

REVIEW PLAN

Willamette River Floodplain Restoration Study, Middle Fork and Coast Fork Willamette River, Oregon, Feasibility Report, Portland District

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Portland District
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1. PURPOSE AND REQUIREMENTS

a. Purpose.

The original peer review plan was approved by the NWD's commander on 14 March 2008. The current Review Plan (RP) serves as an update/revision to that original plan and defines the scope and level of review for the Willamette River Floodplain Restoration Study, Middle Fork and Coast Fork Willamette River, Oregon, Feasibility Report.

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (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) Study PMP, Updated March 2011

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 1105-2-412). A waiver will be requested at the Alternatives Formulation Briefing (AFB) to skip the Draft Report and go straight to public review.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is Ecosystem Restoration Planning Center of Expertise (ECO PCX).

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

a. Decision Document.

The Willamette River Floodplain Restoration Study was authorized in Section 202 of the Water Resources Development Act of 2000 (P.L. 106-541, 11 December 2000). Titled "Watershed and River Basin Assessments".

Section 729 of the Water Resources Development Act of 1986 (100 Stat. 4164) is amended to read as follows:

Sec. 729 <<NOTE 33 USC 2267A>> WATERSHED AND RIVER BASIN ASSESSMENTS.

(a) In General. – The Secretary may assess the water resources needs of river basins and watersheds of the United States, including needs relating to -

- 1) ecosystem protection and restoration;
- 2) flood damage reduction;
- 3) navigation and ports;
- 4) watershed protection;
- 5) water supply; and
- 6) drought preparedness.

(d) Priority River Basins and Watersheds. – in selecting river basins and watersheds for assessment under this section, the Secretary shall give priority to –

- 1) the Delaware River basin;
- 2) the Kentucky River basin;
- 3) the Potomac River basin;
- 4) the Susquehanna River basin; and
- 5) the Willamette River basin.

(g) Authorization of Appropriations. – There is authorized to be appropriated to carry out this section \$15,000,000.

Specifically to fund this Feasibility Study, in the Fiscal Year (FY) 1998 Energy and Water Resources Development Appropriations Act (P.L. 105-62 on 13 October 1997), Congress appropriated \$100,000 for the reconnaissance phase of the Willamette River Floodplain Restoration Study (completed in 1999). In fact sheets provided to Congress, the U.S. Army Corps of Engineers (Corps) stated that the purpose of the floodplain restoration project was to "...assess opportunities to modify existing floodplain features in the Willamette Valley to restore natural wetlands and promote ecosystem restoration. The Feasibility Study will require approval from the Chief of Engineers and Congressional authorization. A programmatic Environmental Assessment (EA) will be provided as part of the Feasibility Report that will assess in a general manner the proposed actions and associated impacts that are common to each of the recommended projects. As each project is implemented, a project specific EA will be prepared along with all required environmental compliance documents.

b. Study/Project Description.

The purpose of this study is to restore natural floodplain functions and improve flood storage along the Willamette River and its tributaries. The study emphasizes the identification of opportunities for the restoration of aquatic and riparian ecosystems, recovery of proposed and listed threatened and endangered species, and flood damage reduction. The study area is the Willamette River Basin of western Oregon. The Willamette is a major tributary of the Columbia River and is the tenth largest river in the United States, based on average annual flow.

This study is being conducted in phases due to the large size and complexity of the Willamette River Basin. **Phase 1** of the study involved the development of a framework level plan for the entire Willamette Basin (WRI 2004); which documented conditions in the basin and strategies to recover fish and wildlife species as part of the Columbia River Basin Fish and Wildlife Program. **Phase 1A**, the

subject of this feasibility study, involves the feasibility study of floodplain restoration opportunities in the lower Coast and Middle Forks of the Willamette River.

The Coast Fork and Middle Fork subbasins are located in the southern portion of the Willamette River Basin. These particular subbasins were chosen for the Phase 1A study for several reasons. First, several opportunities exist below the dams to restore natural floodplain functions. Second, Corps' dams and bank protection projects, among other activities, have significantly altered hydrologic and hydraulic conditions in these subbasins, and it is appropriate for the Corps to take the lead in restoring more natural floodplain functions to these subbasins. Third, the high percentage of public land ownership in these subbasins, as compared to other major tributaries and the mainstem Willamette, increases the likelihood that a cost-effective, integrated restoration plan can be implemented. Finally, there is a high degree of interest in floodplain restoration among stakeholders and potential sponsors in these subbasins.

