SKAGIT RIVER FLOOD DAMAGE REDUCTION AND ECOSYSTEM RESTORATION PROJECT
FEASIBILITY STUDY
SKAGIT COUNTY, WASHINGTON

PROJECT MANAGEMENT PLAN

***Prepared By*:**

U.S. Army Corps of Engineers

Seattle District

***In Coordination With*:**

Skagit County

PMP – Last Revised 9/10/07

US Army Corps of Engineers ®
Seattle District

SKAGIT COUNTY

SECTION 1 – INTRODUCTION

1.1 OVERVIEW AND AUTHORITY

This document is a revised Project Management Plan (PMP) for the Skagit River, Washington, Flood Damage Reduction and Ecosystem Restoration Project feasibility study. It is a revision of the original PMP attached to the July 28, 1997 Feasibility Cost Sharing Agreement between the Seattle District, U.S. Army Corps of Engineers (Corps) and Skagit County. It covers study tasks and activities that will result in formulation and technical evaluation of measures and an evaluation of an array of alternative flood damage reduction plans from which a national economic development (NED) and locally preferred plan will be identified and documented. Findings from the study to this point in time, combined with consideration of new flood damage reduction measures and ecosystem restoration measures, have resulted in additional technical study requirements for the feasibility study.

The revised PMP identifies Federal and non-Federal funding requirements and assigned responsibility for performing identified studies and activities required to complete the feasibility study phase. The PMP provides a detailed task and schedule for the expenditure of the Federal funds and a comparable level of non-Federal cash and sponsor in-kind services. The attached schedule assumes the timely availability of full Federal and non-federal funding. Authority for the feasibility study is derived from Section 209 of the Flood Control Act of 1962 (Public Law 87-874). The current feasibility study was initiated in 1997.

1.2 PROJECT AREA LOCATION

The Skagit River basin is located in northwest Washington State and has a total drainage area of 3,115 square miles. The Skagit River originates near the 8,000-foot level of the Cascades Mountains in British Columbia, Canada and flows south and then west to the Skagit delta where it discharges through two distributaries – the North Fork and South Fork – to Skagit Bay. The major cities on the Skagit River delta – Mount Vernon, Burlington, Sedro-Woolley, and LaConner – lie about 60 miles north of Seattle, Washington. The entire American portion of the basin is within Washington Congressional District No. 2. The basin extends about 110 miles in a north-south direction, reaching 28 miles into British Columbia, and approximately 90 miles in an east-west direction between the crest of the Cascade Mountains and Puget Sound. The project area for the feasibility study encompasses the Skagit River watershed from Ross Dam reservoir to Skagit Bay. The Skagit River floodplain contains about 22,000 acres east (upstream) of Sedro-Woolley (RM 22.4) and 74,000 acres west (downstream) of Sedro-Woolley. Principal tributaries of the Skagit River are the Sauk, Baker, and Cascade Rivers. Seattle City Light operates three hydroelectric dams on the Upper Skagit River (Ross, Diablo, and Gorge), and Puget Sound Energy operates two hydroelectric dams on the Baker River (Upper Baker and Lower Baker). The Corps has a federally authorized flood damage reduction project at the Upper Baker Dam, and coordinates flood storage at Ross Dam.

1.3 PROJECT BACKGROUND

A Corps Reconnaissance Report was prepared in May 1993, identifying a Federal interest in pursuing the feasibility phase study to investigate, in detail, flood damage reduction measures in the

Skagit River basin. In July 1997, Skagit County and the Corps executed a Feasibility Cost Sharing Agreement (FCSA) to initiate feasibility studies. The preliminary project plan described in the report included the following: improving the existing levee system along the lower river to provide a high level of protection (100-year) for urban areas of the Skagit River delta, with lesser protection for rural areas, providing levee overflow sections or control structures at critical locations in rural areas designed to permit levee overtopping without catastrophic failure, and constructing new off-river levees or dikes to channel overflow water away from developed urban areas. In May 2003 the 1997 FCSA was amended to increase the sponsor work-in-kind. In 2003 Skagit County requested a more extensive analysis of the extent to which existing hydroelectric dams in the upper basin could provide additional flood control storage, thereby reducing flood damages in the floodplain. This interest and awareness was initially triggered by pending Federal Energy Regulatory Commission (FERC) relicensing of the Puget Sound Energy Baker River Hydroelectric Project dams located in the upper basin. In February 2004 the FCSA was amended to provide interim funding for the reevaluation of the hydrology and hydraulics (HH) for the Skagit Basin, and to fund studies through the evaluation of measures and the selection of preferred alternatives. Funding levels under this FCSA were exhausted prior to completion of the without project report due to extensive discussions with the County over the Corps HH results. This required the execution of an interim FCSA in April 2007 to fund a re-scoping of the remaining work needed to complete feasibility, including the completion of the without-project report and evaluation of measures and alternatives.

The original focus of the feasibility study, as scoped in the June 1997 PMP, was to formulate solutions to severe flooding problems in the study area. During execution of the early technical studies, the need for ecosystem restoration planning was identified to address new environmental challenges including recent listings of endangered species such as Puget Sound Chinook salmon and bull trout, and the potential listing of Coho salmon and steelhead in the near future. The Corps and Skagit County determined that the incorporation of ecosystem restoration features into the design of a flood damage reduction solution was desirable to developing an acceptable and responsible plan. The addition of ecosystem restoration as a project purpose is consistent with Corps policy to insure compatibility between projects and the environment (Reference: Corps Environmental Operating Principles). The amended FCSA in 2004 included funds for environmental restoration.

1.4 STUDY PURPOSE

The purpose of the feasibility study is to formulate and recommend a comprehensive flood damage reduction plan for the Skagit River floodplain that will reduce flood hazards and damages in the project area. The feasibility study will also investigate complimentary measures to restore ecosystem functions and processes to benefit fish and wildlife in the project area. The feasibility phase of project development involves technical studies to assess the effectiveness, efficiency, acceptability, and completeness of a range of alternative solutions to serious flooding problems, identify potential early action flood damage reduction measures, develop a mitigation plan, and identify ecosystem restoration opportunities in combination with the flood damage reduction measures. The implicit intent is that the recommended plan will have broad federal and non-federal support, will provide critically needed flood damage reduction benefits at an affordable cost in a reasonable time frame, will provide any required mitigation, and will provide cost-effective ecosystem restoration benefits in the project area. The support needed from the public, agencies, stakeholders, and political entities to get General Investigation studies authorized and funded is immense. It is the intention that the recommended project will meet a wide range of needs in the basin. Alternatives will be evaluated for sustainability, residual potential flooding risk,

conformance with Corps Environmental Operating Principles, and environmental, cultural, and socio-economic impacts.

1.5 PURPOSE AND SCOPE OF PMP

The purpose of a PMP is to be a roadmap for quality project delivery, guiding the project delivery team through the development of a Feasibility Report and environmental documentation that describes the formulation and evaluation of a flood damage reduction project and supporting ecosystem restoration projects. The PMP defines the scope of the study, tasks, and schedule for completing the feasibility study. It also serves to allocate responsibilities and costs between the U.S. Army Corps of Engineers ("Corps' or "Government") and Skagit County ("sponsor") and can be used to justify any necessary future negotiated modifications. The PMP provides a common understanding between the sponsor and the Corps as to needs and expectations for project delivery. Specifically, the PMP addresses the following:

- Study tasks as well as responsibility for their accomplishment.
- The estimated cost of individual study tasks and total study cost, including the negotiated cost of work items to be accomplished by the sponsor as in-kind services.
- Corps and other professional criteria to assess the adequacy of the completed work effort, including references to regulations and other guidance that will be followed in performing and evaluating the tasks.
- The schedule of performance and milestones (i.e., key decision points, including in-progress reviews, issue resolution conferences, etc.).
- The specific coordination mechanism between the Corps and the sponsor.
- Procedures for reviewing and accepting work as an in-kind credit performed by the sponsor.
- Technical review requirements for study products
- Public involvement

The PMP was developed consistent with the requirements of the Corps' Engineer Regulation (ER) 1105-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures, ER 5-1-11, U.S. Army Corps of Engineers Business Process, and related guidance. The Project Delivery Team and Executive Committee will use this PMP to facilitate effective communication and oversee the execution of study tasks within time and budget. Because the planning process is dynamic, the stated tasks, scope, budget, and schedule for completion may change. Any proposed changes in the PMP will be fully coordinated with the Executive Committee in accordance with the terms of the FSCA and the PMP will be updated and the FCSA amended as appropriate.

1.6 PROBLEMS AND OPPORTUNITIES AND PLANNING OBJECTIVES AND CONSTRAINTS

1.6.1 Problems and Opportunities

The following statements describe the **Problems and Opportunities** that we will encounter during the project.

Table 1. Problems and Opportunities

• The urban areas of the floodplain, principally portions of Hamilton, Sedro-Woolley, Mount Vernon, Burlington, and La Conner are at high risk of severe flooding.
• Rich and productive agricultural lands in the Skagit Valley are prone to severe flooding due to levee overtopping and failure.
• Major transportation corridors (including Interstate 5, State Route 20, and Burlington Northern-Santa Fe Railroad) and public infrastructure are also prone to severe flooding.
• Skagit River ecosystem structures, functions, and processes are degraded.
• There may be opportunities to make operational or structural modifications to increase flood control storage at existing non-Federal dams located in the upper watershed.
• Flood damages in the Skagit floodplain can be significantly reduced and large floods safely managed.
• The Skagit River basin has a number of separate Diking districts that oversee levees providing at a maximum 35 year recurrence interval flood protection. There is an opportunity to provide the basin with an overall flood damage reduction system.
• The City of Hamilton experiences frequent flooding in the upper basin. There is the potential for relocation of the town out of the Skagit River floodway.
• Ecosystem functions and processes in the Skagit River and delta can be improved to benefit fish and wildlife, including listed salmonid.

1.6.2 Planning Objectives and Constraints

Planning Objectives are statements that describe the results we want to achieve by solving stated problems and taking advantage of opportunities.

Table 2. Planning Objectives

Objectives:
• Reduce flood hazards and flood damage costs in the project area to the maximum extent practicable.
• Identify residual flooding risks, educate citizens, and develop emergency and land use plans to reduce potential catastrophic damages from residual flooding risk
• Reduce the adverse effects of flooding in the towns and cities of the Skagit River floodplain to the maximum extent practicable.
• Reduce the adverse effects of flooding on transportation delays to critical transportation corridors including, but not limited to, Interstate 5, State Routes 9, 20 and 536, and Burlington Northern-Santa Fe Railroad to the maximum extent practicable.
• Provide a systems wide approach to reducing flood damages in the populated areas of the basin
• Protect existing public utility infrastructure from flood hazards to the maximum extent practicable.
• Reduce the threat of catastrophic levee failure and reduce flood damages to the agricultural community and rural residents to the maximum extent practicable.
• Avoid adverse impacts to the socio-economic and cultural aspects of the basin
• Avoid adverse impacts to the aquatic and terrestrial environment to the maximum extent

practicable. Minimize and compensate for unavoidable adverse impacts to the aquatic and terrestrial environment.
• Explore potential ecosystem restoration sites that are compatible with recommended flood damage reduction projects.
• Recognize tribal nation rights within the basin
• Develop sustainable projects with minimal operation and maintenance requirements, minimal risk for catastrophic failure, and in conformance with Corps Environmental Operating Principles
• Restore existing degraded riverine habitats for salmonid and improve Skagit River ecosystem functions and processes.
• Insure active public input in the planning process
• Insure adequate technical review of study products and processes. Involve the public in the identification of an external peer review panel if required to complete technical review.

