Puget Sound Nearshore General Investigation
Revisions to Project Management Plan
Nearshore Workplan

31 October 2008

Background/Preface

The Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) is a large-scale, comprehensive initiative to protect and restore the natural processes and functions in the nearshore zone of Puget Sound. The program is organized around a federal cost share agreement between the U.S. Army Corps of Engineers (Corps) and the Washington Department of Fish and Wildlife (WDFW) using the Corps General Investigation (GI) methodology. Seven federal agencies are active participants and contributors to the program (U.S. Geological Survey, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Environmental Protection Agency, U.S. Navy, U.S. Department of Energy, and the Army Corps of Engineers). Non-federal partners include five state agencies, tribes, local governments, ports, non-governmental organizations (NGOs), the shellfish industry, and private citizens.

The original Feasibility Cost Share Agreement (FCSA) for PSNERP was executed 25 September 2001. In signing the FCSA, the Corps and WDFW, along with their partners, have committed to completion of a General Investigation study.

The original project management plan (PMP) is available at www.pugetsoundnearshore.org, and supports the FCSA. The PMP anticipated the study would be completed in 2007 at a total cost of $12 million. The overall scope of the project has not changed. However due to funding shortfalls in the early years of the project and additional time required to build a scientifically defensible basis for the project, a change in the overall project cost and schedule is necessary.

In anticipation of the update of the FCSA and corresponding revision to the PMP the Corps/Sponsor team tasked the project contractor to review other large-scale restoration projects around the country and outline different alternatives PSNERP could consider for completing the feasibility study and report. Four alternative paths forward were developed based on interviews with PSNERP stakeholders and a review of three large-scale, nationally significant authorized projects including; Comprehensive Everglades Restoration Plan (CERP), Louisiana Coastal Area (LCA), and the Illinois River Basin Restoration Comprehensive Plan. The project management team in consultation with the steering committee selected one of the four outlined alternatives for completing the feasibility report. Under this alternative, the Corps/Sponsor team will develop a comprehensive plan and recommend an initial set of priority sites for authorization. A preliminary draft feasibility report will be complete in February 2010. Completion of this preliminary report will initiate a series of technical, policy and public reviews which will culminate with a final report being presented to congress in October 2011. These dates assume an unconstrained funding schedule. The feasibility report would also recommend authorization of a science and technology program and include demonstration or pilot sites. This study alternative is the preferred approach for revising the

PMP and directing the Corps/Sponsor team to complete a feasibility report. This approach best balances the need to seek authorized projects for implementation while embracing the Corps/Sponsor team's scientific methods thus allowing them to continue examining the comprehensive restoration and protection needs of the Puget Sound Nearshore ecosystem. This study alternative is extremely ambitious, as it outlines prioritized schedules that require strict adherence to deadlines to be ready for authorization by 2011. This alternative is similar to the Everglades, LCA and Illinois large-scale restoration projects mentioned earlier when those studies were at a stage of development comparable to the Nearshore project.

Although the scope of the project has not changed appreciably, the framing of the work tasks to complete the feasibility study have been modified to focus efforts on deliverables necessary to meet Corps of Engineers feasibility study/decision document requirements. Many of the tasks defined generally in the original PMP are now more completely described based on progress to date and an understanding of Puget Sound Nearshore Feasibility Report outcomes. Rather than using stages 1-3 as outlined in the 2001 PMP, in this revision document tasks are aligned more directly with the Corps six step planning process. Sections 1 thru 7 of the PMP Revisions focus on the workplan and approval process, replacing section 2.3 (Feasibility Study Staging: Programmatic and Project Specific) of the September 2001 PMP. The study tasks and subtask descriptions from the original PMP are included in Section 8. These tasks are largely unchanged; however, they have been updated to reflect inclusion of both a comprehensive plan and initial portfolio sites. Section 10 elaborates on several knowledge areas, as defined by the Project Management Institute, to more fully lay out the planned work.

Nearshore General Investigation Project Management Plan Revisions

Table of Contents
Volume I: Revised Workplan Plan by Corps Six-Step Planning Process

1.0 Problems and Opportunities 3
2.0 Inventory & Forecast Conditions 4
2.1 Evaluate Existing Conditions 4
2.1.1 Conceptual Model of the Puget Sound Nearshore 4
2.1.2 Valued Ecosystem Components. 5
2.1.3 Nearshore Geomorphic Classification System 5
2.1.4 Historic Conditions Assessment 5
2.1.5 Current Conditions Assessment 6
2.1.6 Change Analysis 6
2.1.7 Research Plan 8
2.2 Evaluate Future Without Project Conditions 8
2.2.1 Future Without Project Background 8
2.2.2 Future Risk Assessment 9
2.3 Strategic Needs Assessment/Comprehensive Restoration Needs 10
2.4 Stakeholder Involvement for Existing Conditions 11
2.4.1 Valuation of Ecosystem Functions Goods and Services 12
2.4.2 Stakeholder/ Public Involvement for NEPA Compliance 12
2.5 Future Without Project Conditions Report 12
3.0 Formulate Alternative Plans 12
3.1 Restoration Planning Objectives Development 12
3.1.1 Stakeholder Involvement for Restoration Planning Objectives 13
3.2 Plan Formulation Strategy 13
3.2.1 Overview 14
3.2.2 Existing Conditions and Plan Formulation Strategy Report 14
3.3 Identify and Describe Candidate Sites for the Initial Portfolio 15
3.3.1 Stakeholder Involvement for: Nearshore Project Database population 15
3.4 Develop Basin-wide Comprehensive Alternative Plans 15
3.4.1 Nearshore Restoration Portfolio 16

3.4.2 Alternative Strategies for Puget Sound Comprehensive Restoration 16
3.5 Management Measures 17
3.5.1 Identify Management Measures 17
3.5.2 Management Measure Technical Report 18
3.5.3 Parametric Cost Estimates for each Management Measure 18
3.5.4 Output/Benefit Quantification for each Management Measure 18
3.6 Model Certification 19
3.7 Agency Technical Review 19
3.8 External Peer Review 19
3.9 Feasibility Scoping Meeting 19
3.10 Stakeholder Involvement for Plan Formulation 19
3.10.1 Relationship with Other Restoration Programs and Partners 19
3.10.2 Support for Puget Sound Nearshore General Investigation 20
3.10.3 Broad Program Understanding and Support 20
3.10.4 Cooperating Federal Agency Coordination & Involvement 20
3.10.5 Government to Government Tribal Activities 22
3.11 Science & Technology 23
3.11.1 Basic Science and Technology Decision Support 23
3.11.2 Support of WRDA 2010 and Comprehensive Plan 23
3.11.3 Scientific Peer Review 25
3.11.4 Monitoring and Adaptive Management 25
3.11.5 Case Studies 26
3.11.6 Science and Technology Information Transfer 27
4.0 Evaluating Alternative Plans 27
4.1 Screen and Evaluate Early Candidate Initial Portfolio Restoration Sites 27
4.1.1 Stakeholder Review of the PSNERP GI Project List 27
4.2 Evaluate Basin-wide and Sub-basin Comprehensive Alternative Plans 28
5.0 Comparing Alternative Plans 28
5.1 Compare Basin-wide Comprehensive Alternative Plans 28
5.2 Compare and Justify Initial Portfolio Sites for Authorization 29
5.3 Alternative Formulation Briefing 29

6.0 Selecting a Plan 29
6.1 Basin-wide Comprehensive Plan 29
6.2 Engineering & Design and Real Estate Requirements of 1st Portfolio Projects 29
6.2.1 Real Estate 30
6.2.2 Engineering and Design 30
6.2.3 Cost Estimating 30
6.2.4 Economics 30
6.2.5 Site Survey 31
6.2.6 HTRW 31
6.3 Environmental Compliance 31
6.3.1 National Environmental Policy Act (NEPA) 31
6.3.2 Endangered Species Act 31
6.3.3 Clean Water Act (Section 404/401) and Rivers & Harbors Act (Section 10) 32
6.3.4 Cultural Resources (Section 106) 32
6.3.5 State Permits 32
6.4 Feasibility Report & Integrated EIS Preparation 33
7.0 Project Management, Review & Approval Process 33
7.1 Project Management 33
7.1.1 Local Sponsor Project Management 33
7.1.2 Corps Project Management 33
7.2 Review and Approval 33
8.0 References 34

Volume II: Revised Project Management Plan by Knowledge Areas

Volume II is a separate document including the following sections:

- Revised Study Task and Subtask by Work Breakdown Structure (WBS) Codes
- Revised Project Management Plan by Knowledge Areas
  - Cost Management
  - Time Management
  - Risk Management
  - Acquisition (Procurement) Management
  - Communications Management
  - Review Management (Quality Management)
  - Peer Review Plan
  - Model Certification Plan

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Volume I: Revised Workplan Plan by Corps Six-Step Planning Process

The feasibility report, a decision document, is required by the Corps to inform the Nation of nationally significant water resource problems and recommended solutions. The feasibility report will describe the economic, environmental, and social benefits of the recommended plan and alternative plans considered. More specifically the report will:

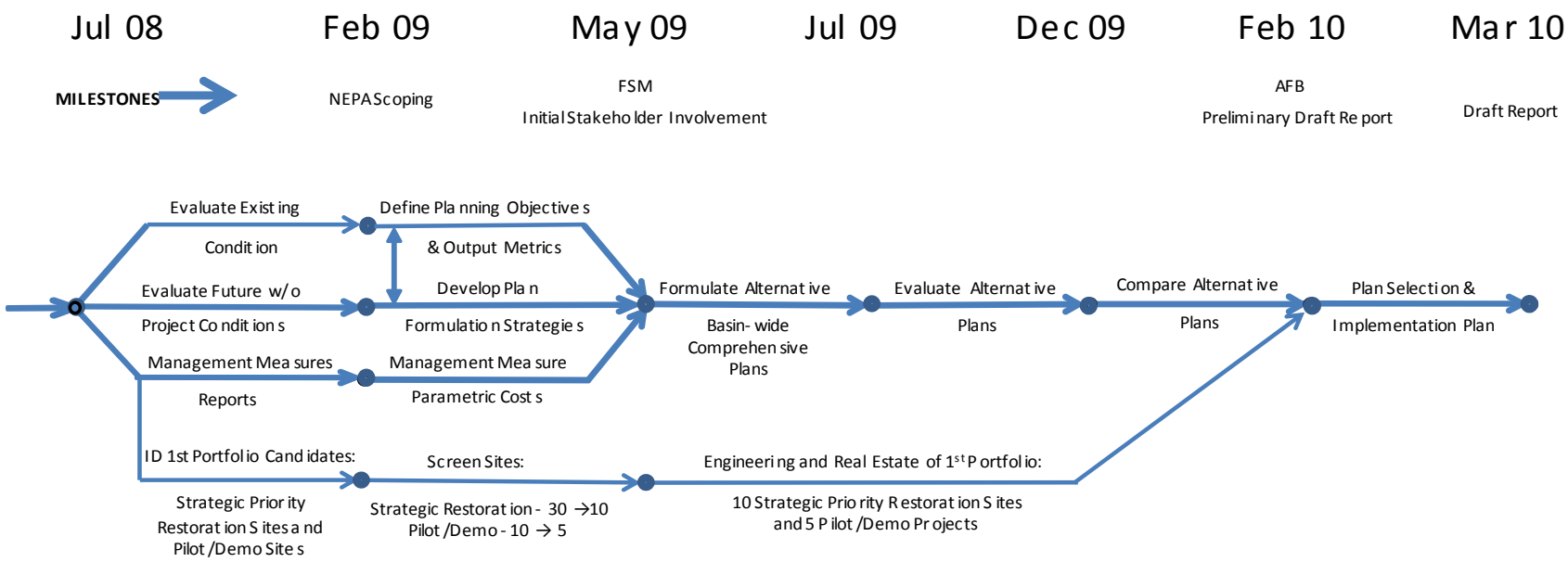
- document the Corps six step planning process for formulation and evaluation of alternatives and selection of the recommended plan;
- complete sufficient design to support reliable estimates of costs and benefits;
- establish sponsor, agency and public support for implementation and
- show decision makers compliance with applicable laws and policy.

Plans will be developed for both a Basin-wide comprehensive plan and for an initial portfolio of restoration opportunities.

Other basic requirements of the feasibility study include: 1) developing plans and designs for the initial portfolio sites; 2) preparing construction as well as operation and maintenance cost estimates for each of the viable sites 3) computing average annual benefits and costs; 4) evaluating technical and economic feasibility of the plan; 5) assessing environmental impacts, including impacts on biological resources, cultural resources, and recreation; 6) addressing the views of the public through workshops and public meetings; 7) formulating plan mitigation measures; and 8) preparing the draft and final feasibility report and integrated environmental impact statement (EIS) with required documentation to present the investigations and evaluations that support the recommended plan.

The end products will be a feasibility report and combined National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) integrated EIS. These documents will describe the identified problems and opportunities, plans formulated, engineering and economic feasibility and public acceptability of each alternative, the social and environmental constraints and impacts for each alternative, and the plan recommended for implementation.

Nearshore 2010
Tasks, Milestones and Timeline



Notes:
NEPA – National Environmental Policy Act
FSM – Feasibility Scoping Meeting
AFB – Alternative Formulation Briefing

(Needs to be updated per Mona's comments/PSNERP executive committee meeting)

The PMP defines and limits the work to that necessary to meet the above requirements for a complete feasibility report. Specific tasks for accomplishing the work, especially engineering, economic and real estate studies to support the recommended project are further outlined in Section 8. There will be close coordination between the Corps of Engineers and the project sponsor throughout the study.

1.0 Problems and Opportunities

The PSNERP GI study presents an opportunity to better understand many of the identified problems through a comprehensive evaluation of changes in the nearshore environment as well as the opportunity to identify and evaluate potential solutions to address documented impairments. In terms of the workplan this task includes documentation of the problems and opportunities to be considered as part of the GI.

The reconnaissance report found that historic and current development along the Puget Sound shoreline has resulted in a significant loss in estuarine and nearshore habitats. The Washington State Department of Natural Resources estimates that almost 80% of the original eastern nearshore habitat of Puget Sound's central basin (King, Pierce, and Snohomish counties) has been modified through the construction of bulkheads and docks, filling of intertidal habitat, and removal of shoreline vegetation. Changes in physical structure have resulted in changes which include loss of shade, reduction in leaf fall, which limits terrestrial food sources and nutrient inputs; lowering of the beach profile; coarsening of beach sediment; narrowing of the beach; loss of area through dredging and filling; and the alteration of groundwater flows. The direct link between physical conditions and habitat, and habitat and biological resources have resulted in significant impacts to critical fish and wildlife resources, including habitat that supports all species of salmonids. Remnant habitat patches have now become critical support features to remaining fish and wildlife populations, including two threatened salmonid species (Chinook salmon and bull trout).
(http://www.pugetsoundnearshore.org/program_documents/section905.htm)

The integrity of the nearshore ecosystem is in jeopardy with potential adverse impacts to humans and natural resources. These impacts include contaminated shellfish and reduced availability of commercially and recreationally harvested marine resources. Nine of the ten species listed as endangered or threatened within the Puget Sound region inhabit the nearshore. Pollution in parts of Puget Sound has caused lesions and tumors in flatfish that eagles, seals, and birds eat. Urban and suburban developments along the Puget Sound shoreline have taken away critical shoreline, and estuarine and nearshore habitats. Changes in the physical processes include limiting food and nutrient sources for marine life, deteriorating beach sediment movement, and altering the flows of surface and groundwater.

2.0 Inventory & Forecast Conditions

2.1 Evaluate Existing Conditions

This task includes an inventory and quantitative assessment of the existing condition in the following two general areas:

- Identification and documentation of existing knowledge base, existing data, or any inventory necessary that is consistent with the needs of the study; inventory is not limited to those areas traditionally used to develop analyses directly related to Corps project planning. Identification of existing evaluation tools (such as GIS) and models, with a discussion of compatibility of models and/or existing data. Quantitative evaluation of the existing condition and the historic condition of the Puget Sound nearshore ecosystem utilizing a change analysis methodology.

- Identification and documentation of ongoing agency programs and capabilities. Determination of jurisdictional delineations (who does what and why). Identification of current regulatory and land management practices.

Work to date on the evaluation of existing conditions has focused primarily on the second bulleted item above. Deliverables to address the second bulleted item have included development of a conceptual model of the Puget Sound nearshore, Valued Ecosystem Components (VECs), nearshore geomorphic classification system, and historic and current conditions assessments. These deliverables have largely been completed. Work on the change analysis is currently ongoing and will continue through December of 2008. In-house and sponsor labor to complete this task beginning 1 October 2008 through December 2008 will be included in the current revision of the workplan.

2.1.1 Conceptual Model of the Puget Sound Nearshore

The Nearshore Science Team (NST) has developed a framework for using Conceptual Models to understand the relationships among natural processes and the structure of Puget Sound nearshore ecosystems (Simenstad et al., 2006).

The PSNERP Conceptual Model enables the Nearshore Science Team to develop and document a process-based understanding of how the Puget Sound nearshore works. This is expressed in terms of how natural nearshore processes shape the structure (what we see) and the dynamics of the Sound's nearshore (how it changes), how these processes are affected by stressors (such as shoreline development), and how restoration of degraded ecosystem processes can restore or improve ecological functions of the nearshore.

The Conceptual Model provides a template for understanding the relationships between Valued Ecosystem Components and the nearshore processes that support them. In application to evaluate restoration alternatives, the Conceptual Model provides a tool that can be used to evaluate: (1) the effect of restoration actions on nearshore processes, and ultimately, VECs; (2)

the potential interactive and cumulative effects of multiple actions; (3) possible undesirable effects of actions; and (4) the effects of no action.

2.1.2 Valued Ecosystem Components

A series of technical reports have been prepared on nine Valued Ecosystem Components (VECs). These VECs include; Coastal Forests (Brennan, 2007), Beaches and Bluffs (Johannessen, and MacLennan. 2007), Eelgrass and Kelp (Mumford, 2007), Forage Fish (Pentilla, 2007), Great Blue Heron (Eissinger, 2007), Juvenile Salmon (Fresh, 2006), Orca (Kriete, 2007), Native Shellfish (Dethier, 2007) and Marine & Shorebirds (Buchanan, 2006). The technical papers outline the cause and effect relationships between the natural ecosystem process in nearshore Puget Sound and the range of factors that limit them. A tenth paper in this series relates human values to these nearshore dependent natural resources (Leschine, 2007). The VEC list will be used largely as a communication tool to translate the benefits of nearshore ecosystem process restoration to more readily understood ecosystem outputs that are important to humans.

2.1.3 Nearshore Geomorphic Classification System

A geomorphic classification framework has been developed for nearshore ecosystems to provide a uniform, process based method of classifying shore forms in Puget Sound (Shipman, 2008). This geomorphic classification system will allow for a spatially explicit understanding of predominant nearshore processes as indicated by observed shore forms. Building from the system, we will construct a list of natural processes important to ecosystem structure and function. This list will be used to establish links between ecosystem restoration needs and categories of restoration activities, and thus ultimately guide site-specific restoration actions.

This task has been completed.

2.1.4 Historic Conditions Assessment

The Historic Conditions Assessment has developed a spatially-explicit characterization of the natural ecosystems in estuaries and along marine shorelines of Puget Sound that occurred prior to European settlement of the region as a baseline for comparison with the Current Conditions Assessment resulting in a Puget Sound-wide Change Analysis. This Change Analysis will be used to develop the Strategic Needs Assessment. The Historic Conditions Assessment focused on the physical structure of estuaries and shoreline in the period 1850-1875, based upon records, notes, field journals, sketches, and cartography from the Government Land Office and the U.S. Coastal and Geological Survey. The assessment utilized the PSNERP geomorphic classification as an organizing framework through which estuaries, deltas and beaches were classified and delineated; this framework will be used throughout the Change Analysis. These data will be digitized, organized in a GIS geodatabase, tabulated, displayed and made accessible through the Nearshore project website. The results will be presented in a report that will describe the historic – and comparatively unaltered by non-native human actions – character of nearshore ecosystem structures sustained by nearshore processes.

Documentation for this task will be accomplished under the current workplan.

2.1.5 Current Conditions Assessment

The Current Conditions Assessment will provide a spatially-explicit, comprehensive assessment of the current physical and biological conditions in Puget Sound estuaries and on the shoreline of Puget Sound, circa ~2000-2006 that can be directly compared to the Historic Conditions Assessment. Current Conditions will be based primarily upon selected existing data sets that comprehensively describe the existing physical and biological condition of nearshore ecosystems in Puget Sound; while most of the identified physical change will be constrained to that which is unambiguously attributable to human actions, much of the biological change cannot be included in the Change Analysis (and thus not included in the Current Conditions Assessment) because of the lack of comparability within the Historic Conditions Assessment data set. However, all ecosystem processes, and their alteration by historic change, will be related to ecosystem functions, goods and services that include biological resources and other benefits valued by society, and represented in part by Valued Ecosystem Components. The analysis will utilize the PSNERP geomorphic classification to spatially link current condition to historic conditions (see Historic Conditions Assessment above) and to relate observed shoreform to variability of the occurrence and qualities of ecosystem processes.

2.1.6 Change Analysis

Change Analysis is defined as a measurement of changes between historic (pre-1900) and current conditions (circa 2000) of shoreline and estuarine landscape features. This analysis follows Army Corps of Engineers (Corps) requirements for a conditions analysis of historic and current landscape features. This will be used to inform a strategic assessment of Puget Sound nearshore restoration needs in support of the PSNERP GI.

This task (Change Analysis) will use data resulting from the Historical Conditions and Current Conditions assessments to analyze the type, location and scale of change between historic and current conditions of Puget Sound's Nearshore ecosystems.

By linking the kinds and levels of nearshore ecosystem processes associated with the different shoreform structures and those processes altered by anthropogenic modifications, this analysis will provide an understanding of the types of factors that have altered and constrained the natural processes in Puget Sound. These results will form the basis of the subsequent Strategic Needs Assessment. It is anticipated that findings of the change analysis will be reported by sub-basin. The following table helps convey the scale and scope of the study area and the changes being evaluated.

Linear Miles by Sub-Basin

Marine Sub-Basins	Linear Shoreline Miles
South Puget Sound	445
South Central Puget Sound	377
North Central Puget Sound	128
Whidbey Basin (Island)	354

Linear Miles by Sub-Basin

Marine Sub-Basins	Linear Shoreline Miles
San Juan Islands/Georgia Straits	715
Hood Canal	245
Strait of Juan de Fuca (East and West)	204
Puget Sound Total	**2468**

Change Analysis will be conducted across multiple spatial scales. These range from the "accounting units," that are the primary components within nearshore ecosystem boundaries (e.g., sediment drift cells, and large river deltas) to seven marine sub-basins, and the Puget Sound basin overall. Observed changes in nearshore ecosystems will be characterized in four ways:

Tier 1: Changes in shoreforms
Tier 2: Changes in anthropogenic stressors along shoreline of process units
Tier 3: Changes in the 200-m nearshore zone of influence associated with adjoining uplands
Tier 4: Changes in the landcover of associated drainage areas

The primary data resulting from the Change Analysis will be in GIS form, organized in the geodatabase, tabulated, displayed and made accessible through the Nearshore Partnership. The results will be presented in a report that will describe the current character of nearshore ecosystem structures that are associated with both natural and modified nearshore processes.

List of Stressors to Evaluate in Change Analysis
Shoreline Armoring
Jetties, Breakwaters
Marinas
Overwater Structures (OWS)
Parcels
Levees and Dikes
Impervious Surfaces
Dams
Roads
Land Cover by Humans
Intertidal Fill
Railroads
Stream Crossings

The three reports prepared (Historic Conditions Assessment, Current Conditions Assessments and Change Analysis) will be included as appendices to the feasibility report that describes the scientific approach to this change analysis and how the results will be used for development of the Strategic Needs Assessment.

The change analysis and the documentation reports are anticipated to be completed by December 2008.

2.1.7 Research Plan

Central to the overarching Strategic Science Plan (described in section 3.11.2) was the development of a Research Plan to identify and address priority research needs specific to completion of this Nearshore Partnership Work Plan. The PSNERP Research Plan (Gelfenbaum et al, 2006) was developed in collaboration with U.S. Geological Service research scientists. The Research Plan defines the near-term science needs of PSNERP required for implementation of the technical elements of the GI as a component of the larger science plan for Puget Sound.

This task is complete.

2.2 Evaluate Future Without Project Conditions

This task includes forecasting the future condition of the Puget Sound nearshore ecosystem. A completed task, the Puget Sound Future Scenarios analysis (Alberti et al., in press) resulted in the identification of six divergent alternative future scenarios for the Puget Sound region. These scenarios were derived using subject matter experts for two key drivers (climate change; human perceptions and behavior) and eight supporting drivers of potential future change (demography, development patterns, economy. governance, knowledge and information, natural hazards, public health, technology, and infrastructure) These six scenarios and the projected conditions of drivers will be used to inform our understanding of future conditions and associated future threats to nearshore ecosystem integrity

2.2.1 Future Without Project Background

The Future Without Project (FWOP) Analysis will establish projections or possible outcomes for future change for the Puget Sound nearshore based upon the Change Analysis under different scenarios. This will inform the GI on a magnitude of restoration responses necessary to both restore past process interruptions but also to prevent or minimize those expected from future conditions. This analysis will ultimately support a comparison of “with” and “without” implementation of the recommended restoration and protection plan (Figure 1).

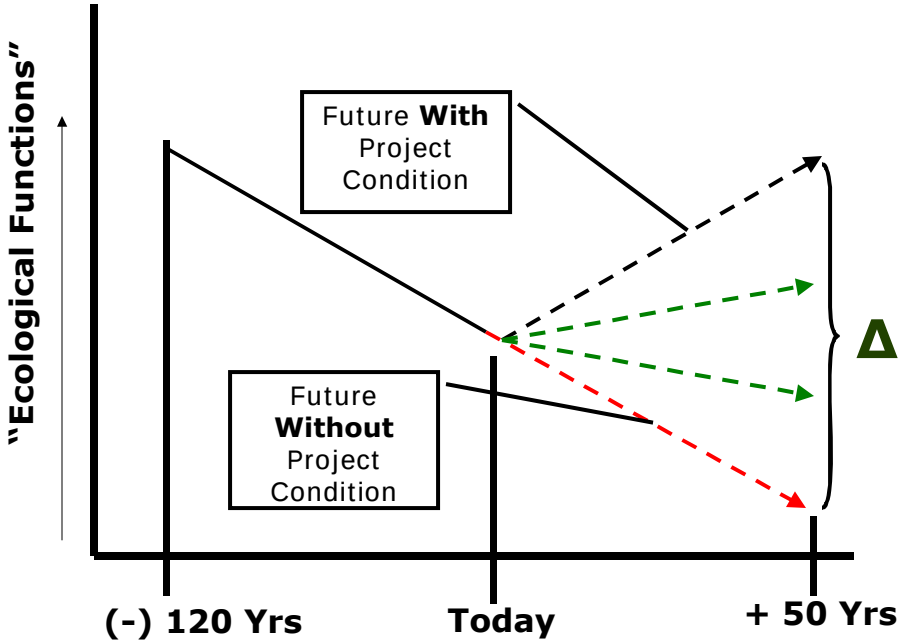


Figure 1: Comparison of Future With and Without Project Conditions

2.2.2 Future Risk Assessment

The Future Risk Assessment Project (FRAP) will assess future risks to the integrity of Puget Sound nearshore ecosystems. FRAP will identify the location and type of potential changes in land use, land cover and associated physical (anthropogenic) alterations to nearshore ecosystems (e.g., beaches, estuaries, deltas) of Puget Sound region by the year 2060 and more intermediate time intervals. To do so, we will complete a Future Risk Assessment Project that examines future conditions under three scenarios:

- Continuation of existing regional population growth trends
- Unregulated control and growth in population along with an increase in natural resource utilization and land conversions from natural conditions; and,
- Decreased or extensively managed growth and increases in environmental consciences and conservation activities

The Future Risk Assessment Project (FRAP) includes the following tasks:

- Predictions of change in the classified land use and land cover of the Puget Sound basin between present time and the year 2060; and,
- Predictions of anthropogenic alterations along the shorelines (beach, estuaries and deltas) of Puget Sound between the present time and the year 2060.

The FRAP will also provide an assessment of potential future development of the Puget Sound basin, with particular focus on shoreline changes. It is anticipated that this will allow for an evaluation of the potential risk that continued or increased regional urbanization may pose to the successful nearshore restoration activities. The findings will be presented in terms of a most likely condition with screening factors to account for other risk factors.

This task is expected to be initiated in October 2008 and completed in March 2009 with an interim submittal provided in February 2009 for inclusion in the plan formulation process.

2.3 Strategic Needs Assessment/Comprehensive Restoration Needs

The primary objective of the Strategic Needs Assessment task is to identify impaired processes and restoration and preservation needs based on interpretation of the change analysis data. Recommended actions will be grounded in guidance on restoration and conservation strategies derived from the peer-reviewed literature. The end product for the entire Puget Sound Basin and each of the seven component sub-basins includes identification of strategic areas upon which to focus integrated restoration and preservation efforts. The following outlines subtasks to be applied Basin-wide and each sub-basin to assess nearshore change to provide input into the Strategic Needs Assessment:

1. Review products of Change Analysis data queries.
2. Summarize major (Tier 1) changes, stressor attributes (Tier 2) and impaired processes (inferred from conceptual model) within the sub-basin.
3. Identify dominant stressors within and across areas of equivalent impairment.
4. Quantify rarity of specific shoreform types within sub-basins.
5. Consider characteristics of adjacency.
6. Relate observed condition of impairment to ecosystem functions, goods and services.
7. Consider effects on VECs as informed by conceptual models that would aid in the illustration of the significance of observed impairment.
8. Develop "storylines" specific to groups of observed change and associated stressors that define the problem and prescribe a solution.
9. Summarize findings at the scale of sub-basins and develop narratives.
10. Use sub-basin strategies to develop a list of potential management measures that could be applied to address identified impairments.
11. Roll-up sub-basin strategies and assess for Sound-wide problems and potential solutions.
12. Work with GIS staff to produce explanatory map products.

This approach will be first applied as a pilot in the Whidbey sub-basin. The methodology will be refined and finalized in October 2008. Evaluation of other sub-basins and the Sound-wide analysis will be completed between November 2008 and January 2009.

This task will culminate in a Strategic Needs Assessment Report which will be an appendix to the feasibility report.

2.4 Stakeholder Involvement for Existing Conditions

The Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) is a partnership among local, state and tribal governments in Washington State, the U.S. Army Corps of Engineers and other federal agencies, industries and environmental organizations committed to:

"Protect and restore the functions and natural processes of the Puget Sound nearshore ecosystem in support of the natural resources and beneficial uses of Puget Sound and the Puget Sound basin."

As the GI has progressed, PSNERP has attracted considerable attention and support from a diverse group of individuals and organizations interested and involved in improving the health of Puget Sound nearshore ecosystems and the biological, cultural, and economic resources they support. In 2004, we selected "Puget Sound Nearshore Partnership" as the name to describe this growing and diverse group. It serves to label the work we are collectively undertaking that ultimately supports the goals of PSNERP, but is beyond the scope of the GI Study. Collaborating with the Puget Sound Action Team, the Nearshore Partnership has worked to implement portions of their Work Plan pertaining to nearshore habitat restoration issues. We understand that the mission of PSNERP remains at the core of the Nearshore Partnership. However restoration projects, information transfer, scientific studies and other activities can and should occur to advance our understanding, and ultimately, the health of the Puget Sound nearshore beyond the original focus and scope of the on-going GI Study.

Beyond PSNERP, a number of programs are responsible for identifying and implementing nearshore habitat protection and restoration projects within Puget Sound. A partial list includes:

- Salmon Recovery Watershed 3 year plans
- Lead Entity annual Salmon Recovery Funding Board (SRFB) prioritization
- Coastal Ecosystem Land Conservation Program (CELCP)
- Alliance for Puget Sound Shorelines
- Marine Resource Committee projects through Northwest Straits Commission
- Estuarine and Salmon Restoration Program (ESRP)
- NOAA Community Restoration Program
- US Fish and Wildlife Service Coastal Program and Partners for Fish and Wildlife
- Pacific Coast Joint Venture
- National Fish and Wildlife Foundation Community Salmon Fund projects

Informally, coordination has occurred between many of these programs to incorporate the interim findings of PSNERP. More recently, State capital budget legislation has acknowledged the need to better coordinate funding, using consistent criteria in order to maximize the effectiveness of investments. ESRP, SRFB technical review teams and NOAA Community

Restoration Partnership have begun to more formally adopt restoration project guidance provided by PSNERP and review projects for consistency with the Regional Nearshore Recovery Chapter. Both of these actions have incrementally improved the ability to make more strategic investments based on the collaborations among Nearshore Partnership members.

2.4.1 Valuation of Ecosystem Functions Goods and Services

The outputs of the Change Analysis will be translated into a currency of impaired ability for nearshore ecosystems to provide functions, goods, and services. Stakeholder input combined with the scientific findings are needed in defining which of the many ecosystem functions, goods and services provided by Puget Sound nearshore ecosystems are of higher relative importance. This helps both to focus our restoration actions and to express the description of project benefits in socially relevant terms.

2.4.2 Stakeholder/ Public Involvement for NEPA Compliance

Compliance with the National Environmental Policy Act (NEPA) includes specific requirements for public involvement. The first milestone includes conducting public meetings to convey findings of the change analysis and Strategic Needs Assessment. A NEPA scoping meeting is anticipated to be held in winter/spring of 2009.

2.5 Future Without Project Conditions Report

The findings from the Future Without Project scenarios will be compiled with the findings from the Future Risk Assessment and the Current Conditions assessment (Strategic Needs Assessment) to document the most likely future without project (without comprehensive Basin-wide restoration) conditions over the 50-year project evaluation period. The Corps planning process evaluates the merits of alternative plans when compared to the without project condition. The documentation of the current conditions and future without project conditions will form the baseline condition or without project condition. This baseline condition also provides the basis for federal requirements (Corps and EPA) to conduct cumulative effects and alternative plan analysis through NEPA.

This task includes feasibility report preparation to document the first two steps in the Corps planning process. This deliverable will be the basis for the Feasibility Scoping Meeting.

3.0 Formulate Alternative Plans

3.1 Restoration Planning Objectives Development

Restoration planning objectives are specific measurable statements about restoration needs that are to be addressed by the project. Specific planning objectives will be developed utilizing the results of the Change Analysis and Strategic Needs Assessment that will provide a clear and concise summary of the problems and needs. The objectives will then be related to ecological outputs. The outputs of the various alternatives will then be assessed through the cost effectiveness analysis and incremental evaluation. This evaluation is a Corps tool that will be

used to assess the ecological merits of all alternatives. The cost-benefit evaluation will be used to measure the success of various restoration alternatives.

Objectives will vary from one Puget Sound sub-basin to another reflecting sub-regional difference in ecosystem conditions, desired level of ecosystem improvements, project constraints, and socio-political willingness to engage in certain types of restoration. It is anticipated that both Sound-wide and sub-basin level objectives will be developed.

3.1.1 Stakeholder Involvement for Restoration Planning Objectives

Restoration objectives are as much a social science exercise as they are a direct output of any PSNERP technical analyses. While strategic needs can inform stakeholders about the relative extent and associated impacts of nearshore ecosystem loss and degradation, this exercise will help us assess the magnitude of restoration acceptable to the public must be assessed in the context of their broader goals for economic development, clean up of Puget Sound and willingness to expend public dollars. Workshops implemented at the sub-basin scale will be necessary to capture the variability of these perspectives across Puget Sound.

As specific restoration planning objectives emerge, we will need to vet these with stakeholders. The important question of "how much is enough" requires substantial stakeholder input at both the sub-basin and Sound-wide scales. Our program can explain benefits and costs associated with different levels of restoration and protection in helping stakeholders understand the consequences of these choices.

3.2 Plan Formulation Strategy

Development of a plan formulation strategy includes the task of laying out how the findings of the Strategic Needs Assessment, planning objectives, management measures, project lists, project outputs (such as ecosystem goods and services) will be utilized to develop and evaluate project alternatives. Given the feasibility report strategy the team is moving forward, the plan formulation framework must identify a method to develop a comprehensive plan and also a method to screen and select an initial portfolio of critical projects. The feasibility report must be able to document that these projects fit within the comprehensive plan, are consistent with sub-basin and/or Sound-wide objectives and are among the most cost-effective projects with a high probability of success.