The Non-Federal sponsor for the Study is a non-profit entity, Willamette Restoration Initiative (WRI), operating through its financing body, the Mid-Willamette Valley Council of Governments (MWVCOG). A Feasibility Cost Sharing Agreement (FCSA) was signed by Portland District and MWVCOG in February 2004. WRI is a diverse stakeholder council originally established by the Governor of Oregon "...to provide an ongoing, permanent structure to the residents of the Willamette Basin to mount a concerted, collaborative effort to restore watershed health." WRI has been designated by the Northwest Power Planning Council (NPPC) as the lead planning entity for the Willamette Subbasin under the Council's Fish and Wildlife Program.

The State of Oregon, represented principally by Oregon Department of Fish and Wildlife and several other state agencies, has played an active role in the feasibility study.

The PMP was prepared with input from WRI and a group of diverse stakeholders representing other Federal, state and local agencies and entities with interest in those subbasins. Other key stakeholders in the process include the Oregon Chapter of The Nature Conservancy and local watershed councils.

The Phase 1A study is intended to be a pilot document for a watershed plan and will include a programmatic EA and programmatic cultural resource assessment. The intent is to prepare site specific EAs and cultural resource evaluations in the future during implementation.

c. Factors Affecting the Scope and Level of Review.

ATR is mandatory for all decision and implementation documents. An ATR is therefore necessary for the draft (if required) and final Feasibility reports for this project, in accordance with criteria presented in EC 1165-2-209, Section 9. A Programmatic Biological Assessment has been prepared and a Biological Opinion will be prepared. A Fish and Wildlife Coordination Act Report is being prepared and will be included in the study report appendices. These environmental compliance documents will be reviewed as part of the ATR and IEPR. A project Cost and Schedule Risk Analysis report was prepared, reviewed, and finalized (May 2012). In summary, the study will be challenging due to property ownership issues and the potential benefits to ESA listed species will have national significance, but neither the study processes and procedures or the expected ecosystem restoration projects are expected to be unique, controversial, or precedent setting, and there was no threat to human life. The total project cost currently ranges from \$40M to \$63M however, and according to regulations, an Independent External Peer Review (IEPR) will be required. Specific items are addressed below:

- 1) Challenges.** The study involves using standard environmental restoration measures that are not considered complex or challenging. Real estate and easement acquisition is probably the biggest challenge, but a recent development with a land purchase by a potential sponsor has improved the situation significantly.
- 2) Project Risks.** The Cost and Schedule Risk Analysis identified numerous separate contracts as the biggest cost and schedule risk driver, contributing 44% of the statistical cost variance and 54% of the statistical schedule variance. The study will recommend multiple

projects for restoration, but these projects are not connected in terms of ecological benefits so they can and will most likely be implemented on an individual basis depending on funding availability.

- 3) Threat to Human Life/Safety Assurance.** The environmental restoration measures proposed in this study, such as removing invasive species and planting native species, do not pose a threat to human life and safety. The proposed environmental restoration is not required for public safety reasons, but rather for ecosystem restoration.
- 4) State Request for Peer Review by Independent Experts.** The State of Oregon has not requested and it is not anticipated that they will request a peer review by independent experts. The study team has worked collaboratively with state, federal, tribal, and private representatives who are experts in the Willamette River Basin and incorporated their comments throughout the study.
- 5) Public Dispute of Size, Nature, and Effects.** The study team has worked collaboratively with all stakeholders to address any concerns or comments about the proposed projects. Public information meetings have been conducted through watershed council meetings and public response has been positive and supportive. There is no public controversy with this project.
- 6) Public Dispute of Economic or Environmental Costs or Benefits.** The study team has worked collaboratively with all stakeholders to address any concerns or comments about the proposed projects. Public information meetings have been conducted through watershed council meetings and public response has been positive and supportive. There is no public controversy with this project.
- 7) Novel Methods, Innovative Materials or Techniques, Complexities, Precedent-Setting Methods or Models, or Change Prevailing Practices.** The study involves standard environmental restoration measures that are not considered novel or complex or changes prevailing practices. No precedent-setting methods or models were used in the study. The HEP model that was used to screen alternatives is an established method and model in the industry. No innovative materials or techniques are proposed. Engineered log jams are an established construction feature on restoration jobs, as are culverts to reconnect side channels.
- 8) Redundancy, Resiliency, Robustness, Unique Construction Sequencing, Reduced or Overlapping Design/Construction Schedule.** There are no plans or requirements resulting from the study to implement any of the proposed projects with unique construction sequencing, or a reduced or overlapping design/construction schedule. Redundancy, resiliency, and robustness are not required for this project. The restoration work will be implemented with an adaptive management approach, so the above mentioned items do not apply.