Planning Constraints are statements about things we want to avoid, or things you cannot change, while striving to meet objectives.

Table 3. Planning Constraints

Constraints:
• A project must comply, to the extent possible, with the objective of Executive Order (EO) 11988, Floodplain Management. It is the intent of EO 11988 – and Corps policy – to: ➢ Reduce the hazards and risk associated with floods; ➢ Minimize the impact of floods on human safety, health and welfare; and ➢ Restore and preserve natural floodplain values. ➢ Avoid inducing floodplain development unless it is the only practicable alternative;
• A project must comply with all other Federal, State, and local regulations, including environmental regulations.
• Design the project with features compatible with existing agricultural and open space uses in rural areas to the maximum extent practicable.
• Flood damage reduction measures must be formulated to be in compliance with Wild and Scenic River designation of significant portions of the Skagit River system upstream of Sedro-Woolley. • Recommended projects must support Corps Environmental Operating Principles.

1.6.3 Planning Assumptions

Planning Assumptions are statements defining the parameters of the study scope, and provide guidelines, decision milestones, and boundaries for the study scope. Projects are formulated to meet the objectives, subject to constraints. Assumptions are modified as needed during the study process to reflect changing conditions.

Table 4. Planning Assumptions

Assumptions:
• The life of proposed flood damage reduction and environmental projects is considered 50 years for the basis of economic, environmental, and benefit analysis.
• Areas being evaluated for flood damage reduction consist of the town of Hamilton and the area downstream from Sedro-Woolley to the mouth of the Skagit River.
• The impact evaluation area for the study goes from the Upper Baker Dam and reservoir to the tidelands of the Skagit River and Padilla Bay.
• Hamilton is being considered for nonstructural flood damage reduction and relocation. A Section 205 study completed by the Corps in the 1980's indicated that a structural solution for Hamilton is not feasible.
• Measures that have been dropped from the feasibility study by previous screening for economic or environmental reasons are: dredging of the Skagit River main stem to Sedro-Woolley, a Samish Bypass, and modifications to the Seattle City Light dams (excepting operational changes at Ross Dam).
• Skagit County will develop designs for the flood damage reduction and restoration alternatives. The Corps will conduct studies of the Baker Dams alternatives. The Corps will complete without project condition reports, coordinate technical reviews, evaluate alternatives, review the County's design work and determine inkind crediting , determine whether additional design work is needed, develop MCASES cost estimates, conduct the with-project hydraulics and FDA modeling, conduct project impact analysis, prepare and coordinate the feasibility report and EIS.
• The PMP will be reevaluated at key phases throughout the feasibility study as well as at the initiation of each fiscal year.
• This PMP covers the coordination between the Corps HH, ERS, and Planning to determine what data is already available for the Baker Dam analysis (developed in association with the Baker Dam relicensing process), an evaluation of PSE's Probable Maximum Flood, and a preliminary evaluation of operational and structural modifications to the dam from a hydraulics viewpoint. It includes costs for HH to develop a waiver package if needed for HQ to modify the Baker Dams. It does not include costs by structures, civil engineering, geotechnical, environmental, real estate, or cost estimating to conduct 35% design of a dam modification alternative. If a structural alternative is indicated during this PMP evaluation, the PMP will be revised to include this work.
• Hydropower losses to Baker Dams or Ross Dam from additional flood damage reduction storage are considered a project cost.
• The Baker Dams alternative is being carried as a "locally preferred plan". If it is recommended for federal implementation (based on environmental, socio-economic, cultural impacts, engineering feasibility and risks), costs greater than the alternative identified by the Corps as the National Economic Development Plan (least cost, most net benefits) will be paid 100% by the local sponsor. The local sponsor will pay all operation and maintenance costs for any recommended project, including hydropower losses, if pertinent.
• Climate change is not included in the HH model. There is currently no accepted protocol for dealing with potential climate change on basin hydrology. Sensitivity studies can be included during Planning, Engineering, and Design to address "worst case" scenarios of various climate outcomes. Potential increases in tidal flooding will be evaluated in project design to determine whether projects could fully function in a reasonable climate change situation.

- It is assumed that the Corps will not conduct detailed, expensive scientific and sediment studies of the impacts of a Padilla Bay bypass to eelgrass beds. The Corps will attempt to provide potential scenarios based on historic records. If the environmental impact risks of a bypass are not acceptable to the resource agencies, the alternative will not be recommended for Federal implementation.

- The scope of work presumes no permanent floodwall/levee system in Mount Vernon, nor a setback of Diking District 12 levees. Constructed projects will be incorporated into the Corps without project condition analysis as appropriate.

- The GI study will evaluate ecosystem restoration projects as a second-added project purpose. The primary project purpose is the identification of a flood damage reduction project. Preference will be give to restoration that is associated with the recommended flood damage reduction plan. All restoration projects need to have a hydraulic nexus, and be incrementally justified. Primary consideration will be give to providing necessary mitigation for the recommended plan. Ecosystem restoration projects, to count as increased project benefits, will need to exceed the requirements for mitigation.

SECTION 2 - PROJECT MANAGEMENT

2.1 PROJECT DELIVERY TEAM

The Project Delivery Team (PDT) is jointly led by the Corps Project Manager, Corps Environmental Coordinator, and the Skagit County Project Manager. The Corps Project Manager will be responsible for overall day-to-day management of the study. He/she will maintain close coordination with the PDT, to ensure timely prosecution of the study and compliance with the FCSA and PMP. The Corps' Project Manager and Environmental Coordinator will meet and confer with the Skagit County Project Manager on a regular basis throughout the study to discuss study progress.

The PDT is composed of qualified staff from the Seattle District, Skagit County, and the U.S. Fish & Wildlife Service (USFWS), supplemented by various consultants and contractors. The PDT members are listed in Table 5. Team meetings will be scheduled periodically, as required by study activities or issues.

Table 5 – Feasibility Study Project Delivery Team

Discipline	Name	Office Symbol/Agency	Telephone Number
Project Manager	Linda Smith	PM-PL-PF	(206) 764-6721
Assistant Project Manager	Rebecca Jahns	PM-PL-PF	(206) 764-3451
Project Manager – Skagit County	Lorna Ellestad	Skagit County	(360) 336-9333, ext 3131
Public Works – Skagit County	Ric Boge	Skagit County	
Plan Formulator	Linda Smith	PM-PL-PF	(206) 764-6721
Environmental Coordinator	Mike Scuderi	PM-PL-ER	(206) 764-7205
Fisheries Analysis – Skagit County	Jeff McGowan	Skagit County	(360) 336-9333
Archeologist	Ron Kent	PM-PL-ER	(206) 764-3576
Historian	Lauren McCroskey	EC-DB-AS	(206) 764-3538
Hazardous, Toxic, & Radiological Waste	TBD	EC-TB-ET	
Geotechnical – Soils	Cathie Desjardin	EC-DB-CS	(206) 764-3452
Hydrology and Hydraulics	Ted Perkins	EC-TB-HE	(206) 764-6927
Geomorphology	Karl Eriksen	EC-TB-HE	
Civil Design	Cathie Desjardin	EC-DB-CS	(206) 764-3452

Structural Design	TBD	EC-DB-AS	
Mechanical Design	TBD	EC-DB-EM	
Electrical Design	TBD	EC-DB-EM	
Value Engineer	Oscar Eason	EC-DB	
Economic Evaluation	Donald Bisbee	PM-PL	(206) 764-3713
Cost Engineering	Tim Sullivan	EC-CO-CA	(206) 764-3672
Real Estate	Kevin Kane	RE-AQ	(206) 764-3669
Real Estate - Skagit County	Lorna Ellestad	Skagit County	(360) 419-3421
Survey & Mapping	Kurt Noble	EC-TB-SY	(206) 764-3535
Survey & Mapping - Skagit County	Bob Prater	Skagit County	(360) 336-9400
Geospatial Data & Systems	Stephen Jesse	IM-PI	(206) 766-6455
GIS Coordinator - Skagit County	Geoff Almvig	Skagit County	(360) 336-9368
Legal Issues	Janet Smith	OC	(206) 764-6079
Program Budget	Patricia Bauccio	PM-CU	(206) 764-3785
Study Budget & Funding - Skagit County	Lorna Ellestad	Skagit County	(360) 419-3421
Budget Analyst	Leila Bantigue	PM-PL-PF	(206)764-3456
Contracting Issues	Contracting Div. staff	CT	(206) 764-3518
Public Affairs Office	Nola Leyde	PA	(206) 764-6896
Public Outreach-Skagit County	Dan Berentson	Skagit County	(360) 336-9400
Technical Review Lead	Patricia Robinson	PM-PL-PF	(206)764-3648

2.2 STAKEHOLDERS

There are a number of stakeholders associated with this project, many with multiple interests. The following stakeholders have had direct involvement in the study:

- ❑ Washington Department of Ecology
- ❑ Washington Department of Natural Resources
- ❑ Washington Department of Fish and Wildlife
- ❑ Washington Department of Transportation
- ❑ Swinomish Tribal Community
- ❑ Sauk-Suiattle Indian Tribe
- ❑ Upper Skagit Indian Tribe
- ❑ Skagit System Cooperative
- ❑ National Marine Fisheries Service
- ❑ U.S. Environmental Protection Agency
- ❑ U.S. Fish and Wildlife Service
- ❑ U.S. Forest Service
- ❑ Puget Sound Energy
- ❑ Seattle City Light
- ❑ Burlington Northern-Santa Fe Railroad
- ❑ Diking District 12
- ❑ Diking District 17
- ❑ Diking District 3
- ❑ Diking District 1
- ❑ Diking District 22
- ❑ Diking District 20
- ❑ City of Mount Vernon
- ❑ City of Burlington
- ❑ City of Sedro Woolley
- ❑ City of Anacortes
- ❑ Town of LaConner
- ❑ Town of Hamilton
- ❑ Town of Lyman
- ❑ Town of Concrete
- ❑ Skagit County Flood Control Committee
- ❑ Salmon Recovery Funding Board
- ❑ The Nature Conservancy
- ❑ Others

2.3 EXECUTIVE COMMITTEE AND VERTICAL TEAM

Members of the Skagit Study Executive Committee are identified in Table 6. Meetings of the Executive Committee will be scheduled, at a minimum, on an annual basis. More frequent meetings will be scheduled, as required.