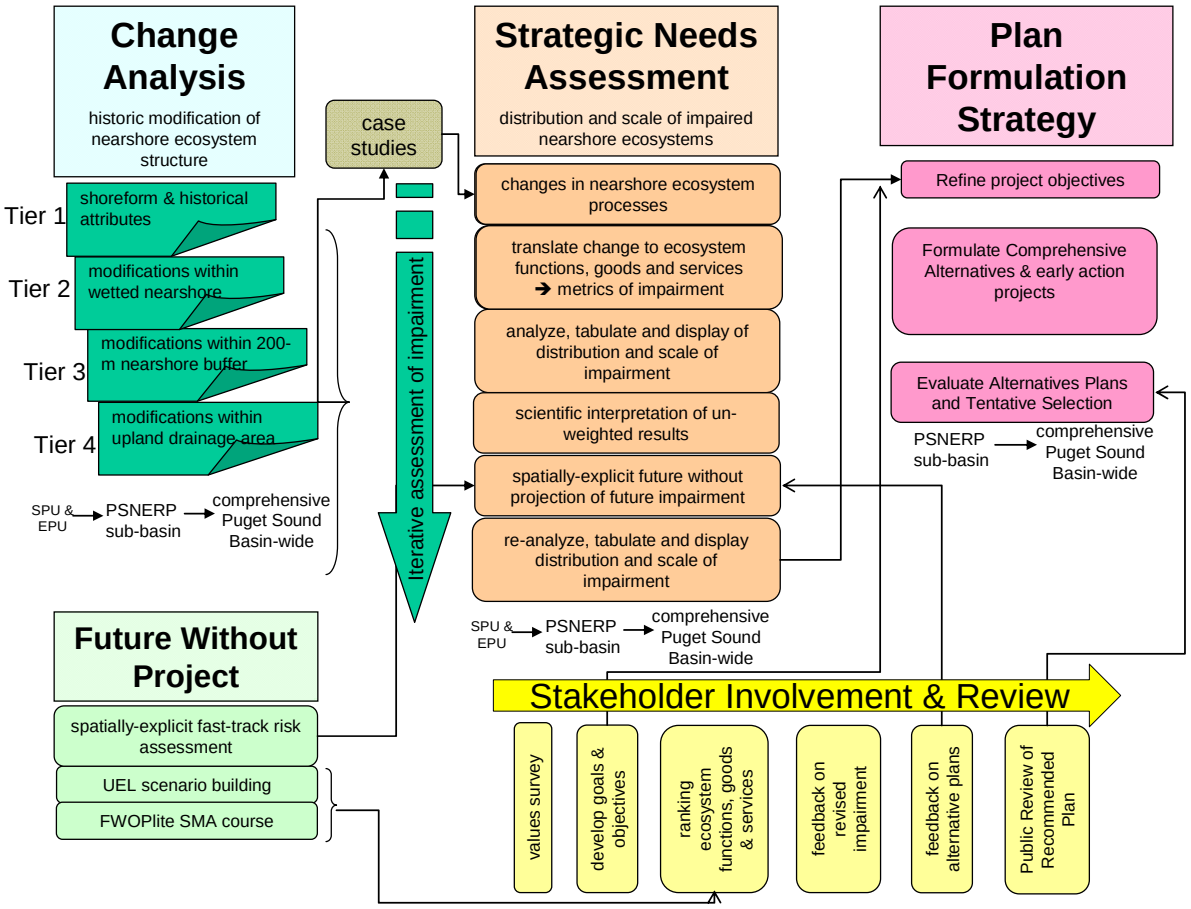


Figure 2: Relationship between GI Study Analytical Tasks.

3.2.1 Overview

The strategic needs assessment combined with development of specific restoration objectives will be the foundation for development of a Puget Sound wide plan formulation strategy. It is anticipated that the formulation strategy will move forward on two parallel paths once strategic needs have been identified: one to identify and screen projects for early implementation (Section 3.3) and another to develop Basin-wide and comprehensive, Sound-wide alternatives (Section 3.4) that together will result in a comprehensive solution set or recommended plan. Management measures are an integral component to developing both initial portfolio sites and building comprehensive basin wide alternatives. Tasks related to management measures follow in section 3.5.

3.2.2 Existing Conditions and Plan Formulation Strategy Report

This step or task includes documentation of the existing and future without project conditions and will also describe the plan formulation strategy. This document will be the basis for review

and discussion at the feasibility scoping meeting and is also the first chapters of the feasibility report.

3.3 Identify and Describe Candidate Sites for the Initial Portfolio

The PSNERP Implementation Team will develop a list of potential nearshore restoration and preservation sites for authorization under WRDA. As results for specific geographic areas from the Strategic Needs Assessment become available, the team can begin to compare these candidate sites with identified needs, highlighting those projects that provide the best match for further analysis. The screening at this level is anticipated to be based on the type of project (appropriateness for Corps participation), scale of project and whether it generally appears to be aligned with the study objectives.

Existing project ideas will form the pool of initial priority sites to be considered. An existing nearshore project data base will be the source for most of these potential projects. There will be limited opportunity to develop new proposals as part of the initial portfolio. Initial sites will be selected based on screening criteria developed from the Strategic Needs Assessment, implementation feasibility and stakeholder considerations. Specifics of the screening process and screening criteria will be developed once the strategic needs assessment is complete for the Whidbey sub-basin and number of potential projects is better defined. For scoping purposes it is assumed from the entire pool of candidate sites that 100 sites will be identified for further consideration. Sites will be broken into two categories

Strategic Priority Restoration Sites: These are sites where project features/design and ecosystem responses are well understood in terms of expected performance and benefits.

Scientific Demonstration Sites: These are sites where there is either some uncertainty in terms of deign, ecosystem process response, and/or expected benefit or the site expanded learning or teaching opportunities about different restoration approaches. Accordingly, it is anticipated that these sites will require considerable more scientific investigation, monitoring and adaptive management investment than the strategic priority restoration Sites. Some of these will likely become dedicated cases studies for integrated natural and social science study.

3.3.1 Stakeholder Involvement for: Nearshore Project Database population

Our program requires an understanding of the broad range of locally identified restoration and protection opportunities. Strategic Needs Assessment provides a tool for evaluating these opportunities, and developing a portfolio of projects that most efficiently meets identified restoration needs. Stakeholder input of project concepts into the nearshore project data base is needed to feed this cycle.

3.4 Develop Basin-wide Comprehensive Alternative Plans

Alternative plans include alternative courses of restoration and preservation action and their expected outcomes, alternative ways to address identified needs through agency programs, and alternative combinations of future efforts, Basin-wide and sub-basin strategies, and other

"alternatives." Alternative plans will be developed in the context of options or choices and their resultant projected outcomes. There may be a myriad of ways to address the needs of the Puget Sound nearshore; and assessment of the pros and cons of pursuing various courses over time allows a comparison of alternatives based upon expected results. The PSNERP GI Study involves a wide variety of other Federal, Tribal, State, and local agencies, NGOs, universities and other stakeholders; and the desired outcome of the study is a comprehensive plan that identifies a combination of recommended actions to be undertaken by these various partners. The level of detail involved in the development of individual Basin-wide comprehensive alternative plans is less than a typical Corps feasibility study proposing independent and discrete projects.

Corps guidance requires the formulation of a National Ecosystem Restoration (NER) Plan for federal water resource studies. Identifying a NER plan requires formulating alternative plans. The team will formulate an array of plans that meet the planning objectives and address known constraints. This will ensure that a plan that maximizes net NER benefits has been identified. The number of alternative plans depends on the complexities and extent of problems and opportunities in the study area, study resources, the availability of different appropriate measures, and the preferences of the stakeholders. Therefore, this task will involve combining management measures to form discrete alternative plans based on strategies developed in the previous step as well as on stakeholder preferences.

3.4.1 Nearshore Restoration Portfolio

As part of the plan formulation strategy, we anticipate development of a list of strategic, process-based, ecosystem scale restoration actions that address protection and restoration of ecosystem processes beyond the scale of ongoing restoration programs. These actions will be organized as portfolios, or packages of different actions for a particular portion of the Puget Sound nearshore that provide different levels of ecosystem goods and services while contributing to the recovery of Valued Ecosystem Components.

3.4.2 Alternative Strategies for Puget Sound Comprehensive Restoration

Since the Nearshore project is a basin level study addressing approximately 10 percent of the area of the State of Washington—approximately 15,000 square miles—some modification of the general formulation approach used for a site-specific project will be required. A Basin-wide analysis, termed (see my comment here – I think we're talking about the change analysis here) Strategic Needs Assessment, with specific focus on direct and indirect effects to marine and estuarine shorelines is being conducted in Stage II. The Strategic Needs Assessment Report (SNAR) will provide a comprehensive, spatially explicit identification of the highest impaired sites along the shoreline; 200 meter zone adjacent to the shoreline; and to a lesser degree, the coastal watersheds draining to the marine waters of Puget Sound. The restoration planning objectives will be set to address the specific resource problems identified in the SNAR for each sub-basin. Next, the focus will shift to identifying suitable strategies to apply restoration measures and alternatives to meet the stated objectives. In general, the system alternatives will not specifically address particular sites (e.g. Skokomish River Estuary, Bainbridge Island Drift Cells, etc.), but instead focused on the level of restoration effort needed to reach system restoration planning objectives. More detailed cost information using MCACES software (Corps

Cost-Estimating Tool) and benefits using habitat models will be defined as part of additional site-specific project evaluations.

3.5 Management Measures

Management measures are actions, including restoration or other physical alterations, as well as management and regulatory changes, that address the objective of recovering or improving nearshore ecosystem functions, structure, and/or processes (Simenstad et al., 2006). In a large-scale restoration program, management measures are vital to describing the varied combination of actions employed at restoration sites. The individual measures serve as building blocks for restoration actions at the individual site scale and will form the basis of large-scale alternatives at the basin or sub-basin scale. The selection of measures for implementation reflects the nature of the nearshore degradation; expected utilization and ecosystem function of the site, and desired habitat improvements, tempered against any existing constraints at each location. The National Research Council and others have identified four general types or categories of ecosystem recovery actions: protection, restoration, rehabilitation, and substitution/creation. These four categories and their respective contribution to ecosystem recovery have been identified in earlier project stages (Fresh et al. 2004). In addition, PSNERP recognizes education and regulation/policy change as categories of measures potentially used in Puget Sound restoration efforts.

3.5.1 Identify Management Measures

Management measures are not restricted to actions the Corps has the authority to implement. For example, PSNERP managers acknowledge the utility of large-scale toxic chemical cleanup and environmental regulatory measures but recognize that other federal and state authorities are better equipped to utilize these management measures. The team is empowered by the Corps' regulations and guidance to develop plans that can be implemented by other Federal agencies, State and local government, or other organizations. The list of management measures selected by PSNERP was developed by simplifying a list of National Estuary Restoration Inventory restoration 'techniques'. This was then compared to the list of measures used for reporting by the Pacific Coastal Salmon Recovery Fund (administered by the Salmon Recovery Funding Board). Finally, the PSNERP Implementation Team reviewed the resulting list. The management measures being considered under the PSNERP program are listed below.

This task has been completed.

- Armor Modification or Removal
- Beach Nourishment
- Berm or Dike Modification or Removal
- Channel Rehabilitation or Creation
- Contaminant Removal or Remediation
- Debris Removal
- Habitat Protection Policy or Regulations

- Hydraulic Modification
- Physical Exclusion
- Invasive Species Control
- Large Wood Placement
- Overwater Structure Removal or Modification
- Physical Exclusion
- Pollution Control
- Property Rights Acquisition
- Public Education and Involvement
- Revegetation
- Species Habitat Enhancement
- Species Reintroduction (non-plant)
- Substrate Modification
- Topography Restoration

3.5.2 Management Measure Technical Report

PSNERP is in the process of developing a technical report covering each of 20 Management Measures. The purpose of the technical report is (1) to help the PSNERP determine how to most effectively use management measures to accomplish process-based restoration in Puget Sound, (2) to describe the relationship of these measures to the ecosystem processes, structure, and functions as well as the goods and services provided by the Puget Sound nearshore and (3) to provide project engineering, planning and design guidance to ensure consideration of relevant constraints and best practices. This task is expected to be completed in April 2008.

3.5.3 Parametric Cost Estimates for each Management Measure

This task will utilize the case study examples identified in the management measure technical report and develop standardized design and parametric cost information that could be applied to sites across the study area. Phase II will focus only on those measures that would be most appropriate for Corps of Engineers implementation. Of the management measure identified, PSNERP has identified primary nearshore process-based restoration actions to include armor modification or removal, berm or dike modification or removal, channel rehabilitation or creation, hydraulic modification, overwater structure removal or modification, and topography restoration.

3.5.4 Output/Benefit Quantification for each Management Measure

Phase II will also include quantifying benefits or outputs for each management measure. This analysis will be used to ensure cost-effective alternatives are selected for initial implementation. A plan formulation strategy will be further developed as a task item in the revised PMP.

3.6 Model Certification

Discussion of plans for Model Certification can be found in the Review (Quality) Management Plan in Volume II.

3.7 Agency Technical Review

Discussion of plans for the Agency Technical Review can be found in the Review (Quality) Management Plan in Volume II.

3.8 External Peer Review

Discussion of plans for External Peer Review can be in the Review (Quality) Management Plan in Volume II.

3.9 Feasibility Scoping Meeting

Once Current and Future Without Project Conditions have been documented and a plan formulation strategy fully developed, a feasibility scooping meeting (FSM) will be held with Corps Division and Headquarters staff. We anticipate convening the FSM in spring 2009.

This task includes development of supporting material for the FSM and completing appropriate policy compliance documentation.

3.10 Stakeholder Involvement for Plan Formulation

By necessity the plan formulation strategy must integrate a broad strategy for stakeholder involvement to ensure the success of the program. The following outlines five broad activities that will occur through the planning process.

3.10.1 Relationship with Other Restoration Programs and Partners

Our program vision of improved restoration and protection benefits derived from widespread application of best science and a common restoration blueprint depends on strong positive relationships with the "restoration and protection community". Our tools need to be informed by their needs, and we must improve our visibility and awareness within this community. Some of the elements required for this task include:

- Publishing PSNERP updates in the newsletters of partner organizations,
- Use of existing networks and relationships by PSNERP "team members" to increase general awareness of PSNERP outside the program

State agencies, NGOs and other entities involved in the study include the following:

King Conservation District
King County
Lead Entities

National Wildlife Federation
Northwest Indian Fisheries Commission
Northwest Straits Commission
People for Puget Sound
Pierce County
Puget Sound Partnership
Recreation and Conservation Office
Salmon Recovery Funding Board
Taylor Shellfish Company
The Trust for Public Lands
The Nature Conservancy
Pacific Northwest National Laboratory
University of Washington
Washington Department of Ecology
Washington Department of Fish and Wildlife
Washington Department of Natural Resources
Washington Public Ports Association
Washington Sea Grant
WRIA 9

3.10.2 Support for Puget Sound Nearshore General Investigation

Ultimately, our success is dependent on support for our program from local project proponents. There is much work to be done in order to complete the PSNERP GI, requiring sustained local, state, and federal investment. We anticipate a request to Congress for a Puget Sound Nearshore Restoration authority requiring strong support from restoration proponents. This task includes preparing material and staff support.

3.10.3 Broad Program Understanding and Support

In addition to the focused and specific needs for stakeholder input to PSNERP, there is a need to develop general support within the Puget Sound region. Public understanding and support for agency activities is good government. Changes in attitudes and behaviors necessary to restore the health of Puget Sound derive from an informed public. Some of the elements necessary to deliver this broad support include:

- Toolbox of communication products (program fact sheets, website updates)
- Outreach and communication through and with the Puget Sound Partnership
    - Funding needs (PSNERP GI match, ESRP)
    - Relationship between programs
- Special events (open houses, demonstration site tours)

3.10.4 Cooperating Federal Agency Coordination & Involvement

The Nearshore Partnership formed around the Washington State Dept of Fish and Wildlife's (WDFW) agreement with the U.S. Army Corps of Engineers (the Corps) to investigate the fundamental causes of ecosystem declines and potential feasible solutions. Since September 2001 when the original agreement was signed, many federal agencies beyond the Corps have

joined the Nearshore Partnership. Their participation has broadened the base of federal support, and expanded the technical and financial resources being applied to both the GI and the broader activities of the Nearshore Partnership.

The Office of the President, Council on Environmental Quality (CEQ), published Collaboration in NEPA - A Handbook for NEPA Practitioners dated October 2007 describes policy for federal agencies to collaborate on federal decisions and actions. The Nearshore Partnership and the collaborating federal agencies conform to the central tenets of the National Environmental Protection Act (NEPA), Section 101 and CEQ policy. Also, by assembling a team of federal agency representatives, the Nearshore Partnership is well poised to develop a comprehensive plan with cooperating agencies conforming to Corps of Engineers policy, ER 1105-2-100. The following describes each agencies involvement in the Nearshore study.

National Marine Fisheries Services (NMFS)
NMFS serves on the Nearshore Science Team and Executive Committee. NMFS has contributed staff time to numerous Nearshore technical papers, including a white paper describing the relationship between juvenile Pacific salmonids and nearshore ecosystems of Puget Sound.

National Oceans and Atmospheric Administration (NOAA)
NOAA Restoration Center serves on the Nearshore Steering Committee and Implementation Team. NOAA provides contract services for the Estuary and Salmon Recovery Funding Program administration. NOAA funds WDFW for Nearshore activities affiliated with the Community-Based Restoration Program through a competitive, 3-year grant. NOAA provides Pacific Coast Salmon Recovery Funds for marine nearshore restoration projects administered by Washington State Salmon Recovery Funding Board and guided by Nearshore Partnership technical papers.

Northwest Straits Commission (NWSC)
Northwest Straits Marine Conservation Initiative is mandated by Congress to facilitate the protection and recovery of the Northwest Straits. The Northwest Straits Commission and its seven member Marine Resources Committees (MRCs) receive federal funds through NOAA for these activities. Representatives of the NWSC serve on the Nearshore Steering and Executive Committees. The MRCs play a role in identifying and supporting nearshore restoration projects for seven northwest Washington State counties.

U.S. Department of Energy, Pacific Northwest National Laboratory (PNNL)
PNNL serves on the Steering and Executive Committees. PNNL expertise has helped PSNERP scope important technical issues including data management, with additional staff time contributed to program support, such as the annual retreat.

U.S. Environmental Protection Agency (EPA)
EPA serves on the Nearshore Steering and Executive Committees and contributes staff labor and funding to the Future-Without-Project investigation. EPA funded faculty to conduct a University of Washington graduate class that examined future conditions of the southern King County (WRIA9) marine shorelines. EPA serves as the National Environmental Protection Act (NEPA) lead agency for the Nearshore project. EPA has aligned funding and activities of the

National Estuary Program with the Nearshore partnership. During plan formulation, EPA has agreed to assign NEPA coordinators to the formulation team to contribute to the recommended plan and streamline agency reviews.

U.S. Fish & Wildlife Service (USFWS)
USFWS and Corps fund 25% of a senior biologist's labor cost for participation on the Nearshore Science and Implementation Teams through the Fish and Wildlife Coordination Act. USFWS contributes staff to WDFW through Cooperative Agreement for Nearshore GI project management who are funded with state appropriations. USFWS serves on Nearshore Executive Committee. USFWS actively seeks opportunities to align their restoration authorities with Nearshore projects implemented by the state-funded Estuary and Salmon Recovery Program, such as the Skokomish River Estuary Restoration Project.

U.S. Geological Survey (USGS):
USGS developed a science program, Coastal Habitats in Puget Sound (CHIPS), which complements and supports the Nearshore project through studies to better understand nearshore ecosystem processes and the effects of anthropogenic stressors such as urbanization and delta modification. USGS contributes staff time to Nearshore Science, Steering and Executive committees and Future-Without-Project and Monitoring and Adaptive Management Working Groups. USGS has organized peer-review and publication of technical papers written by and for the Nearshore Science Team. USGS served as co-lead on the technical paper "Coastal Habitats In Puget Sound: A Research Plan in Support of the Puget Sound Nearshore Partnership". USGS conducts a wide range of multi-disciplinary research in the Puget Sound basin (and Hood Canal), including sediment and nutrient cycling, fisheries health and ecology, food web dynamics, invasive species, ecosystem and groundwater water quality, and watershed stream gaging collectively to provide support for decision making related to the management and restoration of the nearshore and baseline data for future monitoring.

U.S. Navy Region Northwest (Navy)
The Navy serves on the Steering and Executive Committees with additional staff time contributed to project activities. Navy shore facilities are commonly located within the marine nearshore. Collaborative products, such as the Strategic Needs Assessment Report, are expected to guide Navy military construction and associated mitigation sites within Puget Sound.

3.10.5 Government to Government Tribal Activities

Twenty tribes have usual and customary fishing areas within Puget Sound. Many of these tribes have reservations within the basin and have formed interrelated organizations for their mutual benefit, such as the Point-No-Point Treaty Council, Skagit River Cooperative, and Northwest Indian Fisheries Commission. The tribes are co-managers of Washington State fisheries with the Nearshore non-Federal sponsor, WDFW.

The Nearshore Partnership has developed several technical products with the tribes and their organizations. Tribal members and staff routine participate on working groups, Implementation Team, Steering Committee, and Executive Team activities. Those activities and newly identified activities are expected to continue being developed with the tribes. In particular, as stakeholder involvement activities evolve, tribal participation will likely increase.

Government-To-Government meetings and activities are more formal interactions between the federal and tribal governments, which will be used sparingly or not at all depending upon situational needs and findings. Although, final agency review will likely include government-to-government correspondence among federal, state and tribal governments.

3.11 Science & Technology

Development of the Science and Technology (S&T) Program, under the purview of the Nearshore Science Team, involves development of ongoing science-related activities and organizational context and structure for the GI. The S&T Program will be designed to provide the fundamental scientific and technical decision support process, tools and structure for the GI, both for implementation of the WRDA projects and the Comprehensive Alternative Plans. Development of the Program will involve: (1) establishing a process to determine science and technology needs, assessing their feasibility, and setting priorities among the needs; (2) developing an organizational and coordination structure for the S&T Program and its interface with other study components that would be implemented with the WRDA projects and continued with the Comprehensive Alternative Plans; (3) integration of the existing PSNERP Strategic Science Peer Review process (see 10.6.1) into the two programs; (4) designing the monitoring and adaptive management approaches and processes for both the WRDA projects and the Comprehensive Alternative Plans; (5) identifying and coordinating integrated natural and social science case studies for strategic priority restoration and preservation projects; and, (6) providing for science and technology information (see Communications Management, 10.5) of the proposed studies. The S&T Program is also the overall mechanism for identifying critical science needs to inform nearshore ecosystem restoration/preservation in Puget Sound and developing and coordinating GI science initiatives with ongoing and planned science activities in other research and development programs. These research and development programs include those of Federal and State agencies, universities, private interests and non-governmental organization.

3.11.1 Basic Science and Technology Decision Support

Working closely with the PMT and IT, the Nearshore Science Team is tasked with determining science and technology needs of the GI, and assuring that both scientists and the IT are involved in establishing needs, ranking the importance of each need, and determining feasibility. This coordination role includes: developing science and technology guidance for site and project selection, design, monitoring and adaptive management, and assessment; facilitating information transfer; planning periodic science symposia, and assessment of new innovative science.

3.11.2 Support of WRDA and Comprehensive Plan

As described earlier, the GI formulation strategy considers two paths forward: (1) initial portfolio restoration/preservation sites for early implementation, including both strategic priority restoration sites and scientific demonstration sites; and (2) a Basin-wide comprehensive plan. In addition to large-scale restoration actions, the GI study process provides the opportunity to study and recommend other actions outside the GI process, although these actions may not reside in and will be implemented independently of the GI portfolio. The GI

Portfolio List is planned as an iterative process, that future actions will become more specific as the results of already implemented projects emerge. A fundamental strategy under the GI is to improve the quality of protection and restoration decision-making through active monitoring and adaptive management.

A hallmark of national ecosystem programs, incorporates long-term monitoring, adaptive management projects, monitoring and ecological modeling to continually improve information and scientific knowledge regarding restoration actions, and the restoration decisions that are based on scientific understanding. This effort will include development of an implementation process that incorporates an adaptive assessment strategy for project implementation. This strategy will recognize that once restoration measures are implemented and monitoring begins, feedback is provided based on new insights gained from the response of the ecosystem and that sequential adjustments may be made to the project and future elements. The risk and uncertainties (e.g., ecosystem response, etc.) associated with each alternative plan can be addressed with these new insights

Scientific demonstration projects include programmatic actions (restoration and preservation actions and monitoring/adaptive management studies) designed to address high uncertainties about future restoration/preservation actions. These will be specifically designed to generate critical science and technology information needs by providing learning experiences from extensively and intensively studied actions. Measures would be consistent with the GEPs (e.g. process-based), and address critical information needs on behalf of the GI (e.g. hypothesized link between a management measure and an ecosystem process and/or VEC). It is anticipated that this information need will be best addressed if Demonstration Projects are established as adaptive management experiments, with clearly stated hypotheses, and monitoring plans specifically developed to evaluate hypotheses. Objectives for demonstration projects include illustration of restoration concepts; testing of hypotheses; developing experiments in monitoring, restoration, outreach and education; reducing uncertainty and risk; comparing effectiveness among techniques; and dealing with issues and concerns over techniques. Examples of project types will include evaluation of overwater structure removal, dike breach vs. dike removal, eelgrass transplant, and experimental monitoring techniques that presently have little to no scientific baseline. The S&T Program will develop appropriate project sites, research questions, monitoring and evaluation costs.

The S&T Program will also establish a Strategic Science Plan (SSP) to guide a long-term, multi-agency science program for the acquisition, review, management, and distribution of new or existing data and knowledge in support of the Comprehensive GI plan. The SSP will provide the framework and process for comprehensive restoration planning within the Puget Sound, including actions outside of the GI study.

Activities under the SSP will be ongoing development and interactions with the GI external peer review process; cumulative effects and impact assessment; information management; identification of long-term data gaps and research needs; compilation and access to new and existing information; and science outreach. The plan will be integrated with adaptive management and modeling plans listed above and case studies and demonstration projects listed below. An external peer review process has been developed and began operation in 2008;

the SSP will continue operation of the review process. Cumulative effects analysis includes initial work of the Change and Futures Analysis under the GI as well as developing tools for long-term assessment of GI and partner ecosystem restoration impacts. The SSP will integrate work from the GI stakeholder interaction process and plan for ongoing interactions with other science programs.

Long-term analysis will require development of decision support tools such as a modeling framework and information management system. The modeling framework will include analytical tools to address problems and opportunities for future restoration actions, including conceptual and quantitative ecological and hydrodynamic models that can be used to evaluate restoration project alternatives and benefits. To be effective in providing data and information to the GI, the S&T program will consider data needs in geographic hierarchy for purposes of restoration planning, construction, management and maintenance, monitoring relative success of project, and long-term research needs. Through monitoring and data acquisition, the S&T Program would strategically develop a monitoring system and collect existing data from partners and research programs within Puget Sound and integrate this effort with the other ongoing monitoring systems as appropriate. This network of geospatial and scientific data would allow project managers to incorporate lessons learned and adjust restoration strategies to best achieve management goals.

3.11.3 Scientific Peer Review

A peer review plan has been developed by the Nearshore Science Team, and approved by the Corps Center of Expertise. This plan includes external review of individual technical reports, as well as a more comprehensive, "programmatic" Strategic Science Peer Review Panel (SSPRP) peer review. The scope of programmatic peer review includes external review of the sufficiency of science used in the GI Study, as well as the application of science. To date, peer review of technical reports has been routinely completed, and the first SSPRP review conducted.

Integral to the S&T Program will be a contiguous scientific peer-review process that will provide on-going guidance that the Program, and the GI overall, is following the best available science. This Program component will be based on the existing PSNERP Peer Review Plan (see 10.6.1) with modifications adapted from experience and recommendations from the existing SSPRP and guidance from other large-scale restoration programs (e.g., LCA S&T Program). As with the SSPRP, we anticipate that the peer review component (i.e., a panel or committees, depending on the level of science and technology departmentalization) will coordinate with the S&T Program but report to the overall study's management structure, as it presently reports to the PSNERP Executive Committee.

3.11.4 Monitoring and Adaptive Management

Active monitoring of already completed and developing restoration projects is an essential component of advancing and improving the science and management of ecosystem restoration. Monitoring of restoration projects under the GI will be an integral component of an Adaptive Environmental Assessment and Management (AEAM) based plan. The integrated monitoring and adaptive management plan will include recommended techniques for specific ecosystems by management measure.

AEAM prescribes a management process wherein future action can be changed by observing the efficacy of past actions on the ecosystem through the use of monitoring and modeling. The AEAM approach recognizes that uncertainty is unavoidable in implementing large-scale ecosystem management programs. Recognizing and understanding past actions can sequentially improve management actions so that future system conditions become more consistent with program goals and objectives than past actions. AEAM allows development of an iterative and flexible approach to management and decision-making. The GI study is designed to integrate Adaptive AEAM into its management process. The S&T Program will develop a management plan and an action plan to implement AEAM through both the WRDA projects and the Comprehensive Plan. Studies within this category include: assessing the effectiveness of previously completed restoration projects to verify benefits; 2) development of reference sites to serve as templates of properly functioning conditions; and 3) incorporation of existing studies outside the GI to provide additional information.

As an essential learning component to adaptive management is rapid and effective transfer of monitoring results and adaptive management experiences, as well as more intensive scientific studies of associated nearshore ecosystem processes, to restoration and conservation practitioners and managers. In addition to disseminating other GI science and technology products, these AEAM experiences will be a major source for the Science and Technology Information Transfer component (see 3.8.6) of the S&T Program. Mechanisms for dissemination will include both electronic serving of data on the internet, hard-copy reports, and workshops and conferences that are specifically designed to provide comprehensive feedback on the GI results.

A 50-year adaptive management and a monitoring and modeling plan will be developed as a stand-alone report for the feasibility study including plans for initial projects and comprehensive project planning.

3.11.5 Case Studies

Case studies are in-depth evaluations of changes in nearshore processes, locations (places), or actions (stressors or restoration) that affect the nearshore. The Change Analysis provides a coarse scale analysis, while Case Study descriptions from local areas will be developed with finer resolution through additional time points of analysis and added dimensions of analysis (i.e., ecological and social drivers of change). Examples of Case Study data and information are described under the Change Analysis. The S&T Program will develop and implement a series (2 to 4) of case studies that can be applied to historic, current, and future conditions analyses and to aid in restoration planning and evaluation. The S&T Program will develop study plans and guide the execution and interpretation of the studies.

A peer review plan has been developed by the Nearshore Science Team, and approved by the Corps Center of Expertise. This plan includes external review of individual technical reports, as well as a more comprehensive "programmatic" peer review. The scope of programmatic peer review includes external review of the sufficiency of science used in the GI Study, as well as the application of science. To date, peer review of technical reports has been routinely completed, and the 1st programmatic peer review conducted.

3.11.6 Science and Technology Information Transfer

The S&T Program will play a significant role in providing scientific and technical results from the GI and resulting WRDA and Comprehensive Plan projects to the Information Management (see 10.5) component of the study. As described under 3.8.4, Monitoring and Adaptive Management, the focus of this activity will be to provide rapid and informative dissemination of the results from monitoring and adaptive management experiences from restoration/preservation projects implemented under WRDA and the Comprehensive Plan. This will include conventional information transfer tools but will also design tools that are more instructive than simple data and data interpretation, such as dynamic internet models and interactive workshops. Various forms of workshops and conferences, styled on such successful and effective models as the CALFED Science conferences, will also be devised.

4.0 Evaluating Alternative Plans

Similar to the development of alternative plans outlined in Section 3, evaluation of plans will take place along two parallel paths. The first path is related to evaluation of initial portfolio restoration sites and the second related to broad Basin-wide comprehensive alternatives.

4.1 Screen and Evaluate Early Candidate Initial Portfolio Restoration Sites

The screening outlined in Section 3.3 will result in a list of approximately 100 candidate restoration sites. For scoping purposes it will be assumed that from the initial 100 identified sites, 30 will be selected as the initial portfolio for further consideration based on the further screening. The strategic needs assessment will be complete at this point so the findings can be used more explicitly to further screen sites. It is anticipated that other screening criteria will also be developed at this point.

The feasibility report will include initial cost estimates and expected outputs (benefits) for this preliminarily screened set of sites. It is also anticipated that project fact sheets will be developed for each of these projects and will include the cost and benefit information. The fact sheets will consider conceptual alternatives at the individual site and optimize to the extent practicable. We do not anticipate a site-specific cost-effectiveness analysis will be completed at each site. However a cost effectiveness analysis and incremental cost analysis (CEA/ICA) will be used to compare the 30 sites. Based on the results of the CEA/ICA and other criteria the list of 30 candidate projects will be further screened. The end product will be a strategic set of 10-15 projects that are recommended for further evaluation. For scoping purposes 10 of the projects will be initial portfolio restoration sites and 5 will be pilot/demonstration projects.

4.1.1 Stakeholder Review of the PSNERP GI Project List

Stakeholder input is needed throughout the project screening and evaluation process, and GI success will depend on broad support for the final list of sites proposed to Congress for authorization under an anticipated Puget Sound Ecosystem Restoration authority. To accomplish this, workshops will be convened to discuss the results in each of the seven sub-basins.

4.2 Evaluate Basin-wide and Sub-basin Comprehensive Alternative Plans

Evaluation of alternative plans is a two-part process: assessment (quantification) and appraisal (judgment). Several alternative plans will be developed and compared with the no action alternative, allowing for the identification of the National Ecosystem Restoration (NER) plan.

This task will consist of analyzing the effects of the plans against various sets of evaluation categories and criteria to determine effectiveness in meeting the planning objectives. The evaluation categories and criteria will include effects on items such as significant resources, outputs, and plan costs (construction, real estate, operations and maintenance, etc.). The results of these evaluations will then be compared to identify significant differences among the plans.

Once site evaluations are performed, an interim step before the alternative-comparisons step is to formulate portfolios consistent with restoration planning objectives at the sub-basin and Basin-wide levels. At this step, the site-specific alternatives can be organized by sub-basins to facilitate stakeholder and public consultations. This assemblage of portfolios may also be necessary to perform alternatives comparisons within IWR-Plan depending on the number of possible permutations and computer software limitations. The outcome of this analysis will be the generation of portfolios comprised of multiple site-specific restoration and preservation alternatives evaluations for each of the seven sub-basins and comprehensively for the broader Puget Sound Basin. They include:

1. Central Puget Sound
2. Southern Puget Sound
3. Hood Canal
4. Whidbey Basin
5. San Juan
6. Northeastern Puget Sound
7. Strait of Juan de Fuca
8. Puget Sound Basin-wide

5.0 Comparing Alternative Plans

5.1 Compare Basin-wide Comprehensive Alternative Plans

All benefits and impacts must be identified including non-monetary and/or non-quantifiable benefits and impacts. The major benefit categories should be identified. Available economic data that includes cost and benefit information (e.g., traditional benefit-cost analysis, cost-effectiveness analyses, and incremental cost analyses) will be utilized. Cost-effectiveness and incremental cost analyses are used to compare the different outputs resulting from various levels of expenditures. This effort will include development of an implementation process that incorporates an adaptive assessment strategy for project implementation. This strategy will recognize that once restoration measures are implemented and monitoring begins, feedback is provided based on new insights gained from the response of the ecosystem and that sequential adjustments may be made to the project and future elements. The risk and uncertainties (e.g., ecosystem response, etc.) associated with each alternative plan are addressed.

5.2 Compare and Justify Initial Portfolio Sites for Authorization

This task further develops the screened strategic and pilot/demonstration sites and relates them to the Comprehensive Basin Alternatives. For restoration actions to be justified and recommended for implementation in WRDA they must be fully consistent with the identified Basin alternatives. For the strategic priority restoration sites the task will focus on filling data gaps. For the demonstration/pilot sites protocol will be further developed based on findings from the S&T tasks related to monitoring and adaptive management.

5.3 Alternative Formulation Briefing

Once Alternatives have been evaluated and the evaluation process fully documented an Alternative Formulation Briefing (AFB) is held with Corps Division and Headquarters staff.

6.0 Selecting a Plan

6.1 Basin-wide Comprehensive Plan

Selecting a plan is the decision-making stage of the plan formulation process. The Corps/Sponsor team members are not necessarily the decision-makers, and their recommendations may or may not be followed. The purpose of the selection step is to try to purposefully choose the best alternative future path for the nation. Corps guidance has established a method for making this choice. The first choice is do nothing. The second choice is to implement the NER plan. The third choice is to do something else. There must be good reasons for the final selection. For ecosystem restoration projects, the significance of the restored habitat to national, state, and local interests is critical. Data on the scarcity and sustainability of the restored or protected ecosystem and what the project does to achieve diversity are also needed. The selection criteria favor a plan that is cost effective and that objectively maximizes net benefits through an incremental cost analysis. Further, the plan's relative importance to the programs of the various agencies responsible for water resources management in the study area should be considered; for example, how the comprehensive plan integrates with other systems would be an important consideration.