d. 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: the Feasibility Study Report and appendices.

e. Project Delivery Team (PDT).

The PDT is presented in Attachment 1. The project manager is the main point of contact at the Portland District for more information about this project and the RP.

f. Architect Engineering Team (A/E). The A/E team is TetraTech, Inc. The A/E Team members are also presented in Attachment 1.

4. DISTRICT QUALITY CONTROL (DQC)

a. General.

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). DQC for decision documents, as covered by EC 1165-2-209, will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans. All draft products and deliverables will be reviewed within the district as they are developed by the PDT to ensure they meet project and customer objectives, comply with regulatory and engineering guidance, and meet customer expectations of quality. Work products will be forwarded to the appropriate Branch Chiefs of disciplines directly involved with the development of the document. The Branch Chiefs will determine the most appropriate person to carry out the review of the document.

b. Products for Review.

All work products and reports, evaluations, and assessments shall undergo necessary and appropriate DQC, including National Environmental Policy Act (NEPA) documents (programmatic environmental assessment), other environmental compliance products, and any in-kind services provided by the local sponsor. Additionally, the PDT is responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices, and the recommendations before approval by the District Commander.

c. Documentation of DQC.

DrChecks review software will be used to document all DQC comments, responses, and associated resolutions accomplished throughout the review process. Relevant DQC records will be reviewed during each ATR event and the ATR team will provide comments as to the adequacy of the DQC effort for the associated product.

5. AGENCY TECHNICAL REVIEW

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 (ECOPCX) 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 for decision documents, as covered by EC 1165-2-209, will be coordinated with the Planning Center of Expertise (PCX). ATR team members for each relevant discipline will be coordinated by the Portland District with the PCX to determine members from outside Portland District and their availability. The ATR team roster is shown on Attachment 1. The ATR team leader will be from outside the home MSC. The ATR team will ensure that the product is consistent 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 the results in a reasonably clear manner for the public and decision makers. The products will be reviewed against published guidance, including ER's, EC's, manuals, engineering technical letters, and bulletins.

a. Products to Undergo ATR.

The report package for review, AFB, Draft (if required) and Final Feasibility reports, will include all report text, programmatic environmental assessment, programmatic cultural resource assessment, concept plates, background information, and cost information. The FSM was conducted on 17 November 2009 and a policy guidance memo was issued on 22 July 2010. This revised review plan covers review of the draft report that will be used for the AFB in FY12 and the subsequent ATR of the final report.

b. Required ATR Team Expertise.

The current ATR plan will include at least 7 reviewers (Attachment 2). This number is based on the following disciplines required to develop the draft (if required) and final reports:

Table 4.1 ATR Team Requirements

ATR Team Members/Disciplines	Expertise Required
ATR Lead/Environmental/Biological Specialist	The ATR lead will be an Environmental Specialist/Biologist with experience in leading ATR teams and in plan formulation of ecosystem restoration. Experience with anadromous fish passage, NEPA (programmatic EAs), and ESA consultation/coordination, and environmental models and their applications is also required.
Economist/Plan Formulation	The economist and/or plan formulator should have experience in environmental restoration projects.
Cost Engineering	The cost engineer reviewer should be from the Cost Engineering Directory of Expertise (DX) in NWW and have experience with environmental restoration cost estimates, construction schedules, and contingencies.
Hydraulic/Hydrology/Geomorphology Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics/hydrology and have a thorough understanding of computer modeling techniques that will be used such as HEC-RAS and an understanding of geomorphology.
Geotechnical/Civil Engineering	The geotechnical/Civil engineer reviewer should have experience with foundation and excavation issues, specifically related to environmental restoration.
Realty Specialist	The realty specialist should be knowledgeable about gross appraisals and the requirements for a Real Estate Plan.

c. Documentation of ATR.