Table 6 – Feasibility Study Executive Committee

Name	Position
Sharon Dillon	Skagit County, Chair, Board of Commissioners
Jim Voetberg	Skagit County, Public Works Director/County Engineer
Colonel Michael McCormick	Corps – Seattle District Commander
Mona Thomason	Corps – Chief, Planning Branch, Seattle
Linda Smith	Corps, Project Manager, Plan Formulation, Seattle
Ric Boge	Skagit County, Public Works Project Manager
Lorna Ellestad	Skagit County, Public Works Project Manager
PDT and Stakeholder Attendees	
Larry Wasserman	Skagit Systems Cooperative
Mike Scuderi	Corps- Environmental Coordinator, Seattle
Chuck Steele	Washington Department of Ecology (floodplain management)
	City of Mount Vernon, Mayor
	City of Burlington, Mayor
	City of Sedro-Woolley, Mayor
	City of Concrete, Mayor
	City of La Conner, Mayor
	Upper Skagit Tribe
Paul Wetherbee	Puget Sound Energy

Members of the Vertical Team include the Seattle District Commander, Chief of Planning, Chief of Program and Project Management, the project manager, Division Planning, and Headquarters Planning. Technical management will be included in the Vertical Team from the District, Division, and Headquarters as appropriate. The Vertical Team comprises the project Regional Integration Team, or RIT. Sponsors (Skagit County Commissioners, Skagit County Administrator, and Skagit county project managers) are also represented at RIT meetings. The Vertical Team resolves issues of Corps policy. They are brought into the study for the Feasibility Scoping Meeting (FSM), the Alternative Formulation Briefing (AFB), and for Issue Resolution Conferences (IRC).

2.4 ROLES AND RESPONSIBILITIES

2.4.1 Federal responsibilities

The Corps of Engineers will provide technical expertise in the areas of plan formulation, engineering, environmental, and economic analysis for the purpose of furthering the project during all phases. The Corps will also provide project management and guidance, such as coordination with agencies and local groups, attendance at site visits, technical review, and legal guidance.

2.4.2 Sponsor responsibilities

The local sponsor will, at minimum, provide project management support, such as regular meetings with the project team, site visits, technical reviews, and guidance on local project goals. The local sponsor should inform the project team of local issues that may affect the viability of the project. The local sponsor should also provide all necessary lands, easements, rights of way, relocations and disposal areas (LERRD) and rights of entry (if necessary) for the project site. The local sponsor shall provide 50% of the total feasibility study costs annually, in accordance with the Feasibility Cost Sharing Agreement and PMP. The nonfederal match may be provided as work in kind, provided it concurs with the elements of the PMP and/or is mutually agreed to in writing by the Corps. The local sponsor will provide real estate support for the preliminary evaluation of measures, provide public involvement opportunities, and develop alternative designs and costs.

2.5 STATUS REPORTING

The Corps Project Manager, in coordination with the Skagit County Project Manager, will prepare and distribute quarterly study status reports, with appropriate input from the Study Team. The reports will identify progress of work items during the period, projected and actual costs through the last reporting period, as well as document unresolved conflicts or policy issues requiring action by the Executive Committee. Project managers will provide quarterly financial reports to provide up-to-date accounting of study expenditures, including documentation and crediting of Skagit County in-kind services.

2.6 REVIEW AND ACCEPTANCE OF WORK

Work developed by the Corps technical staff will have quality review by the appropriate resource manager within the Corps. Inkind work provided by the sponsor and contract work will be reviewed by the Corps project manager and technical office prior to acceptance. All study documents and reports, whether from the Corps, a contractor, or the County, will require internal technical review before final acceptance. Technical reviewers will be selected by the Corps Centers of Expertise. Disagreements concerning crediting of work will be brought before the Executive Committee for resolution. An external Peer Review will be performed by a panel of technical experts for all aspects of the draft feasibility report/EIS prior to finalization. (A draft Peer Review plan is attached as an appendix. When approved, a final will be provided).

SECTION 3 – COST SHARING AND WORK BREAKDOWN STRUCTURE

Section 3 represents a description of the work breakdown structure and a summary of federal, non-federal cost sharing requirements.

3.1 FEASIBILITY STUDY WORK BREAKDOWN STRUCTURE

For accounting and administrative purposes, all flood damage reduction and ecosystem restoration study tasks performed as part of the overall feasibility study, including in-kind services, will be organized under a “Code of Accounts” format as required by ER 1105-2-100. This Code of Accounts has been broken down into a series of sub-accounts covering work activities performed

by a specific technical or administrative work element within the Corps. Functional elements responsible for work under each account code are described in detail later in the PMP. The Code of Accounts organization of tasks is called a Civil Work Breakdown Structure (CWBS). Table 4 provides the CWBS for the feasibility study. This CWBS is used for accounting and administrative purposes to track obligations and expenditures within the Corps of Engineers Financial Management System (CEFMS). The Work Category (WC) and Work Category Element (WCE) codes in CEFMS provide a representation of the study scope broken down into a hierarchy of activities. The codes are designated in CEFMS when in-house labor and requests for good and services are obligated, as well as when sponsor in-kind services are credited. The Corps Automated Information System, P2, tracks project schedule, activities, assignments, and milestones. This system is updated monthly with actual expenditures, including the reporting of completion of in-kind services. Reference Section 4 for a description of work tasks and codes.

3.2 FEASIBILITY COST SHARING

The amended Project Management Plan increases the feasibility study cost from $6,852,180 to $14,465,180, an increase in total costs of $7,613. Federal and non-Federal cost share requirements for the work plan are shown on Table 7. The work plan schedule presumes that the study is financed (federal and non-federal) to capability level each year, and that full funding is provided at the start of each fiscal year. Projects costs are shared 50% federal, 50% non-federal. The non-federal cost share may be provided with in-kind services as shown in the PMP. Crediting will be limited to those elements that are part of the approved PMP. Any changes in work effort must be agreed to by both the Corps and the sponsor prior to work being accomplished, and must be documented in an amendment to the PMP.

Table 7. Cost Share of Study Costs

Total Study Cost		**Non-Federal Cost Share**		**Federal Cost Share**	
Phase III	**$6,620,000**	**In-Kind**	**$3,310,000**	**Cash**	**$3,310,000**
		Cash	$ 0		
15% Contingency	**$ 993,000**		**$ 496,500**		**$ 496,500**
Total This Phase	**$7,613,000**		**$3,806,500**		**$3,806,500**
Previous Phases	$6,852,180				$3,426,090
In-kind			$2,322,589		
Cash			$1,103,501		
Total Study Costs	**$14,465,180**		**$7,232,590**		**$7,232,590**

SECTION 4 - PLAN FORMULATION, SCHEDULE, WORK TASKS

Section 4 describes the Corps Civil Plan Formulation Process, study schedule and milestones, and the tasks to complete feasibility. Work items include the codes for the Work Breakdown Structure.

Section 4.1 Plan Formulation. The following is a general description of the plan formulation process and study phases that need to be completed for the feasibility study. Reference: ER 5-1-11, Program and Project Management, 17 August 2001; ER 1105-2-100, Planning Guidance Notebook, Policy Guidance Letter No. 52, Flood Plain Management Plan, December 8, 1997,

Without Project Condition – The without project condition, and the future without project condition sets the baseline for the comparison of the efficiency and impacts of all alternatives. The Project Delivery Team (PDT) develops a future without project condition based on the economic life of the project (50 years). The future without project condition includes current trends and the inclusion of generally accepted changes in policy, laws, and development levels, etc. These assumptions are based largely on Skagit County planning documents. Without project conditions have been completed for Hydrology and Hydraulics and Economics, along with a levee failure analysis. Work still to be completed includes the without project condition reports and technical review for the following reports: Geomorphology for the lower and upper river basin, environmental conditions for the upper and lower basin (including cultural resources), evaluation of Other Social Effects and Regional Economic Development, and an updated economic damage report. The without project condition is the basis for a Corps Headquarter evaluation of the proposed project measures at the Feasibility Scoping Meeting (FSM), a mandatory milestone for vertical team coordination.

The Geomorphology studies and environmental studies for the Upper Skagit Basin will be conducted after the FSM, when the PDT has a clearer concept of what type of project could be recommended at the Baker and Ross Dams. Geomorphic and environmental evaluations already completed in support of the Puget Sound Energy FERC relicensing process for the Baker Dams will provide input for the preliminary analysis of measures. Once it is clear whether dam modifications will be carried through the alternatives analysis, as either a Locally Preferred Plan or a federally supported plan, technical studies for the Upper Skagit system will be initiated. The studies for the Upper Skagit system are so tightly tied to the modifications of dams that it is not in the Federal interest to initiate these studies until at least a preliminary evaluation of measures can be completed. The without project condition, and future without project condition, are critical to the analysis of the impacts of alternatives, and the development of a Mitigation Plan. The completion of the without project condition reports will not preclude the economic and engineering analysis of measures. Completed, technically reviewed Without Project Condition Reports are required for the Feasibility Scoping Meeting with Corps Headquarters on the plan formulation process. The FSM for the Skagit will follow completion and technical review of the reports for the Lower Basin, with discussion of what studies would be needed to complete the without project condition reports for the Upper Basin depending on the results of the analysis of the dams. Once the measures analysis for the dams is completed, an Issue Resolution Conference (IRC) will be held with Headquarters to discuss studies needed to further evaluate the dams, including waiver requirements.

Measures Analysis – The purpose of the evaluation and screening of measures is to methodically narrow down the range of individual potential projects so that funding and analysis is focused on those measures that have a Federal interest. A Federal interest for flood damage reduction measures is determined by a positive benefit-to-cost ratio, environmental acceptability, engineering feasibility, acceptable risk, and acceptable socio-economic impacts. Each measure can have multiple designs with corresponding differences in costs and impacts. For example, various levee setback distances will be evaluated for multiple water elevations. The evaluation of Upper Baker

Dam will consider multiple releases, with corresponding reservoir elevations. Ross Dam will initially be evaluated for 3 storage options.

Potential ecosystem restoration measures will be considered to meet potential project mitigation needs as well as to provide true ecosystem restoration. In order to count as restoration, the projects need to exceed the recommended plan's mitigation requirements. Ecosystem restoration measures will be evaluated for their ecosystem benefits versus costs, and their compatibility with flood damage reduction projects. While a benefit-to-cost ratio is not used, consideration is given to the amount and types of benefits versus costs to optimize Federal investment and environmental output. Restoration will be tied to flood damage reduction measures where possible. The Skagit River Watershed Council has developed a portfolio of restoration projects for the basin that predominately deal with the loss of wetland and riverine habitat. These projects will serve as a helpful starting place for both mitigation requirements and restoration. These projects were developed with the input of Skagit River tribal biologists, federal and state biologists, and Nature Conservancy and other NGOs. Projects include the removal of levees, addition of riparian plantings, removal of sea dikes, restoration of sloughs, creation of off-channel habitat, and the restoration of wetlands.