Initiatives that would systematically improve the Puget Sound nearshore ecosystem will be collectively determined—among and within appropriate partnerships and stakeholders. Also, a probable best schedule will be determined for implementing tasks, including identification of which agency is best suited for accomplishing such tasks. Impacts of political and budgetary uncertainties on project implementation will also be addressed.

6.2 Engineering & Design and Real Estate Requirements of 1st Portfolio Projects

Additional engineering and design for the initial portfolio will ensure the individual restoration actions at selected sites are optimized and that the restoration action is viable and cost-effective. This will also include necessary real estate and other studies to support authorization. For scoping purposes the PMP has assumed that 10 sites will be taken to this level. Seven of the 10 sites will have costs between $3-15 million for implementation (plans and specifications,

construction and real estate). Three of the sites will be more significant in scale –for scoping it was assumed that they are in the range of $50 million for implementation. For the revised PMP to be internally consistent, the types of restoration actions that will form the basis for technical scoping are assumed to include: dike removal, armor modification (bulkhead removal), channel rehabilitation, hydraulic modifications, fill and over water structure removal and hydraulic modification (jetty, groins). However, the full group of management measures is expected to be examined to determine the actual initial portfolio of project sites.

Site investigations by inter-disciplinary teams are appropriate to identify site conditions and constraints that will affect the technical feasibility, cost, and environmental soundness of the recommended plan. Site investigations in the plan formulation stage usually are of a limited scope and extent to satisfy concerns about the feasibility of the recommended plan. Lengthy or expensive field explorations are only performed when necessary at this stage. The likely types of feasibility site investigations include: Geotechnical, Biological, Topographical/Bathymetrical, Existing Infrastructure, Property Boundary, Real-Estate, Cultural or Historical Resources, Hazardous, Toxic, and Radiological Waste (HTRW). The revised study task and subtask description by work breakdown structure in Volume II provides a more detailed description of the requirements for each section. Outlined below is a general description of these items.

6.2.1 Real Estate

A real estate plan will be developed for the selected sites and will be included as an appendix to the feasibility report. The plan will contain a real estate write-up describing the lands, easements, rights-of way required for each of the proposed sites. It will also include a gross appraisal of land values, and an estimate of the sponsor's administrative and acquisition **costs.**

6.2.2 Engineering and Design

This task includes engineering and design studies of the 15 1st portfolio projects and the preparation of an engineering appendix to the feasibility report. Engineering and design studies will be performed at the minimum level needed to establish conceptual designs for project features/elements and for the development of construction cost estimates and estimates of operation, maintenance. These studies will focus on civil design, hydraulics, hydrology and Geotechnical considerations.

6.2.3 Cost Estimating

This task includes development of cost estimates for the 1st portfolio sites. An MII estimate shall be prepared for the recommended sites. All cost estimates will include all federal and non-federal costs for lands and damages, all construction features, relocation of facilities and utilities, mitigation (if required) planning, engineering and design, supervision and administration, contingencies and cost escalation associated with each of these activities through mid-point of construction.

6.2.4 Economics

An economic analysis related to both the comprehensive basin-wide alternatives and the 1st portfolio sites will be performed. This analysis includes a cost-effectiveness and incremental

cost analysis which is used to assist in selection and optimization of the preferred plans and the plan that contributes to national ecosystem restoration – the NER plan.

6.2.5 Site Survey

. It is assumed that the majority of designs will be based on existing survey information and that detailed survey work will be accomplished in PED. The survey task will be limited to review of existing information and some limited work to support quantity take-offs, elevation point estimates and project boundaries.

6.2.6 Hazardous, Toxic, and Radiological Waste Studies

The objective of Hazardous, Toxic, and Radiological Waste (HTRW) studies is to determine the presence and character of contamination identified in an initial screening of the 15 sites selected for detailed study. For scoping purposes, a Phase I screening will be completed on 5 of the sites. If the screening shows significant contaminants exist at the site, consideration will be given first to selecting another site or developing an estimate of the HTRW studies that would need to be conducted in the (PED) phase

6.3 Environmental Compliance

Environmental compliance in support of PSNERP will require national and state permitting but at different scales. National permitting requirements for the program such as National Environmental Policy Acts (NEPA), Endangered Species Act, and National Historic Preservation Act (Section 106) are anticipated to take a programmatic approach in which the main documents focus on Puget Sound scale issues and impacts from which site specific permitting actions can be developed. Permitting and coordination requirements best suited for site scale development will be delayed until specific designs are created.

6.3.1 National Environmental Policy Act (NEPA)

A programmatic environmental impact assessment (EIS) that covers Puget Sound should be pursued throughout the PSNERP plan formulation process with public scoping occurring early in the process. Integration of the EIS and any resultant public meetings into the PSNERP stakeholder involvement plan should occur to maintain continuity with the rest of the program. The EIS should focus on the nature of potential impacts and benefits of the program at the Puget Sound scale to provide a regional perspective on actions likely to occur under the PSNERP program. A process for developing specific environmental assessments (EAs) for proposed projects should be included that offer more detail at the site scale.

6.3.2 Endangered Species Act

Regional assessments for restoration programs are required to assess their affects on listed species. Previous efforts have developed several programmatic biological assessments to address this Endangered Species Act requirement. PSNERP will take advantage of the work already completed for NOAA Fisheries and USFWS restoration programs to streamline this effects analysis. The impacts analysis and resultant biological opinions for appropriate listed species will be focused at the management measure level.

6.3.3 Clean Water Act (Section 404/401) and Rivers & Harbors Act (Section 10)

As part of the US Corps of Engineers permitting responsibility PSNERP will also need to be coordinated under Sections 404 and 401 of the Clean Water Act (CWA). Like other federal consultations, the CWA compliance will occur at both the regional and site specific scales. As part of the NEPA documentation and its public involvement/review requirements, a substantive equivalency document for Section 404 will be prepared and made available. Since PSNERP is a Corps authority, the Corps does not work directly with its' regulatory department to obtain permits but instead, develops a substantive equivalency analysis to assure its' actions are consistent with its own regulatory requirements. Where site specific projects are proposed, a more detailed analysis may be provided as part of the NEPA documentation that references the programmatic analysis.

Section 401 of the CWA is administered by the Washington Department of Ecology and is primarily a construction permit designed to handle stormwater and other aspects of construction projects that have the potential to degrade water quality. Site specific documents are the most efficient means to accomplish this coordination. Regional coordination with the Environmental Protection Agency (EPA), which oversees this permit at the national level, would be beneficial so that overall perspective and consistency with other EPA interests within PSNERP are maintained.

Section 10 of the Rivers and Harbors Act regulates hazards to navigation and is administered by the US Army Corps of Engineers. Section 10 permits are required whenever there is potential to install a structure in navigable waters that may have an impact on navigation (buoys, reefs, etc).

PSNERP is a US Army Corps of Engineers project and as such does not issue Section 404 or Section 10 permits to itself. The PSNERP project will develop substantive compliance documents for both Section 404 and Section 10 once restoration site plans are initiated. The Washington Department of Ecology will be consulted on a site by site basis after completion of the Feasibility Report and restoration project authorization.

6.3.4 Cultural Resources (Section 106)

Historic settlements and Native American activities often occurred in estuaries, deltas and accessible areas around the nearshore. Initiation of a large scale restoration program focused in the nearshore areas is likely to encounter remnants of those earlier settlements. A programmatic consultation with the State Historic Preservation Office to establish protocols for identifying and avoiding significant cultural resources known to occur around Puget Sound is essential to the project selection process. Upon site selection, additional investigations should be conducted to ensure unknown resources are avoided or mitigated, if found.

6.3.5 State Permits

In most cases, environmental permits administered by the State of Washington are not applicable to Federal projects. There are a few exceptions for construction related permits that are pursued at the time a site has been selected and designs are initiated. In some instances the pursuit of advisory versions of state permits are warranted to ensure significant concerns are documented.

6.4 Feasibility Report & Integrated EIS Preparation

Building on report chapters developed for the Feasibility Scoping Meeting and the Alternative Formulation Briefing this task includes documentation on the effects of the recommended plan and completes all other NEPA and feasibility report requirements.

Upon completion of the preliminary draft feasibility report and integrated EIS, the sponsor will make a determination on whether to proceed forward with the project through the Corps review process.

7.0 Project Management, Review & Approval Process

7.1 Project Management

Project management includes a wide variety of tasks and activities. These include overall coordination and local, state, tribal and federal governmental agencies, interest groups, and the general public; oversight management of Corps of Engineer, sponsor, and contracted study tasks and related activities; coordination between the Corps and the sponsor; attending and conducting meetings and briefings throughout the study; responding to congressional and other inquiries; and oversight and management of review of the draft and final feasibility activities. This task does not include plan formulation, report preparation, or Washington level review support, which are separately accounted for.

7.1.1 Local Sponsor Project Management

This line item in the budget accounts for the local project manager and supporting staff.

7.1.2 Corps Project Management

This line item in the budget accounts for federal project manager and supporting staff necessary to accomplish general project management activities.

7.2 Review and Approval

Review & Approval When the draft feasibility report and integrated EIS have been prepared and reviewed by the sponsor and the Corps Seattle District they will go through a series of technical and policy reviews. Technical reviews include Agency Technical Review (ATR), a review conducted by an independent team at a separate Corps of Engineers District office; and Independent External Peer Review, which is a review conducted outside of the Corps of Engineers. Once these are conducted, and with the concurrence of Corps vertical team, the document will be reviewed by the public and agencies. The Corps will also be reviewing the document for policy and legal issues. The project is then presented to the Corps Civil Works Review Board. Once these reviews are complete the report is transmitted to the Assistant Secretary of the Army for Civil Works, ASA (CW) and finally the Office of Management and Budget for review. The final report with recommendation and Record of Decision is signed and presented to congress. Details on the Quality Control Plan and Review schedule and sequence are provided in Volume II.

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Puget Sound Nearshore General Investigation
Revisions to Project Management Plan
Nearshore 2010 Workplan

31 October 2008

Volume II:
Revised Study Task and Subtasks by Work Breakdown Structure Codes and Revised Project Management Plan by Knowledge Areas

Table of Contents

1.0 Revised Study Task and Subtask by Work Breakdown Structure Codes 1

2.0 Revised Project Management Plan by Knowledge Areas 13

2.1 Cost Management 13

2.2 Time Management 33

2.3 Risk Management 45

2.4 Acquisition (Procurement) Management 57

2.5 Communications Management 62

2.6 Review Management (Quality Management) 71

2.6.1 Peer Review Plan 73

2.6.2 Model Certification Plan: 74

1.0 Revised Study Task and Subtask by Work Breakdown Structure Codes

Below is a brief description of the individual feasibility tasks, organized in accordance with the prescribed work breakdown structure (WBS). The WBS is largely unchanged from the original PMP but has been revised to correspond to new federal policy (e.g. Project Partnership Agreements replace Project Cooperation Agreements) and to reflect evaluation of comprehensive alternatives as well as initial portfolio projects. The WBS for each task and subtask corresponds to the work category element in the Corps of Engineers Financial Management System (CEFMS). Use of the WBS will enable the estimated funding and actual cost of individual tasks and subtasks, and consequently the estimated and actual costs of the feasibility phase, to be allocated and accounted for, respectively. The study cost estimate is provided in Volume II, Cost Management Plan. The study schedule is shown in Volume II, Time Management Plan

J000 - *FEASIBILITY REPORT*

The feasibility report is the document that describes the planning process, findings and recommended plan. The feasibility report is often referred to as a decision document and is used to support a recommended plan. The report provides the depth of analysis necessary to defend a much more abbreviated final study document, the study Chief's Report.

J001 - Draft Report Preparation This task includes all activities specifically pertaining to writing the draft feasibility report and NEPA/SEPA EIS for public review. Activities include writing the draft feasibility report / EIS, editing and revision following independent technical review, and distributing the draft feasibility report / EIS for public review.

Reference: ER 1105-2-100.

J002 - Draft Feasibility Report / EIS Technical Review This work includes costs for technical review of the draft feasibility report / EIS by the Agency Technical Review (ATR) (formerly ITR) Team. Qualified staff members who are independent of the technical production of the feasibility report will conduct technical review of the draft report. The review will verify that the recommended plan (1) satisfies engineering and functional criteria; (2) meets the customers needs consistent with law and existing public policy, (3) has correct design assumptions and calculations; and (4) has a sufficient level of engineering to substantiate both the screening level comparative cost estimates and the baseline cost estimate with contingencies, as well as benefits, to support selection of the recommended plan. Members of the ITR team will be identified through the PCX in accordance with EC 1105-2-410. The study will also have extensive in-progress review during the plan formulation process, and the draft feasibility report /EIS will undergo a rigorous public review following the agency technical review. Additional details on the review process can be found in the Review Management Section in Volume II.

Reference: EC 1165-2-203, Technical and Policy Compliance Review; EC 1105-2-410 Review of Decision Documents.

J003 - Final Report Preparation This effort includes all activities specifically pertaining to producing the final feasibility report /EIS. Specific activities include writing, assembling, editing,

reviewing, revising, responding to review comments, preparing the final documents, and transmitting them for processing by the Northwestern Division Engineer.

Reference: ER 1105-2-100.

J004 - Washington Level Review and Approval Support This task includes those activities typically necessary for the Seattle District and the project Sponsor to support the Washington Level Review process of the feasibility report. This process starts with the signing of the final report by the Seattle District Engineer, and ending when the Assistant Secretary of the Army (Civil Works) submits the feasibility report to the Office of Management and Budget for review for consistency with the policies and programs of the President. These items could include answering comments, attending Washington level meetings and other necessary travel, and making minor report revisions as a result of Washington Level Review.

Any costs relating to the feasibility report that are incurred following completion of the feasibility phase and subsequent termination of the Feasibility Cost Sharing Agreement (FCSA) will be 100 percent federal costs.

Reference: ER 1105-2-100, Appendix H, Amendment #1 (Policy Compliance Review and Approval of Decision Documents); EC 1105-2-208.

JAE00 – *ENGINEERING AND DESIGN*

This account includes engineering and design studies of the 15 initial portfolio projects and preparation of an engineering appendix to the feasibility report that includes the site specific backup. Engineering and design studies will be performed at the minimum level needed to establish conceptual designs for project features/elements and for development of construction cost estimates, and estimates of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R), and monitoring. At the same time these studies will establish an appropriate basis for further pre-construction engineering and design (PED) design efforts, and project construction schedules. The tasks will also include restoration planning consisting of identifying habitat improvement measures in coordination with team members, quantifying the outputs/benefits of each measure, assist in the selection of the recommended plan, and preparation of narrative covering the above items. The design appendix will consist of all design data analyses, a written description of the design features of the recommended initial portfolio projects and cost estimates.

Thirty Preliminary Restoration Sites Plus 10 Demonstration Sites

A 2-3 page fact sheet will be developed for each of these projects; this will include a one-paragraph description of the design. We shall assume that a concept design will be provided by the local proponent and we will develop a standardized design sheet (1) for each of these sites.

Concept level costs and benefit information will be developed for each of these sites. Anticipate real estate land value estimate would be based on assessed value or land use. The level of detail will be comparable to a 10% design.

Ten Restoration Sites and 5 Demonstration Sites For Further Evaluation.

Additional design will be competed for 15 projects. The level of detail will be comparable to a 20-25% design. Site visits are included for each of the 15 potential sites. A rudimentary level engineering analysis

will be performed to ensure design is capable of maintaining project objectives through the project life-cycle.

Reference: ER 1110-2-1150, ER 1105-2-100.

JAE01 - <u>Hydrology Studies</u> This subaccount includes hydrologic studies to support project design for the initial portfolio projects. Where hydraulic modeling is required hydrologic flow duration data will be required for the modeling efforts. Hydrologic input to the feasibility report will be prepared along with a Hydrology Appendix.

JAE02 - <u>Hydraulic Studies</u> This subaccount includes hydraulic design studies for approximately 15 sites throughout the priority sub-basins nearshore habitats in the Puget Sound Basin. The level of detail will be less 35% design. Until the specific projects are identified details on the hydraulic studies cannot be defined. For scoping purposes the following assumptions are used. Some of the proposed projects (5) are assumed to require hydraulic modeling. For others hydraulic modeling will be deferred to PED. The remaining sites (5) are assumed to have adequate completed hydraulic studies to support the design effort and only review of data and modeling will be required. For example if extensive bio engineering bank stabilization removal or relocation projects are proposed for the nearshore (i.e., removing road fills in the historic intertidal areas where the stream has been forced into a culvert and the remainder of the road area within the estuary filled)any of the sub-basins, a computer model will be required to determine the effect on water surface elevations from replacing or removing these structures from within the water course, and restoring the natural hydrology to the site. In many cases modeling the Hydraulic tidal input will also be required for the estuary sites that have tidal effects. Once sites are identified specific requirements will be further defined. This work will include the preparation of a hydraulic section is the Engineering and Design Appendix.

JAE03 - <u>Geotechnical Studies</u> This subaccount includes the investigation, exploration, and analysis of foundation and material conditions related to the selection and design of the selected restoration alternatives. The screening activities leading to selection of the short list will utilize existing geotechnical data for the screening of alternatives. Geotechnical investigations and analyses are assumed to be required for one of the initial portfolio sites. The major geotechnical analysis will be done in the preconstruction engineering and design pre-construction engineering and design (PED) design effort. A geotechnical section will be included in the Engineering and Design Appendix.

JAE04 - <u>Hazardous, Toxic, and Radiological Waste (HTRW) Studies</u> The objective of HTRW studies is to determine the presence and character of contamination identified in an initial screening of the 15 sites selected for detailed study. For scoping purposes, a Phase I screening will be completed on 5 of the sites. If the screening shows significant contaminants exist at the site, consideration will be given first to selecting another site or developing an estimate of the HTRW studies that would need to be conducted in the (PED) phase.

JAE05 - <u>Survey and Mapping</u> This subaccount includes all surveying, aerial photography, mapping, bathymetry, and related tasks necessary to support engineering and design studies for the basin wide study. It is assumed that the majority of designs will be based on existing survey information and that detailed survey work will be accomplished in PED. The survey task will be limited to review of existing information and some limited work to support quantity take-offs, elevation point estimates and project boundaries.

JAE06 - <u>Design Analysis</u> This design analysis outlines any necessary civil design analysis work necessary to identify and define conceptual features of ecosystem restoration elements of plans considered and recommended in the feasibility report. The level of detail of design for the 40 initial sites will be comparable to a 10% design. The level of detail for the selected 15 initial portfolio sites will be comparable to 20-25% design. This work will consist of, but not be limited to:

- providing engineering data in the fact sheets for site screening;
- collecting and evaluating background data such as topographic and bathymetric survey data, hydrologic and hydraulic data;
- visiting sites (assumed only for 15 sites)
- entering data to digital terrain model (used to calculate quantities and make cross sections, etc.) for those sites that have adequate survey data.
- preparing concept designs and defining features for 15 sites;
- preparing quantity estimates for use in cost estimating;
- performing in-house and interagency coordination.

JAE07 - <u>Write Appendix</u> Prepare narrative of analyses performed, methodologies used and results obtained for Engineering and Design Appendix. The information developed above will be used as a basis for developing and screening alternative plans. Project features will be developed to form an adequate basis for establishing a project construction schedule and a baseline cost estimate. Engineering and design studies will be performed at the minimum level needed to establish conceptual designs for project features and elements and for development of construction cost estimates, while at the same time forming an appropriate basis for subsequent pre-construction engineering and design (PED). The engineering appendix will document the engineering and design effort during project formulation, and will include the design data analyses, a detailed description of the design features of the recommended plan, summary of alternative measures and plans evaluated, drawings, and construction cost estimates.

Reference: ER 1110-2-1150, ER 1105-2-1407.

JB000 – *<u>SOCIOECONOMIC STUDIES</u>*

The Corps objective in ecosystem restoration planning is to contribute to national ecosystem restoration (NER) Contributions to national ecosystem restoration (NER outputs) are increases in the net quantity and/or quality of desired ecosystem resources. Measurement of NER is based on changes in ecological resource quality as a function of improvement in habitat quality and/ or quantity and expressed quantitatively in physical units or indexes. These net changes are measured in the planning area and in the rest of the Nation. Single purpose ecosystem restoration plans shall be formulated and evaluated in terms of their net contributions to increases in ecosystem value (NER outputs), expressed in non-monetary units.

An economic analysis related to both the comprehensive Basin-wide alternatives and the initial portfolio projects will be performed. This includes helping identify all potential restoration alternatives and then performing an incremental cost and cost effectiveness analysis for each of the separate restoration components. The results of these analyses will be used to:

- Assist in the selection of the preferred projects and to compute an apportionment of costs to be assigned to each project purpose.
- Determine the construction costs to be paid by the federal government and local sponsor.
- Assist the local sponsor in preparing a financing plan and statement of financial capability.
- Prepare an assessment of sponsor's financing plan.
- Prepare economic appendix to include the results of the economic analyses, benefit-cost ratios, maximization analysis, federal versus non-federal cost sharing computation, and determining the National Ecosystem Restoration (NER), and the National Economic Development (NED) plans.

The results of these studies will be documented in an Economic Appendix containing narrative describing the analysis performed, methodologies used and results obtained.

Reference: ER 1105-2-100, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies.

JC000 – *REAL ESTATE STUDIES*

This task includes all required real estate studies and analysis to support plan formulation and plan selection, including obtaining Rights-of-Entry (ROE) where needed to support field investigations and a gross appraisal of land costs required for economic evaluation to be developed in site specific study. A Real Estate Appendix for the feasibility report will be prepared containing a real estate write-up describing the lands, easements, and rights-of-way required for the recommended plans, the gross appraisal of land values, and an estimate of the sponsor's administrative and acquisition costs. This work may be performed by the government or the sponsor.

The site selection process will begin by narrowing the field of potential sites to 30 strategic priority restoration sites and 10 demonstration sites. Upon application of more detailed selection criteria, a final set of ten strategic priority restoration sites and 5 demonstration sites will be identified.

Preliminary List – Thirty Strategic Priority Restoration Sites Plus 10 Demonstration Sites
A two to three page fact sheet will be developed for each of these 40 projects. Concept level costs and benefit information will be developed for each of these sites. We anticipate real estate land value estimates would be based on assessed value or land use. The 10% evaluation effort includes: a Realty Technician using site information for each alternative provided by the District Project Manager in order to pull landownership information from METROSCAN if this information is available; or the staff appraiser obtaining this information directly from the County or BIA records; or the District PM tasking a Planning Contractor to provide assessor's maps, including the larger parcel, and surrounding ownerships in addition to assessor's information (i.e. assess values, zoning), and cross-referencing the ownership information to the assessor's maps.

Final List - Ten Strategic Priority Restoration Sites Plus Five Demonstration Sites
Additional design will be completed for the 15 projects that will be recommended for construction. Real estate plans for each of these projects is assumed to be required.
Real Estate Tasks for final recommended list of 10 strategic priority restoration sites and five demonstration sites include the following:

- Procure Title Information for Proposed Project Lands

- Investigate Rights of Entry needs and obtain Rights of Entry where land access to sites for feasibility planning is necessary.
- Investigate Facility and Utility Relocations that will be required for the projects.
- Real Estate Discussions on Application of Navigable Servitude.
- Physical Taking Analysis – briefly describes the nature and extent of any flooding and whether additional acquisition of lands is required.
- Real Estate Requirements – Establish specific real estate requirements, including identifying standard estates, as necessary, and use of existing estates or development of non-standard estates, when necessary.
- Prepare Preliminary Real Estate Drawings for Real Estate Plan
- Perform PL 91-646 Relocation Survey – To determine estimated number of residents, farms and/or businesses that would be displaced by the projects
- Prepare Land Cost Estimate
- Preparation of Real Estate Plan
- Prepare a Baseline Cost Estimate in MII format
- Ascertain Non-Federal Sponsor's Legal Authorities
- Independent Technical Review and Higher Authority Review of Decision Document

JD000 - *ENVIRONMENTAL STUDIES*

This task includes inventory and assessment required to determine the without project conditions which will be compared to ecosystem restoration effects measured as non-monetary benefits of all alternative plans. A number of discrete tasks have been identified, as described below. Work will lead to preparation of a programmatic environmental impact statement (EIS), plus appropriate written narrative for the feasibility report. These studies will provide valuable and vital information for Endangered Species Act (ESA) Section 7 biological evaluations, where determinations on how construction activities and habitat changes would affect endangered and threatened species are made. This work will be coordinated in consultation with NMFS and USFWS. The work will be performed by both the government and the sponsor.

Reference: ER 1105-2-100, ER 200-2-2.

JD001 - Cultural Resource Studies This sub account includes work required to locate, identify, and evaluate historic and prehistoric cultural resources (CR) possibly impacted by alternative measures. Previous CR studies have identified numerous CR sites within the project area. This sub account provides for completion of CR inventory (e.g., location and identification) and site evaluation. In addition, there will be a preliminary evaluation of the effects of restoration project alternatives upon historic properties. These tasks will be accomplished in consultation with the Washington State Historic Preservation Officer (SHIPO). Existing CR information will be considered in screening project alternatives. The Government will perform this work. This sub account will support intensive survey and site evaluations for consideration of inclusion on the National Register of Historic Places and provide for the efficient planning of required data recovery investigations needed prior to construction. If required, site data recovery would occur during the project construction phase. The strategy will also consider the extent of potential effects of final alternatives. The Government will complete CR portions of the EIS (including input to the FR and PMP). Completed CR assessment, evaluation, and mitigation, in

conjunction with the inventory and initial assessment funded under this sub account, could be expected to total one percent of the total estimated Federal appropriations required for project construction.

Reference: National Historic Preservation Act of 1966, Archeological and Historical Preservation Act of 1974, National Environmental Policy Act of 1969, Executive Order 11593 (Protection and Enhancement of the Cultural Environment), Native American Religious Freedom Act, and Native American Graves Repatriation Act.

JD002 - Information Management A map-based format [i.e., Geographical Information System (GIS)] technology will be used to manage the large volume of diverse geospatial data and information needed to screen and evaluate the nearshore environment and identify potential sites for restoration. Tasks include: identifying and accessing environmental data; data quality verification; preparing digitized data layers for use in map site screening and selection; and the management and operation of map-based systems. to be used to screen the basin and identify sites of interest. Tasks include identifying and computing environmental data, and preparing digitized data layers for use in GIS site screening and selection, data quality verification, and GIS system operation and management

JD003 - Information Review Conduct an in-depth review of available references and other objective information on environmental limiting factors, particularly as they pertain to salmonids, and ecosystem restoration proposals within the nearshore habitat of Puget Sound. This review will: 1) identify the documented ecological limiting factors within Puget Sound Basin, 2) assemble information on ecosystem restoration projects that have been proposed to meet the needs of the basin, as well as those already constructed for restoration and 3) prepare a synthesis of all information reviewed to support a follow-on assessment of needs and alternatives to meet the needs of the project purpose.

JD004 - Field Investigations Conduct field investigations necessary to obtain data on approach, priority and value of potential ecosystem restoration alternatives for the nearshore habitat areas of Puget Sound and to gather information necessary for future restoration planning, design, implementation and assessment. Use in conjunction with results of the information review (JD003) to assist development of alternatives. Together with the information review, determine through field investigations the environmental outputs for each type of each site considered in the nearshore project. Document this task with a memorandum containing field observations, data collected and recommendations for further study for each of the priority basins. Field investigations may include the following separate efforts:

Nearshore Functional Assessment Characterize the function of intertidal and shallow subtidal nearshore habitats provide for floral and faunal communities supporting salmon and other key species, including evaluating functional changes from shoreline alteration from artificial structures and human uses. Surveys will seek to quantify important functions, such as determining diet of nearshore fishes, prey resources availability and refuge from predation.

Salmon and Forage Fish Migration and Movement Patterns Patterns of juvenile salmon migration and movement of other key species (e.g., forage fishes) through Puget Sound are a relatively unknown but critical information gap in understanding the function of the nearshore. Studies of movement will need to be conducted at several scales in order to document fish interaction at both fine scales, such as intra- and inter-habitat movement over tidal cycles, and coarse scales, such as rates and routes of movement within (e.g., between islands, west-east shores) among the various basins of the Sound. New technologies for fish tagging and tracking will enable some of these studies to document real-time

movement, while other more conventional mark-and-recapture techniques may be more appropriate for other investigations of more cumulative movement patterns.

Nearshore Habitat Mapping Based on the emerging results of the Nearshore Functional Assessment (above), this investigation will involve mapping the distribution and integrity of different intertidal and shallow subtidal habitats for salmon and other key species. The purpose is to identify at the landscape scale locations where restoration would achieve the greatest increase in habitat and function.

Limiting Factors Analyses The objective of this task is to identify the key processes and characteristics, constituting factors limiting salmon and other key species, that have been degraded in the nearshore region of Puget Sound Assessment of limiting factors will utilize in part analysis of current and historic conditions, development of the conceptual model, and knowledge of salmon life history and ecology. Analysis will be conducted at multiple spatial scales related to the distribution of watersheds with depressed salmon populations and known migratory pathways of these salmon through Puget Sound.

Riparian/Shoreline Vegetation Surveys Characterize the composition of shoreline vegetation assemblages and assemblage quality within 100 m of the shoreline. Particular emphasis will be placed on the supralittoral and backshore zones relative to their support of salmonid habitat.

Bathymetry and Substrate Surveys Characterize nearshore bathymetry and substrate types up to the -10 m (MLLW) depth stratum and at least 100 m landward of the shoreline. The present resolution of nearshore bathymetry-topography and substrate data is insufficient (too coarse) for ecological characterization and for restoration planning. Nearshore bathymetric/topographic mapping and substrate characterization should be feasible over large scales if new technology (e.g., water penetrating airborne laser) and spatial datasets (e.g., PRISM seamless bathymetry-topography GIS dataset) are incorporated into survey and development of product.

Ground/Surface Water Quality and Quality Inventory Assess natural levels and anthropogenic inputs of surface and groundwater in nearshore, with emphasis on small stream (surface) and seeps (groundwater) inputs to nearshore habitats. This study will specifically assess point source and cumulative non-point (e.g., septic failures) seeps and other sources from likely anthropogenic loading of nutrients, contaminants and other dissolved and particulate stressors on nearshore habitat integrity

JD005 - Prepare Programmatic NEPA/SEPA EIS The principal outputs of this effort will include: evaluation of programmatic alternatives; determination of geographic areas of interest and restoration site feasibility; and definition of siting criteria. The work includes preparing a draft programmatic EIS, conducting the EIS review process and related environmental coordination, contract management, and production of the final NEPANEPA/SEPA programmatic EIS. . Documents will be reviewed in-house and by Agencies and the public as necessary before preparing final NEPANEPA/SEPA EIS.

Reference: 33 CFR Parts 230 and 325, ER 1105-2-100.

JD006 - Prepare Supplemental NEPA/SEPA EIS For each of the specific site plans recommend for further federal consideration, a supplement to the programmatic NEPANEPA/SEPA EIS will be prepared containing project/site specific information and assessments.

Reference: 33 CFR Parts 230 and 325, ER 1105-2-100.

JD007 - <u>Fish and Wildlife Coordination Act Report</u> This subaccount includes coordination with, and studies conducted by the USFWS, as required by the Fish and Wildlife Coordination Act (FWCA). This task will be performed by the USFWS and managed by the Government. The Government will write a scope of work and transfer funds to the USFWS for interagency and tribal coordination, planning and evaluation of the impacts of alternative measures and plans on fish and wildlife resources, preparation of a minimum of two planning aid letters (PAL), and a draft and final Fish and Wildlife Coordination Act Report (FWCA) Report for inclusion in the Feasibility Report. The Government effort will also includes monitoring USFWS work and providing USFWS with required information such as description of alternatives, map of affected area, etc. The USFWS effort will include environmental data collection and evaluation of the environmental resources of the study area. The USFWS will review alternative plans and assess the effect of alternatives on the environmental values of the study area. The USFWS will offer recommendations concerning formulation of alternative plans. The USFWS will prepare a FWCA Report documenting its findings. The FWCA Report will be included as an attachment to the FR/EIS.

Reference: Fish and Wildlife Coordination Act of 1958 (PL 85-624, as amended).

JD008 - <u>Environmental Coordination</u> Coordination consists of attending agency and sponsor meetings, coordinating with Native American Tribes, and attending team and public meetings and workshops, travel.
Additional coordination and document preparation will include the following:

<u>Clean Water Act Section 404(b)(1) Evaluation</u> The Government will complete a Section 404(b)1) 1) evaluation for the recommended projects. A 404(b)(1) analysis will be completed for both the programmatic EIS and the Supplemental EIS.

<u>Endangered Species Act Coordination</u> Endangered Species Act (ESA) coordination letters will be sent to both the USFWS and the NMFS. Based on their response, the ESA coordination will be completed with the preparation of a biological assessment(s), as appropriate, to identify possible effects to special status species found in the project area.

<u>Coastal Zone Management Act</u> A Coastal Zone Management Act (CZM) consistency determination will be completed with the project.

JH000 – *<u>COST ESTIMATING</u>*

This task includes development of cost estimates for the initial portfolio projects. A 10% estimate shall be prepared for the 40 initial projects. An MII estimate shall be prepared for the projects recommended for implementation. Parametric cost estimates will be developed for each of the 20 management measures. This product will be accomplished by contract and reviewed by the District staff and the Center of Expertise. It is anticipated that costs for the comprehensive Basin-wide alternatives will be based on these parametric cost estimates for each of the management measures. All cost estimates will include all federal and non-federal costs for lands and damages, all construction features, relocation of facilities and utilities, mitigation (if required) planning, engineering and design, supervision and administration, contingencies and cost escalation associated with each of these activities through mid-point of construction. The government will prepare cost estimates, with input from the sponsor.

Reference: ER 1105-2-100.

JJ000 – *PLAN FORMULATION AND EVALUATION*

This task involves identifying all potential alternatives to solve the identified problem, evaluating each alternative and selecting the recommended plans. Alternatives will be developed for both the initial portfolio restoration sites and the Basin-wide comprehensive alternatives. Alternatives will be formulated based on four criteria: completeness, effectiveness, efficiency, and acceptability. As formulation progresses, remaining alternatives will be evaluated in greater detail, eliminating alternatives until detailed evaluation is complete and a recommended alternative is selected for implementation. The formulation process will analyze all available information and data assembled from many different components of the study.

Reference: ER 1105-2-100.

JJ001 - Without Project Condition Report This task involves defining the conditions that will prevail in the basin into the future without the project including, a literature review, data gathering, coordination and reporting. The following is a partial list of anticipated studies that may be conducted to assist in preparation of the Without Project Conditions Report:

- Fisheries and other marine resources trends;
- Habitat loss estimates
- Fish and wildlife population estimates
- Potential human build out estimates

Aerial Photography Analysis This study will assess physical and biological changes and trends in the basin using and comparing existing up-to-date aerial photographs and available aerial photographs from flights as long ago as 1938. Existing and past conditions and or

JJ002 - Needs Assessment This task uses the without project condition and predicts the needs of the environment to support salmonid species and other marine resources within the Puget Sound Basin.

JJ003 - Formulation of Alternatives Alternatives will be developed for both the initial portfolio restoration sites and the Basin-wide comprehensive alternatives. This task will be accomplished by the implementation team in consultation with the Science team. Section 3 provides additional detail on the formulation and evaluation of alternatives.

JJ004 - Selection of Alternatives for Detailed Study The list of initial portfolio restoration sites will then be evaluated to determine the 15 sites that are most effective in meeting the objectives. An incremental cost and cost effectiveness analysis, a test of acceptability and the sponsor's willingness will be used to determine the 15 site sites to be recommended for implementation.

Reference: ER 1105-2-100.

Z000 – *PROGRAM AND PROJECT MANAGEMENT*

This task will include all activities related to the overall management of the feasibility phase. The project will be jointly managed by the USACOE and the sponsor, and assumes costs for full time project management and part-time project management assistance.

Z001 - <u>Program Management</u> Program management consists of feasibility phase budget development, justification, management, defense and execution, as well as fund allocation and monitoring of both federal and non-federal expenditures. It includes preparation of budgetary documents and upward reporting, programming of funding, managing and tracking study obligations and expenditures, and accounting for sponsor cash contributions and in-kind services.

Z002 - <u>Project Management</u> Project management includes a wide variety of tasks and activities. These include overall coordination and local, state, tribal and federal governmental agencies, interest groups, and the general public; oversight management of Corps of Engineer, sponsor, and contracted study tasks and related activities; coordination between the Corps and the sponsor; attending and conducting meetings and briefings throughout the study; responding to congressional and other inquiries; and oversight and management of review of the draft and final feasibility activities. This task does not include plan formulation, report preparation, or Washington level review support, which are separately accounted for.

Reference: ER 5-1-11, ER 1105-2-100.