DrChecks review software has been/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 been properly followed;
- 3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- 4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in or to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks includes the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical coordination, and lastly the agreed upon resolution.

The ATR team will prepare a Review Report which includes a summary of each unresolved issue; each unresolved issue will be raised to the vertical team for resolution. Review Reports will be considered an integral part of the ATR documentation and shall:

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

ATR may be certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. Certification of ATR should be completed, based on work reviewed to date, for the AFB, draft report (if required), and final report. A sample certification is included in ER 1110-2-12.

6. INDEPENDENT EXTERNAL PEER REVIEW

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. 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 the 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 documents concerning 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.

While this study will be somewhat challenging and the potential benefits to ESA listed species will have national significance, neither the study processes and procedures or the expected ecosystem restoration projects are expected to be unique, controversial or precedent setting and there is no threat to human life. The current cost estimate ranges from \$59M to \$68M. Based on this information, a Type I IEPR will be required due to meeting the mandatory trigger dollar threshold of \$45M, as per Paragraph 11.d.(1) and Appendix D of EC 1165-2-209. A Type II IEPR will not be required because there is no threat to human life, innovative materials or techniques, or unique construction sequencing.

Type I IEPR is mandatory if any of the following are true:

- 1) **Significant Threat to Human Life.** The environmental restoration measures proposed in this study, such as removing invasive species and planting native species, do not pose a threat to human life and safety. The proposed environmental restoration is not required for public safety reasons, but rather for ecosystem restoration.
- 2) **Cost Greater Than \$45 Million.** The current cost estimate ranges from \$40M to \$63M, requiring a Type I IEPR.
- 3) **State Governor Requests Peer Review by Independent Experts.** The State of Oregon has not requested and it is not anticipated that they will request a peer review by independent experts. The study team has worked collaboratively with state, federal, tribal, and private representatives who are experts in the Willamette River Basin and incorporated their comments throughout the study.
- 4) **Significant Public Dispute.** The study team has worked collaboratively with all stakeholders to address any concerns or comments about the proposed projects. Public information meetings have been conducted through watershed council meetings and public response has been positive and supportive. There is no public controversy with this project.

Type I IEPR is discretionary where the head of a Federal or state agency charged with reviewing the project study determines that the project is likely to have a significant adverse impact on environmental, cultural, or other resources under the jurisdiction of the agency after implementation of proposed mitigation plans and he/she requests an IEPR.

No Federal or state agency head has made a determination that there will be a significant adverse impact on environmental, cultural, or other resources nor is it anticipated that such a determination will be made for this project.

Type II IEPR (SAR) will not be required for this project based on the following analysis:

- 1) Significant Threat to Human Life.** The environmental restoration measures proposed in this study, such as removing invasive species and planting native species, do not pose a threat to human life and safety. The proposed environmental restoration is not required for public safety reasons, but rather for ecosystem restoration.
- 2) Novel Methods, Innovative Materials or Techniques, Complexities, Precedent-Setting Methods or Models, or Change Prevailing Practices.** The study involves standard environmental restoration measures that are not considered novel or complex or changes prevailing practices. No precedent-setting methods or models were used in the study. The HEP model that was used to screen alternatives is an established method and model in the industry. No innovative materials or techniques are proposed. Engineered log jams are an established construction feature on restoration jobs, as are culverts to reconnect side channels.
- 3) Redundancy, Resiliency, Robustness, Unique Construction Sequencing, Reduced or Overlapping Design/Construction Schedule.** There are no plans or requirements resulting from the study to implement any of the proposed projects with unique construction sequencing, or a reduced or overlapping design/construction schedule. Redundancy, resiliency, and robustness are not required for this project. The restoration work will be implemented with an adaptive management approach, so the above mentioned items do not apply.

b. Products to Undergo Type I IEPR.

The report package for review, Final Feasibility report, will include all report text, programmatic environmental assessment, programmatic cultural resource assessment, concept plates, background information, and cost information produced collaboratively with the sponsor and the sponsor's contractor through in-kind contributions.

c. Required Type I IEPR Panel Expertise.