Nonstructural measures will be considered, particularly for the frequently flooded town of Hamilton, and for rural areas, including Cockreham Island and Hart's Slough. Nonstructural measures will include relocation, floodproofing, and improved emergency flood notification and evacuation plans. Residual risk will be a key concern for determining whether floodproofing of structures is adequate, or if relocation is required. For relocation projects, environmental benefits of removing structures and infrastructure in the floodplain will be considered along with the elimination of flood damages. In the 1980's an unfavorable Section 205 Detailed Project Report concluded there was no Federal interest in implementing structural flood damage reduction projects for Hamilton. There has been little change in Hamilton since to alter this determination. Therefore, the feasibility study will only evaluate nonstructural measures for the town.

The evaluation of measures is an iterative process. The first evaluation, which has been completed, is the hydraulic modeling of the measures to indicate their success in reducing flows for a variety of flood events. Next, measures will be run through the HEC-FDA model to determine damages reduced with each measure. Annualized damages prevented will be compared with preliminary annualized measure construction costs to provide an initial benefit-to-cost ratio for each measure. For those measures that have a positive benefit-to-cost ratio or those that are "locally preferred", real estate values based on tax values will be included in the next round of evaluation. Finally, remaining measures will be evaluated for significant environmental, risk, and socio-economic impacts. Public and stakeholder/agency input are important to the screening process. The matrix will be the basis of the Feasibility Scoping Meeting with the Corps Vertical Team. A public presentation of the measures will be provided to the County, tribes, and other stakeholders. The presentation will include a description of measures, the parameters of ranking, and the results of the comparison of measures. Environmental measures either to be used as project mitigation or for ecosystem restoration will be developed in coordination with the County and stakeholders, and will focus on environmental benefits versus implementation costs. All Corps projects are required to conform to the Environmental Operating Principles, which insure that the projects have minimum environmental impacts, allow for good stewardship of the nation's resources, and are readily sustainable.

All measures are shown in Table 8 and 9. The basis of the evaluation of measures will are the preliminary design and costs developed by the County's consultant and designs and costs prepared

by the Corps in 2001. The evaluation of damages reduced will be based on the economic analysis completed in 2007 by the Corps and its contractors. Preliminary environmental evaluation of measures will be based on available technical data provided by resource agencies, tribes, Puget Sound Energy, the County, and the Corps. Hydraulic efficiencies of measures will be based on the Corps Hydrologic and Hydraulic evaluations from 2005-2006.

Dam Waiver Package Decision Milestone – After the evaluation of measures is completed, the PDT will make a presentation to the Executive Committee of the results of the preliminary analysis of the "locally preferred plan" for structural or operational modifications to Upper and Lower Baker Dams, and Ross Dam. The Project Management Plan will need to be revised to incorporate more detailed costs for the design and evaluation of these measures. Seattle District will need to initiate discussions with Corps Headquarters and Division at an Issue Resolution Conference (IRC) concerning potential waivers to Corps engineering standards for modifications to the dams. If a waiver submittal is required, the PDT will need to scope the work required to complete a waiver package. Without project geomorphologic and environmental studies for the upper basin will be initiated following the milestone decision. The preliminary evaluation of measures will rely on the considerable existing information for the Upper Skagit system. Resource agency, tribal, public, and stakeholder/NGO input will be needed to finalize the environmental studies required for evaluating the dams.

Feasibility Scoping Meeting – The Feasibility Scoping Meeting (FSM) is an opportunity for the Corps Vertical Team (District, Division, Headquarters), the local sponsor, and key stakeholders to evaluate whether the without project conditions are correctly stated, measures under consideration are adequate, and whether the screening criteria is sufficient. During the FSM, the Vertical Team will commonly visit the study area; meet with the PDT and local sponsor. The FSM process results in a memorandum noting any Vertical Team concerns, and ultimately providing assurance that the feasibility evaluation process is adequate. The FSM will be held early in the measures evaluation process.

Alternatives Analysis – Measures selected through the screening process for further evaluation, based on benefit-to-cost ratios, environmental impacts, residual risk, engineering feasibility, and socio-economic impacts, will be combined into alternatives. These alternatives are screened through the HEC-FDA model and through public, agency, and stakeholder input to determine the combination of measures that provides the greatest net benefits (economic, social, and environmental). This alternative becomes the National Economic Development Plan (NED), the project that the Corps uses as a basis for future cost sharing for construction. It is possible that the local sponsor may have another preferred alternative, known as the "Locally Preferred Plan" (LPP). If this plan meets Corps requirements, it can be recommended in the feasibility report. However, if the costs for implementation exceed the costs of the NED plan, the local sponsor is required to pay 100% of these costs. Input from the sponsor, public, agencies, tribal nations, and stakeholders is key to the evaluation of alternatives.

Selection of Preferred Alternative and 35% Design – The evaluation of alternatives will normally produce a National Economic Development Plan (NED), and a Locally Preferred Plan (LPP) that warrant detailed evaluation to 35% design. For the purposes of this Project Management Plan, it is assumed that the recommended plan would include a combination of levees, bypass channels, and nonstructural methods. The inclusion of modifications to dams would require a plan rescope. Measures that are recommended by the screening analysis are combined to develop

alternatives. These are evaluated to develop a plan that has the greatest net benefits, is environmentally sound, has acceptable risk, is engineeringly acceptable, and has minimal socio-cultural impacts. The combination of measures that provides the greatest net benefits is the National Economic Development Plan (NED). This project serves as the basis for cost sharing by the Corps in construction. The local sponsor may prefer another alternative (Locally Preferred Alternative – LPP) which is then also carried forward for economic and environmental evaluation. Any costs for the LPP that exceed the costs of the NED are paid for 100% by the local sponsor. Costs for mitigation, construction, monitoring, hydropower losses, and operation and maintenance are included in the economic costs of the recommended plan. Project construction is cost shared 65% federal, 35% non-Federal. These costs include mitigation and monitoring. Operation and maintenance costs become a local responsibility after project construction. The recommended plan (NED and LPP) become the basis for the environmental impact statement and other environmental documents.

Technical Reviews – Completed study products, and processes, whether produced by the Corps, sponsor, or a consultant, require independent technical review (ITR). ITR reviewers are selected by Corps Centers of Expertise for the particular technical area, and are funded as a cost shared study cost. Technical reviewers will insure that study products meet Corps criteria and quality, that appropriate models are used, and that data is interpreted correctly. Policy review remains with the Vertical Team, including Division and Headquarters staff. In accordance with EC1105-2-408, a draft Peer Review Plan has been developed for this study which outlines technical review requirements. The Review Plan will receive technical review by the Corps Centers of Expertise for flood damage reduction and ecosystem restoration and then be posted for public access on a Corps website. Local cities and the diking districts in the Skagit Basin have requested that an external peer review panel be used to review the final feasibility report/EIS prior to approval by the Chief of Engineers. A technical review panel will be selected prior to the AFB (see below) with input from the public, resource agencies, tribes, NGOs, and the Corps. This panel will not include Corps participants, but will have nationally recognized experts in the fields in question. Costs for technical reviews are cost shared with the local sponsor. Reference: EC 1105-2-407, Planning Models Improvement Program, Model Certification, May 31, 2005, EC-1105-2-408, Peer Review of Decision Documents, May 31, 2005, EC-1105-2-409, Planning in a Collaborative Environment, May 31, 2005.

Report Documentation – This task includes the completion of the Draft Feasibility Report (FR) and environmental impact statement (EIS), including all technical appendices and environmental documentation Reference: EC 1105-2-405, Division Engineers Submittal of final Decision Document for Projects Requiring Specific Authorization, Corps of Engineers March, 31. 2005.

Alternative Formulation Briefing – The Alternative Formulation Briefing (AFB) is held at the completion of the draft feasibility report/EIS and provides the opportunity for the Vertical Team to review the screening and selection of alternatives and draft report documents prior to their submittal to the public. This briefing normally includes a field trip to the project site with the Vertical Team, sponsor, and key stakeholders. The AFB results in a memorandum from the Vertical Team concerning any outstanding issues the Vertical Team may have concerning the feasibility study. The resolution of all comments results in approval by the Vertical Team of the study process to date. Reference: ER-1105-2-100, Planning Guidance Notebook, Appendix G.

Report Approvals – This task includes the submittal, routing and approval process for the Draft

Feasibility Report (FR)/EIS package, including the revisions, Final FR/EIS and Record of Decision (ROD). A Summary Report and draft Chief of Engineer's report. A draft Project Cooperation Agreement (PCA) and a draft Design Agreement is also provided. The draft Skagit Feasibility Study will have external Peer Review by a panel of technical experts at the request of local stakeholders. Report approval requires the signature of the District and Division Commanders prior to submittal to Headquarters. During Headquarter review, the local sponsor and key District personnel, including the District Commander, participate in the Civil Work's Review Board with the Vertical Team and Chief of Engineers staff. This meeting is normally held in Washington D.C. A positive recommendation is required for the submittal of the feasibility report/EIS to the Chief of Engineer's for signature. With approval by the Chief's office, the approved feasibility report is submitted to the Office of Management and Budget for their approval, and then to Congress. A Water Resource Development Act (WRDA) is normally required to obtain authority for project construction. A Water and Energy Appropriations Bill is required to obtain funding for construction. Once the feasibility report/EIS is signed by the District Commander, the Corps can initiate the Planning, Engineering, and Design (PED) phase and sign a Design Agreement with the local sponsor to conduct detailed project design. Reference: EC1105-2-406, Planning District Engineers Presentation of Final Decision Document for Projects Requiring Specific Authorization, March 31, 2005.

4.2 STUDY MEASURES

Skagit County and the Corps have developed an array of structural and nonstructural measures for flood damage reduction, and a preliminary list of ecosystem restoration measures (based on the Skagit River Watershed Council's recommendations). These measures have been presented to the public at several workshops in Skagit County, and to resource and tribal groups. Several measures have been eliminated based on high maintenance or construction costs or unacceptable environmental impacts. All measures that have been examined and rejected for further study are shown in Table 8. Measures to continue in the evaluation are shown in Table 9.

