used for CE/ICA analysis. Additional planning models may be identified as the study progresses.

b. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Adaptive Hydraulics Model (ADH)	ADH is a state-of-the-art ADaptive Hydraulics Modeling system developed by the Coastal and Hydraulics Laboratory, ERDC, USACE, and is capable of handling both saturated and unsaturated groundwater, overland flow, three-dimensional Navier-Stokes flow, and two- or three-dimensional shallow water problems.	Enterprise

GeoStudio	GeoStudio 2007 is a suite of software products that can be used to evaluate the performance of dams and levees with varying levels of complexity. The seepage, settlement, filling/drainage, and stability performance of the structure can be simulated during the entire construction sequence. Either long term (steady state) or detailed transient analyses can be done to consider time-dependent responses. Pore-water pressures and stresses can be included in an advanced stability analysis.	Enterprise
Micro-Computer Aided Cost Estimating System (MCACES, MII)	The second generation of the Micro-Computer Aided Cost Estimating System (MCACES). It is a detail cost estimating program that was developed in conjunction with Project Time & Cost, Inc. (PT&C). MII provides an integrated cost estimating system (software and databases) USACE requirements for preparing cost estimates for project alternatives.	Enterprise

9. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost.

Task	Date	Estimated Cost
Draft DPR/EA	May 2012	\$18,000
Total:		

b. Model Certification/Approval Schedule and Cost. No model certification is anticipated at this time.

10. PUBLIC PARTICIPATION

The public will be invited to comment directly to the PDT through informal and formal public scoping meetings (including a NEPA scoping meeting) as well as public review and comment of project documents through the Corps’ Environmental Resources Section website. This includes but will not be limited to documents developed for the AFB, NEPA documentation, and draft DPR and EA. The opportunity for the public to nominate reviewers will be provided. Public input will be available to the ATR team to ensure public comments have been considered in development of the draft and final DPR and EA.

Once approved by NWD, this RP and the accompanying PMP (approved by NWS) will be posted to the District web site for public review.

11. PCX COORDINATION

For Section 544 projects, review plans for decision documents and supporting analyses outlined in EC 1165-2-209 are coordinated with NWD rather than a PCX. The MSC (Northwestern Division) is the review manager for the Section 544 program and will coordinate with the appropriate planning centers of expertise as needed.

12. REVIEW PLAN APPROVAL AND UPDATES

The Northwestern Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be 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, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Seattle District POC: Josh Fitzpatrick, Project Manager, Dungeness Ecosystem Restoration Project, 206-764-3801
- Home MSC POC: Valerie Ringold, 503-808-3984

ATTACHMENT 1: TEAM ROSTERS & DESCRIPTION OF MAJOR TASKS

Corps Project Delivery Team.

<u>Name</u>	<u>Corps Staff:</u>	<u>Office Symbol</u>	<u>Phone</u>	<u>Email</u>
Josh Fitzpatrick	Project Manager	PM-CP-CJ	(206) 764-3654	joshua.t.fitzpatrick@usace.army.mil
Bernard Hargrave	Program Manager	PM-CP	(206) 764-6839	bernard.l.hargrave@usace.army.mil
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Linda Smith	Plan Formulation	PM-PL-PF	(206) 764-6721	linda.s.smith@usace.army.mil
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Lee Ford	Civil Engineer	EN-DB-CS	(206)764-3765	lee.ford@usace.army.mil
Zac Corum	Hydraulic Engineer	EC-TB-HE	(206) 764-6581	zachary.p.corum@usace.army.mil
Laura Orr	Cost Estimator	EC-CO-CA	(206) 764-6761	laura.a.orr@usace.army.mil
Travis Goss	Geotechnical Engineer	EN-DB-CS	(206)764-6714	travis.b.goss@usace.army.mil
Charyl Francois	Economic Analysis	PM-PL	(206)764-5522	charyl.l.francois@usace.army.mil
Doris Cope	Real Estate	RE-RS	(206) 316-4417	doris.l.cope@usace.army.mil
TBD	Appraiser	RE-AP		
TBD	Office of Counsel	OC		

Project Management

- Update the Project Management Plan
- Attend meetings, prepare correspondence, and prepare meeting minutes
- Track and develop budgeting and schedule
- Provide schedule and financial updates in P2
- Conduct alternatives evaluation/plan formulation review
- Coordinate DQC and ATR

Plan Formulation

- Conduct without project and future without-project conditions analysis: review existing data related to current site conditions as well as future without project site conditions
- Develop measures
- Coordinate public involvement
- Conduct 10% design and prepare cost estimate of measures
- Final array of measures
- Develop, analyze, and screen alternatives
- Conduct 35% design and cost estimate
- Prepare alternative formulation briefing AFB read-ahead report
- Lead AFB
- Prepare draft and final decision document – Detailed Project Report/Environmental Assessment: documentation and review

Biologist

- Complete an Environmental Assessment in accordance with NEPA (including a public notice)
- Complete a Biological Assessment for the Endangered Species Act (ESA)
- Complete a wetland delineation and 404(b) (1) analysis for section 404 of the Clean Water Act
- Complete a 401 water quality certification and Coastal Zone Consistency determination

Cultural Resources

- Coordinate cultural and historic resource concerns
- Conduct a cultural resource survey on site during the feasibility phase
- Dig test pits and compose an evaluation report
- Coordinate with affected Tribes, the State Historic Preservation officer and compliance with Section 106 of the National Historic Preservation Act

Civil & Structural Engineering

- Review preliminary designs for measures and alternatives provided by the Sponsor
- Develop the 35% design for the recommended plan (including dike breaches, a new cross levee, and drainage systems)
- Prepare design drawings and provide appropriate written material for a decision document

Hydraulics & Hydrology

- Review technical studies, hydraulic modeling results, and site drainage and flood analysis to determine if proposed alternatives are hydrologically sound
- Assist with cross levee design criteria and breaching criteria for 35% design

Cost Engineering

- Complete cost estimate of two design alternatives (10% level using M2 computer software)
- Complete 35% cost estimate
- Incorporate real estate costs into Total Project Cost
- Evaluate project for constructability

Geotechnical Engineering

- Conduct necessary geotechnical evaluations for site design, including data needed to evaluate seepage and settling of the proposed cross levee
- Provide input to decision document and participate in DQC and ATR

Economics

- Perform incremental cost and cost effectiveness analysis using inputs from others of costs and outputs (benefits) to evaluate alternatives and determine and the recommended plan
- Prepare narrative analysis of findings as well as cost sharing for inclusion in decision document
- Work with cost estimating on developing Total Project Cost and other required economic analysis for report

Real Estate

- Complete a valuation estimate of the lands (i.e. reasonable cost estimate of the real estate interests for the proposed project)
- Prepare Real Estate Plan
- Complete summary information for the decision document that describes the lands, easements and rights of way necessary for the construction, operation, and maintenance of the project, including total acreage broken down by estate (property interest) and duration of easements required
- Complete a baseline cost estimate for the real estate.

Sponsor Team.

Name:	Role:	Organization	Phone	Email:
Hannah Merrill	Project Manager	Clallam County	360-417-2563	hmerrill@co.clallam.wa.us

ATTACHMENT 2: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
ITR	Independent Technical Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act