The current IEPR plan is to include approximately 7 reviewers (Attachment 2). This number is based on the following disciplines required to develop the draft (if required) and final reports:

Table 5.1 IEPR Team Requirements

IEPR Team Members/Disciplines	Expertise Required
IEPR Lead/Economist/Plan Formulation	The IEPR lead should be an economist and/or plan formulator with significant experience in environmental restoration projects. The lead should also have the necessary skills and experience to lead a virtual team through the IEPR process. The IEPR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Environmental/Specialist	The Environmental Specialist should have experience with NEPA (programmatic EAs) and ESA consultation/coordination and environmental models and their applications.
Environmental/Biologist	The Environmental Analyst/Biologist should have experience with anadromous fish passage and environmental models and their applications.
Cost Engineering	The cost engineer reviewer should have experience with environmental restoration cost estimates, construction schedules, and contingencies, and be familiar with the Corps cost estimating system.
Hydraulic/Hydrology/Geomorphology Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics/hydrology and have a thorough understanding of computer modeling techniques that will be used such as HEC-RAS and an understanding of geomorphology.
Geotechnical/Civil Engineering	The geotechnical/Civil engineer reviewer should have experience with foundation and excavation issues.
Realty Specialist	The realty specialist should be knowledgeable about gross appraisals and the requirements for a Real Estate Plan.

d. Documentation of Type I IEPR.

The Type I IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR

comments in Section 5.c above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

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

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

DrChecks review software will be used to document IEPR comments and aid in the preparation of the Review Report. Comments should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 5.c The OEO will be responsible for compiling and entering comments into DrChecks. The IEPR team will prepare a Review Report that will accompany the publication of the final report for the project and shall:

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

The final Review Report will be submitted by the IEPR panel no later than 60 days following the close of the public comment period for the draft decision document. The report will be considered and documentation prepared on how issues were resolved or will be resolved by the District Commander before the district report is signed. The recommendations and responses will be presented to the CWRB by the District Commander with an IEPR panel or OEO representative participating, preferable in person.

7. 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.

8. 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. The RMO is responsible for coordination with the Cost Engineering DX.

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 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.

EC 1105-2-412 does not cover engineering models used in planning activities. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practices 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. Use of engineering models is also subject to DQC, ATR, and IEPR.

a. Planning Models.

In order to evaluate potential restoration alternatives for this study, it was necessary to develop a method to measure the benefits. A multi-species floodplain restoration habitat index was prepared to evaluate potential ecological benefits of restoring floodplain function along the Willamette River. Specifically, the index and its components will address the extent to which floodplain restoration will benefit multiple key fish and wildlife species. The index is composed of multiple species Habitat Suitability Indices (HSIs) within the Habitat Evaluation Procedures (HEP) framework model developed by the USFWS (1980a and 1980b) was used to quantify habitat benefits. The specific HSI models used included beaver, wood duck, yellow warbler, native amphibian, western pond turtle, Oregon chub, native salmonids, and American kestrel. The benefits identified were used to conduct the incremental cost and cost effectiveness (IC/CE) analysis on all restoration plans. A memo to EC 1105-2-407, titled "Policy Guidance on Certification of Ecosystem Output Models," dated 13 August 2008, approved the HEP methodology for use in ecosystem restoration planning. The memo also states that the Ecosystem Restoration Center of Expertise (ECO-PCX) must certify or approve for use each regionally modified version of these methodologies and individual models and guidebooks used in application of these methods. A Habitat Suitability Index (HSI) is the typical format used in HEP. All of the HSI models used for this study have been published and 3 of the 8 are approved for use, including beaver, wood duck, and yellow warbler. The native amphibian, western pond turtle, Oregon Chub, native salmonids, and American kestrel will require review and approval. Documentation supporting all of these models has been provided to the Ecosystem Restoration Center of Expertise (ECO-PCX) and a model review plan has been provided to the ECO-PCX for model review/approval.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Western Pond Turtle (Tetra Tech, 2001)	HSI for Western Pond Turtle to be used in the HEP model will be utilized to capture the range of benefits that could be provided by a floodplain restoration project. These benefits will be utilized in the IC/CE analysis on all restoration plans. Variable/attributes include water depth, water temperature, percent cover, and availability of nesting sites. Habitat type associated with this species includes off-channel ponds, sloughs, and backwaters.	Under review
Oregon chub (Scheerer, 2006)	HSI for Oregon chub to be used in the HEP model will be utilized to capture the range of benefits that could be provided by a floodplain restoration project. These benefits will be utilized in the IC/CE analysis on all restoration plans. Variable/attributes include waterbody type, velocity, submergent and emergent vegetation, water depth, substrate type, slope, woody debris, riparian, marsh, water temperature, non-native fish, habitat isolation. Habitat type associated with this species includes off-channel ponds, sloughs, and backwaters.	Under review
Native amphibians (WDFW, 1997)	HSI for Native amphibians to be used in the HEP model will be utilized to capture the range of benefits that could be provided by a floodplain restoration project. These benefits will be utilized in the IC/CE analysis on all restoration plans. Variable/attributes include permanent water, water velocity, emergent and submergent vegetation, ground cover along water's edge, riparian zone width, water temperature, and land use. Habitat type associated with this species includes slow velocity stream reaches/alcoves, off-channel ponds, sloughs, and backwaters and other wetlands.	Under review
Native salmonids (Tetra Tech, 2001)	HSI for Native salmonids to be used in the HEP model will be utilized to capture the range of benefits that could be provided by a floodplain restoration project. These benefits will be utilized in the IC/CE analysis on all restoration plans. Variable/attributes include maximum water temperature, percent pools, instream cover, and predominant substrate size. Habitat type associated with this species includes side channels, backwaters, and oxbows/ponds.	Under review
American kestrel (USFWS, 1978)	HSI for American kestrel to be used in the HEP model will be utilized to capture the range of benefits that could be provided by a floodplain restoration project. These benefits will be utilized in the IC/CE analysis on all restoration plans. Variable/attributes include distance to woodland, distance to suitable perch sites, distance to open land, and average dbh of trees. Habitat type associated with this species includes grasslands, ag lands, riparian forest, and woodland.	Under review