Table 8. – Eliminated Flood Damage Reduction Measures

Measures screened out	**Rationale**
• Samish diversion channel	Significant environmental impacts and concerns. Would allow mixing of ESA fish species across basins
• Dredging of Skagit River from bay to Sedro Woolley	Not hydraulically viable, nor environmentally acceptable. High maintenance costs.
• New dams with flood control storage	Not institutionally viable due to "Wild and Scenic River" status of Sauk River and Skagit River upstream of Sedro-Woolley.
• Modifications to Seattle City Lights Gorge and Diablo Dams	Gorge and Diablo too small to provide significant storage.
• Debris Management	Washington Department of Transportation (WDOT) evaluation limits feasible project to current County/BNRR emergency work
• Three bridge corridor – Bridge Modifications	High costs of replacement for I-5 bridge, railroad bridge. BNRR does not support replacing their bridge. WDOT at some point will reconstruct the I-5 bridge. At that time, modifications in design can reduce flood potential. Without bridge modifications, constriction remains severe at the 3-bridge corridor.
• Cockreham Island, River Bend storage	Insignificant storage area, potential for ecosystem restoration

Table 9 – Remaining Measures to be Evaluated– by Type

Modifications of Existing Dams **operational and structural changes**		**Description**
1	Addt'l storage at Upper Baker Dam	Evaluating 85K, 100K storage, 110K storage, altered timing of rule curve release during at Upper Baker Dam during flood. Assuming operational changes to the dams, or use of PSE provided data for physical dam modifications. Changes to Ross Dam would be operational only.
2	Addt'l storage at Lower Baker Dam	
3	Addt'l storage at Ross Dam	
Additional Storage (non-dam related)		**Description**
4	Nookachamps storage	Levees/weir to store peak flow in Nookachamps Creek
5	Hart's Slough Storage	Off-channel storage, levees and gate
Levees – Modifications, setbacks and flood walls		**Description**
6	Sterling Levee	Evaluating alignments to eliminate flooding upstream of Burlington.
7	Setback levees downstream of 3-br. Corridor	Setback levees on main-stem Skagit River and North and South Forks. May entail modification of Division Street bridge and North Fork and South Fork bridges.
8	Three bridge corridor – Setback levees	Setback levees in transportation corridor.
9	Overtopping levees (Swinomish Diversion, Fir Island, Mount Vernon)	Allow controlled overtopping of levees
10	Setback Main stem and North fork only	Setback levees on main stem Skagit and North Fork
11	Raise and strengthen existing levees	Keep existing levee alignments, raise levees
12	Setback Levees with Excavation	Setback levees, excavate material riverward of levee
13	Setback Levees w/o excavation	Setback levees from 3 bridge corridor, for left bank, right bank, and left and right banks of N. and S. Forks
14	Improve levee system – Left bank	Left bank levee improvements only
15	Improve levee system – Right bank	Right bank levee improvements only
16	Mount Vernon Floodwall	To protect Mount Vernon business district, either as a stand-alone measure or in combination with setback levees.
Bypass Systems		**Description**
17	North Swinomish Diversion (Avon bypass)	Bypass from left bank of Skagit River to Padilla Bay or Swinomish Slough.
18	Fir Island Bypass	Bypass from north Fork Skagit River through to Skagit Bay
20	Mount Vernon Bypass	Right bank bypass through river bend downstream of Mount Vernon. An alternative to a floodwall and setback levee in this river reach.
Relocation/Ecosystem Restoration		**Description**
23	Cockreham Island	Removal of levee, restoration of riparian habitat
24	Estuarine restoration projects (misc)	Removal of agricultural dikes/tide gates, restoration of sloughs, marine shoreline
25	Riparian restoration projects (misc)	Removal of levees, restoration of riparian vegetation, off-channel habitat.
Non-structural		**Description**

26	Non-structural measures	May include flood proofing, relocation, purchase of floodway easements, flood warning and the establishment of evacuation routes. May be combined with other measures.
27	Debris Management	Removal of debris from 3 bridge corridor, other system bridges to prevent blockage during flood events
28	City of Hamilton	Relocation/floodproofing of town
Ring Dikes		**Description**
28	Sedro Woolley	Levee system to protect Sedro-Woolley
29	Sedro Woolley STP	Ring dike to protect treatment plant.
30	Sedro Woolley Hospital	Ring dike to protect hospital
31	Burlington	Ring dike to protect city of Burlington
32	North Mount. Vernon	Ring dike to protect north Mount Vernon
33	West Mount Vernon	Ring dike to protect West Mount Vernon
34	East Mount Vernon	Ring dike to protect East Mount Vernon
35	La Conner	Ring dike to protect La Conner
36	Clear Lake	Ring dike to protect Clear Lake
37	Anacortes Water Treatment Plant	Ring dike to protect Water treatment facility

4.3 SCHEDULE

The schedule attached as an appendix represents the schedule at the time of signature of the 2007 FCSA. The feasibility schedule will be reevaluated at the beginning of each fiscal year based on available Federal and non-federal funding, and to reflect any changes in study assumptions or tasks based on current information. Schedule and budget are managed within the Corps schedule and budgeting software P2. Key study milestones are listed in Table 10.

Table 10 – Project Milestones

Task	Milestone
Complete Preliminary 10% Measures Analysis	November 2007
Complete 10% Measures Analysis including Baker	January 2008
Dam Waiver Package Decision	February 2008
Feasibility Scoping Meeting	April 2008
Complete Dam / Operation Alternatives Analysis	August 2008
Submit Preliminary Waiver Package	September 2008
Complete Alternatives / Impact Screening	March 2009
Select Recommended Plans	April 2009
Complete Mitigation Plan / 35% Design	October 2009
Complete 75% FR/EIS	January 2010
Alternative Formulation Briefing	April 2010
Sign and Submit Final Feasibility Report	September 2010

Table 11 shows the breakout of funding requirements by study task for federal and nonfederal funding.

Table 11. Feasibility Cost Share by Task (phase)

$ in $1,000	TOTALS	Federal	Non-Federal
Project Management	**$800**	$450	$350
Budget/P2 management			
Public Outreach	**$105**		$105
Without Project Condition	**$540**	$370	$170
Dams – Without Project Condition	**$450**	$300	$150
Without Project Condition Report – Independent Technical Review	**$135**	$90	$45
10% Design Analysis	**$350**	$350	
10% Design – Baker Storage	**$275**	$275	
Decision - Re-Scoping	**$75**	$50	$25
Screen / Evaluate Alternatives	**$490**	$270	$220
35% Design Analysis	**$1,420**	$145	$1,275
35% Design – Baker Storage	**$280**	$260	$20
Milestone Decision – Baker Storage	**$50**	$50	
Waiver Package – Baker Storage	**$450**	$450	
Feasibility Report (FR) and Environmental Impact Statement (EIS) Documentation	**$1,000**	$500	$500
FR and EIS Approvals	**$200**	$100	$100
SUBTOTAL	**$6,620**	**$3,310**	**$3,310**
Contingency (15%)	**$993**	**$496.5**	**$496.5**
Total	**$7,613**	**$3,806.5**	**$3,806.5**

Table 12 shows the breakout of funding requirements by study phase for each fiscal year for federal and nonfederal funding.

Table 12 Feasibility Tasks by Fiscal Year (FY)

Feasibility Costs by Fiscal Year (FY) in $1,000s							
Work Task	FY08		FY09		FY10		**Task**
	Fed	*Non Fed	Fed	Non Fed	Fed	Non Fed	**Totals**
Project Management	$150	$125	$150	$125	$150	$100	**$800**
Public Outreach		$35		$35		$35	**$105**
Without Project Condition	$70	$20	$300	$150			**$540**
Dams - Without Project Condition			$300	$150			**$450**
Without Project Condition Report – Independent Technical Review	$15	$10	$25	$10	$50	$25	**$135**
10% Design Analysis		$350					**$350**
10% Design - Baker Storage	$275						**$275**
Decision - Re-Scoping	$50	$25					**$75**
Screen/evaluate alternatives	$120	$120	$150	$100			**$490**
35% Design Analysis	$20	$750	$75	$475	$50	$50	**$1,420**
35% Design Analysis - Baker Storage			$260	$20			**$280**
Milestone Decision - Baker Storage			$50				**$50**
Waiver Package - Baker Storage					$450		**$450**
Feasibility Report (FR) and Environmental Impact Statement (EIS) Documentation		$150	$100	$100	$400	$250	**$1,000**
FR and EIS Approvals					$100	$100	**$200**
							$6,620
Corps	$700		$1,410		$1,200		**$3,310**
*(Includes FY 07) County		$1,585*		$1,165		$560	**$3,310**

4.4 FEASIBILIY STUDY WORK ITEMS

Below is a brief narrative description of the individual feasibility phase tasks, organized in accordance the prescribed work breakdown structure (WBS). The WBS for each task and subtask corresponds to the work category element in the corps of Engineers Financial Management System or CEFMS (P2 WBS is in parenthesis).

4.4.1 PUBLIC INVOLVEMENT JA000 (22A00)

Public Involvement will consist of activities to inform and obtain input from the public during the planning process. A Communication Plan is presented in Section 9 of the PMP. The study will

present for public consideration and comment potentially controversial measures for handling floodwaters and reducing damages in the floodplain. Ecosystem restoration and mitigation issues will also be presented. A key consideration to present to the public is the level of residual risk with proposed projects. No flood damage reduction project can entirely protect a population. Some types of projects (e.g. levees) can lead to more catastrophic flooding when exceeded than others (bypass channels). Floodproofing structures may reduce damages, but can leave people in dangerous isolation during flood events. The education of the public on their risks is a prime concern of the feasibility study. The public involvement/outreach process will include workshops, meetings with individual stakeholder groups (e.g. businesses, Watershed Council, tribal nations, Puget Sound Energy, Diking Districts and cities). A Corps website, linked to the Skagit County website, will also provide key contacts and study updates. Skagit County will take the lead for public involvement. Public meetings will be used to obtain formal public comment on the draft feasibility study/EIS, and a formal review process for the receipt of written comments will be used. The Corps will hold environmental scoping and meetings with tribal nations in conformance with our environmental scoping process. The public will be encouraged to review the PMP, Peer Review Plan, and study documents and provide comments. Formal review of and environmental scoping meetings will be held to meet Corps Reference: ER 1105-2-100, Planning Guidance Notebook.

4.4.2 ENVIRONMENTAL AND CULTURAL RESOURCES STUDIES/REPORT JD000 (22E00)

Environmental and cultural studies include a number of discrete tasks. Work will ultimately lead to the preparation of a NEPA EIS, Historic SHIPO report, and Biological Opinion**.** The evaluation and recommendation of projects will take into full consideration the Corps Environmental Sustainability requirements.

Without Project Condition Analysis – An analysis of existing fish and wildlife habitat and cultural/historic features within the study area will be completed for both the Upper and Lower Skagit Basin. The evaluation of the upper basin will be initiated following the dam milestone decision. There is considerable existing information that will be reviewed by Corps staff for the environmental and cultural conditions of the upper Skagit Basin for the preliminary measures evaluation. This will be supplemented by additional work as indicated by technical experts from the Corps, tribal nations, resource agencies, the county, and the public following the preliminary evaluation of measures.