A **Steering Committee** was formed as part of the project management team for this study. The Steering Committee leads the project, provides information to the Executive Committee and keeps them informed of key actions and decisions. The Steering Committee makes final decisions on project scope and direction, and coordinates with other Federal and State agencies, and other technical or advisory committees that may be formed as a result of the study effort to ensure efforts are not duplicative. The membership of the committee was determined jointly by the sponsor and the USACOE. The USACOE and sponsor project managers will act as co-chairpersons for the Steering Committee.

Z003. - <u>Public Outreach and Involvement</u>

This subaccount will consist of activities related to developing public information on the study and obtaining public comments during the study process. Education and increased awareness and exchange of viewpoints are vital to the development of acceptable and successful recommendations for improvements to the existing situation. The public involvement/outreach strategy will be on-going throughout the project and consist of (1) a series of workshops and public meetings throughout the Puget Sound Basin, (2) workshop and meeting notices, news releases, and public information brochures; and (3) speaking engagements at community service clubs and local organizations by Corps, State, and local government personnel and possibly other experts, if available, and 4) development of a website and public information dissemination strategy. The study will have extensive review throughout the process by agencies at the federal, state, local and Tribal governmental level, and by, special interest groups, and the general public. Those entities most directly involved in review will include project partners, project stakeholders such as WDF&W, WSDOT, WDOE, USFWS, NMFS, Northwest Indian Fisheries Commission, Tribes, local governments, the Hood Canal Coordinating Council, Northwest Straits Commission, People for Puget Sound and, private citizen groups and interest groups. Details of the plan are documented in the Communication Plan in Volume II of the PMP.

Reference: ER 1105-2-100.

Recognizing that the active involvement of all interested publics in the planning and design process is critical, as well as obtaining valuable input from interested stakeholders in the community, the state will solicit the active involvement of local land use planners, environmental groups, local governmental agencies, Native American tribes, businesses, resource agencies, interested groups, and private citizens. Participation of people with scientific and technical expertise will also be encouraged, to increase the amount of relevant information available to the project study team. Coordination with several groups will be maintained to facilitate dialogue among basin residents and interest groups.

Z004. - Executive Committee. This task includes costs incurred by the study Executive Committee made up of members of members from the Corps and WDFW as well as other stakeholders including Tribal representatives, State and Federal Agencies, local governments and other non government organizations and academia.

Z005 - Pre-construction Engineering and Design (PED) Cost Sharing Agreement. A pre-construction engineering and design (PED) cost sharing agreement is prepared during the feasibility phase, following completion and submittal of the final feasibility report. Therefore, some scoping for PED is required during feasibility for inclusion into the Feasibility Report. The PED phase of project development encompasses all planning and engineering necessary for project construction. These costs are covered in the project and program management account.

Z006. - Negotiate Draft Project Partnership Agreement (PPA). This task includes coordinating with the local sponsor during the feasibility phase. It also includes reviewing the model project partnership agreement (PPA) with the sponsor and agreeing on a final draft PPA to be included in the final feasibility report. The PPA describes all of the requirements and responsibilities relating to construction of the project, including items of local cooperation required from the local sponsor.

Reference: Section 221 of Flood Control Act of 1970 (Public Law (PL) 91-611), as amended by Sections 101(e) and 103(j) of the 1986 Water Resource Development Act (PL 99-662), as amended.

2.0 Revised Project Management Plan by Knowledge Areas

2.1 Cost Management

Cost Estimating and Budget Planning:

Costs were estimated for the revised plan through a series of methods. First the sponsor, Washington State Department of Fish and Wildlife (WDFW) estimated the total required to complete the feasibility report. Their estimated amount was based on the original workplan, actual progress and costs to-date (Jul-08), their understanding of the overall effort required to accomplish the revised workplan, and their judgment on the team's ability to raise funds within the expected timeframe.

The Corps then asked disciplines within the Seattle District to estimate effort to complete the workplan, each from their discipline's perspective. To prepare them for their estimates, the district team was briefed on the work to-date, the original and revised workplans, and a talking paper, "The Path Forward". The talking paper summarized the project, workplans, and common assumptions about the expected project sites. The project management team (PMs) used the provided estimates to compile a total estimate to complete the feasibility study based on FY08 costs. The PMs applied judgment to reconcile different perspectives after discussing individual discipline's estimates with the responsible district team member. They also estimated work effort holistically from the project perspective to fill in gaps in the estimates among disciplines.

The resulting estimate represented the cost of effort to complete the feasibility report in the estimated year, FY08. The PMs then prepared a budget-to-complete by estimating labor cost-growth during the expected performance period from a historic average (i.e. fully funded estimate) and rated uncertainty in the cost estimates. The PMs decided the uncertainty rating was best described as their confidence in the estimates. The qualitative ratings (high, medium, and low confidence) were used to evaluate each work task and converted to percentages, or confidence factors, for a semi-quantitative analysis of cost risk (Risk Management Plan for more complete description of cost risk categories). Each task's contribution to management reserve was computed as the product of the fully funded task estimate and corresponding confidence factor. The total management reserve was a summation of all of the task contributions. The total budget-to-complete included the fully funded tasks and management reserve. Table A-4 in the cost appendix "A" below shows the fully funded estimate and management reserve. Table A-5 shows the fully funded estimate by fiscal year.

To complete the budget analysis, the budget was evaluated based on the agreement between WDFW and the Corps, 50%-50% cost-share. The partner's participation in producing each task was estimated which resulted in an assignment of all or part of each task to the partner's portion. The sum of all task assignments for each partner showed nearly equal balance, so the management reserve was used to completely balance the cost-share estimate. Table A-6 shows the cost-share apportionment between WDFW and the Corps.

The tables in the cost appendix "A" below present two funding scenarios. The plan is presented assuming federal funding is available to match capability (unconstrained); alternatively the plan is presented assuming federal funding levels do not exceed past federal funding of 1.5 million dollars per fiscal year (constrained).

Comparison of Original and Revised Budgets:

The original and actual costs were reported by the PMs to the Nearshore Executive co-leads, COL McCormick and Dr. Koenings, on 1-Jul-08 as shown in Figures 1 and 2. {Note: Since the briefing, the Corps received an additional $50,000 of FY08 funds for Stage II in-house efforts.} The subsequently developed budget-to-complete is compared to the original as shown in Tables 1, 2 and 3 to help answer these questions:

1. How does the original total budget compare to the revised budget?
   The original study budget was $12,055,558 compared to the revised budget of $19,105,943 which is an increase of $7,050,385. This increase would be shared equally between the Corps and the local sponsor; approximately $3,500,000 over the next 3 years.

2. How does the original budget for the future, planned work compare to the revised budget?
   The original budget for Stage III was $4,912,431 compared to the revised workplan budget of $9,240,792, which is an increase of $4,328,361.

3. How does the original management reserve compare to the revised management reserve?
   The original estimate was based on 15% contingency of FY06 and FY07 estimates before computing the fully funding estimate. The revised reserve is based on a confidence rating of each fully funded task estimate. Based on the more detailed revised plan than originally available for Stage III work, the management reserve is increased to $535,214.

4. How does the team expect to balance the cost-share for:
   a. Work completed to-date?
      Throughout the preceding 7 federal fiscal years, the cost-share balance has generally been near 50/50, with one partner slightly ahead due to differences in federal and State of Washington appropriation cycles. Currently, the Corps is slightly ahead (55%) of WDFW (45%); the current difference is $1,048,849.

   b. Work described in the revised plan?
      The work described in the revised plan was apportioned between the Corps and WDFW based on task expertise. Some tasks were fully apportioned to one partner who has the required expertise to accomplish the task and other task efforts were shared. A relatively small total difference resulted between the partners shares and management reserve apportionment was used achieve balance.

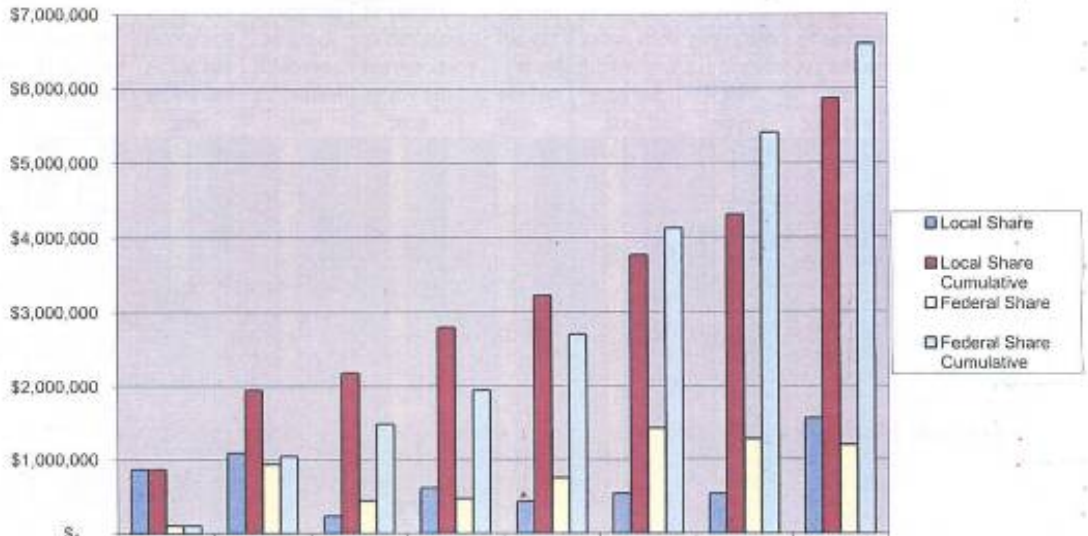
   c. The overall strategy to balance the entire study costs?
      The agreement requires that the total study costs be shared equally between WDFW and the Corps. The PMs with assistance from state and federal program analyst will continue to monitor the cost-share accounts and seek ways to balance the accounts before completion of the feasibility report. Pursuant to the Feasibility Cost Share Agreement, the Corps will periodically request funds from WDFW to balance the cost-shares. If a difference remains at final accounting balance will be reached with a cash transfer between the partners.

Table 1: Comparison of Original, Actual Costs To-Date, and Revised Budgets				
	Original Budget	Actual Costs (AC) estimated at end-FY08	Revised Budget To Complete (BTC)	Revised Total Budget (BTC+AC)
Stage I	$2,902,000			
Stage II	$4,241,127			
Subtotal – Stages I & II	$7,143,127	$9,865,150		$9,865,150
Stage III – (Revised Workplan)	$4,912,431	---	$9,240,792	$9,240,792
Total	$12,055,558	$9,865,150	$9,240,792	$19,105,942

Table 2: Comparison of Original and Revised Budget: Management Reserve Estimates			
	Original Management Reserve Estimate	Revised Management Reserve	Difference Revised & Original
Stage III / Revised Workplan	$226,500	$535,214	$308,714

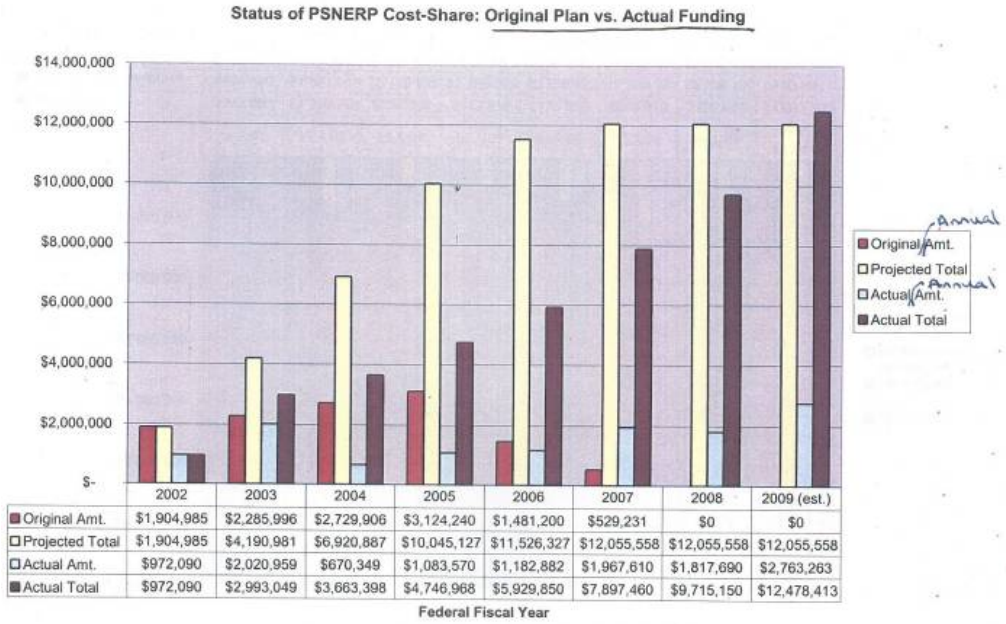
Table 3: Comparison of Original and Revised Budget: Cost-Share Plan			
	Corps' Share	WDFW's Share	Difference Corps - WDFW
Original Stage I & II	$4,959,205	$5,085,922	<$126,717>
Actual Stage I & II	$5,457,000	$4,408,150	$1,048,850
Stage III – Revised Plan--	$4,620,396	$4,620,396	--$0--
Total Budget	$10,077,396	$9,028,546	$1,048,850
Amount to Reconcile Cost-Share Agreement	<$524,425>	+$524,425	--$0--

Figure 1 Study Cost-Share Status as 1-Jul-08



	FFY 02	FFY 03	FFY 04	FFY 05	FFY 06	FFY 07	FFY 08	FFY 09 (est.)
Local Share	$865,090	$1,085,959	$231,349	$613,570	$432,882	$540,610	$538,690	$1,563,263
Local Share Cumulative	$865,090	$1,951,049	$2,182,398	$2,795,968	$3,228,850	$3,769,460	$4,308,150	$5,871,413
Federal Share	$107,000	$935,000	$439,000	$470,000	$750,000	$1,427,000	$1,279,000	$1,200,000
Federal Share Cumulative	$107,000	$1,042,000	$1,481,000	$1,951,000	$2,701,000	$4,128,000	$5,407,000	$6,607,000

Figure 2
Comparison of Original Budget to Actual Costs
as 1-Jul-08



	2002	2003	2004	2005	2006	2007	2008	2009 (est.)
Original Amt.	$1,904,985	$2,285,996	$2,729,906	$3,124,240	$1,481,200	$529,231	$0	$0
Projected Total	$1,904,985	$4,190,981	$6,920,887	$10,045,127	$11,526,327	$12,055,558	$12,055,558	$12,055,558
Actual Amt.	$972,090	$2,020,959	$670,349	$1,083,570	$1,182,882	$1,967,610	$1,817,690	$2,763,263
Actual Total	$972,090	$2,993,049	$3,663,398	$4,746,968	$5,929,850	$7,897,460	$9,715,150	$12,478,413

Cost Monitoring and Control:

Cost monitoring and control is part of the integrated management and control performed for the Nearshore project. Each partner has assigned an analyst to monitor and report on cost performance. The PMs meet several times each month to monitor project progress and to apply control measures as appropriate. Specific to costs, a typical process includes one PM assigned responsibility for a task. He or she often works with other team members to scope, estimate, negotiate and award (for in-house effort the award is simply a labor code for work by a unit or individual.) Prior to award, the responsible PM reports back to the entire team on the outcome of negotiations. For complex or expensive tasks, the co-lead PMs will both participate. Monitoring after award of work occurs at least monthly through email, mail, telephone calls, and meetings. Control is scaled to the complexity of each task. For instance, for contract work on GIS data analysis, additional scope clauses were included in the task order to prescribe the method to control costs of uncertain, critical products.

Appendix "A": Cost Summary Tables

Table A.1 - Summary of Cost Estimate: Federal/Sponsor Costs to Date and Projected Costs by Fiscal Year

	Federal				Sponsor				Total			
	In-Kind				In-Kind				In-Kind			
	Unconstrained		Constrained		Unconstrained		Constrained		Unconstrained		Constrained	
	Budgeted Work[1]	Application of Management Reserve	Budgeted Work[1]	Application of Management Reserve	Budgeted Work[1]	Application of Management Reserve	Budgeted Work[1]	Application of Management Reserve	Total Budgeted Work[1]	Total Application of Management Reserve	Total Budgeted Work[1]	Total Application of Management Reserve
FY 2002	$107,000		$107,000		$865,091		$865,091		$972,091		$972,091	
FY 2003	$935,000		$935,000		$1,085,960		$1,085,960		$2,020,960		$2,020,960	
FY 2004	$439,000		$439,000		$231,349		$231,349		$670,349		$670,349	
FY 2005	$470,000		$470,000		$613,570		$613,570		$1,083,570		$1,083,570	
FY 2006	$750,000		$750,000		$432,882		$432,882		$1,182,882		$1,182,882	
FY 2007	$1,427,000		$1,427,000		$540,609		$540,609		$1,967,610		$1,967,610	
FY 2008	$1,329,000		$1,329,000		$638,689		$638,689		$1,967,690		$1,967,690	
FY 2009	$1,579,195	$23,538	$1,500,000	$22,358	$1,843,145	$207,416	$1,750,714	$197,014	$3,422,340	$230,954	$3,250,714	$219,372
FY 2010	$2,427,807	$36,187	$1,500,000	$22,358	$1,913,054	$215,283	$1,181,964	$133,011	$4,340,860	$251,470	$2,681,964	$155,369
FY 2011	$545,538	$8,131	$1,007,001	$15,010	$396,841	$44,658	$823,521	$92,674	$942,378	$52,789	$1,830,523	$107,683
FY 2012			$545,538	$8,131			$396,841	$44,658			$942,378	$52,789
Total:	$10,009,539	$67,857	$10,009,539	$67,857	$8,561,190	$467,356	$8,561,190	$467,356	$18,570,729	$535,214	$18,570,729	$535,214

1. Figures for FY2002 through FY2008 are actual dollars spent.

Table A.2 - Summary of Cost Estimate: By Technical Area and Fiscal Year

	Federal	Sponsor	Total
Project Expense:	$4,552,539	$4,153,040	$8,705,579
Management Reserve:	$67,857	$467,356	$535,214
Total:	$4,620,396	$4,620,396	$9,240,792
Percentage:	50%	50%	100%

Major Task Groupings	Base Cost Estimate	FY2009[1]		FY2010[1]		FY2011[1]		Fully Funded Cost Estimate
		Federal	Sponsor	Federal	Sponsor	Federal	Sponsor	
Existing Condition/Future Without Project Condition	$460,333	$176,259	$200,931	$22,677	$67,716		$9,754	$477,336
Alternative Development and Plan Formulation								
• Plan Formulation	$705,000	$284,452	$221,021	$92,475	$102,996	$23,676	$9,106	$733,725
• Science and Technology	$1,451,136	$58,263	$606,035	$60,010	$624,216	$15,453	$160,736	$1,524,713
• Agency Support	$90,000	$41,200		$42,436		$10,927		$94,563
• Stakeholder Involvement[2]	$520,917		$238,464		$245,618		$63,247	$547,329
Evaluate Alternative Plans	$398,750	$114,407	$110,362	$92,219	$94,735		$4,705	$416,428
Select Plan								
• Real Estate	$500,000	$61,800	$15,450	$318,270	$79,568	$43,709	$10,927	$529,724
• Engineering & Design	$675,000	$83,430	$20,858	$429,665	$107,416	$59,007	$14,752	$715,127
• Cost Estimating	$262,000	$13,493		$236,262		$28,629		$278,385
• Economics	$111,111	$17,167		$88,408		$12,141		$117,716
• Site survey	$100,000				$106,090			$106,090
• HTRW	$25,000			$26,523				$26,523
• Environmental Compliance	$500,000	$162,225	$18,025	$238,703	$26,523	$73,759	$8,195	$527,430
• Feasibility Report, Integrated EIS Preparation & Plan Selection	$165,000			$114,975	$33,816	$20,898	$6,147	$175,836
Project Management	$2,137,500	$566,500	$412,000	$583,495	$424,360	$150,250	$109,273	$2,245,878
Review and Approval	$175,000			$81,689		$107,087		$188,777
Total Estimated Project Expenses:	**$8,276,747**	$1,579,195	$1,843,145	$2,427,807	$1,913,054	$545,538	$396,841	**$8,705,579**

Footnotes

1. Fully funded costs reflect a 3% annual inflation rate.

2. Additional Stakeholder Involvement expenses are included in other major task groupings.

Table A.3 – **Constrained** Summary of Cost Estimate: By Technical Area and Fiscal Year

	Federal	Sponsor	Total
Project Expense:	$4,552,539	$4,153,040	$8,705,579
Management Reserve:	$67,857	$467,356	$535,214
Total:	$4,620,396	$4,620,396	$9,240,792
Percentage:	50%	50%	100%

Major Task Groupings	Base Cost Estimate	FY2009[1]		FY2010[1]		FY2011[1]		FY2012[2]		Fully Funded Cost Estimate
		Federal	Sponsor	Federal	Sponsor	Federal	Sponsor	Federal	Sponsor	
Existing Condition/Future Without Project Condition	$460,333	$167,420	$190,854	$14,011	$41,838	$17,505	$35,955		$9,754	$477,336
Alternative Development and Plan Formulation										
• Plan Formulation	$705,000	$270,187	$209,937	$57,135	$63,635	$49,605	$50,445	$23,676	$9,106	$733,725
• Science and Technology	$1,451,136	$55,341	$575,643	$37,077	$385,667	$25,855	$268,941	$15,453	$160,736	$1,524,713
• Agency Support	$90,000	$39,134		$26,219		$18,283		$10,927		$94,563
• Stakeholder Involvement[3]	$520,917		$226,506		$151,753		$105,824		$63,247	$547,329
Evaluate Alternative Plans	$398,750	$108,670	$104,827	$56,977	$58,531	$40,980	$41,738		$4,705	$416,428
Select Plan										
• Real Estate	$500,000	$58,701	$14,675	$196,640	$49,160	$124,729	$31,182	$43,709	$10,927	$529,724
• Engineering & Design	$675,000	$79,246	$19,812	$265,465	$66,366	$168,384	$42,096	$59,007	$14,752	$715,127
• Cost Estimating	$262,000	$12,816		$145,973		$90,966		$28,629		$278,385
• Economics	$111,111	$16,306		$54,622		$34,647		$12,141		$117,716
• Site survey	$100,000				$65,547		$40,543			$106,090
• HTRW	$25,000			$16,387		$10,136				$26,523
• Environmental Compliance	$500,000	$154,090	$17,121	$147,480	$16,387	$99,358	$11,040	$73,759	$8,195	$527,430
• Feasibility Report, Integrated EIS Preparation & Plan Selection	$165,000			$71,036	$20,893	$43,939	$12,923	$20,898	$6,147	$175,836
Project Management	$2,137,500	$538,091	$391,339	$360,508	$262,187	$251,397	$182,834	$150,250	$109,273	$2,245,878
Review and Approval	$175,000			$50,471		$31,218		$107,087		$188,777
Total Estimated Project Expenses:	**$8,276,747**	$1,500,000	$1,750,714	$1,500,000	$1,181,964	$1,007,001	$823,521	$545,538	$396,841	**$8,705,579**

Footnotes

1. Fully funded costs reflect a 3% annual inflation rate.

2. By extending the project duration under the constrained budget, some project costs would increase an additional 3%.
This increase is assumed to be absorbed by the management reserve, leaving the total fully-funded estimate (including management reserve) at $9,240,792.

3. Additional Stakeholder Involvement expenses are included in other major task groupings.

Table A.4 – Fully Funded Estimated Costs to Complete, Confidence Ratings, and Management Reserve Contribution

Fully Funded Costs:	$8,705,579
Management Reserve:	$535,214
Estimated Cost to Complete:	$9,240,792

Outline Level			Task	Fully Funded Estimated Cost (From Table A5)	Confidence Rating[1]	Line Item Contribution to Management Reserve[2]	Notes
1			Problems and Opportunities				Assumed complete prior to revised FCSA
2			**Inventory & Forecast Conditions**	**$477,336**			**Sum of all items in Section 2**
	2.1		Evaluate Existing Conditions				Assumed complete prior to revised FCSA
		2.1.1	Conceptual Model of the Puget Sound Nearshore				Assumed complete prior to revised FCSA
		2.1.2	Valued Ecosystem Components.				Assumed complete prior to revised FCSA
		2.1.3	Nearshore Typology				Assumed complete prior to revised FCSA
		2.1.4	Historic Conditions Assessment				Assumed complete prior to revised FCSA
		2.1.5	Current Conditions Assessment				Assumed complete prior to revised FCSA
		2.1.6	Change Analysis				Assumed complete prior to revised FCSA
		2.1.7	Research Plan				This task is complete.
	2.2		Evaluate Future Without Project Conditions				Assumed complete prior to revised FCSA
		2.2.1	Future Without Project Background	$51,500	high		To develop FWOP
		2.2.2	Future Risk Assessment.				EPA funds; sponsor to contract academians
	2.3		Strategic Needs Assessment/Comprehensive Restoration Needs	$258,659	low	$51,732	480 hours. 4 FTE's on contract, 2 FTEs for oversight (w/ six people, that's ten days of work each.) -- Revised est. assumes 6 FTE @ 2 mo.
	2.4		Stakeholder Involvement for Existing Conditions				Overall costs distributed among subtasks
		2.4.1	Stakeholder Involvement: EFG&S valuation	$10,857	medium	$1,086	incl. in 3.10
		2.4.2	Stakeholder/ Public involvement for NEPA compliance	$73,549	medium	$7,355	incl. in 3.11
	2.5		W/O Project Conditions Report	$82,771	medium	$8,277	

Outline Level			Task	Fully Funded Estimated Cost (From Table A5)	Confidence Rating[1]	Line Item Contribution to Management Reserve[2]	Notes
3			**Formulate Alternative Plans**	**$2,900,330**			**Sum of all items in Section 3**
	3.1		Planning Objectives Development				Assumed included in program support, or overall estimate distributed across subtasks
		3.1.1	Stakeholder Needs to Support Objectives.	$282,027	medium	$28,203	incl. in 3.10
	3.2		Plan Formulation Strategy	$51,732	medium	$5,173	This amount for contractor; oversight covered under project management
		3.2.1	Overview				Assumed included in program support, or overall estimate distributed across tasks
		3.2.2	Existing Condition and PF Strategy	$20,693	medium	$2,069	meeting FR requirements for existing conditions
	3.3		Identify and Describe Initial Portfolio Restoration Opportunities	$25,866	high		GIS support for project screening; ID of BAPs
		3.3.1	Stakeholder Involvement: Nearshore Project Database population	$52,535	medium	$5,254	incl. in 3.10
	3.4		Develop Basinwide Comprehensive Alternative Plans	$157,605	medium	$15,761	workshop, facilitated by contractor - rev'd est. incl. GIS support
		3.4.1	Nearshore Restoration Portfolio				incl. in 3.4
		3.4.2	Alternative Strategies for Basinwide Comprehensive Restoration				incl. in 3.4
	3.5		Management Measures				Overall costs distributed among subtasks
		3.5.1	Define Management Measures				done
		3.5.2	Management Measure Technical Report	$103,000	medium	$10,300	Contract. Oversight under gen. PM overhead
		3.5.3	Management Measure Parametric Cost Estimates for each Measure.	$82,771	medium	$8,277	30K for Walla Walla, 50K for contractor
		3.5.4	Development of Management Measure Output/Benefit for each Measure.	$20,693	medium	$2,069	
	3.6		Model Certification	$31,364	medium	$3,136	Contract; GIS; Cat. 2 Models; cert. for ecological outputs

Outline Level			Task	Fully Funded Estimated Cost (From Table A5)	Confidence Rating[1]	Line Item Contribution to Management Reserve[2]	Notes
	3.7		Agency Technical Review	$51,500	medium	$5,150	Necessary for FSM
	3.8		External Peer Review	$125,454	high		3 meetings/review at 40K ea; IEPR is separate
	3.9		Feasibility Scoping Meeting	$20,600	medium	$2,060	
	3.1		Stakeholder Involvement for Alternative Plan Formulation		-		Costs redistributed to sections where they belong
		3.10.1	Stakeholder Involvement: Relationship with other restoration programs and partners	$78,803	medium	$7,880	
		3.10.2	Stakeholder Involvement: Local support for PSNERP Recommended Plan	$105,070	medium	$10,507	incl. in 3.10
		3.10.3	Stakeholder Involvement: Broad program understanding and support	$28,894	medium	$2,889	incl. in 3.10
		3.10.4	Cooperating Federal Agency Coordination & Involvement	$94,563	high		40K/yr for USFW, other agencies pay own way. Assumes 2.25 yr.
		3.10.5	Government to Government Tribal Activities	$42,448	low	$8,490	Placeholder until details get worked out with Diane Lake
	3.11		Science and Technology	$827,429	high		Assumes 2.25 yr @ $350K to cover add'l Social Science support
		3.11.1	Basic Science and Technology Decision Support				included in 3.11
		3.11.2	Support of WRDA 2010 and Comprehensive Plan	$382,073	medium	$38,207	Assumes cost of S&T program dev't. and demo proj. hypotheses dev't. only (not implementation). Includes Demo Project support
		3.11.3	Scientific Peer Review				included in 3.11.2
		3.11.4	Monitoring and Adaptive Management	$105,070	high		Assumes cost of Monitoring Protocol dev't only; 10 @ $10K
		3.11.5	Case Studies	$210,141	high		
		3.11.6	Science and Technology Information Transfer		high		included in 3.11.2

Outline Level			Task	Fully Funded Estimated Cost (From Table A5)	Confidence Rating[1]	Line Item Contribution to Management Reserve[2]	Notes
4			**Evaluating Alternative Plans**	**$270,714**			**Sum of all items in Section 4**
	4.1		Screen and Evaluate Initial Portfolio Restoration Sites	$31,364	high		Economist working w/ IT
		4.1.1	Stakeholder Involvement: Review and support for PSNERP GI Project List	$40,715	medium	$4,071	incl. in 3.10
	4.2		Evaluate Basinwide & Subbasin Comprehensive Alternative Plans	$198,636	low	$39,727	Quantitative analysis and cost-effectiveness. Assumes 1 reformulation.
5			**Comparing Alternative Plans**	**$145,714**			**Sum of all items in Section**
	5.1		Compare Basinwide Alternative Plans	$98,877	high		May contract out. Assumes 1 reformulation.
	5.2		Compare and Justify Initial Portfolio Restoration Sites for Authorization	$15,612	low	$3,122	
	5.3		Alternative Formulation Briefing	$31,224	medium	$3,122	
6			**Selecting a Plan**	**$2,476,830**			**Sum of all items in Section 6**
	6.1		Plan Selection	$15,985	high		
	6.2		Engineering & Design and Real Estate Requirements for WRDA 2010 Projects.				Overall costs distributed among subtasks
		6.2.1	Real Estate	$529,724	low	$105,945	Rev'd 2008
		6.2.2	Engineering & Design	$715,127	medium	$71,513	
		6.2.3	Cost Estimating	$278,385	high		Rev'd 2008
		6.2.4	Economics	$117,716	medium	$11,772	
		6.2.5	Site survey	$106,090	low	$21,218	Assumes 5 sites at $20,000 each
		6.2.6	HTRW	$26,523	high		Assumes 5 sites at $5,000 each
	6.3		Environmental Compliance	$527,430	high		roll up of 6.3.1 thru 6.3.5
		6.3.1	National Environmental Policy Act (NEPA)				Included in 6.3
		6.3.2	Endangered Species Act (ESA)				Included in 6.3
		6.3.3	Clean Water Act (Section 404/401) and Rivers and Harbors Act (Sec. 10)				Included in 6.3

Outline Level			Task	Fully Funded Estimated Cost (From Table A5)	Confidence Rating[1]	Line Item Contribution to Management Reserve[2]	Notes
		6.3.4	Cultural Resources (Section 106)				Included in 6.3
		6.3.5	State Permits.				Included in 6.3
	6.4		Feasibility Report & Integrated EIS Preparation.	$159,851	low	$31,970	
7			**Project Management, Review & Approval Process**	**$2,434,654**			**Sum of all items in Section 7**
	7.1		Project Management				Overall costs distributed among subtasks
		7.1.1	Local Sponsor Proj. Mgmt	$945,633	high		2.25 yrs @ $400K
		7.1.2	Corps Proj. Mgmt	$1,300,245	high		2.25 yrs @ $550K
	7.2		Agency Technical Review of Feasibility Report/EIS	$80,761	medium	$8,076	Separate Corps District review
	7.3		Independent External Peer Review	$43,073	medium	$4,307	$40K for Panel + $25K for Center of Expertise
	7.4		NEPA State and Agency Review	$16,152	medium	$1,615	
	7.5		Public Review	$16,152	medium	$1,615	
	7.6		Civil Works Review Board	$32,639	medium	$3,264	Assumes all Washington D.C. level review
			TOTAL	**$8,705,579**		**$535,214**	

Footnotes

1. PMP, Risk Management chapter describes confidence scales.
2. Factors for Calculating Contribution to Management Reserve as follows:
   High confidence: 0%
   Medium confidence: 10%
   Low confidence: 20%

Table A.5 – Estimated Cost to Complete: Fully Funded Costs by Fiscal Year

FY2009:	$3,422,340
FY2010:	$4,340,860
FY2011:	$942,378
Total:	$8,705,579

Outline Level			Task	Estimated Cost	Fully Funded Estimated Cost per Fiscal Year			Fully Funded Estimated Cost
					FY 2009	FY 2010	FY 2011	
					Inflation Factors			
					3%	3%	3%	
1			Problems and Opportunities					
2			**Inventory & Forecast Conditions**	**$460,333**	**$377,190**	**$90,392**	**$9,754**	**$477,336**
	2.1		Evaluate Existing Conditions					
		2.1.1	Conceptual Model of the Puget Sound Nearshore					
		2.1.2	Valued Ecosystem Components.					
		2.1.3	Nearshore Typology					
		2.1.4	Historic Conditions Assessment					
		2.1.5	Current Conditions Assessment					
		2.1.6	Change Analysis					
		2.1.7	Research Plan					
	2.2		Evaluate Future Without Project Conditions					
		2.2.1	Future Without Project Background	$50,000	$51,500			$51,500
		2.2.2	Future Risk Assessment.					
	2.3		Strategic Needs Assessment/Comprehensive Restoration Needs	$250,000	$218,875	$39,784		$258,659
	2.4		Stakeholder Involvement for Existing Conditions					
		2.4.1	Stakeholder Involvement: EFG&S valuation	$10,333	$4,730	$4,872	$1,255	$10,857
		2.4.2	Stakeholder/ Public involvement for NEPA compliance	$70,000	$32,044	$33,006	$8,499	$73,549
	2.5		W/O Project Conditions Report	$80,000	$70,040	$12,731		$82,771
3			**Formulate Alternative Plans**	**$2,767,053**	**$1,449,435**	**$1,167,752**	**$283,144**	**$2,900,330**
	3.1		Planning Objectives Development					
		3.1.1	Stakeholder Needs to Support Objectives.	$268,417	$122,875	$126,562	$32,590	$282,027

Outline Level			Task	Estimated Cost	Fully Funded Estimated Cost per Fiscal Year			Fully Funded Estimated Cost
					FY 2009	FY 2010	FY 2011	
					Inflation Factors			
					3%	3%	3%	
	3.2		Plan Formulation Strategy	$50,000	$43,775	$7,957		$51,732
		3.2.1	Overview					
		3.2.2	Existing Condition and PF Strategy	$20,000	$17,510	$3,183		$20,693
	3.3		Identify and Describe Initial Portfolio Restoration Opportunities	$25,000	$21,888	$3,978		$25,866
		3.3.1	Stakeholder Involvement: Nearshore Project Database population	$50,000	$22,889	$23,576	$6,071	$52,535
	3.4		Develop Basinwide Comprehensive Alternative Plans	$150,000	$68,667	$70,727	$18,212	$157,605
		3.4.1	Nearshore Restoration Portfolio					
		3.4.2	Alternative Strategies for Basinwide Comprehensive Restoration					
	3.5		Management Measures					
		3.5.1	Define Management Measures					
		3.5.2	Management Measure Technical Report	$100,000	$103,000			$103,000
		3.5.3	Management Measure Parametric Cost Estimates for each Measure.	$80,000	$70,040	$12,731		$82,771
		3.5.4	Development of Management Measure Output/Benefit for each Measure.	$20,000	$17,510	$3,183		$20,693
	3.6		Model Certification	$30,000	$15,450	$15,914		$31,364
	3.7		Agency Technical Review	$50,000	$51,500			$51,500
	3.8		External Peer Review	$120,000	$61,800	$63,654		$125,454
	3.9		Feasibility Scoping Meeting	$20,000	$20,600			$20,600
	3.10		Stakeholder Involvement for Alternative Plan Formulation					
		3.10.1	Stakeholder Involvement: Relationship with other restoration programs and partners	$75,000	$34,333	$35,363	$9,106	$78,803
		3.10.2	Stakeholder Involvement: Local support for PSNERP Recommended Plan	$100,000	$45,778	$47,151	$12,141	$105,070