b. Engineering Models.

HEC-RAS will be used and is on the SET approved list.

10. REVIEW SCHEDULES AND COSTS

The FSM was conducted on 17 November 2009 and a policy guidance memo was issued on 22 July 2010. This revised review plan covers review of the draft report that will be used for the AFB in FY12 and the subsequent ATR of the final report and the IEPR estimate.

a. ATR Schedule and Cost. The ATR schedule and cost estimate is presented in Table 1.

Table 7.1. ATR Schedule and Cost.

Task	Date	Estimated Cost
AFB Report with supporting documents, including FSM	Oct 2011	\$32,400
Comment Resolution	May 2012	Included in cost above
Draft Report*		
Final Report with supporting documents,	Jan 2013	\$24,600
Comment Resolution	Feb 2013	Included in cost above
	Total	\$57,000

* A waiver will be requested at the AFB to skip the Draft Report and go straight to public review.

b. IEPR Schedule and Cost.

Table 7.2. IEPR Schedule and Cost.

Task	Date	Estimated Cost
Final Report IEPR	Feb/Mar 2013	\$300,000 (100% Fed)
Comment Resolution	Mar-May 2013	\$100,00 (Cost Shared)
	Total	\$400,000

c. Model Certification/Approval Schedule and Cost.

Schedule and cost unknown at this time.

Table 7.3. Model Certification/Approval Schedule and Cost.

Task	Date	Estimated Cost
Western Pond Turtle Model Review/Approval	Nov 2011 to Sep 2012	\$2,000
Oregon Chub Model Review/Approval	Nov 2011 to Sep 2012	\$2,000
Native Amphibians Model Review/Approval	Nov 2011 to Sep 2012	\$2,000
Native Salmonids Model Review/Approval	Nov 2011 to Sep 2012	\$2,000
American Kestrel Model Review/Approval	Nov 2011 to Sep 2012	\$2,000

11. PUBLIC PARTICIPATION

Public review of the final report will be conducted after the Alternatives Formulation Briefing and subsequent ATR, and prior to the IEPR. Comments will be documented in the report appendices for reviewer's reference. Public outreach and coordination/reviews by regional technical experts, agencies, and tribal members has been ongoing from the start of this project and will continue to completion. Regional experts will be consulted about potential external peer reviewers.