With Project Condition Analysis – This work consists of the participation by biologists, cultural resources and historic staff in developing and evaluating measures and alternatives, general coordination with other study elements, agency coordination, attendance at study team meetings, arrangement and attendance at agency, tribal, and stakeholder meetings, conducting /documentation of the environmental scoping process, review of pertinent data and reports. The environmental resources staff and the County will work with the public to determine the impacts of potential projects, and mitigation requirements of the recommended plans (NED and LPP). The environmental study team will work to minimize the impacts of the recommended plans through design and implementation strategies, and will develop a Mitigation Plan for the NED and LPP. The mitigation plan will replace habitat lost as a result of the recommended project. The potential habitat/cultural impacts will be quantified by comparison to a baseline condition. The NED and LPP will be evaluated to the same level of detail in the NEPA documentation.

Draft Reports - Preparation of a NEPA EIS, Biological Assessment, SHIPO, plus appropriate written narrative for the feasibility report

Final Reports – Prepare Final EIS and Record of Decision

Endangered Species Coordination – ESA coordination will be continued in the feasibility study, with consultation conducted with USFWS and NOAA.

Reference: ER 1165-2-502, Civil works Ecosystem Restoration Policy, September 30, 1999, ER 1165-2-13-, Ecosystem Restoration – Supporting Policy Information, September 30, 1999, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, U.S. Water Resources Council, March 10, 1983. ER 200-2.

4.4.3 FISH AND WILDLIFE COORDINATION ACT REPORT JE000 (22F0D)

This task includes coordination and studies conducted by USFWS as required by the Fish and Wildlife Coordination Act. USFWS activities will include interagency and tribal coordination, planning and evaluation of the impacts of alternative measure and plans on fish and wildlife resources, preparation of planning aid letters, and a draft and final Fish and Wildlife Coordination Act Report for inclusion in the feasibility report. Reference: Fish and Wildlife coordination Act of 1958 (PL 85-624, as amended).

4.4.4 GEOMORPHOLOGY AND SEDIMENT TRANSPORT ANALYSIS JAE00 (FEA1810)

Geomorphology studies will identify trends in channel forming processes, the development of a model to describe the interrelated processes that form the Skagit River and it's floodplain. Alternatives will be evaluated on their impacts to the existing process.

Without Project Condition Analysis – A sediment transport model for the lower Skagit Basin has been completed, and sediment sampling during flood events were completed under a contract with USGS in 2006. This data needs to be incorporated in the existing model, and a report completed for the lower basin. Some geomorphologic data has been developed by Puget Sound Energy for the upper Skagit Basin as part of their FERC relicensing effort for the Baker Dams. This data will be incorporated in to the upper basin geomorphologic study. Additional work, including new cross-sections for the upper basin, an analysis of channel changes since the 1970's, and the preparation of a report will be initiated following the milestone meeting on dam modifications. Detailed studies for this PMP will include the following tasks. A sediment budget will be developed, to approximate the volume of sediment delivered to the project area from upstream. This will provide context for the sediment transport modeling effort and provide a basis for evaluating long-term trends in channel aggradations. Sediment transport within the project area will be modeled, to include modeling of bank erosion, riverbed scour, sediment transport, and deposition within the project area to quantify anticipated changes in channel morphology. Without project condition reports will be prepared for both the lower Skagit Basin (almost completed) and upper Skagit Basin. The upper basin will be evaluated after preliminary design work indicates the potential nature of projects at Upper and Lower Baker Dams, and Ross Dam.

With Project Condition Analysis – Potential geomorphic effects including over bank sedimentation of alternative flood damage reduction measures will be evaluated, as will modeling scenarios to represent distinct variations of alternatives. Particular consideration will be given to changes in river geomorphology from modifications to dams.

Draft/Final Reports – Preparation of draft and final appendices for the feasibility report, plus text as needed for the feasibility report/EIS.

Reference: ER1110-2-1460, Hydrologic Engineering Management, EP1110-2-9, Hydrologic Engineering Studies Design, ER-1110-2-1405, Engineering Studies Design.

4.4.5 ECONOMIC ANALYSIS/REPORT JB000 (22C00)

Economic analysis under this PMP includes the economic screening of flood damage reduction and ecosystem measures and an array of alternative plans, incremental analysis of flood damage reduction and ecosystem restoration alternatives, development of benefit-to-cost ratios for measures and alternatives, identification and evaluation of Other Social Effects and Regional Economic Development benefits, identification of net benefits for each alternative, and the identification of the National Economic Development (NED) plan for Federal cost sharing purposes. Analysis will also likely include a Locally Preferred Plan (LPP) that is different from the NED. In addition, an update of economic damages for the study area may be required, and the preparation of text, tables, and appendices for draft and final Feasibility Report/EIS.

Without Project Condition Analysis – If required due to significant changes in the development of the Skagit River basin, another without project condition report will be prepared prior to the completion of the evaluation of the recommended plan. The economic damage area is from Sedro-Woolley downstream, including the city of Hamilton.

With Project Condition Analysis – Using HEC-FDA model, calculate damages prevented by measures and then alternatives. Various forms of each measure will be considered, including different elevations and sizing, to allow for the identification of measures that produce the most net benefits. For nonstructural measures, floodproofing versus relocation will be considered, for various areas.

Incremental Analysis – As part of the plan formulation process, conduct an incremental analysis of flood damage reduction measures and alternatives. Identify the NED plan. Conduct an incremental cost analysis for effectiveness, analysis of ecosystem restoration alternatives. Ecosystem restoration measures will be compatible with the flood damage reduction measures.

Draft/Final Reports – Preparation of draft and final appendices for the feasibility report, plus text as needed for the feasibility report/EIS.

Hydropower Loss Analysis- Incorporation of hydropower losses (previously calculated by NWD) from Ross and the Baker Dams as part of the economic analysis of the Locally Preferred Plan.

Reference: ER 1105-2-100, Draft EC 1165-2-200, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (March 10, 1983), ER 1105-2-101.

4.4.6 HYDROLOGY AND HYDRAULICS STUDIES/REPORT JAE00 (FEA 1810, FEA 1840)

The without project condition report has been completed and technically reviewed. The hydraulic efficiencies of the majority of the measures has been established. Work in this PMP will include providing input to the HEC-FDA model to complete the analysis of measures, the evaluation of the

hydraulic efficiencies and impacts of alternatives, and the evaluation of structural and operational modifications to the Upper and Lower Baker Dams, and operational changes at Ross Dam. The study will result in the preparation of an HH appendix for the draft and final feasibility report/EIS.

Without Project Condition Analysis – Completed

With Project Condition Analysis – Seattle District will conduct hydraulic analysis of alternatives, working closely with Economics on the HEC-FDA model. Skagit County will provide the design and cost data for evaluation. The following floods will be evaluated: 5, 10, 25, 50, 75, 100, 250, and 500 year recurrence interval events.

Dam Analysis – HH, Seattle District, will coordinate the evaluation of operational and structural modifications at Upper and Lower Baker Dams, and Ross Dam. HH will coordinate the need for a waiver with HQ. HH will work with Puget Sound Energy and Seattle City Light to get information necessary to conduct preliminary studies of dam modifications.

Technical Review – HH products will be a significant part of the final Peer Review for the feasibility report.

Draft/Final Reports – Preparation of draft and final appendices for the feasibility report, plus text as needed for the feasibility report/EIS.
Reference: ER-1105-2-100, Planning Guidance Notebook, ER 1105-2-101, Planning Risk Analysis for flood Reduction Studies.

4.4.7 SURVEYS AND MAPPING JAA00 (FEA1800)

Surveys and mapping for the lower basin have been completed. Skagit County will provide LIDAR and cross-section information for the Skagit River upstream of Sedro-Woolley if needed. Survey information developed by Puget Sound Energy will be incorporated into the feasibility study. A determination of whether additional survey data is required the upper basin for the support of design and impact analysis will be made following the dam decision milestone. Reference: ER 1105-2-100, Planning Guidance Notebook, ER 1110-2-1150, Engineering and Design for Civil Works Projects.

4.4.8 ENGINEERING AND DESIGN ANALYSIS JAE00 (DEA1860)

Without Project Conditions – Evaluation of the Probable Maximum Failure points for the existing levee system has been completed and incorporated into the hydraulic model and analysis.

With Project Conditions - Preliminary designs for the measures are based on designs developed by Skagit County's contractors, the Corps in the 2001 feasibility study, and information provided by Puget Sound Energy. Skagit County will perform the design of measures and alternatives, and the 35% level design of the NED and LPP plan, with the exception of modifications to dams. Corps Civil Works and hydraulic engineers will review the County's design scopes of work, coordinate with the County on the selection of contractors, and review the final product. The Corps will provide work inkind credit where appropriate for County design work (based on applicability to the GI, quality of product, and meeting Corps engineering requirements). Following the dam decision milestone, the PMP may need to be modified to include costs for further design of the dam modifications. This would include Civil Design, Hydraulics, Structures, and Mechanical technical experts. Funding for the Corps to do additional design work on alternatives if the County's work is not sufficient for our requirements is not included in this PMP. Skagit County will develop designs for mitigation and ecosystem restoration projects, basing projects on the Skagit Watershed Council project recommendations. Restoration projects will be tied to flood damage reduction projects

where possible. Costs to provide additional design effort from the Corps if needed as a result of review is not included in this PMP.

Draft/Final Reports – Preparation of draft and final appendices for the feasibility report, plus text as needed for the feasibility report/EIS.

References: ER 1110-2-1150, Engineering and Design for Civil Works Projects, ER 1105-2-100, Planning Guidance Notebook, EM 1110-2-5027, Confined Disposal of Dredged Material, EM 1110-2-5025, Dredging & Dredged Material Disposal, ER 1105-2-101, Planning - Risk Analysis for Flood Damage Reduction Studies.

4.4.9 COST ESTIMATING JH000 (FEA 1870)

Cost Estimating provides the costs for constructing and maintaining a project, based on data provided by civil engineers and real estate. Included in project costs are disposal sites, levee material, building materials, and costs for equipment and labor. Real estate provides costs for land acquisition or use, relocations, and other estate issues. Cost estimating will review designs and costs for alternatives, the NED plan, and the LPP provided by Skagit County for accuracy. Funding to conduct additional studies if data is not sufficient for Corps use is not included in this PMP. An MCASES cost estimate will be prepared for the recommended plans. Cost estimating will coordinate technical review of costs, and coordinate review with Walla Walla District Corps Cost Estimating Center of Expertise).
Efforts required to cost structural/operational changes to dams is not included in this PMP.
Reference: ER 1110-2-1150, Engineering and Design for Civil Works Projects, ER 1110-2-1302, Civil Works Cost Engineering.

4.4.10 STRUCTURES/ELECTRICAL/MECHANICAL (22P00)

Structures specializes in the design of structures such as buildings, concrete weir structures, dams, and bridges. This PMP does not include efforts by Structures, Electrical/Mechanical to design structural changes to Upper or Lower Baker Dams, or the Nookachamps dam. Skagit County will develop design for bridge and weir projects associated with flood damage reduction or ecosystem restoration alternatives. Structures is funded to review designs provided by Skagit County.