Outline Level			Task	Estimated Cost	Fully Funded Estimated Cost per Fiscal Year			Fully Funded Estimated Cost
					FY 2009	FY 2010	FY 2011	
					Inflation Factors			
					3%	3%	3%	
		3.10.3	Stakeholder Involvement: Broad program understanding and support	$27,500	$12,589	$12,967	$3,339	$28,894
		3.10.4	Cooperating Federal Agency Coordination & Involvement	$90,000	$41,200	$42,436	$10,927	$94,563
		3.10.5	Government to Government Tribal Activities	$40,000	$13,733	$14,145	$14,570	$42,448
	3.11		Science and Technology	$787,500	$360,500	$371,315	$95,614	$827,429
		3.11.1	Basic Science and Technology Decision Support					
		3.11.2	Support of WRDA 2010 and Comprehensive Plan	$363,636	$166,464	$171,458	$44,151	$382,073
		3.11.3	Scientific Peer Review					
		3.11.4	Monitoring and Adaptive Management	$100,000	$45,778	$47,151	$12,141	$105,070
		3.11.5	Case Studies	$200,000	$91,556	$94,302	$24,283	$210,141
		3.11.6	Science and Technology Information Transfer					
4			**Evaluating Alternative Plans**	**$258,750**	**$131,039**	**$134,970**	**$4,705**	**$270,714**
	4.1		Screen and Evaluate Initial Portfolio Restoration Sites	$30,000	$15,450	$15,914		$31,364
		4.1.1	Stakeholder Involvement: Review and support for PSNERP GI Project List	$38,750	$17,739	$18,271	$4,705	$40,715
	4.2		Evaluate Basinwide & Subbasin Comprehensive Alternative Plans	$190,000	$97,850	$100,786		$198,636
5			**Comparing Alternative Plans**	**$140,000**	**$93,730**	**$51,984**		**$145,714**
	5.1		Compare Basinwide Alternative Plans	$95,000	$63,603	$35,275		$98,877
	5.2		Compare and Justify Initial Portfolio Restoration Sites for Authorization	$15,000	$10,043	$5,570		$15,612
	5.3		Alternative Formulation Briefing	$30,000	$20,085	$11,139		$31,224
6			**Selecting a Plan**	**$2,338,111**	**$392,447**	**$1,806,218**	**$278,166**	**$2,476,830**
	6.1		Plan Selection	$15,000		$13,526	$2,459	$15,985

Outline Level			Task	Estimated Cost	Fully Funded Estimated Cost per Fiscal Year			Fully Funded Estimated Cost
					FY 2009	FY 2010	FY 2011	
					Inflation Factors			
					3%	3%	3%	
	6.2		Engineering & Design and Real Estate Requirements for WRDA 2010 Projects.					
		6.2.1	Real Estate	$500,000	$77,250	$397,838	$54,636	$529,724
		6.2.2	Engineering & Design	$675,000	$104,288	$537,081	$73,759	$715,127
		6.2.3	Cost Estimating	$262,000	$13,493	$236,262	$28,629	$278,385
		6.2.4	Economics	$111,111	$17,167	$88,408	$12,141	$117,716
		6.2.5	Site survey	$100,000		$106,090		$106,090
		6.2.6	HTRW	$25,000		$26,523		$26,523
	6.3		Environmental Compliance	$500,000	$180,250	$265,225	$81,955	$527,430
		6.3.1	National Environmental Policy Act (NEPA)					
		6.3.2	Endangered Species Act (ESA)					
		6.3.3	Clean Water Act (Section 404/401) and Rivers and Harbors Act (Section 10)					
		6.3.4	Cultural Resources (Section 106)					
		6.3.5	State Permits.					
	6.4		Feasibility Report & Integrated EIS Preparation.	$150,000		$135,265	$24,586	$159,851
7			**Project Management, Review & Approval Process**	**$2,312,500**	**$978,500**	**$1,089,544**	**$366,610**	**$2,434,654**
	7.1		Project Management					
		7.1.1	Local Sponsor Proj. Mgmt	$900,000	$412,000	$424,360	$109,273	$945,633
		7.1.2	Corps Proj. Mgmt	$1,237,500	$566,500	$583,495	$150,250	$1,300,245
	7.2		Agency Technical Review of Feasibility Report/EIS	$75,000		$39,784	$40,977	$80,761
	7.3		Independent External Peer Review	$40,000		$21,218	$21,855	$43,073
	7.4		NEPA State and Agency Review	$15,000		$7,957	$8,195	$16,152
	7.5		Public Review	$15,000		$7,957	$8,195	$16,152
	7.6		Civil Works Review Board	$30,000		$4,774	$27,865	$32,639
			TOTAL:	**$8,276,747**	**$3,422,340**	**$4,340,860**	**$942,378**	**$8,705,579**

Table A.6 – Federal/Sponsor Cost Apportionment (Fully Funded)

	Federal	Sponsor	Total
Project Expense:	$4,552,539	$4,153,040	$8,705,579
Management Reserve:	$67,857	$467,356	$535,214
Total:	$4,620,396	$4,620,396	$9,240,792
Percentage:	50%	50%	100%

Outline Level			Task	Federal	Sponsor	Total
1			**Problems and Opportunities**			
2			**Inventory & Forecast Conditions**			
	2.1		Evaluate Existing Conditions			
		2.1.1	Conceptual Model of the Puget Sound Nearshore			
		2.1.2	Valued Ecosystem Components.			
		2.1.3	Nearshore Typology			
		2.1.4	Historic Conditions Assessment			
		2.1.5	Current Conditions Assessment			
		2.1.6	Change Analysis			
		2.1.7	Research Plan			
	2.2		Evaluate Future Without Project Conditions			
		2.2.1	Future Without Project Background	$51,500		$51,500
		2.2.2	Future Risk Assessment.			
	2.3		Strategic Needs Assessment/Comprehensive Restoration Needs	$64,665	$193,994	$258,659
	2.4		Stakeholder Involvement for Existing Conditions			
		2.4.1	Stakeholder Involvement: EFG&S valuation		$10,857	$10,857
		2.4.2	Stakeholder/ Public involvement for NEPA compliance		$73,549	$73,549
	2.5		W/O Project Conditions Report	$82,771		$82,771
3			**Formulate Alternative Plans**			
	3.1		Planning Objectives Development			
		3.1.1	Stakeholder Needs to Support Objectives.		$282,027	$282,027
	3.2		Plan Formulation Strategy	$51,732		$51,732
		3.2.1	Overview			
		3.2.2	Existing Condition and PF Strategy	$20,693		$20,693
	3.3		Identify and Describe Initial Portfolio Restoration Opportunities		$25,866	$25,866
		3.3.1	Stakeholder Involvement: Nearshore Project Database population		$52,535	$52,535
	3.4		Develop Basinwide Comprehensive Alternative Plans	$78,803	$78,803	$157,605
		3.4.1	Nearshore Restoration Portfolio			
		3.4.2	Alternative Strategies for Basinwide Comprehensive Restoration			
	3.5		Management Measures			
		3.5.1	Define Management Measures			
		3.5.2	Management Measure Technical Report		$103,000	$103,000
		3.5.3	Management Measure Parametric Cost Estimates for each Measure.	$82,771		$82,771
		3.5.4	Development of Management Measure Output/Benefit for each Measure.	$20,693		$20,693

Outline Level			Task	Federal	Sponsor	Total
	3.6		Model Certification	$31,364		$31,364
	3.7		Agency Technical Review	$51,500		$51,500
	3.8		External Peer Review		$125,454	$125,454
	3.9		Feasibility Scoping Meeting	$20,600		$20,600
	3.10		Stakeholder Involvement for Alternative Plan Formulation			
		3.10.1	Stakeholder Involvement: Relationship with other restoration programs and partners		$78,803	$78,803
		3.10.2	Stakeholder Involvement: Local support for PSNERP Recommended Plan		$105,070	$105,070
		3.10.3	Stakeholder Involvement: Broad program understanding and support		$28,894	$28,894
		3.10.4	Cooperating Federal Agency Coordination & Involvement	$94,563		$94,563
		3.10.5	Government to Government Tribal Activities	$42,448		$42,448
	3.11		Science and Technology		$827,429	$827,429
		3.11.1	Basic Science and Technology Decision Support			
		3.11.2	Support of WRDA 2010 and Comprehensive Plan	$133,726	$248,348	$382,073
		3.11.3	Scientific Peer Review			
		3.11.4	Monitoring and Adaptive Management		$105,070	$105,070
		3.11.5	Case Studies		$210,141	$210,141
		3.11.6	Science and Technology Information Transfer			
4			**Evaluating Alternative Plans**			
	4.1		Screen and Evaluate Initial Portfolio Restoration Sites	$23,523	$7,841	$31,364
		4.1.1	Stakeholder Involvement: Review and support for PSNERP GI Project List		$40,715	$40,715
	4.2		Evaluate Basinwide & Subbasin Comprehensive Alternative Plans	$99,318	$99,318	$198,636
5			**Comparing Alternative Plans**			
	5.1		Compare Basinwide Alternative Plans	$49,439	$49,439	$98,877
	5.2		Compare and Justify Initial Portfolio Restoration Sites for Authorization	$15,612		$15,612
	5.3		Alternative Formulation Briefing	$18,735	$12,490	$31,224
6			**Selecting a Plan**			
	6.1		Plan Selection	$7,993	$7,993	$15,985
	6.2		Engineering & Design and Real Estate Requirements for WRDA 2010 Projects.			
		6.2.1	Real Estate	$423,779	$105,945	$529,724
		6.2.2	Engineering & Design	$572,102	$143,025	$715,127
		6.2.3	Cost Estimating	$278,385		$278,385
		6.2.4	Economics	$117,716		$117,716
		6.2.5	Site survey		$106,090	$106,090
		6.2.6	HTRW	$26,523		$26,523
	6.3		Environmental Compliance	$474,687	$52,743	$527,430
		6.3.1	National Environmental Policy Act (NEPA)			
		6.3.2	Endangered Species Act (ESA)			
		6.3.3	Clean Water Act (Section 404/401) and Rivers and Harbors Act (Section 10)			
		6.3.4	Cultural Resources (Section 106)			

Outline Level			Task	Federal	Sponsor	Total
		6.3.5	State Permits			
	6.4		Feasibility Report & Integrated EIS Preparation.	$127,881	$31,970	$159,851
7			**Project Management, Review & Approval Process**			
	7.1		Project Management			
		7.1.1	Local Sponsor Proj. Mgmt		$945,633	$945,633
		7.1.2	Corps Proj. Mgmt	$1,300,245		$1,300,245
	7.2		Agency Technical Review of Feasibility Report/EIS	$80,761		$80,761
	7.3		Independent External Peer Review	$43,073		$43,073
	7.4		NEPA State and Agency Review	$16,152		$16,152
	7.5		Public Review	$16,152		$16,152
	7.6		Civil Works Review Board	$32,639		$32,639
			TOTAL:	**$4,552,539**	**$4,153,040**	**$8,705,579**

2.2 Time Management

Schedule Planning:

The Corps/Sponsor team considered different approaches to completing the feasibility study based on a review other large-scale restoration projects around the country. Four alternative paths forward were developed based on interviews with Nearshore project stakeholders and a review of three large-scale, nationally significant authorized projects, Comprehensive Everglades Restoration Plan (CERP), Louisiana Coastal Area (LCA), and the Illinois River Basin Restoration Comprehensive Plan.

The selected approach includes development of a basin-wide comprehensive plan and identifies project sites for early implementation. The workplan in the revised PMP places schedule much higher in study importance than earlier versions of the management plan and requires strict adherence to deadlines to complete the feasibility report in time for the anticipated Water Resource Development Act (WRDA) of 2010.

The Time Management Plan assumes approval of concurrent HQUSACE and public reviews. When the draft feasibility report and integrated EIS have been prepared and reviewed by the sponsor and the District they will go through a series of technical and policy reviews. Technical reviews include Agency Technical Review (ATR), a review conducted by an independent team at a separate district; and Independent External Peer Review, which is a review conducted outside of the Corps of Engineers. Once these are conducted, and with the concurrence of Corps vertical team, the document will be reviewed by the public and agencies. The Corps will also be reviewing the document for policy and legal issues. The project is then presented to the Corps Civil Works Review Board. Once these reviews are complete the report is transmitted to the Assistant Secretary of the Army for Civil Works, ASA (CW) and finally the Office of Management and Budget for review. The final report with recommendation and Record of Decision is signed and presented to congress.

The discussion in this section assumes an unconstrained funding schedule. The detailed Gantt charts at the end of this section present the schedule assuming both an unconstrained funding schedule (Figure 1) and a constrained funding schedule (Figure 2).

<u>Feasibility Report preparation schedule to submit a Chiefs Report for WRDA 2010</u>

- 1 October 2008. Execute revised FCSA.
- July 2008-Jan 2009. Critical work is required over the next six months to complete existing conditions evaluation, future without project conditions, Strategic Need Assessment for all basins and sound-wide and development of management measures these tasks all must be completed by January 2009. Initial project identification will be initiated as the basin assessments are completed with a finalized preliminary list and initial screening by January 2009 for the February FSM.
- Feb 2009 – May 2009. Between February and May 2009 the plan formulation strategy will be further developed along with outputs and all necessary screening criteria. . Initial Stakeholder involvement to convey findings will also be initiated at this time.
- May 2009- February 2010. The FSM (feasibility scoping meeting) is scheduled for May '09 with Corps Division and HQ staff. Individual Project development (engineering, economics,

and environmental considerations - formerly stage 3 in the 2001 PMP) will be initiated in May 2009. Stakeholder involvement continues. Alternative plan development, evaluation and comparison will be take place from July 2009 to December 2009. Tentative plan selection and an AFB (alternative formulation briefing) with Corps division and HQ staff in February 2010.

- March 2010. Submit draft feasibility report.
- March 2010-December 2010. Review and Approval process.

The detailed schedule in Gantt chart format is shown in Figure 1 (unconstrained) and Figure 2 (constrained).

Comparison of Original and Revised Schedules:

The original FCSA for the Nearshore project was executed 25 September 2001. The original PMP, supporting the FCSA, anticipated the study would be completed in 2007. The change in schedule is largely due to funding shortfalls in the first several years of the program and the added time that has been required to build a scientifically defensible basis for the project.

Schedule Monitoring and Control

Schedule monitoring and control will align with the following outline:

Evaluate Future Without Project Conditions ..... Oct 2008- Feb 2009

Strategic Needs Assessment ..... July 2008-Feb 2009

Plan Formulation ..... Oct 2008- July 2009

Planning Objectives Development ..... Oct 2008 – Feb 2009

Develop Plan Formulation Strategy ..... Feb – April 2009

Model Certification ..... 3 Nov 2008 – 2 Feb 2009

Management Measures Technical Report ..... Oct 2008 - Feb 2009

Develop Management Measure Parametric Cost Estimates ..... Feb – May 2009

Existing Condition and Plan Formulation Strategy Report ..... 1 Dec 2008 – 02 March 2009

(Chapters 1, 2 and part of 3 of the Feasibility Report)

Agency Technical Review (ATR #1) ..... 3 March – 1 April 2009

Report Revisions ..... 1 April – 1 May 2009

Reproduction and transmit report/read ahead to HQ ..... 1 May – 15 May 2009

HQ Review of Existing Conditions and transmittal of comments ..... 15 May – 15 June 2009

District Prepares response plan to comments ..... 15 June – 20 June 2009

Feasibility Scoping Meeting ..... 20 June 2009

Revise Existing Condition and Plan Formulation Strategy Report ..... 20 June – 20 July 2009

Initial Portfolio Restoration Opportunities .....Oct 2008 – Dec 2009

Identify potential sites ..... Oct 2008- Dec 2008

Screen projects (100 → 30 + 10) ..... Dec 2008 – Feb 2009

Final screening (30 → 10) and (10 → 5) ..... Feb – June 2009

Engineering & Design for selected sites ..... 1 July 2009 – 5 Jan 2010

Real Estate for selected sites ..... 1 July 2009 – Jan 2010

Comprehensive Basin Wide Alternative Plans:

- Develop Alternatives ..... May – July 2009
- Evaluate Alternatives ..... 1 July – 30 Nov 2009
- Compare Alternatives ..... 1 Dec 2009 – 5 Jan 2010
- Tentative Plan Selection ..... 15 Jan 2010

Feasibility Report Preparation (alternative evaluation and selected plan) ..... July 2009 – 1 Feb 2010

ATR #2 for Alternative Formulation Briefing ..... 1 Feb – 1 March 2010

Alternative Evaluation and Selected Plan Report revisions ..... 1 March – 1 April 2010

Reproduction of read-ahead and transmittal to HQ ..... 1 April – 15 April 2010

HQ Review, prepare and transmit comments ..... 15 April – 15 May 2010

District prepares response plan ..... 15 May – 30 May 2010

Alternative Formulation Briefing ..... 1 June 2010

Revision to alternative formulation and selections ..... 1 June – 30 June 2010

Prepare draft Feasibility Report ..... 1 June – 30 June 2010

Agency Technical Review #3 ..... 1 July – 30 July 2010

Independent External Peer Review (IEPR) ..... 1 July – 30 July 2010

Incorporate Comments/Revise Report ..... 1 Aug – 30 Aug 2010

Compliance Memorandum…. ..... 30 Aug –15 Sept 2010

ATR Review & Legal Compliance Certification ..... 15 Sept 2010

Reproduction and Transmittal to Northwest Division (NWD)/HQ ..... 15 Sept – 30 Sept 2010

HQ Policy Review* ..... 30 Sept – 15 Nov 2010

Public Review ..... 30 Sept – 15 Nov 2010

Receipt of Project Guidance Memorandum from HQ ..... 15 Nov 2010

Report Revisions ..... 15 Nov 2010 – 15 Dec 2010

Draft Final Report Complete ..... 15 Dec – 30 Dec 2010

ATR #4 & IEPR on any changes ..... 1 Jan – 30 Jan 2011

Report Revisions ..... 1 Feb – 1 March 2011

District Commander signs final report ..... 1 March 2011

Reproduction and submittal of package to NWD ..... 1 March – 15 March 2011

Prepare Transmittal Letter ..... 15 March - 30 March 2011

Division Engineer's Transmittal Letter to HQ ..... 30 March 2011

Office of Water Project Review Preliminary Assessment (OWPR) ..... 30 March- 7 April 2011

Civil Works Review Board Briefing ..... 14 April 2011

Environmental Impact Statement (EIS) filing letters signed ..... 21 April 2011

District sends letters/report & files EIS ..... 25 April 2011

Notice in Federal Register ..... 10 May 2011

State & Agency (S&A) Review ..... 10 May – 10 June 2011

EIS Review ..... 10 May – 10 June 2011

OWPR Assessment/Final Policy Review (4 weeks from receipt) ..... 30 April 2011

District responds to policy concerns ..... 1 May - 7 May 2011

National Environmental Protection Act (NEPA) review ends ..... 10 June 2011

District provides responses to significant S&A concerns ..... 10 June – 30 June 2011

Regional Integration Team (RIT) issues response letters for S&A ..... 1 July- 5 July 2011

Major Subordinate Command (NWD) response letters for NEPA ..... 1 July – 5 July 2011

Prepare Addendum to final report and Final EIS ..... 10 June – 30 June 2011

Reproduction and transmittal ..... 1 July – 15 July 2011

OWPR completes documentation of review findings ..... 18 July 2011

OWPR provides report package to RIT ..... 18 July 2011

RIT forwards to Director of Civil Works and Chief of Engineers ..... 22 July 2011

Chief signs Report of the Chief of Engineers ..... 8 Aug 2011

Ass't. Sec. of the Army for Civil Works (ASA/CW) and OMB Review ..... 8 Aug –30 Sept 2011

ASA/CW signs Record of Decision if not authorized** ..... 15 October 2011

Feasibility Report Transmittal to Congress ..... 15 October 2011

* Assumes at the Alternative Formulation Briefing the District receives approval to conduct concurrent public and HQ policy review.

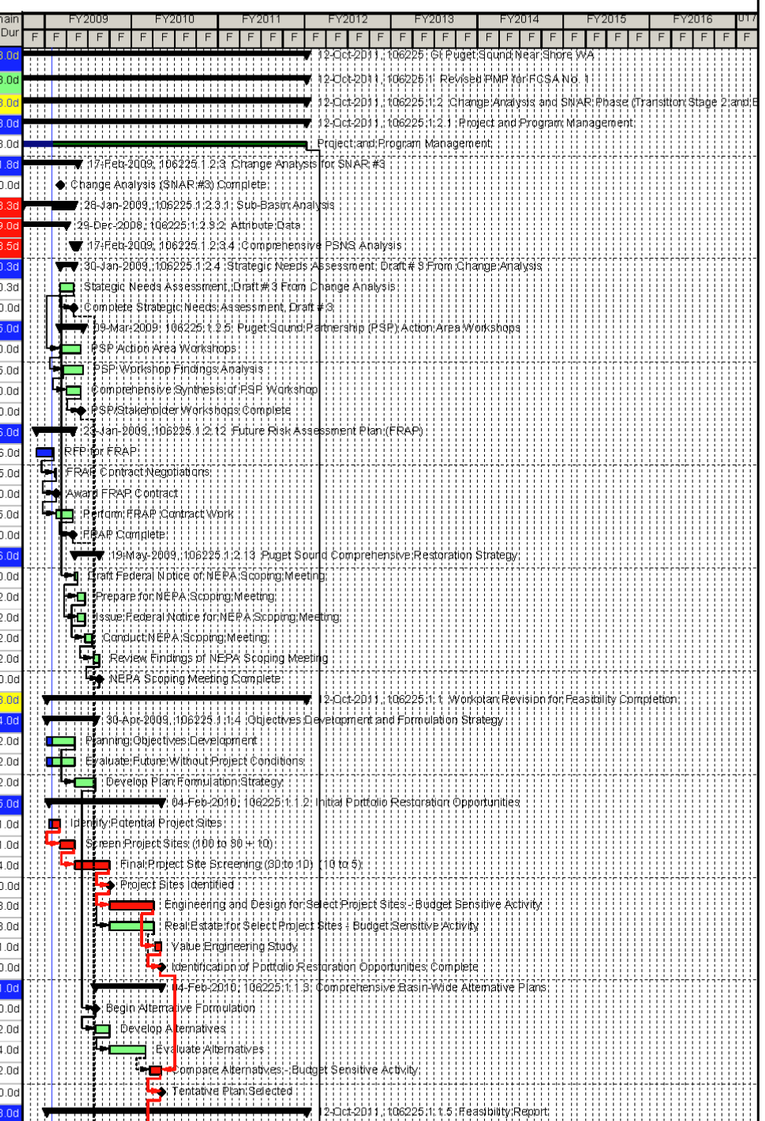
**When Congress has authorized construction prior to receiving the ASA(CW) recommendations, the Director of Civil works signs the ROD and the ROD should only address the project as authorized by Congress

Figure 1 – Unconstrained Schedule

Puget Sounds Nearshore Project - Unconstrained Budget View

27-Oct-2008 08:08

Activity ID	Activity Name	Start	Finish	Orig Dur	Remain Dur
106225 GI Puget Sound Near Shore WA		01-Oct-2007 A	12-Oct-2011	944.0d	738.0d
106225.1 Revised PMP for FCSA No. 1		01-Oct-2007 A	12-Oct-2011	944.0d	738.0d
106225.1.2 Change Analysis and SNAR Phase (Transition Stage 2 and Execute Stage...		01-Oct-2007 A	12-Oct-2011	343.0d	738.0d
106225.1.2.1 Project and Program Management		01-Oct-2007 A	12-Oct-2011	1.0d	738.0d
A1840	Project and Program Management	01-Oct-2007 A	12-Oct-2011	1.0d	738.0d
106225.1.2.3 Change Analysis for SNAR #3		02-Apr-2008 A	17-Feb-2009	125.8d	71.8d
A4160	Change Analysis (SNAR #3) Complete		01-Dec-2008*	0.0d	0.0d
106225.1.2.3.1 Sub-Basin Analysis		30-Jun-2008 A	28-Jan-2009	103.3d	58.3d
106225.1.2.3.2 Attribute Data		02-Apr-2008 A	29-Dec-2008	93.0d	39.0d
106225.1.2.3.4 Comprehensive PSNS Analysis		28-Jan-2009	17-Feb-2009	13.5d	13.5d
106225.1.2.4 Strategic Needs Assessment, Draft # 3 From Change Analysis		02-Dec-2008	30-Jan-2009	40.3d	40.3d
A1890	Stategic Needs Assessment, Draft # 3 From Change Analysis	02-Dec-2008*	30-Jan-2009	40.3d	40.3d
A2320	Complete Strategic Needs Assessment, Draft # 3		30-Jan-2009	0.0d	0.0d
106225.1.2.5 Puget Sound Partnership (PSP) Action Area Workshops		02-Dec-2008	09-Mar-2009	65.0d	65.0d
A2220	PSP Action Area Workshops	02-Dec-2008	02-Mar-2009	60.0d	60.0d
A2230	PSP Workshop Findings Analysis	16-Dec-2008	09-Mar-2009	55.0d	55.0d
A2310	Comprehensive Synthesis of PSP Workshop	31-Dec-2008	02-Mar-2009	40.0d	40.0d
A1900	PSP/Stakeholder Workshops Complete		02-Mar-2009	0.0d	0.0d
106225.1.2.12 Future Risk Assessment Plan (FRAP)		25-Aug-2008 A	23-Jan-2009	103.0d	56.0d
A2390	RFP for FRAP	25-Aug-2008 A	07-Nov-2008	20.0d	6.0d
A2400	FRAP Contract Negotiations	10-Nov-2008	17-Nov-2008	5.0d	5.0d
A2410	Award FRAP Contract	18-Nov-2008		0.0d	0.0d
A2420	Perform FRAP Contract Work	18-Nov-2008	23-Jan-2009	45.0d	45.0d
A2430	FRAP Complete		23-Jan-2009	0.0d	0.0d
106225.1.2.13 Puget Sound Comprehensive Restoration Strategy		02-Feb-2009	19-May-2009	76.0d	76.0d
A2440	Draft Federal Notice of NEPA Scoping Meeting	02-Feb-2009	13-Feb-2009	10.0d	10.0d
A2450	Prepare for NEPA Scoping Meeting	17-Feb-2009	18-Mar-2009	22.0d	22.0d
A2480	Issue Federal Notice for NEPA Scoping Meeting	17-Feb-2009	18-Mar-2009	22.0d	22.0d
A2460	Conduct NEPA Scoping Meeting	19-Mar-2009	17-Apr-2009	22.0d	22.0d
A2470	Review Findings of NEPA Scoping Meeting	20-Apr-2009	19-May-2009	22.0d	22.0d
A2490	NEPA Scoping Meeting Complete		19-May-2009	0.0d	0.0d
106225.1.1 Workplan Revision for Feasibility Completion		06-Oct-2008 A	12-Oct-2011	756.0d	738.0d
106225.1.1.4 Objectives Development and Formulation Strategy		06-Oct-2008 A	30-Apr-2009	142.0d	124.0d
A5920	Planning Objectives Development	06-Oct-2008 A	02-Feb-2009	80.0d	62.0d
A6560	Evaluate Future Without Project Conditions	06-Oct-2008 A	02-Feb-2009	80.0d	62.0d
A5930	Develop Plan Formulation Strategy	03-Feb-2009	30-Apr-2009	62.0d	62.0d
106225.1.1.2 Initial Portfolio Restoration Opportunities		17-Oct-2008 A	04-Feb-2010	333.0d	315.0d
A6020	Identify Potential Project Sites	17-Oct-2008 A	02-Dec-2008	39.0d	21.0d
A6030	Screen Project Sites (100 to 30 + 10)	03-Dec-2008	02-Feb-2009	41.0d	41.0d
A6040	Final Project Site Screening (30 to 10) (10 to 5)	03-Feb-2009	30-Jun-2009	104.0d	104.0d
A6050	Project Sites Identified		30-Jun-2009	0.0d	0.0d
A6060	Engineering and Design for Select Project Sites - Budget Sensitive Activity	01-Jul-2009	05-Jan-2010	128.0d	128.0d
A6070	Real Estate for Select Project Sites - Budget Sensitive Activity	01-Jul-2009	05-Jan-2010	128.0d	128.0d
A6790	Value Engineering Study	06-Jan-2010	04-Feb-2010	21.0d	21.0d
A6080	Identification of Portfolio Restoration Opportunities Complete		04-Feb-2010	0.0d	0.0d
106225.1.1.3 Comprehensive Basin-Wide Alternative Plans		01-May-2009	04-Feb-2010	191.0d	191.0d
A6090	Begin Alternative Formulation	01-May-2009		0.0d	0.0d
A6100	Develop Alternatives	01-May-2009	30-Jun-2009	42.0d	42.0d
A6110	Evaluate Alternatives	01-Jul-2009	30-Nov-2009	104.0d	104.0d
A6120	Compare Alternatives - Budget Sensitive Activity	18-Dec-2009	04-Feb-2010	32.0d	32.0d
A6130	Tentative Plan Selected		04-Feb-2010	0.0d	0.0d
106225.1.1.5 Feasibility Report		06-Oct-2008 A	12-Oct-2011	756.0d	738.0d



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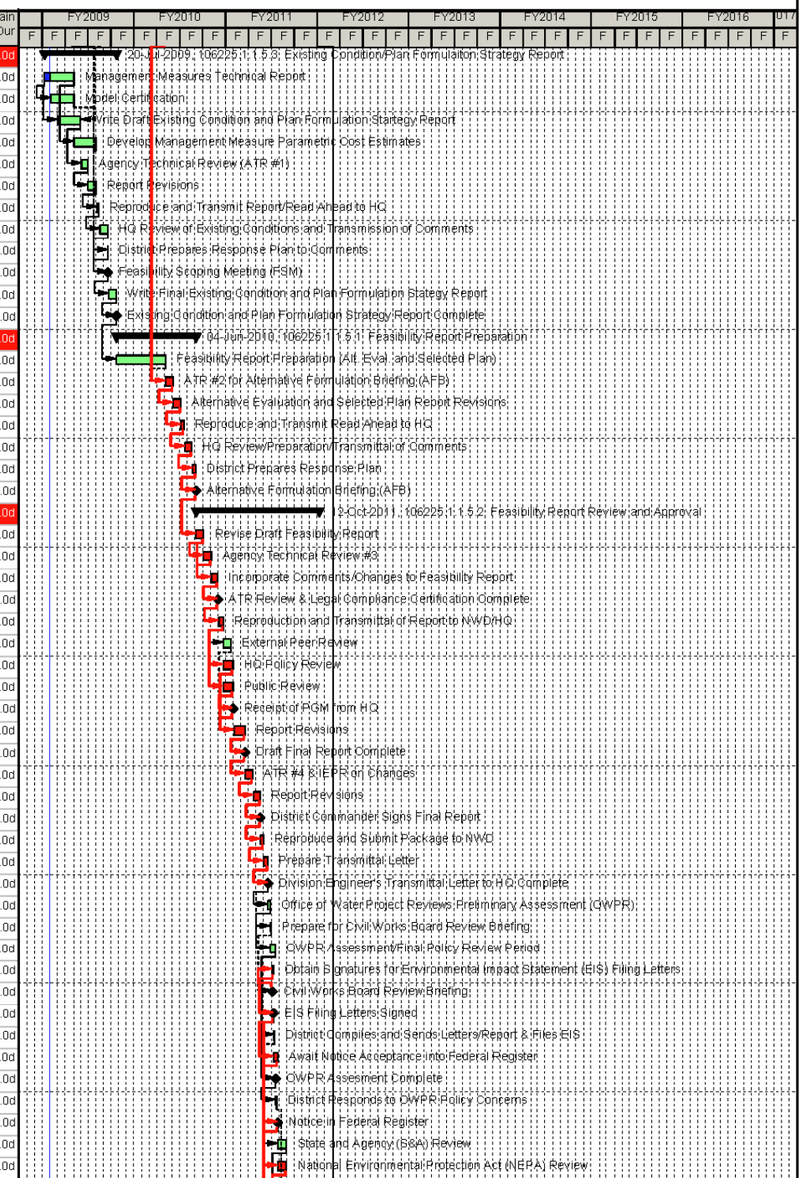
Page 1 of 3

DataDate 31-Oct-2008

Activity ID	Activity Name	Start	Finish	Orig Dur	Remain Dur
106225.1.1.5.3	**Existing Condition/Plan Formulaiton Strategy Report**	06-Oct-2008 A	20-Jul-2009	197.0d	179.0d
A5940	Management Measures Technical Report	06-Oct-2008 A	02-Feb-2009	80.0d	62.0d
A5980	Model Certification	03-Nov-2008	02-Feb-2009	61.0d	61.0d
A5960	Write Draft Existing Condition and Plan Formulation Startegy Report	01-Dec-2008	02-Mar-2009	62.0d	62.0d
A5950	Develop Management Measure Parametric Cost Estimates	03-Feb-2009	01-May-2009	63.0d	63.0d
A5970	Agency Technical Review (ATR #1)	03-Mar-2009	01-Apr-2009	22.0d	22.0d
A6570	Report Revisions	02-Apr-2009	01-May-2009	22.0d	22.0d
A6580	Reproduce and Transmit Report/Read Ahead to HQ	04-May-2009	15-May-2009	10.0d	10.0d
A6590	HQ Review of Existing Conditions and Transmission of Comments	18-May-2009	15-Jun-2009	20.0d	20.0d
A6600	District Prepares Response Plan to Comments	16-Jun-2009	19-Jun-2009	4.0d	4.0d
A5990	Feasibility Scoping Meeting (FSM)		19-Jun-2009	0.0d	0.0d
A6000	Write Final Existing Condition and Plan Formulation Stategy Report	22-Jun-2009	20-Jul-2009	20.0d	20.0d
A6010	Existing Condition and Plan Formulation Strategy Report Complete		20-Jul-2009	0.0d	0.0d
106225.1.1.5.1	**Feasibility Report Preparation**	21-Jul-2009	04-Jun-2010	220.0d	220.0d
A6150	Feasibility Report Preparation (Alt. Eval. and Selected Plan)	21-Jul-2009	01-Feb-2010	133.0d	133.0d
A6160	ATR #2 for Alternative Formulation Briefing (AFB)	05-Feb-2010	04-Mar-2010	19.0d	19.0d
A6610	Alternative Evaluation and Selected Plan Report Revisions	05-Mar-2010	06-Apr-2010	23.0d	23.0d
A6620	Reproduce and Transmit Read Ahead to HQ	07-Apr-2010	20-Apr-2010	10.0d	10.0d
A6630	HQ Review/Preparation/Transmittal of Comments	21-Apr-2010	20-May-2010	22.0d	22.0d
A6640	District Prepares Response Plan	21-May-2010	04-Jun-2010	10.0d	10.0d
A6650	Alternative Formulation Briefing (AFB)		04-Jun-2010	0.0d	0.0d
106225.1.1.5.2	**Feasibility Report Review and Approval**	07-Jun-2010	12-Oct-2011	339.0d	339.0d
A6170	Revise Draft Feasibility Report	07-Jun-2010	06-Jul-2010	21.0d	21.0d
A6180	Agency Technical Review #3	07-Jul-2010	04-Aug-2010	21.0d	21.0d
A6340	Incorporate Comments/Changes to Feasibility Report	05-Aug-2010	02-Sep-2010	21.0d	21.0d
A6200	ATR Review & Legal Compliance Certification Complete		02-Sep-2010	0.0d	0.0d
A6670	Reproduction and Transmittal of Report to NWD/HQ	03-Sep-2010	20-Sep-2010	11.0d	11.0d
A6190	External Peer Review	21-Sep-2010	20-Oct-2010	21.0d	21.0d
A6210	HQ Policy Review	21-Sep-2010	02-Nov-2010	30.0d	30.0d
A6360	Public Review	21-Sep-2010	02-Nov-2010	30.0d	30.0d
A6680	Receipt of PGM from HQ		02-Nov-2010	0.0d	0.0d
A6380	Report Revisions	03-Nov-2010	17-Dec-2010	31.0d	31.0d
A6690	Draft Final Report Complete		17-Dec-2010	0.0d	0.0d
A6700	ATR #4 & IEPR on Changes	20-Dec-2010	19-Jan-2011	20.0d	20.0d
A6710	Report Revisions	20-Jan-2011	16-Feb-2011	20.0d	20.0d
A6720	District Commander Signs Final Report		16-Feb-2011	0.0d	0.0d
A6730	Reproduce and Submit Package to NWD	17-Feb-2011	03-Mar-2011	10.0d	10.0d
A6740	Prepare Transmittal Letter	04-Mar-2011	18-Mar-2011	11.0d	11.0d
A6330	Division Engineer's Transmittal Letter to HQ Complete		18-Mar-2011	0.0d	0.0d
A6260	Office of Water Project Reviews Preliminary Assessment (OWPR)	19-Mar-2011	26-Mar-2011	8.0d	8.0d
A6240	Prepare for Civil Works Board Review Briefing	27-Mar-2011	02-Apr-2011	7.0d	7.0d
A6750	OWPR Assessment/Final Policy Review Period	28-Mar-2011	18-Apr-2011	16.0d	16.0d
A6280	Obtain Signatures for Environmental Impact Statement (EIS) Filing Letters	04-Apr-2011	11-Apr-2011	5.0d	5.0d
A6530	Civil Works Board Review Briefing		04-Apr-2011	0.0d	0.0d
A6290	EIS Filing Letters Signed		11-Apr-2011	0.0d	0.0d
A6300	District Compiles and Sends Letters/Report & Files EIS	11-Apr-2011	13-Apr-2011	2.0d	2.0d
A6370	Await Notice Acceptance into Federal Register	11-Apr-2011	28-Apr-2011	13.0d	13.0d
A6390	OWPR Assesment Complete		18-Apr-2011	0.0d	0.0d
A6400	District Responds to OWPR Policy Concerns	19-Apr-2011	25-Apr-2011	5.0d	5.0d
A6310	Notice in Federal Register		28-Apr-2011	0.0d	0.0d
A6320	State and Agency (S&A) Review	28-Apr-2011	31-May-2011	22.0d	22.0d
A6410	National Environmental Protection Act (NEPA) Review	28-Apr-2011	31-May-2011	22.0d	22.0d