12. REVIEW PLAN APPROVAL AND UPDATES

The Northwestern Division (NWD) Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HOUFACE 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:

Tomma Barnes, Planner, CESAW-TSD-PL, 910-251-4728

Jodi Creswell, ECO-PCX Operations Director, CEMVD-PD-N, 309-794-5448

Chris Budai, Project Manager, Portland District (CENWP-PM-FP), 503-808-4725

ATTACHMENT 1: TEAM ROSTERS

PROJECT DELIVERY TEAM ROSTER

Discipline	Name	Organization
Project Manager	Chris Budai	CENWP-PM-FP
Technical Lead/H&H	Julie Amman	CENWP-EC-HY
Cost Engineer	Ricky Russell	CENWP-EC-CC
GIS Technician	Doug Swanson	CENWP-EC-TG
Operations – Fish Biologist	Greg Taylor	CENWP-OD-V
Environmental Specialist	Greg Smith	CENWP-PM-E
Fish Biologist	Rich Piaskowski	CENWP-PM-E
Economist	Louis Landre	CENWP-PM-F
Civil Engineer	Guy Fielding	CENWP-EC-DC
Archaeologist	Burt Rader	CENWP-PM-E
Appraiser	Karen Peterson	CENWS-RE-TR

A/E TEAM ROSTER

Discipline	Name	Organization
Project Manager/Biologist	Merri Martz	Tetra Tech, Inc.
Environmental /Fishery Biologist	Darlene Siegel	Tetra Tech, Inc.
Economist	James Carney	Tetra Tech, Inc.
Cost Estimator	Rick McCallan	Tetra Tech, Inc.
Hydraulic/Civil Engineer	Jason Kent	Tetra Tech, Inc.
Real Estate Appraiser	Steve Pio	Day Appraisal Company
Senior Reviewer/QA/QC	Scott Estergaard	Tetra Tech, Inc.
CADD Tech/GIS	Tom Smrdel	Tetra Tech, Inc.

DQC TEAM ROSTER

Discipline	Name	Organization
Hydraulic/Hydrologic Engineer	Cindy Thrush	CENWP-EC-HY
Fish Biologist	Mike Langeslay	CENWP-PM-E
Cost Engineer	Jeff Sedey	CENWP-EC-CC
Environmental Specialist	Jodi Marshall	CENWP-PM-E
Economist/Plan Formulation	Tim Kuhn	CENWP-PM-FP
Geotechnical/Civil Engineer	Mark Brodesser	CENWP-EC-DC
Realty Specialist	Kevin Kane	CENWS-RE-RS

AGENCY TECHNICAL REVIEW TEAM ROSTER

Discipline	Name	Organization	Years
ATR Lead/Environmental	Elliott Stefanik	CEMVP-PD-E	14
Economist/Plan Formulation	Charyl Barrow	CNWS-PM-PL	3.5
Cost Engineering	Jim Neubauer	CENWW-EC-X	30
Hydraulics/Hydrology/Geomorphology	Karl Eriksen	CENWS-EN-HH-HE	35
Geotechnical/Civil Engineering	Paul Anderson	CENWS-EC-DB-CS	20
Realty Specialist	Brett Scharlow	CELRL-RE-M	12

INDEPENDENT EXTERNAL PEER REVIEW TEAM ROSTER

Discipline	Name	Organization	Years
Lead-Economist/Plan Formulation	TBD	TBD	
Environmental/Biological	TBD	TBD	
Cost Engineering	TBD	TBD	
Hydraulics/Hydrology/Geomorphology	TBD	TBD	
Geotechnical/Civil Engineering	TBD	TBD	
Realty Specialist	TBD	TBD	

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name

Date

ATR Team Leader

Office Symbol/Company

SIGNATURE

Name

Date

Project Manager

Office Symbol

SIGNATURE

Name

Date

Architect Engineer Project Manager¹

Company, location

SIGNATURE

Name

Date

Review Management Office Representative

Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Name

Date

Chief, Engineering Division

Office Symbol

SIGNATURE

Name

Date

Chief, Planning Division

Office Symbol

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
July 2011	Revised entire document to align with new regulations	Entire Document
October 2011	Addressed review comments	As noted
April 2012	Addressed review comments	As noted
June 2012	Addressed review comments	As noted

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
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
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSD	Major Subordinate Command	WRDA	Water Resources Development Act