Draft/Final Reports – Preparation of text and drawings for the feasibility report.

Reference: ER 1110-8-2 (FR), Inflow Design Floods for Dams and Reservoirs.

4.4.11 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (22L00)

Literature review of HTRW issues in the Skagit Basin. This PMP does not include costs for HTRW sampling or evaluation. If an alternative appears to have HTRW issues, the PMP will need to be modified. HTRW issues are a local sponsor responsibility.

Reference: 1105-2-100, Planning Guidance Notebook, ER 1110-1-263, Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities.

4.4.12 REAL ESTATE JC000 (22H00)

Real estate provides the land rights required for studies and project implementation and

operation/maintenance. Rights-of-entry for study purposes (survey, environmental studies, geotechnical studies) will be provided through standard Corps ROE/easements by Skagit County, with coordination with the Corps. Skagit County will provide real estate input for Corps screening of measures based on tax assessment information. When the project footprint for the preferred alternative(s) has been developed by Skagit County and approved by Corps review, the Corps will conduct preliminary appraisals. Real estate costs for alternatives will consider the type of taking (fee, easement, etc), and will provide access to the site for maintenance and monitoring, construction access, and staging areas. The County will provide disposal sites. The footprint of the project will be minimized to fit the project purpose, and will not include extraneous land unless specifically required to support the project. Access for recreational or other uses must be stated in the real estate documents. Where possible, project footprints will be adjusted to avoid disruption of structures, transportation routes, or minor pieces of property. It is likely that Department of Natural Resources land will be impacted along the Skagit riverbank. Skagit County will support Corps efforts to conduct appraisals through their excellent computerized land system. Corps Real Estate will coordinate technical review of all real estate products. The Corps will prepare real estate maps in support of the project, but will look for strong support from the county.

Draft/Final Reports – Corps Real Estate will prepare maps, Real Estate Report, and text for the draft and final feasibility report/EIS.
Reference: ER 405-1-12, Real Estate Handbook, November 20, 1985, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Uniform Relocation Act Amendments of 1987.

4.4.13 PROGRAM AND PROJECT MANAGEMENT Z000 (22T00)

Both the Corps and the local sponsor perform project management, the oversight of the budget, schedule, work tasks, and team efforts for the feasibility study. This task will include all activities related to day-to-day program and project management. Activities include: overall coordination with local, state, tribal and federal governmental agencies, industry, interest groups, and the general public; oversight management of in-house, sponsor in-kind services, and contracted efforts; coordination between the Sponsor and the Corps; attending meetings and conducting briefings throughout the course of the study; responding to congressional and other inquiries; preparation of budgetary documents and upward reporting; programming, managing and tracking study obligations and expenditures; and accounting for in-kind services. Management of internal and independent technical reviews of project outputs, including the draft and final FR/EIS, is included. Feasibility Management also includes costs incurred by the study Executive Committee members who will generally oversee study progress in accordance with the PMP, as prescribed in Article IV of the FCSA. The Corps and Skagit County will jointly share and perform study management activities. Feasibility Management is distinct from plan formulation, report preparation, and Washington level review support activities, which are separately described below. Reference: ER 1105-2-100, Planning Guidance Notebook.

BUDGET/P2 SUPPORT- The feasibility study is scheduled and monitored through the P2 financial system. Budget and Program analysts and Schedulers work with the Project Manager to insure the funding of team members, budget management and requests, and scheduling changes.

REPORT PREPARATON – Preparation of a draft and final feasibility report/EIS, incorporating review comments; preparation of an After Action Review, Lessons Learned Report, Summary

Report, draft Chief of Engineer's Report.

4.4.14 PLAN FORMULATION AND EVALUATION JJ000 (22R00)

Plan formulation is a distinct evaluation process adapted by the Corps that insures a systematic evaluation of civil works projects. A discussion of the plan formulation process is included under Section 4.1. This task includes the formulation and evaluation of flood damage reduction (structural and non-structural), and ecosystem restoration measures and alternatives. Measures will be screened based on costs, benefits, environmental impacts, engineering feasibility, socio-cultural impacts, residual risk, and implement ability. Ecosystem restoration measures will be evaluated for costs and ecosystem output. The resulting product will be a series of measures and an array of alternative plans for detailed evaluation. Plan formulation is the process whereby project alternatives are conceived and developed to address specific planning objectives and constraints (covered previously in the PMP). Combinations of measures are evaluated to develop alternative plans. Alternative plans will be formulated in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability.

Plan formulation and evaluation activities to be conducted in accordance with this PMP include:

1. Developing planning objectives and constraints, and problems and opportunities;
2. Preparing reports on Without Project Conditions
3. Conducting a Feasibility Scoping Meeting with the vertical team (Headquarters, Northwestern Division, Seattle District and Skagit County staffs); and an Alternative Formulation Briefing, and
4. Screening flood damage reduction measures and development of an array of alternative plans for detailed evaluation in the next phase of project development.

The goal of the plan formulation process is to identify the National Economic Development Plan (NED), the flood damage reduction alternative that provides the maximum net economic benefits. Since ecosystem restoration is also a project purposes, an alternative will be recommended that includes the maximum ecosystem benefits, with consideration to costs. The primary purpose of the feasibility study is flood damage reduction. Ecosystem restoration is an important secondary consideration. Restoration projects that tie into the recommended flood damage reduction alternative(s) will receive primary consideration. Because ecosystem restoration is not an equally competing project purpose to flood damage reduction, no National Ecosystem Restoration (NER) alternative will be selected. However, the NED plan will give full consideration to the maximum ecosystem benefits that can be achieved in a multipurpose project. Reference: ER 1105-2-100, Planning Guidance Notebook.

Detailed costs for each feasibility study activity for the Corps and Skagit County will be determined and agreed upon before work is initiated based on available funding. Tasks will be conducted over the feasibility phase in accordance with the project schedule.

SECTION 5 - QUALITY CONTROL PLAN

5.1 PURPOSE-This Quality Control (QC) Plan presents the process that assures quality products for the feasibility study. Corps policy is to develop, integrate and implement quality control and quality assurance as a part of the Corps' Project Management Business Process (PMBP). The project delivery team (PDT) will ensure that services and products meet the agreed upon

requirements and are performed in accordance with appropriate laws, policies and technical criteria. The QC Plan defines the responsibilities and roles of each member of the PDT and Independent Technical Review (ITR) team. ITR will be performed independent of the technical production of the product to be reviewed. It will include all relevant technical disciplines, along with necessary legal sufficiency and policy compliance review. Refer to NWSOM 5-1-3, dated February 25, 2002, as amended, for a complete description of quality management policy and responsibilities established by Seattle District.

Reference: ER 5-1-11, U.S. Army Corps of Engineers Business Process; ER 1110-1-12, Engineering and Design Quality Management; ER 1110-1-8159, Design and Review Checking System, DrChecks; NWSOM 5-1-3, Quality Management Plan, Seattle District; Northwestern Division Quality Management Plan.

5.2 METHODOLOGY

Project Delivery Team, Executive Committee, Vertical Team. The PDT is an interdisciplinary group formed to execute the feasibility study in accordance with the PMP. The Skagit River PDT is comprised of qualified staff from within the Seattle District, Skagit County, and consultants and contractors. The Executive Committee, which oversees the work of the PDT and consistency with the PMP, is comprised of senior members representing both the Corps and Skagit County. Executive Committee members are identified in Table x. Seattle District and Skagit County PDT members are identified in Table x. The Vertical Team is comprised of Corps policy level staff from the District, Division, and Headquarters and the local sponsor. They represent the key technical areas of focus of the feasibility study, including planning and plan formulation. The Vertical Team has the task to insure that the feasibility study is following appropriate Corps process for planning and technical issues. The Vertical Team reviews the PDT's products at the Feasibility Scoping Meeting and the Alternative Briefing Meeting, and is available to resolve study issues throughout the feasibility process through interim project reviews. Reference: ER1105-2-100.

Work performed under contracts with third parties administered by either Skagit County or the Corps will be technically reviewed to ensure that quality objectives have been met. The Corps and Skagit County will perform internal review of all study-related work products, whether prepared by the Corps or by Skagit County as in-kind services. Quality control review by the Corps of in-kind services performed by Skagit County will ensure that such products qualify for credit as in-kind services.

Independent Technical Review. Independent technical review (ITR) is a review by a qualified person or team not affiliated with the development of a project/product. The ITR team is appointed by the Corps national Centers of Expertise. The purpose of ITR is to confirm the proper application of clearly established criteria, regulations, policy, laws, codes, principles and professional procedures. The ITR team performs a quality control check on products completed in-house, and a quality assurance check of products completed by contractors/consultants. An interdisciplinary group is formed to perform the ITR. Team members will be selected on the basis of having the proper knowledge, skills, and experience necessary to perform the task and their lack of affiliation with the development of the specific work to be reviewed. There will be an ITR of the Without Project Conditions Report prior to holding the Feasibility Scoping Meeting. Corps personnel external to the Seattle District will perform this ITR. Technical disciplines to be represented on the

ITR will, at a minimum, include hydraulics, economics, environmental, cultural, design, and plan formulation. All decision documents require ITR. The draft feasibility report, NEPA documents and technical appendices will have ITR as well as quality review by the District and sponsor. A detailed Peer Review plan has been approved by Corps Division offices and the Centers of Expertise for Flood Damage Reduction and Environmental Restoration and is posted at their website. At the request of the Skagit River basin community, the feasibility report and appendices will have External Peer Review by a panel of experts selected with public input. This panel will require nationally recognized experts outside of the Corps in economics, environmental and cultural resources, civil design, and hydrology and hydraulics. Additional panel members may be required from the fields of geotechnical and structural engineering, real estate, cost estimating, and plan formulation. The External Peer Review will focus on technical issues. Policy issues will be reviewed by Corps Division and Headquarters, and the Chief of Engineer's office. Reference: EC 1105-2-407, Planning - Planning Models Improvement Program: Model Certification.

5.3 PEER REVIEW PLAN- To insure transparency and accountability in the Corps planning process, the Corps requires the preparation of a Peer Review Plan (attached). This plan recommends the level of technical review – either within the Corps, or with an external panel of nationally recognized specialists. Technical review is for technical data only. Policy review remains within the Corps chain of command. At the request of the public, the Skagit River GI feasibility report will have external peer review prior to approval of the Chief's Report. Areas of review will include hydrology and hydraulics, economics, environmental and cultural considerations, design, and costs. Division and the Corps Centers of Expertise are in the process of identifying internal technical reviewers for the Skagit GI study. The panel of experts will be selected, with public input, prior to the Alternative Formulation Briefing (AFB) meeting. All policy compliance milestones will be implemented in accordance with ER 1105-2-100, Planning Guidance Notebook, EC 1105-2-408, Planning - Peer Review of Decision Documents.