Activity ID	Activity Name	Start	Finish	Orig Dur	Remain Dur
A6760	EIS Review	28-Apr-2011	31-May-2011	22.0d	22.0d
A6420	NEPA Review Complete		31-May-2011	0.0d	0.0d
A6430	District Provides Responses Significant S&A Concerns	31-May-2011	20-Jun-2011	14.0d	14.0d
A6770	Prepare Addendum to Final Report and Final EIS	31-May-2011	20-Jun-2011	14.0d	14.0d
A6440	Regional Integration Team (RIT) Issues Response Letters for S&A	20-Jun-2011	24-Jun-2011	4.0d	4.0d
A6450	Major Subordinate Command (MSC) Response Letters For NEPA	20-Jun-2011	24-Jun-2011	4.0d	4.0d
A6780	Final Report Production and Transmittal	20-Jun-2011	05-Jul-2011	10.0d	10.0d
A6460	OWPR Documents and Reviews Findings	05-Jul-2011	08-Jul-2011	3.0d	3.0d
A6470	OWPR Provides Report Package to RIT		08-Jul-2011	0.0d	0.0d
A6480	RIT Forwards Findings to Director of Civil Works and Chief of Engineers	08-Jul-2011	14-Jul-2011	4.0d	4.0d
A6490	Chief Reviews Report	14-Jul-2011	29-Jul-2011	11.0d	11.0d
A6500	Chief Signs Report of the Chief of Engineers		29-Jul-2011	0.0d	0.0d
A6510	Assistant Secretary of the Army for Civil Works (ASA/CW) and OMB Review	29-Jul-2011	05-Oct-2011	47.0d	47.0d
A6520	ASA (CW) Signs Record of Decision if not Authorized		05-Oct-2011	0.0d	0.0d
A6540	Feasibility Report Transmittal to Congress	05-Oct-2011	12-Oct-2011	4.0d	4.0d
A6550	Feasibility Report to Congress		12-Oct-2011	0.0d	0.0d

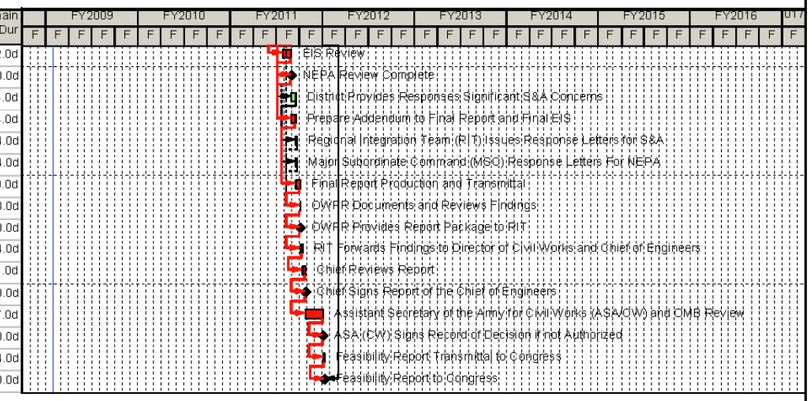
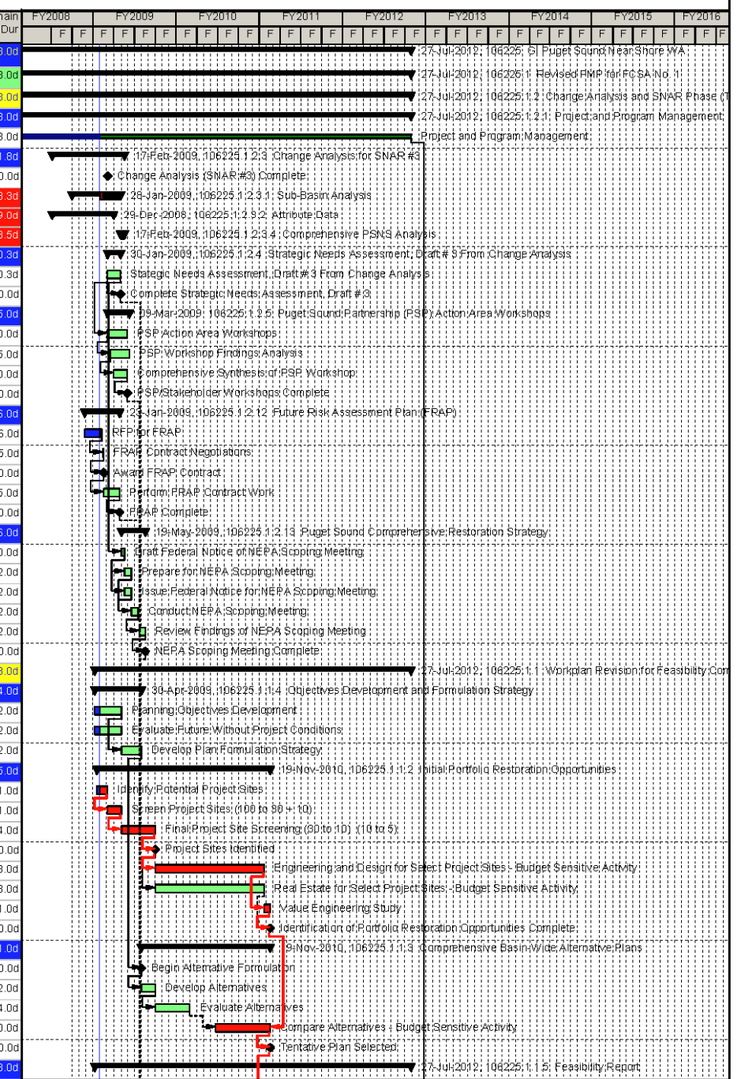


Figure 2 – Constrained Schedule

Puget Sounds Nearshore Project - Constrained Budget View 27-Oct-2008 08:04

Activity ID	Activity Name	Start	Finish	Orig Dur	Remain Dur
106225 GI Puget Sound Near Shore WA		01-Oct-2007 A	27-Jul-2012	1144.0d	938.0d
106225.1 Revised PMP for FCSA No. 1		01-Oct-2007 A	27-Jul-2012	1144.0d	938.0d
106225.1.2 Change Analysis and SNAR Phase (Transition Stage 2 and Execute Stage...		01-Oct-2007 A	27-Jul-2012	343.0d	938.0d
106225.1.2.1 Project and Program Management		01-Oct-2007 A	27-Jul-2012	1.0d	938.0d
A1840	Project and Program Management	01-Oct-2007 A	27-Jul-2012	1.0d	938.0d
106225.1.2.3 Change Analysis for SNAR #3		02-Apr-2008 A	17-Feb-2009	125.8d	71.8d
A4160	Change Analysis (SNAR #3) Complete		01-Dec-2008*	0.0d	0.0d
106225.1.2.3.1 Sub-Basin Analysis		30-Jun-2008 A	28-Jan-2009	103.3d	58.3d
106225.1.2.3.2 Attribute Data		02-Apr-2008 A	29-Dec-2008	93.0d	39.0d
106225.1.2.3.4 Comprehensive PSNS Analysis		28-Jan-2009	17-Feb-2009	13.5d	13.5d
106225.1.2.4 Strategic Needs Assessment, Draft # 3 From Change Analysis		02-Dec-2008	30-Jan-2009	40.3d	40.3d
A1890	Stategic Needs Assessment, Draft # 3 From Change Analysis	02-Dec-2008*	30-Jan-2009	40.3d	40.3d
A2320	Complete Strategic Needs Assessment, Draft # 3		30-Jan-2009	0.0d	0.0d
106225.1.2.5 Puget Sound Partnership (PSP) Action Area Workshops		02-Dec-2008	09-Mar-2009	65.0d	65.0d
A2220	PSP Action Area Workshops	02-Dec-2008	02-Mar-2009	60.0d	60.0d
A2230	PSP Workshop Findings Analysis	16-Dec-2008	09-Mar-2009	55.0d	55.0d
A2310	Comprehensive Synthesis of PSP Workshop	31-Dec-2008	02-Mar-2009	40.0d	40.0d
A1900	PSP/Stakeholder Workshops Complete		02-Mar-2009	0.0d	0.0d
106225.1.2.12 Future Risk Assessment Plan (FRAP)		25-Aug-2008 A	23-Jan-2009	103.0d	56.0d
A2390	RFP for FRAP	25-Aug-2008 A	07-Nov-2008	20.0d	6.0d
A2400	FRAP Contract Negotiations	10-Nov-2008	17-Nov-2008	5.0d	5.0d
A2410	Award FRAP Contract	18-Nov-2008		0.0d	0.0d
A2420	Perform FRAP Contract Work	18-Nov-2008	23-Jan-2009	45.0d	45.0d
A2430	FRAP Complete		23-Jan-2009	0.0d	0.0d
106225.1.2.13 Puget Sound Comprehensive Restoration Strategy		02-Feb-2009	19-May-2009	76.0d	76.0d
A2440	Draft Federal Notice of NEPA Scoping Meeting	02-Feb-2009	13-Feb-2009	10.0d	10.0d
A2450	Prepare for NEPA Scoping Meeting	17-Feb-2009	18-Mar-2009	22.0d	22.0d
A2480	Issue Federal Notice for NEPA Scoping Meeting	17-Feb-2009	18-Mar-2009	22.0d	22.0d
A2460	Conduct NEPA Scoping Meeting	19-Mar-2009	17-Apr-2009	22.0d	22.0d
A2470	Review Findings of NEPA Scoping Meeting	20-Apr-2009	19-May-2009	22.0d	22.0d
A2490	NEPA Scoping Meeting Complete		19-May-2009	0.0d	0.0d
106225.1.1 Workplan Revision for Feasibility Completion		06-Oct-2008 A	27-Jul-2012	956.0d	938.0d
106225.1.1.4 Objectives Development and Formulation Strategy		06-Oct-2008 A	30-Apr-2009	142.0d	124.0d
A5920	Planning Objectives Development	06-Oct-2008 A	02-Feb-2009	80.0d	62.0d
A6560	Evaluate Future Without Project Conditions	06-Oct-2008 A	02-Feb-2009	80.0d	62.0d
A5930	Develop Plan Formulation Strategy	03-Feb-2009	30-Apr-2009	62.0d	62.0d
106225.1.1.2 Initial Portfolio Restoration Opportunities		17-Oct-2008 A	19-Nov-2010	533.0d	515.0d
A6020	Identify Potential Project Sites	17-Oct-2008 A	02-Dec-2008	39.0d	21.0d
A6030	Screen Project Sites (100 to 30 + 10)	03-Dec-2008	02-Feb-2009	41.0d	41.0d
A6040	Final Project Site Screening (30 to 10) (10 to 5)	03-Feb-2009	30-Jun-2009	104.0d	104.0d
A6050	Project Sites Identified		30-Jun-2009	0.0d	0.0d
A6060	Engineering and Design for Select Project Sites - Budget Sensitive Activity	01-Jul-2009	20-Oct-2010	328.0d	328.0d
A6070	Real Estate for Select Project Sites - Budget Sensitive Activity	01-Jul-2009	20-Oct-2010	328.0d	328.0d
A6790	Value Engineering Study	21-Oct-2010	19-Nov-2010	21.0d	21.0d
A6080	Identification of Portfolio Restoration Opportunities Complete		19-Nov-2010	0.0d	0.0d
106225.1.1.3 Comprehensive Basin-Wide Alternative Plans		01-May-2009	19-Nov-2010	391.0d	391.0d
A6090	Begin Alternative Formulation	01-May-2009		0.0d	0.0d
A6100	Develop Alternatives	01-May-2009	30-Jun-2009	42.0d	42.0d
A6110	Evaluate Alternatives	01-Jul-2009	30-Nov-2009	104.0d	104.0d
A6120	Compare Alternatives - Budget Sensitive Activity	22-Mar-2010	19-Nov-2010	170.0d	170.0d
A6130	Tentative Plan Selected		19-Nov-2010	0.0d	0.0d
106225.1.1.5 Feasibility Report		06-Oct-2008 A	27-Jul-2012	956.0d	938.0d



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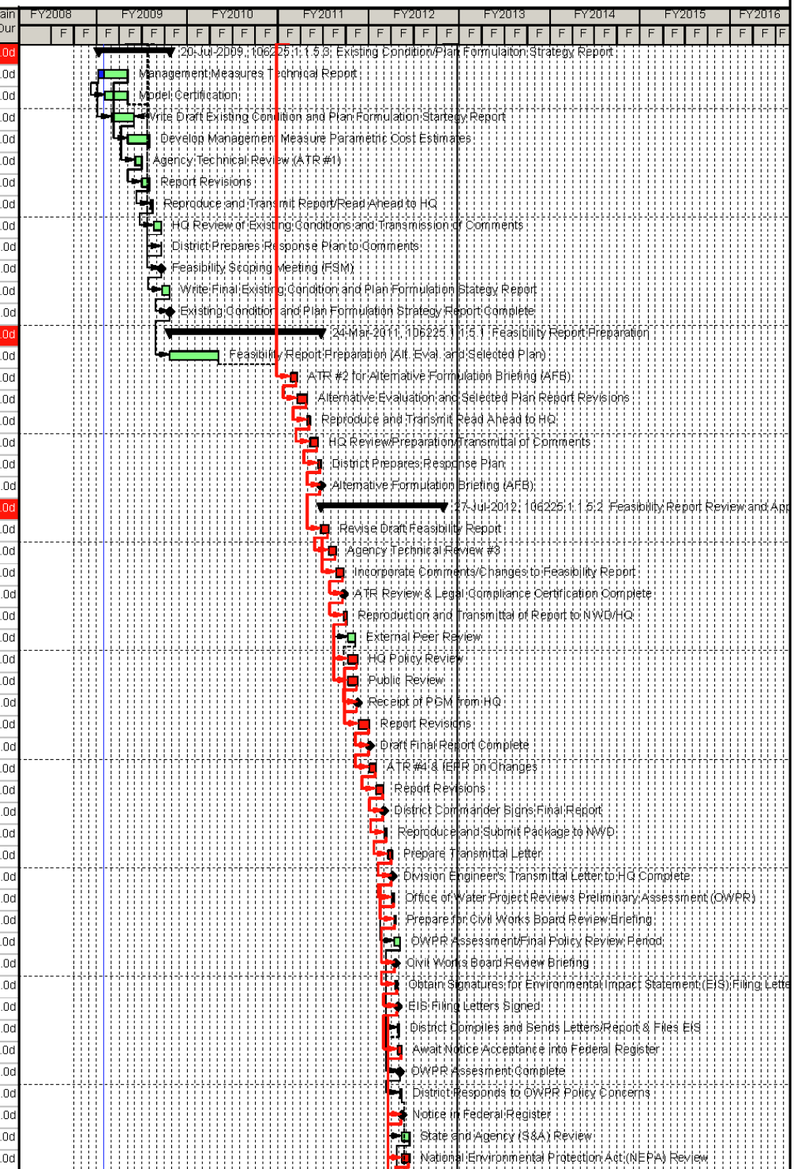
Activity ID	Activity Name	Start	Finish	Orig Dur	Remain Dur
106225.1.1.5.3	**Existing Condition/Plan Formulaiton Strategy Report**	06-Oct-2008 A	20-Jul-2009	197.0d	179.0d
A5940	Management Measures Technical Report	06-Oct-2008 A	02-Feb-2009	80.0d	62.0d
A5980	Model Certification	03-Nov-2008	02-Feb-2009	61.0d	61.0d
A5960	Write Draft Existing Condition and Plan Formulation Startegy Report	01-Dec-2008	02-Mar-2009	62.0d	62.0d
A5950	Develop Management Measure Parametric Cost Estimates	03-Feb-2009	01-May-2009	63.0d	63.0d
A5970	Agency Technical Review (ATR #1)	03-Mar-2009	01-Apr-2009	22.0d	22.0d
A6570	Report Revisions	02-Apr-2009	01-May-2009	22.0d	22.0d
A6580	Reproduce and Transmit Report/Read Ahead to HQ	04-May-2009	15-May-2009	10.0d	10.0d
A6590	HQ Review of Existing Conditions and Transmission of Comments	18-May-2009	15-Jun-2009	20.0d	20.0d
A6600	District Prepares Response Plan to Comments	16-Jun-2009	19-Jun-2009	4.0d	4.0d
A5990	Feasibility Scoping Meeting (FSM)		19-Jun-2009	0.0d	0.0d
A6000	Write Final Existing Condition and Plan Formulation Stategy Report	22-Jun-2009	20-Jul-2009	20.0d	20.0d
A6010	Existing Condition and Plan Formulation Strategy Report Complete		20-Jul-2009	0.0d	0.0d
106225.1.1.5.1	**Feasibility Report Preparation**	21-Jul-2009	24-Mar-2011	420.0d	420.0d
A6150	Feasibility Report Preparation (Alt. Eval. and Selected Plan)	21-Jul-2009	01-Feb-2010	133.0d	133.0d
A6160	ATR #2 for Alternative Formulation Briefing (AFB)	22-Nov-2010	17-Dec-2010	19.0d	19.0d
A6610	Alternative Evaluation and Selected Plan Report Revisions	20-Dec-2010	24-Jan-2011	23.0d	23.0d
A6620	Reproduce and Transmit Read Ahead to HQ	25-Jan-2011	07-Feb-2011	10.0d	10.0d
A6630	HQ Review/Preparation/Transmittal of Comments	08-Feb-2011	10-Mar-2011	22.0d	22.0d
A6640	District Prepares Response Plan	11-Mar-2011	24-Mar-2011	10.0d	10.0d
A6650	Alternative Formulation Briefing (AFB)		24-Mar-2011	0.0d	0.0d
106225.1.1.5.2	**Feasibility Report Review and Approval**	25-Mar-2011	27-Jul-2012	339.0d	339.0d
A6170	Revise Draft Feasibility Report	25-Mar-2011	22-Apr-2011	21.0d	21.0d
A6180	Agency Technical Review #3	25-Apr-2011	23-May-2011	21.0d	21.0d
A6340	Incorporate Comments/Changes to Feasibility Report	24-May-2011	22-Jun-2011	21.0d	21.0d
A6200	ATR Review & Legal Compliance Certification Complete		22-Jun-2011	0.0d	0.0d
A6670	Reproduction and Transmittal of Report to NWD/HQ	23-Jun-2011	08-Jul-2011	11.0d	11.0d
A6190	External Peer Review	11-Jul-2011	08-Aug-2011	21.0d	21.0d
A6210	HQ Policy Review	11-Jul-2011	19-Aug-2011	30.0d	30.0d
A6360	Public Review	11-Jul-2011	19-Aug-2011	30.0d	30.0d
A6680	Receipt of PGM from HQ		19-Aug-2011	0.0d	0.0d
A6380	Report Revisions	22-Aug-2011	04-Oct-2011	31.0d	31.0d
A6690	Draft Final Report Complete		04-Oct-2011	0.0d	0.0d
A6700	ATR #4 & IEPR on Changes	05-Oct-2011	02-Nov-2011	20.0d	20.0d
A6710	Report Revisions	03-Nov-2011	02-Dec-2011	20.0d	20.0d
A6720	District Commander Signs Final Report		02-Dec-2011	0.0d	0.0d
A6730	Reproduce and Submit Package to NWD	05-Dec-2011	16-Dec-2011	10.0d	10.0d
A6740	Prepare Transmittal Letter	19-Dec-2011	04-Jan-2012	11.0d	11.0d
A6330	Division Engineer's Transmittal Letter to HQ Complete		04-Jan-2012	0.0d	0.0d
A6260	Office of Water Project Reviews Preliminary Assessment (OWPR)	05-Jan-2012	12-Jan-2012	8.0d	8.0d
A6240	Prepare for Civil Works Board Review Briefing	13-Jan-2012	19-Jan-2012	7.0d	7.0d
A6750	OWPR Assessment/Final Policy Review Period	13-Jan-2012	06-Feb-2012	16.0d	16.0d
A6530	Civil Works Board Review Briefing		19-Jan-2012	0.0d	0.0d
A6280	Obtain Signatures for Environmental Impact Statement (EIS) Filing Letters	20-Jan-2012	26-Jan-2012	5.0d	5.0d
A6290	EIS Filing Letters Signed		26-Jan-2012	0.0d	0.0d
A6300	District Compiles and Sends Letters/Report & Files EIS	27-Jan-2012	30-Jan-2012	2.0d	2.0d
A6370	Await Notice Acceptance into Federal Register	27-Jan-2012	14-Feb-2012	13.0d	13.0d
A6390	OWPR Assesment Complete		06-Feb-2012	0.0d	0.0d
A6400	District Responds to OWPR Policy Concerns	07-Feb-2012	13-Feb-2012	5.0d	5.0d
A6310	Notice in Federal Register		14-Feb-2012	0.0d	0.0d
A6320	State and Agency (S&A) Review	15-Feb-2012	16-Mar-2012	22.0d	22.0d
A6410	National Environmental Protection Act (NEPA) Review	15-Feb-2012	16-Mar-2012	22.0d	22.0d



Puget Sounds Nearshore Project - Constrained Budget View

27-Oct-2008 08:05

Activity ID	Activity Name	Start	Finish	Orig Dur	Remain Dur
A6760	EIS Review	15-Feb-2012	16-Mar-2012	22.0d	22.0d
A6420	NEPA Review Complete		16-Mar-2012	0.0d	0.0d
A6430	District Provides Responses Significant S&A Concerns	19-Mar-2012	05-Apr-2012	14.0d	14.0d
A6770	Prepare Addendum to Final Report and Final EIS	19-Mar-2012	05-Apr-2012	14.0d	14.0d
A6440	Regional Integration Team (RIT) Issues Response Letters for S&A	06-Apr-2012	11-Apr-2012	4.0d	4.0d
A6450	Major Subordinate Command (MSC) Response Letters For NEPA	06-Apr-2012	11-Apr-2012	4.0d	4.0d
A6780	Final Report Production and Transmittal	06-Apr-2012	19-Apr-2012	10.0d	10.0d
A6460	OWPR Documents and Reviews Findings	20-Apr-2012	24-Apr-2012	3.0d	3.0d
A6470	OWPR Provides Report Package to RIT		24-Apr-2012	0.0d	0.0d
A6480	RIT Forwards Findings to Director of Civil Works and Chief of Engineers	25-Apr-2012	30-Apr-2012	4.0d	4.0d
A6490	Chief Reviews Report	01-May-2012	15-May-2012	11.0d	11.0d
A6500	Chief Signs Report of the Chief of Engineers		15-May-2012	0.0d	0.0d
A6510	Assistant Secretary of the Army for Civil Works (ASA/CW) and OMB Review	16-May-2012	23-Jul-2012	47.0d	47.0d
A6520	ASA (CW) Signs Record of Decision if not Authorized		23-Jul-2012	0.0d	0.0d
A6540	Feasibility Report Transmittal to Congress	24-Jul-2012	27-Jul-2012	4.0d	4.0d
A6550	Feasibility Report to Congress		27-Jul-2012	0.0d	0.0d

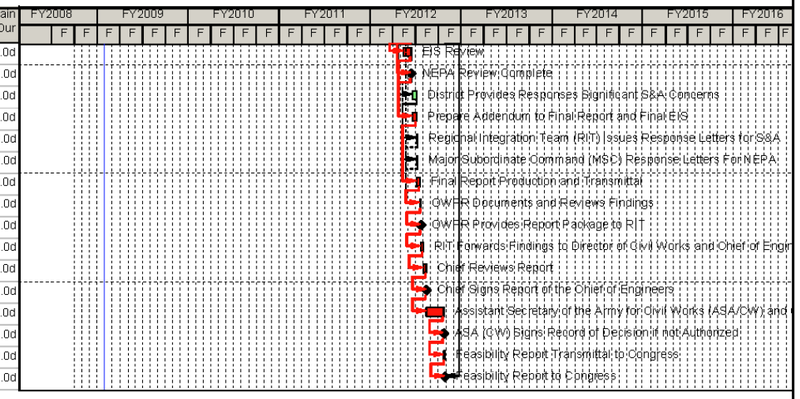


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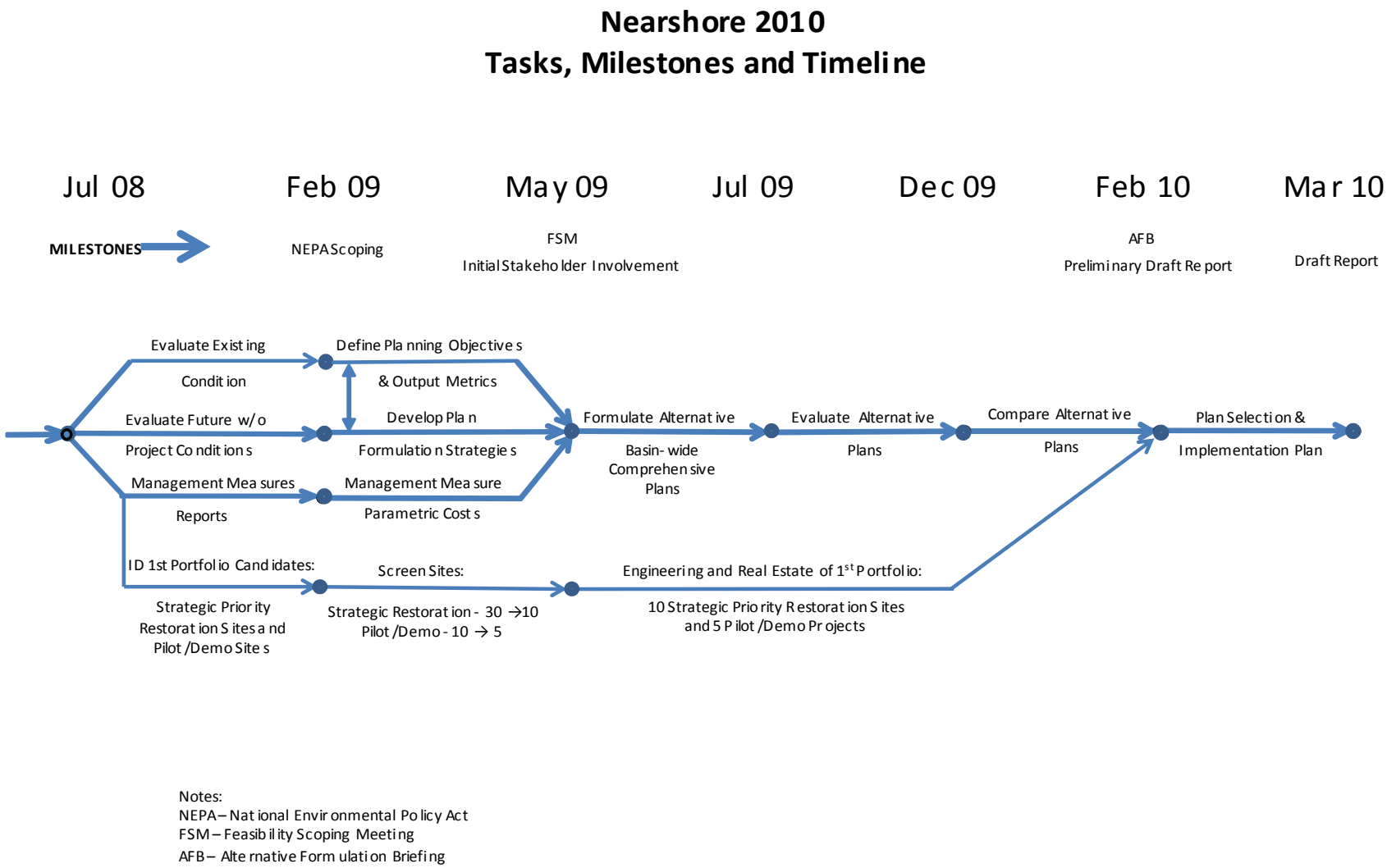
Figure A-3: Overall Schedule to Complete Feasibility Report with Task Relationships **(Needs to be updated per Mona's comments/PSNERP executive committee meeting)**



Notes:
NEPA – National Environmental Policy Act
FSM – Feasibility Scoping Meeting
AFB – Alternative Formulation Briefing

2.3 Risk Management

Risk Management Process:

The Corps defines risk management as "a systematic process for identifying, analyzing, and responding to risk for the entire life cycle". The Nearshore project is beginning the third of three stages of developing a feasibility report. At this point, the future project which may be recommended by the study team has not been formulated, so risk management will now focus on risks to delivery of the feasibility report, or the study risks. As project formulation and eventually implementation progresses, risk will be reassessed iteratively to complete a life-cycle approach to project risk.

Nearshore study risks are classified into two broad types, consistent with current project management literature on risk planning:

a. Threats to feasibility report delivery
b. Opportunities during feasibility report delivery

These categories are separately, qualitatively assessed for likelihood, severity, potential impact and management response strategies. Threat response strategies are significantly different than those for opportunities. Threats are viewed as negatives and counter to the team's efforts to complete the study. Therefore, the threat response strategies focus on avoiding, transferring, mitigating or accepting the threat. On the other hand, opportunities are positive, welcome events with strategies designed to encourage occurrence. Opportunity response strategies include enhancing, exploiting, and sharing positive events.

Nearshore Risk Identification:

The project team during execution of the study routinely looks forward to the future work to be done. Risk identification is an inherent part of team planning for the work. The project managers are sensitive to team conversations that identify project delivery risks and translate the ideas from those conversations into explicitly identified risks.

Nearshore Risk Response Planning:

The project managers document identified risks in Risk Registers separately for threats and opportunities. The register allows a systematic documentation of the entire life-cycle of individual risks including identification, assessment, triggers, strategies and responses. Appendices "A" and "B" show the registers for threats and opportunities, respectively. Risk planning is an on-going, iterative process that progressive elaborates risks during the study execution. Therefore the registers frequently change

Nearshore Risk Monitoring and Control:

The project managers will monitor and control risks using the risk register framework at their routine meetings. The registers include observable trigger events that will allow managers to initiate the planned response. The monitoring and control process also includes repeated reexamination of risks and updates to the risk management plan.

Nearshore Cost-Estimating Risk Process:

The revised Nearshore study budget-to-complete is prepared by estimating the costs of numerous tasks with varying degrees of estimating uncertainty. To provide a reasonable estimate, the

uncertainty inherent in the estimates was qualitatively assessed with a scale of three levels of confidence in the estimate:

1) High Confidence: Project has historical evidence about the costs involved with a task. The task may be similar in scope and duration to earlier efforts.
2) Medium Confidence: The task is commonly performed for project studies like the Nearshore project. The level of effort is not highly dependent upon specific characteristics of future work products or quantities (e.g. number and size of evaluated project sites). Historical evidence or experienced professional judgment increases confidence in the estimate despite inherent, irreducible uncertainties in the task.
3) Low Confidence: The work has little prior precedence or is highly dependent on findings or results from future work products. Historical evidence or experienced professional judgment is not available to increase confidence in the estimate and the task has inherent, irreducible uncertainties. As the task is better understood in the future as the study progresses, the task maybe better estimated and confidence increased.

The confidence scales are converted to percentages based on project manager judgment. The percent-scales are multiplied by each task cost estimate to determine its contribution to the reserve funds controlled by the managers. The sum of all task contributions composes the management reserve.

Appendix "A': Risk Register: Negative Risks
(i.e. Threats to Successful Delivery of the Nearshore Feasibility Report)

	Risk Identification	Negative (Harmful) Risks				Risk Assessment				Risk Response Plan	
#	Risk Description	Date or Phase Identified	Cause	Category	Trigger	Impact	Threat Severity	Likelihood	Overall Score	Risk Response Strategy	Contingency Plan
N2	Key Individuals not available @ right time	8/7/2008	Too few people w/ required expertise/ too many projects & programs requiring expert judgment	Human Resources	Competing work requests	Schedule	H	H	H	Avoid/ Mitigate (Train)/ Accept	Schedule experts early. Train new experts with mentors. Negotiate more time with them
N4	Not ready for WRDA 2010	8/7/2008	Recommended plan not adequately formulated	Project Mgmt	draft feasibility report behind schedule	Schedule/ Charter	H	M	H	Mitigate (Inform Team & HQ, Add Team Members)/ Accept	With sponsor agreement, continue formulating recommended plan in feasibility report. Inform congressional decision about potential "contingent authorization"
N6	Comprehensive Plan not acceptable to OMB	8/7/2008	Lack of compelling planning results	Authorizations	Draft Feasibility Report	Scope/ Schedule	H	L	H	Avoid (Seek Early OMB Buy-in To Report Approach)	Respond to Congressional inquiries about feasibility report content and schedule.

	Risk Identification	Negative (Harmful) Risks				Risk Assessment				Risk Response Plan	
#	Risk Description	Date or Phase Identified	Cause	Category	Trigger	Impact	Threat Severity	Likelihood	Overall Score	Risk Response Strategy	Contingency Plan
N8	Loss of Corps Resources/Focus	8/7/2008	Competing national assignments	Corps of Engineers	New administration/ National crisis/ disaster	Charter/ Schedule	H	L	H	Avoid (Educate & Inform HQ about study importance)	Negotiate revised workplan to slow or delay study pending crisis recovery.
N3	Insufficient Funding	8/7/2008	Inadequate estimates/ competing funding priorities/ lack of enacted legislation	Funding	lack of budget requests/ legislative inattention/ higher perceived priorities	Schedule/ Charter	H	L	H	Transfer/ Accept	Transfer work to non-Federal sponsor if insufficient federal funds available. If non-Federal funds insufficient for their scheduled activities, reduce federal efforts to balance cost-share equally while sponsor is securing more funds.
N7	Loss of Sponsor/Director Support	8/7/2008	New agency direction/ Loss of PSNERP credibility	Sponsor, WDFW	Schedule Delays/ Cost Increase/ lack of federal support	Charter	H	L	H	A. Avoid (Inform Director of study progress, findings implications, and formulated plan) B. Accept	A. Reformulate study plan to conform to sponsor requirements B. Begin final accounting and study close-out.

	Risk Identification	Negative (Harmful) Risks				Risk Assessment				Risk Response Plan	
#	Risk Description	Date or Phase Identified	Cause	Category	Trigger	Impact	Threat Severity	Likelihood	Overall Score	Risk Response Strategy	Contingency Plan
N10	Inaccurate cost-estimates	8/7/2008	Lack of specific work plan & activities/ poor duration or sequence estimations/ no prior experience to draw upon	Technical	cost-overrun of key, interim products	Budget	M	H	H	A. Avoid B. Mitigate C. Transfer	A. Actively monitor and control cost B. Anticipate iterative study process in estimates & include mgt reserve C. Contract for work activities where entity has experience & expertise to best manage costs.
N11	Inaccurate activity duration estimates	8/7/2008	Lack of specific work plan & activities/ lack of prior experience to draw upon	Technical	key interim products delayed	Schedule	M	H	H	A. Avoid B. Mitigate C. Transfer	A. Actively monitor and control schedule B. Anticipate iterative study process in duration estimates & include adequate schedule control points C. Contract for work activities were entity has experience & expertise to best manage schedule
N9	External forces impede/eliminate study	8/7/2008	Lack of public acceptance of problem findings or proposed solutions	Communications	NEPA Public meetings	Schedule	M	M	M	A. Avoid (Educate) B. Mitigate	A. Design stakeholder/public outreach process to acknowledge and address concerns identified by the public. B. Consider use of respected individual testaments.

	Risk Identification	Negative (Harmful) Risks				Risk Assessment				Risk Response Plan	
#	Risk Description	Date or Phase Identified	Cause	Category	Trigger	Impact	Threat Severity	Likelihood	Overall Score	Risk Response Strategy	Contingency Plan
N12	Lack of suitable project "pool" available from local planners	8/7/2008	Prior local planning lacked current state-of-knowledge or based on local opportunities	Technical	Compare SNAR w/ Nearshore project database	Schedule/Budget/ Scope	L	M	M	A. Avoid B. Mitigate C. Accept	A. Educate local restoration planners to identify suitable site-specific actions. B. Use PSNERP team members to aid suitable restoration planning. C. Accept risk that some recommended sites will not be identified by local restoration practitioners.
N5	WRDA 2010 Not Enacted	8/7/2008	Lack of national imperative for new water resource projects	Authorizations	lack of legislative agreement among delegates	Schedule	L	H	L	Mitigate (Inform Team Members as early as event expected) & Accept (Revise Workplan)	Continue formulating recommended plan if feasibility report not approved. If approved, sign Design Agreement to initiate Pre-construction, Engineering and Design activities to advance recommended project sites and revised FCSA for additional investigation.
	Legend										
	Event			Technical		Schedule	L, M, H	L, M, H		Avoidance	
				Project Mgmt		Budget				Transference	
				Funding		Scope				Mitigation	
				Human Resources		Charter				Training	
				Cost						Acceptance	
				Authorizations							
				Sponsor, WDFW							
				Communications							

	Risk Identification	Negative (Harmful) Risks				Risk Assessment				Risk Response Plan	
#	**Risk Description**	**Date or Phase Identified**	**Cause**	**Category**	**Trigger**	**Impact**	**Threat Severity**	**Likelihood**	**Overall Score**	**Risk Response Strategy**	**Contingency Plan**
				Schedule							
				Scope							
				Corps of Engineers							

Probability		***Overall Score***	
High	Low	High	High
Medium	Low	Medium	High
Low	Low	Medium	High
	Low	Medium	High

Severity

Appendix "B': Risk Register: Positive Risks
(i.e. Opportunities During Delivery of the Feasibility Report)

	Risk Identification	Positive Risks (Helpful Opportunities)				Risk Assessment				Risk Response Plan	
#	Risk Description	Date or Phase Identified	Cause	Category	Trigger	Impact	Opportunity Impact	Likelihood	Overall Score	Response Strategy	Contingency Plan
P2	Strategic approach popular w/ PS restoration planners	8/7/2008	Strategic planning helps PS restoration planners do their work better.	Technical	Strategic Needs Assessment leads to higher priority, locally formulated site restoration actions.	Scope/ Charter	H	H	H	Enhance: Brief planners at PSGB Research Conference, Feb 09	PSNERP add more oversight/mentoring support to local restoration planners
P6	PSNERP receives national recognition	8/7/2008	PSNERP demonstrates a better method to plan large-scale restoration by identifying feasible solutions to cumulative, fundamental	Communications	A. Conference presentations B. Respected, peer-reviewed technical products. C. Accepted Feasibility Report	Scope/ Charter	H	M	H	Enhance: Magnify project impact to health of Puget Sound Nearshore by developing support for more actions delivered more quickly.	Establish multiple delivery teams with standing planning, design and construction contractors to rapidly and repeatedly deliver restoration actions simultaneously at multiple sites.

	Risk Identification	Positive Risks (Helpful Opportunities)				Risk Assessment				Risk Response Plan	
#	Risk Description	Date or Phase Identified	Cause	Category	Trigger	Impact	Opportunity Impact	Likelihood	Overall Score	Response Strategy	Contingency Plan
			causes of ecosystem decline.								
P1	Stakeholders see PSNERP as an excellent, efficient project delivery method	8/7/2008	Project delivers data, scientific findings or solutions better than, at a larger scale, or faster than other methods	Project Mgmt	A. Strategic Needs Assessment with GIS database B. Feasible Report to Congress C. Estuary and Salmon Restoration Program early actions	Scope/ Charter	H	M	H	A. Exploit: Seek additional opportunities with stakeholders to deliver project benefits B. Exploit: Begin dialogue about new initiatives C. Enhance: Invite written or oral presentations to HQ USACE @ Feasibility	Build upon success with next generation of restoration planning after WRDA 2010 (Big-Audacious Projects)

	Risk Identification	Positive Risks (Helpful Opportunities)				Risk Assessment				Risk Response Plan	
#	**Risk Description**	**Date or Phase Identified**	**Cause**	**Category**	**Trigger**	**Impact**	**Opportunity Impact**	**Likelihood**	**Overall Score**	**Response Strategy**	**Contingency Plan**
										Scoping Mtg	
P3	Tools developed by PSNERP valuable to others	8/7/2008	Tools are developed for general utility by PS restoration practitioners	Technical	Technical Reports and GIS database publicly available and accessible	Scope/ Charter	H	M	H	Share: Conduct workshop to demonstrate tools	Encourage further tool development, including development done by others

	Risk Identification	Positive Risks (Helpful Opportunities)				Risk Assessment				Risk Response Plan	
#	**Risk Description**	**Date or Phase Identified**	**Cause**	**Category**	**Trigger**	**Impact**	**Opportunity Impact**	**Likelihood**	**Overall Score**	**Response Strategy**	**Contingency Plan**
P4	PS recovers health more quickly than expected, thus negating needed additional, future restoration actions	8/7/2008	PS ecosystem resiliency is freed from harmful, legacy stressors	Ecosystem Benefits	Key, valued species recover in abundance and spatial diversity	Scope/ Charter	H	L	H	Exploit: Develop strategy to redirect state and federal resources to higher priority needs.	Develop basin-wide monitoring strategy to assess on-going effectiveness of restoration actions, including a Science and Technology Program linked to adaptive management.
P5	PSNERP becomes "flagship" of Puget Sound Partnership	8/7/2008	PSNERP demonstrates value to PSP mission by acting to restore PS by 2020.	Communications	Technical products and restoration actions	Scope/ Charter	M	M	M	Share: Formally and explicitly link PSNERP activities to PSP.	Assign a Nearshore team to the PSP with suitable agreements among agencies
	Legend:			Category		Impact				Opportunities	
	Event			Technical		Schedule	L, M, H	L, M, H		Enhance	
				Project Mgmt		Budget				Exploit	
				Funding		Scope				Share	
				Cost		Charter					
				Authorizations							
				Sponsor, WDFW							

	Risk Identification	Positive Risks (Helpful Opportunities)				Risk Assessment				Risk Response Plan	
#	**Risk Description**	**Date or Phase Identified**	**Cause**	**Category**	**Trigger**	**Impact**	**Opportunity Impact**	**Likelihood**	**Overall Score**	**Response Strategy**	**Contingency Plan**
				Communications							
				Schedule							
				Ecosystem Benefits							
				Scope							
				Corps of Engineers							

Probability		***Overall Score***	
High	Low	High	High
Medium	Low	Medium	High
Low	Low	Medium	High
	Low	Medium	High

Opportunity Impact

2.4 Acquisition (Procurement) Management

27-Aug-08

Nearshore Project Management Plan

for

Acquisition Management

"Make-Or-Buy" Decisions:

The project management profession recognizes that organizations must often decide on whether to "make" a project product with their in-house staff or to "buy" products from outside organizations or vendors. The Nearshore project team is uniquely organized with in-house (Corps staff) composed of a relatively few individuals who are working collaboratively with a much larger team of agency, academic and non-profit organizational staff. The "make-or-buy" decision has occurred several times during the course of the study to-date. First when the Corps signed a cost-share agreement in 2001 with the non-federal sponsor, Washington Department of Fish and Wildlife (WDFW), the parties agreed to split the cost of the study equally with each providing services, in lieu of cash transfers. This early decision limited the "make" delivery method for each sponsor's organization. Since the study began, more organizations have expressed their willingness to participate in delivery of study products which has resulting in the collective agency team (known as the Puget Sound Nearshore Partnership) to operate as a well-integrated organization. The partnership team jointly develops products and writes scopes of work for products to be purchased through competitive methods managed by either the Corps or WDFW. In those cases, the "make or buy" decision is usually based on an analysis of the partnership's staff resource capacity. Occasionally the decision is based on securing highly-specialized skills not available from agencies.

Acquisition Planning:

In the early study period, contract acquisitions supported Nearshore Science Team investigations. Initially sole-source contracts were executed for specialized services only one firm was found to possess. Later, small Request-For-Proposal (RFP) competitive procurements were awarded for discrete, individual products. In 2006, the Nearshore project management team identified that the study required more capacity by many professionals than was then currently available within the partnership team or existing, available contractors. The new, selected contractor would be expected to support the entire Nearshore team by delivering many study products to the science, implementation and project management teams.

Indefinite-Delivery-Indefinite-Quantities (IDIQ) Contract Acquisition:

In consultation with the Corps' Contracting Division, an IDIQ contract to acquire a professional services contractor was determined to best serve the project's needs. The Corps, with WDFW and University of Washington faculty help, developed a scope of work and evaluation criteria to select the Nearshore IDIQ contractor through a national competition. Anchor Environmental, Inc. successful competed for the contract (Contract No. W912DW-07-D-1006, dated 14-Jun-07) through a rigorous process. The contract includes a basis year valued at a maximum of $1M with three optional years of

equal value. The contract includes many professional disciplines with several experienced-based labor categories.

IDIQ Task Order Management:

The Corps' IDIQ contracting process allows a wide-range of flexibility in scope, contract amount, and delivery schedules. As project requirements are developed by the Nearshore partnership team, the Corps prepares discrete scopes of work that are negotiated through individual task orders using a RFP process. The Corps project manager is assigned the role of Contracting Officer's Representative. Anchor Environmental principal-in-charge is assigned Contractor Project Manager. They negotiate fair and reasonable price and schedule for the individual scopes that are awarded by the Contracting Officer as sequentially numbered task orders.

Other Contract Acquisitions:

During the final stage of feasibility report preparation, other contract services besides the IDIQ are expected to be required. WDFW will issue an RFP procurement and administer a contract for a Future Risk Assessment product which is expected to be awarded to an academic team of interdisciplinary scientists. Also, WDFW awarded contracts to select scientists for (Scientific) External Peer Review. The Corps will administer a contract for a third party who in turn will manage a WRDA 2007 compatible Independent External Peer Review of the feasibility report. WDFW will award a contract for preparation of a technical paper describing management measures.

Other contracts, such as for engineering services from an Architect-Engineering (AE) firm, may be required to support the Nearshore team's delivery of the feasibility report. As the team elaborates on its' needs during the course of the study, the project managers will coordinate acquisition strategies with their contracting managers/officers.

Contract Monitoring and Control:

Contract monitoring and control is highly situational based on the scope, uncertainty of successful product delivery, and product complexity. Each contract is monitored by routine contract status and progress meetings; evaluation of progress payments; and comparison of payments to product delivery progress. For more uncertain contracting actions, the Nearshore team applies additional monitoring and control activities.

For delivery of the change analysis data, a specialized GIS expert panel of University of Washington and Corps team members meets weekly with the Anchor Environmental staff. They address issues; evaluate contractor quality control and perform government quality assurance. The team has developed special reports, flow diagrams and monitor progress concurrently with quality as shown in Appendix "A".

In Task Orders No. 1 and 3, the government and contractor included a change control task where the contractor's project manager has control over management reserves for highly uncertain tasks. This task allows product delivery to progress while the collective project management team resolves issues between scientific methods development and contractor production activities. The approach includes a reporting table, shown in Appendix "B", which is furnished in advance of progress payments.

Appendix "A": Integrated Contractor Quality Control / Government Quality Assurance of GIS Data Products:

Work-flow Diagram For Change Analysis Using GIS Datasets

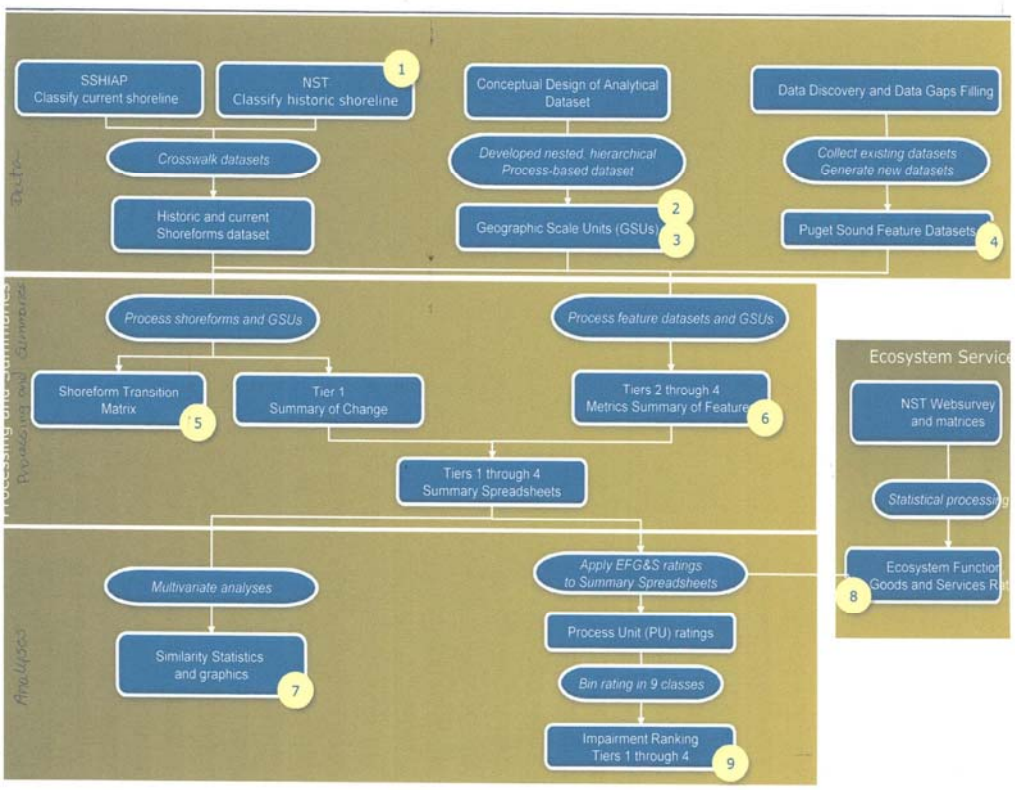
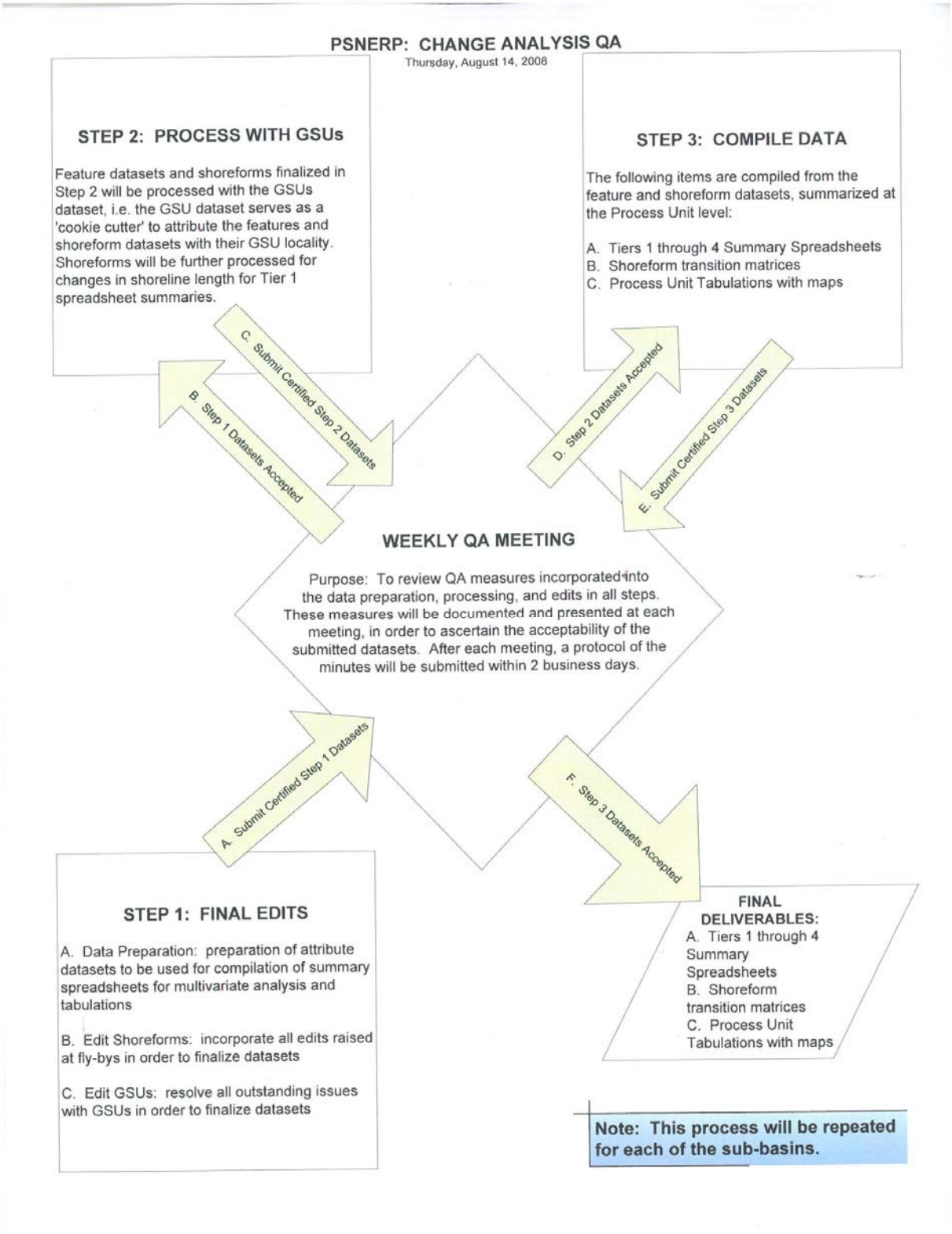


Diagram depicting Quality Control – Quality Assurance Process for GIS Datasets



Appendix "B":
Example Contractor Project Management Reporting Form on Change Control Tasks:

Puget Sound Nearshore General Investigation
W912DW-07-D-1 006
Delivery Order 1

TASK 7 - CHANGE CONTROL ISSUE SHEET

Issue Sheet Number: 1 of 1

Date: December 14, 2007

Relates to Subtask: Task 2C Drift Cells QA/QC and Option Tasks 2 and 4 Related to Current Shoreform Typology

Subtask Percent Complete: Task 2C 100% Complete and Option Tasks 2 and 4 not exercised (0% complete)

Additional Hours Needed

Description	Name	Hours	Rationale	Cost
Shoreform Typology (September 2007)	[redacted] (0104AA)	24	**Prepare, travel, participate in meeting:** [redacted] (LeeSaa Consulting) and [redacted] (Coastal Geologic Services) participated in a meeting to discuss how to incorporate the Salmon and Steelhead Habitat Inventory and Assessment Program (SSHIAP) current shoreform typology into the Corps/PSNERP analysis. Both had to prepare for meeting by reviewing and comparing the SSHIAP and [redacted] typologies to be able to provide informed recommendations. [redacted] had a particularly large preparation role because she helped [redacted] (UW/PSNERP) understand how the typology work was conducted in the previous WRIA 9 pilot project.	$4,020
	[redacted] (0101AA)	15		
Drift Cell - QA/QC (September to December 2007)	[redacted] (0101AA)	9	**Method Agreement:** Upon initiation the Delivery Order 1, a drift cell QA methodology recommendation memorandum was prepared and distributed. This led to an unanticipated series of discussions to select a methodology. [redacted]	$972
	[redacted] (0101AA)	16	**Convergent Zone:** Final method decided upon for the Drift Cell QA methodology was different than that assumed during cost estimating and scope negotiation. Final method was a hybrid of two approaches in order to satisfy Nearshore Science Team [redacted] interests in the dataset. This hybrid entailed more work than either of the two alternatives contributing to it.	$2,928
	[redacted] (0101AB)	16		
	[redacted] (0101AA)	4	**Source Data Worse Than Expected:** Ecology's Net Shore-Drift dataset was worse than expected in areas previously unused by CGS (i.e., no familiarity with data in some portions of Puget Sound). In particular, Ecology's data in Skagit, Clallam, and Pierce Counties had numerous problems for the Drainage Unit delineation including numerous unintended line breaks, "unknown" segments, shoreline gaps, and some areas with two shorelines.	$2,232
	[redacted] (0101AB)	24		
	[redacted] (0101AA)	6	**Interpretation of Net Shore-Drift in Boundary Bay, Canada:** This interpretation was not part of original Drift Cell QC scope. [redacted] requested this in a meeting on November 6. Ecology's dataset includes only Washington shorelines. This task is to define drift cells in Boundary Bay, and requires obtaining historic photos, research information, and interpreting net	$1,548
	[redacted] (0101AB)	12		
			Total Costs	$11,700

Labor Totals	Name	Hours
	[redacted] (0104AA)	24
	[redacted] (0101AA)	50
	[redacted] (0101AB)	52

Page 1 of 2

2.5 Communications Management

Background

Puget Sound defines much of the Pacific Northwest region. The health and robustness of our local economy and local residents can be traced indirectly and directly to the Sound. Despite our reliance on it, we have astonishingly little information on the Sound's essential nearshore, the shallow fringe where sunlight can reach the floor, giving life to an array of marine plants and creatures.

Now, a convergence of factors have turned the dream of a major nearshore project into a reality: tribal, federal, local and state governments, along with private sector and nonprofit organizations combined funds; the Endangered Species Act listing of salmon and eight other species in the nearshore added urgency; technology has become available for monitoring, conducting remote sensing and working with data; and groups with common interests have created a coalition-building atmosphere.

The result is the Puget Sound Nearshore Ecosystem Restoration Project, a cooperative effort among government organizations, tribes, industries and environmental organizations to preserve and restore the health of the Sound's nearshore that runs from the bluffs on the land to approximately the depth of light penetration into the waters of the Sound.

A General Investigation Reconnaissance Study conducted by the U.S. Army Corps of Engineers in 2000 identified a direct link between healthy nearshore and the physical condition of the shoreline. The study identified several areas that would be central in restoring shoreline processes to a more natural state:

- Providing beaches with essential sand and gravel materials,
- Removing, moving and modifying artificial structures (bulkheads, rip rap, etc.), and
- Using alternative measures to protect shorelines from erosion.

The Nearshore Partnership team is making a long-term commitment to the restoration and preservation of the Puget Sound Nearshore. The scope of this commitment includes engineering and design study to be completed by 2010, ongoing project work, and a communication plan for raising awareness of the benefits of a healthy nearshore and involving people in the Nearshore Project's work. Restoration and preservation work should be underway by 2012.

A key outcome of the Nearshore Project is to set priorities for and conduct restoration and preservation activities to restore and protect the vital nearshore for aquatic and wildlife and businesses and people.

Purpose

The purpose of the communication plan is to help facilitate a unified voice for the Nearshore Partnership, while respecting diversity of opinion. Successful, early communication will help with the success of the future project.

The communication plan should assist the science team as they provide investigation data.

Nearshore Communication Team Participants

U.S. Army Corps of Engineers
Washington Department of Fish & Wildlife
People for Puget Sound
Department of Natural Resources
Puget Sound Partnership

Team Roles and Responsibilities

Upon completion of the plan, it is envisioned that team members will produce various communication tools and products outlined in the plan, and assist and coordinate with various communication activities and events as the project develops.

However, the communication team is not solely responsible for implementing the communication plan. Steering Committee and Science Team members will be responsible for implementing the communication plan, too.

Communication Goals

Early, frequent, and iterative communication is key to the success of the Nearshore Project.

1. Educate target audiences about the environmental and socio-economic benefits of a healthy Puget Sound nearshore and the need for restoration and preservation projects.

2. Coordinate and unify the voices of the many organizations that make up the Puget Sound Nearshore Partnership and strive for a consistent voice.

3. Maintain the central Web site with basic information about the project with links to partners.

4. Create and maintain interest and momentum in the long-term project via early, ongoing and iterative communication with key groups.

5. Educate policy makers at tribal, federal, state and local levels about the importance and need for the project, in terms of the environment, economy and people. Proactively provide information to media and develop a response plan in anticipation of media questions and criticisms.

6. Involve key audiences, in particular local jurisdictions, in setting restoration and preservation priorities.

7. Seek opportunities to proactively provide information to key audiences about the project.

8. Increase public awareness and interest with a goal in stewardship toward the nearshore and the necessity to improve and protect Puget Sound.

Key Audiences: The audiences are divided into two groups: technical and **inclusive**

1. Technical Audience

Sound Recovery Nearshore Organizations, such as Salmon Recovery 15 Lead Entities and Marine Resources Committees

Goals:

1. Understand importance of the nearshore to region as a whole
2. Solidarity/involvement with project
3. Understand the benefits of the Nearshore Project to their nearshore restoration work and salmon recovery. Explain that 65 percent of federal funding, with a 35 percent local match could occur in their area for nearshore preservation and restoration and salmon recovery.

Tools/Activities:

1. Presentations to their staff leads
2. Put on group email
3. Provide regular bulletin updates via group email
4. Project members should talk with the 15 local identities and Marine Resources Committees a minimum of once a year to brief them on the progress of the project and involve them with the project.

Puget Sound area tribes

Members of the Northwest Indian Fisheries Commission

Goals:

1. Information sharing of extensive tribal research in the nearshore and with salmon
2. Continued participation in cost sharing of tribal restoration projects with PSNERP
3.

Tools/Activities:

1. Maintain communication with the members through their staff representatives on the Steering Committee

Members of the Federal Agencies

National Marine Fisheries Service
U.S. Environmental Protection Agency
U.S. Fish & Wildlife
U.S. Geological Survey
Military installations
Pacific Northwest Lab

Goals:

1. Increased understanding of nearshore project

Tools/Activities:

1. Information sharing via their agency representatives on the Steering Committee and/or Science Team – results of local studies, monitoring and restoration efforts

<u>Salmon Recovery Funding Board</u>

Goals:

1. Keep them informed and updated on the project

<u>Recreation Conservation Office</u>

Goals:

1. Keep them informed and updated on the project

2. Inclusive Audience

<u>Environmental Groups</u>

Audubon Society
Puget Soundkeeper Alliance
Washington Environmental Council
Friends of the San Juans
Long Live the King
Puget Sound Alliance
People for Puget Sound

Goals:

1. General and legislative support
2. Prioritization and unification of issues of concern for Puget Sound

Tools/Activities:

1. Presentations at regular chapter meetings and discussions on similarities of goals for nearshore
2. Articles in their newsletters

Local Governments

Elected officials
Puget Sound Council
Puget Sound counties
Staff people

Goals:

1. Solidarity/involvement with the project
2. Continued participation in project cost-share
3. Information sharing – results of local studies, monitoring and restoration efforts

Tools/Activities:

1. Presentations to their staff leads

U.S. Congress

Washington Delegation

Goals:

1. Keep them informed and updated on the project
2. Seek their support

Tools/Activities:

1. Update staff and delegation when they are in Washington state during various breaks
2. Travel to D.C. to brief

Association of Washington Cities

Goals:

1. Information sharing – results of local studies, monitoring and restoration efforts

Waterfront Landowners

Goals:

1. Increased understanding of nearshore processes
3. Permission to access property for multi-property projects

Tools/Activities:

1. Information sharing via workshops – results of local studies, monitoring and restoration efforts

News Media

Goals:

1. Inform media of the benefits of a healthy nearshore and establishment of project
2. Inform media about the scope of the project to restore the nearshore
3. Inform media of activities that compromise the nearshore

Tools/Activities:

1. Pitch story ideas to targeted media outlets
2. Hold media day(s) at projects

Washington Public Ports Association

Goals:

1. Guidance on minimizing effects of port operations on nearshore habitat

Industry Groups

Shell Fish/Aquacultural

U.S. Congress

Appropriate Committees

Civic Organizations

Chambers of Commerce
Kiwanis Clubs, Rotary Clubs, etc.

General Public

Strategy

The Communication Team plans to focus communication efforts on key audiences. First, the team wants to ensure that the project members develop a message from their agency's perspective on why they are involved with the nearshore project. This message needs to be consistent with the big picture messages for the nearshore project. Second, the team wants to alleviate or reduce surprises, misinformation and any concerns that the project is perceived as a threat, rather to instill that the project is a benefit to the environment and people. And, third, the team wants to establish and maintain ongoing interest in the project.

Key Messages/Talking Points

- The Puget Sound Nearshore Partnership is a large-scale initiative that affords a unique opportunity to tackle some of the foremost ecosystem restoration needs in Washington State's Puget Sound basin. Nearshore Project goals are to identify significant ecosystem problems, evaluate potential solutions, and restore and preserve the critical nearshore. The team represents a partnership between the U.S. Army Corps of Engineers, state, local, and federal government organizations, tribes, industries, and environmental organizations.

- The purpose of these groups coming together is to restore and preserve the health of Puget Sound's critical nearshore.

- The project is one of the largest restoration and preservation endeavors ever undertaken in the United States.

- The Nearshore Partnership has made a long-term commitment to the restoration and preservation of the Puget Sound Nearshore.

- A key outcome of the Nearshore Project is to set priorities for and conducting activities to restore and protect the vital nearshore for aquatic and wildlife and businesses and people.

- Private, non-profit, tribal, federal, state, and local government organizations are combining their resources to fund the Nearshore Project.

- This investigation has allowed scientists and engineers to begin to assess and identify ecosystem restoration and protection opportunities while developing criteria to set priorities and develop projects in the Puget Sound nearshore environment.

Key Messages from Nearshore Partnership Agencies

- *Will be developed*

Tools/Activities and Timeline

Tools/Activities	Target Audience	Target Date
Develop toolbox of communication products by updating existing and creating new products: Update: Q&A Project Fact Sheet, and PSNERP Committee list	Key audiences, as needed. On Web site Provide electronic copies to Nearshore Partnership committees and Science Team.	October 2008
Determine interest from participating agencies to have reps. on Communication Team: - Northwest Straits - Ecology - EPA - Nature Conservancy - NOAA - USGS - Northwest Fisheries - USFW - Pacific Northwest Lab	Steering Committee	Next Steering Committee meeting
Use a group email list to inform both the technical and inclusive audiences of various project milestones.	Technical and targeted inclusive audiences	Ongoing
Keep Nearshore Project Web site updated. Evaluate reactivating Seattle District Web site.	Technical and inclusive audiences	Ongoing
Prepare and distribute monthly briefing bulletins of an update of project.	Technical and targeted inclusive audiences Post on Nearshore Project Web site	Ongoing
Public meetings required by NEPA	Technical and inclusive audiences	TBD

Present Strategic Needs Assessment report and develop an audience-friendly presentation	Technical and inclusive audiences, including media. Will serve as a read ahead for first round of NEPA public meetings.	Winter 2009
Demonstration site tours	Key audiences, including government representatives, various stakeholders, general public and media	TBD
Generate story leads for articles in various agency newsletters, and local and national news media	Targeted audiences based on publication Will determine related topics on editorial calendars and deadline dates.	Ongoing
Participate in national conferences: - Restore Americas Estuaries - National Conference on Ecosystem Restoration - WA State Governors Georgia Basin/Puget Sound Research Conference	Technical audience and elected government officials and their staff	Annually

2.6 Review Management (Quality Management)

Nearshore Project Description: The Puget Sound Marine Nearshore General Investigation Team is examining the fundamental causes of ecological decline within the Puget Sound Nearshore domain and will recommend feasible solutions for restoring ecological health. The expected Nearshore feasibility report will be a Corps of Engineers decision document which will allow broad, diverse public and agency review, comment and possible acceptance, prior to submitting the Chief's Report to Congress. The technical reviews are anticipated to require several disciplines including, but not limited to: geomorphologist; biologist for fisheries, benthic, riparian, marine mammals and birds; geospatial analysts; engineers for coastal, hydraulics, hydrology, structures and cost; cultural resource specialist, and social scientists for restoration. The designated points of contact to direct inquiries about the Nearshore plan are:

Bernie Hargrave, P.E., PMP,
Seattle District Program Manager
206-764-6839
bernard.l.hargrave.jr@usace.army.mil
and
David Vigh,
Corps of Engineers
Planning Center of Expertise For Ecosystem Restoration
601-668-4445
david.a.vigh@usace.army.mil

Anticipated Number of Reviewers: The Nearshore study reviews are expected to require 2-20 reviewers depending on review type. See Table 1 for more detail on the anticipated number of reviewers.

Likelihood of Influential Scientific Information or Assessments: The Nearshore study will likely influence national policy dialogue about methods to assess cumulative effects of multiple human actions on ecological decline in marine nearshore regions of coastal states.

Anticipated Level of Review: The Puget Sound Nearshore feasibility report is expected to require an Independent External Peer Review as its highest level of technical review.

Timing and Sequence of Reviews: The reviews will be timed to be accomplished (with incorporated comments) prior to a corresponding major project milestone event, like the Feasibility Scoping Meeting (FSM), Alternative Formulation Briefing (AFB), Civil Works Review Board (CWRB), Chief's Report or Environmental Impact Statement (EIS) Record-of-Decision (ROD). The review events are anticipated to occur in the sequence as shown in Table 1 during the investigation:

Table 1

Puget Sound Nearshore General Investigation

Timing and Sequence of Reviews

Review Type	Major Milestone Event	Anticipated Number of Reviewers
Peer review of scientific, technical products	FSM	2-5
Peer Review of scientific investigation	FSM, AFB	5
District Quality Control	FSM, AFB, CWRB	10
Agency Technical Review	FSM, AFB, CWRB	15
Value Engineering Study	CWRB	6
Independent External Peer Review	CWRB	5
State & Agency Review	EIS ROD	many
Public Review	EIS ROD	many

Opportunities for Public Comment: The approved Nearshore Peer Review Plan has been available for public comment since September 2007. Upon approval of the Review Plan, it will be posted for public review and comment on Seattle District's public web site.

Anticipated Availability of Significant, Relevant Public Comments:

Sponsor In-Kind Contributions to Review:

Execution of Review Plan:

The review process for this study will be conducted in accordance with EC 1105-2-410 "Review of Decision Documents" dated 22-Aug-08 and ER 1105-2-100, Appendix "H". Although EC 1105-2-410 expires in September 2010, it is likely to be in effect when the Nearshore project undergoes a series of reviews of the draft and final feasibility report versions and is the best policy guidance to develop this review plan. The Nearshore study has been underway for several years prior to passage of Water Resource Development Act 2007 (WRDA 2007), which lead to EC 1105-2-410. During the study, the Nearshore team has developed review standards, including the NWD and PCX approved External Peer Review Plan (EPR). The approved EPR recognized three levels of peer review: product, scientific and programmatic. EC1105-2-410 defines an Independent External Peer Review (IEPR) which is essentially identical to the earlier Nearshore External Programmatic Peer Review. The chief difference between on-going Nearshore reviews and EC 1105-2-410 is that the EC describes reviews of near-final products where the Nearshore team continues to perform reviews as part of an on-going, integrated process during product delivery.

Once a draft feasibility report is available from the Nearshore team, the first level of review will be conducted by the Seattle District Quality Control (DQC) team. This team will be composed of staff

inside the Seattle District who have not been directly involved in preparing the study report. The DQC team will be responsible for verifying the basic science and engineering work products.

The Agency Technical Review (ATR) team replaces the Independent Technical Review (ITR) team defined in the original PMP. They will review the draft feasibility report and supporting appendices. The ATR team will be composed of USACE senior staff (Regional Technical Specialists (RTS), etc.) outside of Seattle District who have not been involved in the production of this study. The ATR team will reflect the significant disciplines involved in the planning effort, in particular, recognizing the significance of plan formulation, evaluation, and selection in forming a defensible feasibility report. These senior staff members may be supplemented by outside experts as appropriate.

The DQC and ATR will use appropriate analytical methods for each technical area and include periodic technical review team meetings to discuss critical decisions and coordinate review of the written feasibility report and supporting appendices. The DQC and ATR will ensure and confirm that:

- Quality products are realized;
- The overall integrity of the report and technical appendices;
- Proper application of clearly established criteria, regulations, laws, codes, principals, and professional practices;
- All parts fit together in a coherent whole; and
- Compliance with law and policy.

Dr. Checks will be used to administer DQC and ATR reviews to document reviewer comments, Nearshore Team responses, and final resolution of comments.

The most objective, technical review will be by an Independent External Peer Review (IEPR) panel. This level of review is necessary when projects have a high level of risk and magnitude that warrant examination by a qualified team outside of USACE. The IEPR is required to be managed by an outside eligible organization (OEO) that is free from conflict or interest, does not advocate for or against Federal water resources projects, and has experience establishing and administering IERP panels. The scope of review by the IEPR will encompass all aspects of the project. An IEPR is currently anticipated for this project and is described in the Peer Review Plan.