5.4 Quality Control Responsibilities

5.4.1 Project Managers

The Corps and Skagit County project managers shall be responsible for coordinating the ITR effort with the review team leader, and shall:

1. Ensure that the schedule contains sufficient time to perform reviews of completed products.
2. Manage responses to ITR comments and resolve technical issues with the ITR team leader, consult with Northwestern Division and the Centers of Expertise as appropriate, and forward all unresolved ITR issues to the USACE managers for resolution.

5.4.2 Resource Managers

Each Corps of Engineers Resource Manager is responsible for ensuring that all work prepared by or for his/her Section or Branch has received any necessary internal quality control checks prior to the product being furnished to the review team for review. Skagit County shall follow the same procedure for all work performed as an in-kind service for which credit is to be granted by the Corps.

5.4.3 ITR Team Leader and ITR Team Members

The ITR team leader is responsible for coordinating all activities associated with the ITR of assigned work products. The ITR team leader will coordinate the technical review and assemble all

technical review comments and other review-related documents for the use of the ITR team and PDT. Each ITR team members is responsible for performing an ITR of assigned work products and providing written comments to the ITR team leader for consolidation in an ITR memorandum. ITR team members will also conduct a back check of PDT responses to technical review comments and provide results of the back check to the ITR team leader.

5.4.4 Consultant Products

Consultants are an extension of the Corps or Skagit County staff. Accordingly, all products prepared by consultants will have an ITR just as if they had been prepared by the PDT.

5.4.5 Policy Compliance Review

Policy compliance review is the Corps of Engineers Headquarters (HQUSACE) level review of decision documents that involves analysis of decision factors and assumptions used to determine the extent and nature of Federal interest, project cost-sharing and cooperation requirements, and any other related issues. The District is responsible for the technical and policy content of all documents produced by the District. Questions or problems regarding policy concerns will be elevated by the functional program manager directly to HQUSACE (CECW-A) for resolution as the issues develop. Legal and real estate policy issues will be elevated to the Chief Counsel and Director of Real Estate, respectively. During HQUSACE review of documents, the Policy Review Branch (CECW-AR) of Policy Division (CECW-A) will perform a policy compliance review of decision documents using a review team composed of members from the major HQUSACE elements and other offices, as appropriate.

SECTION 6 – RISK MANAGEMENT

Risk management is a systematic process of identifying, analyzing, and responding to risk for the entire project life cycle. A risk analysis is performed for five categories of project risk: scope, quality, schedule, cost, and safety and health risks. The level of detail of the risk analysis and plan is based on the complexity of the project. When a project is determined to be other than low-risk, the risk must be identified, and associated control procedures defined to address the risk. A key concern of the Corps is the potential for residual flooding risks with constructed projects. This is particularly an issue if the flood damage reduction plan encourages additional development behind projects that can have catastrophic failure, such as levees. The risks of operating dams for additional flood control will also be seriously considered by the Corps. Modifications to the Baker Dams, even for operational changes, will require coordination with Corps HQ concerning the ability of the dams to meet current Corps design/operation requirements. The Corps will need to insure that prudent assumptions have been made concerning the hydrology and hydraulics of the basin, the condition of existing flood damage reduction projects, and the ability of the local sponsor to operate and maintain the recommended system over time.

SECTION 7 – ACQUISITION PLAN

All work will be conducted by the Corps, the local sponsor, or contractors. The assignment of specific tasks is shown in the study scope of work. Skagit County will be responsible for the design and costs for alternatives. The Corps will evaluate dams, the without project condition, and the evaluation of measures. The Corps and County will work together to evaluate impacts, select a recommended plan, and prepare a feasibility report and NEPA documents. Work can be completed

by contractors for Skagit County or the Corps, provided there is mutual agreement on the scope of work and selection of the contractor. Any modifications to the scope of work or allocation of tasks must be agreed to by both the County and the Corps before work is initiated. . Design work in plans and specs will be completed in-house by the Seattle District or contracted by the Seattle District. Construction will be completed by contract.

SECTION 8 – CHANGE MANAGEMENT

Change management is the process whereby the Project Management Plan and supporting documents may be changed in response to policy, technical, economic, political, financial, and other issues. It must be approved by the Seattle District Chief, Planning Branch. The Project Management Plan serves as the "road map" for the feasibility study. The PMP can be changed with the concurrence of the PDT (including the local sponsor). The Corps and the sponsor cannot initiate new work outside of the PMP without a written decision stating that both parties concur the work needs to be done, the monetary value of the work, the schedule for completion, and who will be assigned the task. The memorandum becomes part of the amended Project Management Plan. The Feasibility Cost Sharing Agreement (FCSA) is the "contract" between the Corps and the local sponsor to co share funding of the study. It is signed by the Seattle District Commander and the County either by the County Commissioners or their designee. Contained in the FCSA are the steps for revisions of the FCSA or for the termination of the study. Two key teams are involved in Change Management, the Executive Team, and the Vertical Team.

The Executive team (listed in table x) is comprised of the District Commander, Chief Planning Branch, the project manager, and other key technical staff from the Corps. The County Commissioners, Diking District commissioners, local city mayors, local Indian nations, and other key County and stakeholders complete the team. This team has the ability to discuss and seek resolution on study issues. The Vertical Team consists of staff from Corps Headquarters, Division, and District staff, and makes policy and technical decisions for the Corps. The Vertical Team may act on recommendations provided by the Executive Team.

Any study issues that result in the change in milestones or funding will be raised to Chief, Planning. Technical issues will be discussed within the team but raised to resource managers and Chief, Planning in a timely manner. Changes in milestones or obligation/expenditure rates will be reported to the District Program Review Board (PRB).

SECTION 9 – COMMUNICATION PLAN

The goal of the Communication Plan is to inform stakeholders of public comment opportunities and study milestones, increase public awareness of agency plans, milestones, and opportunities to provide meaningful comments, answer questions from local elected officials as representatives of their community (including tribal nations), and keep the Product Development Team (PDT) composed of Corps and local sponsor staff informed.
The Communication Plan has several key messages:

- Continue to work closely with Skagit county on flood damage reduction and ecosystem restoration plan for the Skagit River basin
- The feasibility process will provide the information and processes needed to select the best possible alternative for the most cost-effective amount of money and the least

environmental, socio-economic impact.

- All flood damage reduction projects have residual risk for damages when exceeded. The Communication plan will insure the community and stakeholders are aware of residual risks, and that these are acceptable to the public and the Corps.
- Our highest priority is the safety of people in the basin
- The recommended projects must not have significant impacts on other portion of the basin. Significant impacts must be mitigated, whether they are environmental impacts or induced flooding.
- A Corps project must be economically, engineeringly, and environmentally sound.
- Corps projects include costs for mitigation, operation and maintenance, and any needed hydropower compensation. Therefore, all stages and aspects of a project are considered in the evaluation of alternatives. Corps projects strive to be sustainable.
- The financial capability of the local sponsor to co-fund construction, and entirely fund operation and maintenance of projects is a key part of project success. The development of a financial support system during feasibility is a responsibility of the local sponsor.

Target Audiences. For the Skagit River feasibility study, the targeted audience for the communication plan includes: Skagit county commissioners, Skagit County staff, Diking district commissioners, mayors and public work directors of Mount Vernon, La Conner, Conway, Burlington, Sedro-Woolley, Concrete, Skagit Co-op, Tribal leaders of the Swinomish, Sauk-Suiattle, and Upper Skagit tribes, Puget Sound Energy, Seattle Public Utilities, city of Anacortes Water Department, Nature conservancy, US Fish and Wildlife Service, Washington Department of Fish and Game, National Oceanic and Atmospheric Agency, United States Geologic Survey, Federal Emergency Management Agency, residents of Hamilton, agricultural and business leaders, elected federal and state officials, sports fishing/recreational groups, other NGOs, property owners in affected areas, the Skagit Watershed council, and the general community.

The tools to implement the Communication Plan include: workshops, team meetings, attendance by PDT members at the Skagit county Commissioners meetings, participation in the monthly Flood meetings, attending meetings with Diking districts, holding meetings with tribal representatives, participating in the BRICC meetings on Baker Dam relicensing issues, attending Watershed council meetings, news releases, meetings with local media, project website, site tours, public meetings. Skagit County will coordinate the majority of the public involvement through their excellent knowledge of local channels. The PDT will meet on a regular basis to discuss design progress and resolve product development issues. The team will monthly, unless they elect to discuss issues by email or teleconference. Team includes both Corps and Sponsor staff. The Corps and County will exchange quarterly updates on execution and expenditures.

SECTION 10 – EARNED VALUE AND VALUE MANAGEMENT

An earned value and value management plan has not yet been developed. It will be included in the PMP when finalized.

SECTION 11- VALUE ENGINEERING

Value engineering is required for all Civil Works projects exceeding $1,000,000 in value. The purpose of value engineering is to improve the efficiency of the recommended plan. It is performed during the 35% design process for all projects over $1 million, and is intended to reduce construction and maintenance costs, improve engineering features, and generally provide a better Federal product.

SECTION 12 – CLOSE OUT PLAN

Projects are closed out when completed. Interim close out occurs following the completion of the feasibility phase. All study expenditures (labor, contacts, equipment, work inkind) are accounted for. The amount of federal and nonfederal cash provided to the study is tabulated, along with credited work in kind (submitted to Chief, Finance and Accounting by the project manager) The close out insures that expenditures are balanced, if nonfederal funds need to be given back to the sponsor, or if there is a need for additional nonfederal cash to balance the books. Expenditures and obligations of work are tracked through the Corps CEFMS and P2 systems.

SECTION 13 – LESSONS LEARNED REPORT

A Lessons Learned report will be prepared at the conclusion of the feasibility study, and following key decision point meetings during feasibility. The Lessons Learned report will be the responsibility of the Project Manager, with input from the PDT, sponsor, and other key players involved in the particular issues. The intent of a Lessons Learned Report is to clarify what happened, why, and how. The PDT then proposes ways to insure that these errors are not repeated again by this team, and as guidance for other Corps feasibility studies. Lessons Learned are discussed within the District and posted on the District webpage. "Lessons Learned" can also represent examples of studies where things went unusually well, providing guidance for other studies.

SECTION 14 – PMP APPROVALS

Review of the draft PMP was conducted by the PDT and sponsor team members in July and August 2007. The PMP will be provided to the general public, resource agencies, stakeholders, and tribal nations for comment. Significant comments will be addressed in later modifications of the PMP. The PMP will be reevaluated in response to fiscal year federal funding limits, technical or policy issues, at the request of the Executive and Vertical team, and as a result of the dam decision milestone meeting. For the Corps, approval of the PMP is by the Chief of Planning. For Skagit County, approval is coordinated by the County Project Manager, with ultimate approval by the County Commissioners.