Policy and Legal Compliance Review will be conducted prior to convening the Civil Works Review Board (CWRB).

State and Agency Review is assumed to be conducted concurrently with Public Review once the CWRB approves release of documents for review.

The MSC will be responsible for approval of the RP. Once approval has been established, the RP will be posted on the District's website similar to the approved Peer Review Plan currently on the Seattle District's public web site.

2.6.1 Peer Review Plan

The Peer Review Plan is available as a separate document.

2.6.2 Model Certification Plan:

Planning Model Certification Guidance:

The Corps' Engineering Circular, EC 1105-2-407, provides the following definition of a planning model:

> **"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 Corps' National Ecosystem Planning Center of Expertise (Eco-PCX) Planning Models Improvement Program provides protocols for certification of planning models which includes the criteria for certifying planning models used by the Nearshore project team. The Nearshore project models requiring certification are expected to include:

a. The Corps Institute of Water Resources (IWR) planning model, IWR-Plan is a Category (1) model, which is a model of national significance and applicability. IWR-Plan certification process is currently in the final approval stage by Eco-PCX and is expected to be available to the Nearshore project when the team evaluates and compares plans. This plan assumes IWR-Plan model certification approval will be accomplished independent of the Nearshore project.

b. The Nearshore project team has developed a regional model using commercial–of-the-shelf Geographic Information System (GIS) software and regional databases from a variety of sources that characterize basin-wide attributes of the Puget Sound natural shoreforms and anthropogenic infrastructure features. The Nearshore GIS model appears to fit a Category 2 model of the Eco-PCX protocol:

> **Category (2) Regional/Local Models**
> Regional/Local models are typically developed by field offices of the Corps for specific applications that cannot be adequately addressed using available corporate models. These models are typically conceived to address unique regional/local situations for major studies where accuracy in depicting the specific characteristics of the study area is critical to the outcomes of the model and when it is more effective to develop a regional/local model than to develop or modify a National model. Other regional/local models are conceived based on alternative views of the workings of the marketplace (economics) or environment than those considered in National models.

The model certification protocol has several components including:

a. Certification Criteria
    1) Technical Quality
    2) System Quality
    3) Usability
b. Certification Process

c. Roles and Responsibilities
d. Levels of Review
e. Certification Review Team

The Nearshore team will documented the regional GIS model using Table 2 from the Eco-PCX protocol as shown below to show compliance with the certification criteria. The criteria response will be developed in close coordination with the Nearshore project team who are the model developers, the Seattle District Enterprise-GIS Team, Nearshore Science Team and Anchor Environmental Inc. In FY09, the Nearshore team will request an Eco-PCX contact to engage them in the development of the model and coordinate model certification.

Once the model is documented by the Nearshore project team, cost and schedule will be negotiated with the PCX. In turn, they will determine the appropriate level of review, develop a model review plan, and assemble a review team. The PCX will provide management and policy oversight to the model review team. The Nearshore project team will assist the review team by conducting and documenting Beta tests until critical issues are resolved. Once Beta testing is complete, the PCX will document certification process including a certification of approval to the Nearshore project team, Northwest Division and the Corps' Toolbox Manager.

Appendix “A’: Nearshore Model Certification Plan Criteria Table:

Eco-PCX Planning Models Certification Protocol Table 2: Outline for Model Documentation		
Cover Sheet		
a.	Model Name	
b.	Functional Area	
c.	Model Proponent	
d.	Model Developer	
1. Background		
a.	Purpose of Model	
b.	Model Description and Depiction	
c.	Contribution to Planning Effort	
d.	Description of Input Data	
e.	Description of Output Data	
f.	Statement on the capabilities and limitations of the model	
g.	Description of model development process including documentation on testing conducted (Alpha and Beta tests)	
2. Technical Quality		
a.	Theory	
b.	Description of system being represented by the model	
c.	Analytical requirements	
d.	Assumptions	
e.	Conformance with Corps policies	

	and procedures	
f.	Identification of formulas used in the model and proof that the computations are appropriate and done correctly	
3. System Quality		
a.	Description and rationale for selection of supporting software tool/programming language and hardware platform	
b.	Proof that the programming was done correctly	
c.	Availability of software and hardware required by model	
d.	Description of process used to test and validate model	
e.	Discussion of the ability to import data into other software analysis tools (interoperability issue)	
4. Usability		
a.	Availability of input data necessary to support the model	
b.	Formatting of output in an understandable manner	
c.	Usefulness of results to support project analysis	
d.	Ability to export results into project reports	
e.	Training availability	
f.	Users documentation availability	

	and whether it is user friendly and complete	
g.	Technical support availability	
h.	Software/hardware platform availability to all or most users	
i.	Accessibility of the model	
j.	Transparency of model and how it allows for easy verification of calculations and outputs	

Peer Review Plan
for
Feasibility Study
of
Puget Sound Marine Nearshore Habitat Restoration, WA

PUGET SOUND
NEARSHORE
PARTNERSHIP

RESTORING OUR
ECOSYSTEM HEALTH

Dated: 25 Sep 07

1. INTRODUCTION

The Puget Sound basin is located in northwestern Washington and is bounded by Whatcom, Skagit, Snohomish, King, Pierce, Thurston, Mason, Kitsap, Jefferson, Clallam, Island, and San Juan counties. The purpose of the Puget Sound Marine Nearshore Habitat Restoration Project (i.e. Nearshore or PSNERP) is to provide ecosystem restoration that will reverse the decline in function of targeted Puget Sound nearshore ecosystem processes.

The purpose of the Nearshore feasibility study is first to evaluate significant ecosystem degradation in the Puget Sound Basin. Then, the project team will formulate, evaluate, and compare potential solutions to these problems in order to recommend a series of actions and projects that have federal interest and are supported by a non-Federal sponsor. The recommended plan must significantly contribute to the identified restoration objectives of restoring nearshore habitat of Puget Sound for the benefit of the biological resources and the integrity of the ecosystem, including the functions and natural processes of the basin; additionally the plan must be both technically viable and economically sound.

The purpose of the peer review plan is to assign the appropriate level and review independence, establish the procedures, and assign responsibilities for conducting the independent technical and external peer reviews (ITR and EPR, respectively) to ensure the quality and credibility of all decision documents developed during the General Investigation (GI). This plan is compliant with EC 1105-2-408 *Peer Review of Decision Documents*, 31 May 2005, section 6, parts a. through j. This plan also is compliant with the 30 March 2007 USACE Civil Works-Civil Planning memorandum *Peer Review Process* and the 20 April 2007 USACE Northwestern Division memorandum *Peer Review Process.* The peer review plan is part of the Project Management Plan (PMP). Once approved, the plan will be provided to the public on Seattle District's website with a link to the Corps' Planning Center of Expertise.

The project delivery team is presented in Table 1. The Seattle District Project Manager is the project main point of contact for more information about this project and the peer review plan and can be telephoned at 206-764-6839. The Technical Point of Contact for the Ecosystem Planning Center of Expertise can telephoned at (601) 634-5854.

TABLE 1 [1/]	
FEASIBILITY PHASE PROJECT DELIVERY TEAM	
DISCIPLINE	**OFFICE/AGENCY**
Project Manager	Corps of Engineers
Program Manager (GI)	Corps of Engineers
Program Analyst	Corps of Engineers

TABLE 1 [1/]	
FEASIBILITY PHASE PROJECT DELIVERY TEAM	
DISCIPLINE	**OFFICE/AGENCY**
Plan Formulation	Corps of Engineers
Environmental Coordinator	Corps of Engineers
Environmental Resources	Corps of Engineers
Cultural Resources	Corps of Engineers
Fish & Wildlife	Corps of Engineers
Survey/ CADD Mapping/GIS	Corps of Engineers
GIS	Corps of Engineers
Economic Evaluation	Corps of Engineers
Public Affairs	Corps of Engineers
Office of Counsel	
Cost Engineering	Corps of Engineers
Real Estate	Corps of Engineers
Hydraulic Engineering	Corps of Engineers
Construction	Corps of Engineers
Coastal Engineering	Corps of Engineers
Non-Federal Sponsor: Program Manager	Washington Department of Fish & Wildlife
Non-Federal Sponsor: Project Manager	Washington Department of Fish & Wildlife

1/ A full list of Nearshore Partnership team members can be found at www.pugetsoundnearshhore.com.

2. PROJECT SIGNIFICANCE

The GI Feasibility Report (FR)/ Environmental Impact Statement (EIS) will reflect the results of a comprehensive study of the Puget Sound nearshore. The project team includes interdisciplinary scientists who are active researchers of the Puget Sound. Before the project investigation began, issues of the Puget Sound nearshore were weakly synthesized in forms of limited usefulness to the diverse, active restoration community. During the investigation, many documents have been produced by the project team to guide on-going restoration decisions by the State of Washington and others. To assure high quality, creditable scientific documents each document is reviewed by the author's peers. The Nearshore General Investigation continues to be an influential scientific assessment with broad interest from federal and state agencies, including the State of Washington agency, Puget Sound Partnership, and the associated federal agency group, the Puget Sound Federal Caucus.

The effects of human development on manifested natural Puget Sound geomorphological and hydrological processes are central to the investigation. Other large-scale restoration projects -- like those in Chesapeake Bay, the Great Lakes,

Everglades, Coastal Louisiana, and San Francisco Bay -- are also addressing natural process restoration; yet, many issues within Puget Sound are unique or are being addressed in novel ways. The cumulative benefits of actions guided by the investigation are expected to significantly contribute to the region's social, environmental and possibly economic well-being. The project provides a more integrated understanding of the many, interrelated, complex human actions which have contributed to ecological decline than previous attempts.

The Nearshore project construction authorization may be more than one-billon dollars ($1,000,000,000), based on the non-Federal sponsor's (Washington State Department of Fish and Wildlife) project fact sheets.

Therefore, the GI phase documents (i.e. the without project report, the with-plan report, and the Draft EIS/FR) and major engineering products meet the criteria for external peer review (EPR) and will require review by both ITR and EPR teams.

3. REVIEW SCHEDULE

ITRs and EPRs will be conducted for all major GI phase documents (i.e. without project report, feasibility scoping documents, plan selection report, and Draft EIS/FR) and major engineering and scientific documents and products. The complete schedule is included in the Final Project Management Plan which can be found at http://www.pugetsoundnearshore.org/

The major feasibility study milestones are shown below, however; public peer review (including other agencies, tribes, non-profit organizations and the public attending project workshops, seminars or visiting the project web site) is managed as on-going activities of the investigation.

July 2008	Project Conditions Report (Historic, Current, Future Without Project)
November 2008	Feasibility Scoping Meeting
August 2009	Alternative Formulation Briefing
April 2010	Draft Feasibility Report

4. EXTERNAL PEER REVIEW

The project began in 2001, prior to issuance of EC 1105-2-408 and the establishment of required PCX managed/conducted ITR/EPR. The project has an established procedure for incorporating peer review and has funds budgeted for that review. Appendix A describes the PSNERP Peer Review process that is currently being followed.

There are three types of review: 1) Proposal or Product; 2) Strategic Science Review and 3) Program Review. The types of reviewers include - Nearshore Science Team (NST) or Workgroup(s); Individual NST member(s); Science Editor; and External Reviewer(s).

Table 2 describes the types of peer review conducted on published papers to-date and the types of individuals who performed each review. Table 3 is a similar table which outlines the documents currently being reviewed.

Table 2 [2/]

Published documents	**Type of review conducted** **Reviewers**
Application of the "best available science" in ecosystem restoration: lessons learned from large-scale restoration project efforts in the US	2) Strategic Science Review – NST, 6 external reviewers, nationally recognized scientists
Guidance for Protection and Restoration of the Nearshore Ecosystems of Puget Sound	1) Product NST 1-3 external reviewers
Guiding Restoration Principles	1) Product NST 2-3 external reviewers
Historic Characterization of WRIA 9 Shoreline Landforms	1) Product NST 1 external reviewer
Coastal Habitats in Puget Sound: A Research Plan in Support of the Puget Sound Nearshore Partnership	2) Strategic Science NST USGS Multiple external reviews
The Geomorphology of Puget Sound Beaches	1) Product 2 NST 2-3 external reviewer
Conceptual Model for Assessing Restoration of Puget Sound Nearshore Ecosystems	2) Strategic Science NST Multiple external reviewers Workgroups

Table 2 [2]	
Published documents	**Type of review conducted** **Reviewers**
Native Shellfish in Nearshore Ecosystems of Washington State	1) Product NST 2 individual members 1 external reviewer
Nearshore Birds in Puget Sound	1) Product 2 NST members Science editor 1 external
Juvenile Pacific Salmon and the Nearshore Ecosystem of Puget Sound	1) Product 2 NST Science editor 1 external
Historical Reconstruction, Classification and Change Analysis of Puget Sound Tidal Marshes	1) Product Individual NST members External agency Workgroup
Puget Sound Annotated Bibliography	1) Product Individual NST members
Marine Riparian Vegetation Communities	1) Product 2 NST members Science editor 1 external reviewer
Native Shellfish in Nearshore Ecosystems of Washington State	1) Product 2 NST members Science editor 1 external reviewer
Nearshore Birds in Puget Sound	1) Product 2 NST members Science editor 1 external reviewer
Juvenile Pacific Salmon and the Nearshore Ecosystem of Puget Sound	1) Product 2 NST members Science editor 1 external reviewer
Kelp & Eelgrass	1) Product 2 NST members Science editor 1 external reviewer

Table 2 [2/]	
Published documents	**Type of review conducted** **Reviewers**
Valuing Puget Sound's Valued Ecosystem Components	1) Product 2 NST members Science editor 1 external reviewer
Beaches and Bluffs of Puget Sound and the Northern Straits Valued Ecosystem Component of Washington State	1) Product 2 NST members Science editor 1 external reviewer
Orcas in Puget Sound	1) Product 2 NST members Science editor 1 external reviewer
Great Blue Heron	1) Product 2 NST members Science editor 1 external reviewer
Valued Ecosystem Component White Paper Marine Forage Fishes	1) Product 2 NST members Science editor 1 external reviewer

Table 3 [2/]	
Documents currently under review	**Type of review** **Reviewers**
A Geomorphic Typology of Puget Sound Nearshore Landforms	1) Product 2 NST members 3 external reviewers

2/ Appendix B includes a complete bibliography of the documents listed in Tables 2 and 3.

5. PUBLIC REVIEW OPPORTUNITIES

The public has actively participated in the on-going external peer review process already part of the PSNERP GI project. Venues for soliciting comments are varied and range from passive collection of comments at the public website to actively requesting that another agency manage an EPR with a team of reviewers selected by the agency. Examples of the types of review that PSNERP documents undergo are:

- Public review of published documents at http://www.pugetsoundnearshore.org/
- External Peer Reviews that are managed by Washington Sea Grant and USGS
- Author suggestions to professionally edited manuscripts

- Public presentations and document submittal to Washington State Salmon Recovery Funding Board (SRFBoard), Washington State Governor's Puget Sound and Georgia Basin bi-annual research conferences, National Ecosystem Restoration Conference, and Estuary and Salmon Recovery Program (ESRP) workshops at six Puget Sound locations, and other public venues.

The public will be invited to comment directly to the PDT through public scoping meetings and public review periods programmed into the feasibility schedule. Although resources have been programmed for a public review of the Final FR/EIS, a public review of the final EIS/FR will not be conducted unless the final document is significantly different from the draft.

6. AVAILABILITY OF PUBLIC COMMENTS TO ITR TEAM

Public input from the NEPA workshops and the public scoping meetings will be available to the ITR members to ensure that public comments have been considered in the development of interim products and the draft FR/EIS. However, the draft FR/EIS will be independently reviewed prior to the conclusion of the public comment period, and, therefore, these comments will not be available to the ITR members. In the event that the final FR/EIS is significantly revised from the draft, another ITR will be scheduled and public comment on the draft will be available to the reviewers.

7. ANTICIPATED NUMBER OF REVIEWERS

The current ITR plan includes 12 independent reviewers corresponding to the disciplines required to develop the feasibility products and the FR/EIS.

8. PRIMARY DISCIPLINES AND EXPERTISE NEEDED FOR THE ITR

The disciplines and expertise required for the ITR team are presented in Table 4.

TABLE 4. INDEPENDENT TECHNICAL REVIEW TEAM

Discipline
Review Team Leader
Plan Formulation
Environmental Coordinator
Cultural Resources
Civil Design
Coastal Engineering
Geotechnical
Economic Evaluation
Cost Engineering
Real Estate

Discipline
Sponsor WDFW
Hydraulics and Hydrology

The Independent Technical Review Team will be selected based on their knowledge, skills, and experience necessary to perform the task and their lack of affiliation with the development of the feasibility report/EIS and associated appendixes. Seattle District will recommend ITR members to the MSC and PCX. The PCX will confirm the quality and adequacy of the ITR members. Funding their participation may include travel to Seattle District for the review conference. All ITRs will be completed through DRCHECKS where comments and comment resolution are captured.

Technical review will use appropriate analytical methods for each technical area. Technical review will rely on periodic technical review team meetings to discuss critical plan formulation or other project decisions, and on the review of the written feasibility report documentation and files. Independent technical review will ensure that:

- the feasibility report/EIS is consistent with current criteria, procedures and policy
- clearly justified and valid assumptions that are in accordance with established guidance and policy have been utilized, with any deviations clearly identified and properly approved
- concepts, features, analytical methods, analyses, and details are appropriate, fully coordinated, and correct
- problems/issues are properly defined and scoped
- conclusions and recommendations are reasonable and justified.

Appendix A provides a detailed proposed ITR and EPR plan developed by the Nearshore Science Team.

9. EXTERNAL PEER REVIEWERS

TABLE 5 EXTERNAL PEER REVIEW TEAM

DISCIPLINE
Planning Center of Expertise, Point of Contacts
Coastal Physical Oceanography or Wetland Hydrology
Geomorphology or Sedimentology
Coastal Systems Ecology
Restoration Engineering
Fish and Wildlife Ecology
Information Management

DISCIPLINE
Socioeconomics

10. PUBLIC SELECTION OF PEER REVIEWERS

Public suggestions have been received for individual peers. Direct public comments about the document content have been incorporated, as appropriate, into the current documents. The Nearshore Science Team has requested public agencies to manage EPRs and return comments to the authors for incorporation. Agencies that have conducted and managed EPRs are Washington Sea Grant and USGS. MSC, with concurrence from PCX and NWS, tentatively concurs that EPR is consistent with Corps policy and will be done for the Nearshore project.

11. FEDERAL ADVISORY COMMITTEE ACT

Because the PSNER team includes members that are not Federal, State, local, or Tribal government employees the Federal Advisory Committee Act (FACA) may apply. However, the project organization and charter has been developed with the help of district counsel to avoid potential FACA conflicts. In the future, if there is uncertain about whether or not FACA applies to a particular external peer review, questions regarding applicability of FACA will be addressed to the Seattle District Office of Counsel.

12. MODEL CERTIFICATION:

Project team has not identified models to be used for the investigation. If models are subsequently identified, the plan will be modified to explain the certification process.

13. IMPLEMENTATION COST CRITERIA EVALUATION FOR DETERMINING NECESSITY FOR EPR:

Currently implementation costs of a future authorized project are estimate by the non-Federal sponsor to exceed $1,000,000,000 (one-billion dollars). This is not an “official” Corps of Engineers estimate, instead a rough order of magnitude estimate used solely to determine whether the cost criteria for EPR alone would necessitate conducting an EPR. Since the non-Federal sponsor’s project cost estimate exceeds the policy criteria, currently $50,000,000 (50-million dollars), the project will require an EPR.

14. COST ESTIMATING DIRECTORY OF EXPERTISE:

The project feasibility report cost estimate will be reviewed by the NWW Cost Estimating Directory of Expertise.

Puget Sound Marine Nearshore Habitat Restoration Project (PSNERP) Peer Review

INTRODUCTION

The Nearshore Science Team (NST) of the Puget Sound Marine Nearshore Habitat Restoration Project (PSNERP) proposes to the PSNERP Management Team and other authorizing entities that the PSNERP formally institute both internal (research and product review by agency, non-profit, tribal, and academic team members who have been involved in the investigation) and external (program review by qualified individuals who have not been involved in developing products for the investigation) peer review to see the Project through the completion of the General Investigation. Certain aspects of PSNERP governance already receive strict, formalized peer review (e.g., US Army Corps of Engineers competitive contractor selection) or presently have a reasonable peer review process (e.g., Valued Ecosystem Component white paper review). However, the Project's strategic science and overall program structure and direction, especially as developing in the General Investigation would benefit from a peer review. This NST statement and proposal addresses all levels of peer review but is particularly focused at the Project's needs at the programmatic level.

Peer review is a fundamental tenet of good science around the world. Independent peer review is the accepted tool for rigorous, impartial evaluation of scholarly manuscripts, research proposals, complex institutional research programs, faculty promotion and most other decisions affecting how science is conducted and used to address human needs and problems.

As described in a recent Ecological Society of America (ESA) Public Affairs Office briefing to the US Congress[1], "Peer review is an integral component of scientific research and publishing. It allows the scientific community to maintain quality control of research through the review of research proposals, journal manuscripts and other reports. Academic peer review, although far from perfect, is the best tool scientists have to ensure high standards for their professional work."
Adherence to peer review is sometimes less than perfect in applied disciplines compared to basic science and engineering, with predictable effects on credibility in the eyes of the scientific community.

Restoration of Puget Sound nearshore ecosystems as developed under PSNERP will involve extensive assessment of scientific direction and priorities, and scrutiny of background science and restoration performance; all of these aspects demand some level and type of peer review. Peer review should:

- ensure that the "best available science[2]" is pursued;
- avoid potential conflicts of interest; and,
- minimize the influence of other, subjective factors, such as funding source.

[1] ESA Bulletin 86(1), January 2005; see: http://www.esapubs.org/bulletin/current/current.htm
[2] See US federal and other institutional/legal definitions; Lessons Learned document (PSNERP-NST 2005) also provides detailed definition.

FORMS OF PEER REVIEW

Peer review can be implemented in many forms, with various means of affecting decision processes. Any program such as PSNERP should incorporate peer review input at several levels in the PSNERP organizational structure: (1) research proposal ranking and selection; (2) technical report and other product review; (3) strategic science approach review; and (4) program review.

Decisions of Selection or Ranking

Any decision based on scientific and technical merit, such as evaluation of research proposals, should be based in peer review. Through peer review, the difficult decisions about research funding allocation and dissemination of results can be objectively based on scientific validity, originality, and importance. Examples from the NST Lessons Learned assessment of large-scale, ecosystem restoration programs (Van Cleve *et at* 2003) would include the CALFED Ecosystem Restoration Program procedures for selecting restoration projects to implement in the San Francisco Bay-Delta.

Ideally, the peer-review process should involve scientists (individually and as a body) who: (1) have no conflict of interest with any of the proposal or study participants; and, (2) preferably, have regional expertise directly applicable to the decision topic. This is not always feasible in a region with a limited number of technical experts, most of whom have some level of conflict of interest (e.g., are research colleagues, are involved in competing proposals, are from the same institution or have long-term affiliations). Thus, review by peers external to the region is often required to ensure impartiality.

Such peer review typically occurs either through (a) mail review, (b) assembled panel review, or (c) a combination of both. Relative ranking and narrative discussion (or completions of a systematic form, in a few cases) are generated for each proposal. In the case of mail and panel review, the mail reviews are typically used for initial screening; subsequent resolution of decisions requires more in-depth discussion of the strengths and weaknesses of each proposal. The following are example criteria that are used to assess the relative merits of a research proposal or manuscript describing research results:

- examines an important scientific issue
- study is original
- directly tests hypothesis
- study design (sample size, control, feasibility) is capable of testing hypothesis and statistical approach is appropriate
- study not compromised by impediments to implementing study design
- no conflict of interest

Although peer reviewers may comment on other aspects, such as budget feasibility or sociological factors, these should not be considered scientific decision factors (e.g., these issues are often left to program managers).

Confidentiality is a fundamental requirement of most peer review of this type, although reviewers may agree to provide their identification under some circumstances. Scientific and professional societies (that publish peer-review journals) and institutions often acknowledge reviewers by listing them, but they seldom identify reviewers with specific decisions.

Product Review

The second internal need for formalized peer review is to ensure the scientific credibility of PSNERP products, such as guidance documents, technical reports and data/metadata.

The following principles are proposed as a basis for responsible peer review. Peer review must be characterized by:

1. Effectiveness—an effective process for peer review is essential to promote academic integrity
2. Competence—reviewers should have the expertise to provide an authoritative review
3. Usefulness—procedures for reviews will be followed in a timely fashion and that reviewers' comments will be constructive
4. Security—has confidence that the peer review process minimizes the risks of bias and that reviewers will not take unfair advantage of privileged information

Many organizations and institutions have guidelines dealing explicitly with the responsibilities of peer reviewers, such as those of the American Chemical Society (1996), the Society for Neuroscience (1999), and the Council of Biology Editors (CBE Peer Review Retreat Consensus Group, 1995). Some of these documents and the principles discussed above are a basis for guidelines that should be followed by peer reviewers[3]:

1. Responsive
   Reviewers are responsible for following the instructions for completing a review and doing so in a timely fashion. Failing to do so undermines the review process.
2. Competent
   Although a reviewer may not be an expert in every aspect of the review, the assignment should be accepted only if he or she has adequate expertise to provide an authoritative assessment. A reviewer who does not have the requisite expertise is at risk of accepting a submission that has substantial deficiencies or rejecting one that is meritorious.
3. Unbiased
   Reviewers' comments and conclusions should be based on an objective consideration of the facts, exclusive of personal or professional bias. To the extent possible, the system of review should be designed to minimize actual or perceived bias on the reviewer's part.
4. Confidential
   Material under review should not be shared or discussed with anyone outside the designated review process unless necessary and approved by the editor, funding agency, or academic institution. Material submitted for peer review is a privileged communication that should be treated in confidence.
5. Secure
   A reviewer should not take scientific, financial, personal, or other advantage of material available through the privileged communication of peer review.

[3] Modified from USCD Responsible Conduct of Research Education Committee, http://ethics.ucsd.edu/courses/integrity/assignments/review.html

6. Constructive
   Reviewers' comments should acknowledge positive aspects of the material under review, assess negative aspects constructively, and indicate clearly the improvements needed.
7. Responsible
   Peer review depends, by definition, on the willingness of peers to participate as reviewers, usually without financial compensation. Nominal compensation is not unusual in governmental review processes, however.

Scientific Strategy and Direction

Peer review can also be a critically important aspect of program guidance, contributing to pivotal decisions and advising on strategic directions. Such guidance typically involves a body (formal committee or panel) of experts from outside the region, who are completely disassociated with the program but familiar with the ecosystems and scientific concepts required to address the regional issues. Such peer review can serve internal direction in (1) an *advisory* role or can (2) provide critical *review* of program progress and performance. In addition, these roles may be exercised *internally* (operating as an explicit component of the organizational structure) or *externally* (operating outside of the organizational structure, reporting to an over-seeing or independent body). Examples from the Van Cleve *et al.* (2003) Lessons Learned assessment include the advisory role of the National Technical Review Committee (NTRC) that is an internal component of the Louisiana Coastal Area Ecosystem Restoration Program (LCA) and the review role of the external National Academy of Sciences, National Research Council (NRC) independent review of the LCA.

There are some significant differences in the internal advisory vs. external review roles:

- Internal advisory bodies do not always examine the fine detail aspects of a program, but more the program's fundamental goals and objectives, the strategic approach to addressing them and the organization structure and decision-making process. When applied most effectively, advisors are involved early in the program and meet periodically to review the program at critical stages, in an adaptive mode. Reporting is often brief and often the most critical exchange is verbal review with the program staff. They often report directly to a program's technical staff, but copy their advice to management levels.
- External review bodies typically evaluate a program nearing its completion, or at least late in its maturity. The primary goal is often to assess whether or not the program has met its goals and objectives, and to provide pivotal evaluation for the decision of whether or not to continue a program. Such review panels or committees may stipulate their own approach to assessing the program, independent of the program or its sponsor.

One example of how these different levels of peer review can contribute to the integrity of a large, ecosystem restoration program is illustrated by the South Bay Salt Pond Restoration Project's[4] Program Plan (Fig. 1). In this case, the Science Team is the

[4] See http://www.southbayrestoration.org/index.html

Project's internal core advisory group. It is a large team, under the direction of a Lead Scientist, who together provide technical support, knowledge-building, and peer review support to the Project Management Team, Stakeholder Forum, and technical Work Groups. The Science Team functions in a technical advisory and peer review role and is prohibited from participating on any consultant teams that are hired to design elements of the plan and/or undertake environmental compliance work. The external National Science Panel, on the other hand, is composed of national and locally-recognized experts familiar with large-scale wetlands restoration efforts and knowledgeable about application of adaptive management protocols and long-term monitoring. The Panel's role is to provide critical science oversight to the overall planning process and periodic review of local technical investigations pertaining to the restoration plan design.

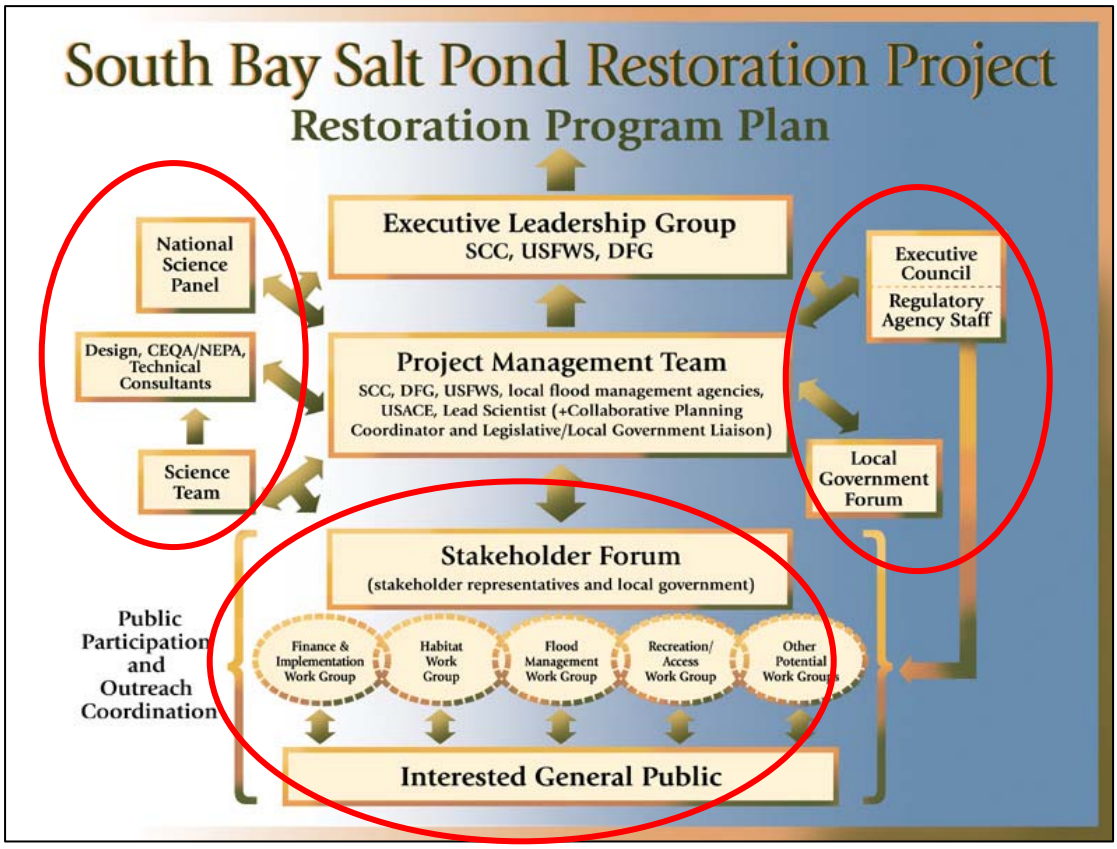


Figure 1. Structure of South Bay Salt Pond Restoration Program, indicating position of peer-review and advisory bodies within overall organizational structure.

Programmatic Structure

Designing the structure of a complex restoration program, such as the PSNERP General Investigation, is a difficult task with seemingly endless alternatives to integrating and balancing science, management, governance and evaluation (VanCleve *et al.* 2004).

PSNERP Peer Review

The integrity and effectiveness of scientific investigations associated with PSNERP require peer review, preferably in the multiple programmatic levels described above. We recommend that PSNERP establish peer review at three levels:

1. Proposal and Product Review
2. Strategic Science Review
3. Program Review

Research Proposal and Product Review would provide the periodic review required for proposals and products from and to PSNER. These would be based on an internal review process conducted by anonymous, independent experts not associated with the program.

To prevent real or perceived conflict of interest, reviewers would be limited to individuals not related to any on-going PSNER research or other direct or contractual activities. The reviewers and their disciplines would vary depending upon the topic of the review, but their expertise should overlap extensively with the proposal or product topic. Review of PSNER products (e.g., reports, manuscripts, datasets) would typically be based on mail/e-mail exchanges. Proposal reviews would likely involve a combination of mail/e-mail review and panel meetings. Review participants may be volunteers (as is often the case for proposal and manuscript review if volunteers are allowed to donate their labors by applicable Federal and State laws) or be compensated on a review-by-review basis.

Strategic Science Review would involve a standing panel or committee of nationally-recognized technical experts that would be incorporated at the early stages of the PSNER. These experts would provide scientific guidance and oversight of the overall program, particularly at critical stages in formulation and implementation of science initiatives. Preferably, the composition would be multidisciplinary, including at least the following scientific disciplines: coastal physical oceanography or wetland hydrology; geomorphology or sedimentology; coastal systems ecology; restoration engineering; fish and wildlife ecology; information management; and socioeconomics. Members would be drawn from both the region and the nation as available; as in the other peer review, strict conflict of interest rules would also apply to Strategic Science Review panelists. They would meet periodically (e.g., at least twice per year) to review both status of the PSNER science (e.g., *vis a vis* a PSNER "all-scientists" meeting) but also at important junctures in evolution of the Science Plan. The panel would interact principally with the PSNER technical staff and participants but report their assessments and recommendations directly to the PSNER steering and management levels. Participants would be compensated on an on-going contractual basis.

Program Review would require a less frequent (e.g., every other year?) assessment than the *Strategic Science Review* but would address the broader goals and purposes of the PSNER on the scale of a NRC review but with continued involvement rather than a one-time review. It would be composed of both national (or international?) and regional experts, including representatives of scientific and technical expertise, social scientists and stakeholders. Optimally, members would have some experience in large, ecosystem-scale restoration in other regions (as might be represented by key individuals involved in the case study programs reviewed in Van Cleve *et al.* 2003). While their background should be science based, their perspective should be programmatic, e.g., to ensure that science is most effectively deployed and managed toward the goals of the PSNER. They would report principally to program management. Participants would be compensated on an on-going contractual basis for each review period.

Summary

In considering the applicability and need of rigorous peer review in PSNERP, we echo the recent ESA[1] recommendations, paraphrased here:

1. **Engage the most competent scientists, to ensure that they bring the necessary scientific knowledge and objectivity to reviewing the matter at hand.**
2. **Insulate the scientific review process from politics as much as possible, with oversight vested in scientists and science managers.** "The agencies must be

trusted to perform the task of constituting and overseeing fair and independent scientific peer review efforts, without interference from political entities."

3. **Recognize that even the best scientific peer review cannot give policy makers the "right" answer.** But, it can provide assurances that rigorous conclusions logically follow from the results.
4. **Scientific peer review must have programmatic flexibility.** Overly rigid programmatic processes for scientific peer review of the body of science underlying policy decisions will result in inefficient use of time and resources. For example, it may be overly prescriptive to stipulate the number of reviewers, how they are selected, the questions they must answer, or the type of report they must produce.
5. **All scientific peer review must be based upon an assumption of integrity.** Fair reviews are the product of professional standards of conduct that are a fundamental component of training in scientific research, and the credibility of scientific peer review will ultimately rest on the presumed integrity of the reviewers.
6. **Acknowledge the differences in professional culture that often divide scientists, policy makers, and the public.** Science is inherently uncertain and there will always be unanswered questions and areas where more research is needed. However, acknowledging uncertainty should not be equated with-an inability to draw conclusions; managers often must act without complete certainty. Scientific peer review, properly earned out by competent peer scientists, can reassure managers, decision makers, and the public that such difficult decisions are based on research that represents the current state of our scientific understanding. The academic model of peer review calls on reviewers to be as critical as possible. Results from scientific peer review that highlight uncertainties, questions, and alternative explanations do not mean that the science was not well done or that its findings are invalid. Authors are able to make improvements where they can and so that the weaknesses of the work are understood and acknowledged.

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