

Attendees: Bernie Hargrave, Curtis Tanner, Dick Ecker, George Hart, Debby Hyde, Rob Koeppen, Michael Rylko, Jacques White, Margen Carlson, Debbie Rick

----- Meeting Notes -----

PSNERP Work Plan ~ Sound Wide Change Analysis

Objective: Update StC on-going activities and plans; high-level tasks and work plan refinement

Anchor Environmental has finished much of the historic typology dataset and will complete their work as SSHIAP completes their dataset in early May. Anchor's team has complete three datasets; armor, jetties, and fill for their internal QC review and appear on schedule to deliver in early June. The fourth, levees, is an option that will likely be awarded in May, as the PMT re-examines the option after a re-scoping meeting.

In early May, the Corps negotiated the comprehensive Change Analysis task order (Task Order No. 3) that is expected to be awarded May 21, 2008. The award includes the first option year in the potential four-year contract (one base year with three optional years), the Puget Sound Nearshore Change Analysis, and Project Management Support work. The task order requires close coordination and timing with the UW team, which we will pace by issuing, separate notice-to-proceeds (NTPs) for each of three work packages. The first NTP will require Anchor to prepare the datasets from GIS into Excel files compatible with the UW Primer analysis. Also, Anchor's team with national ecosystem restoration experience will gather data, including conducting team interviews, to help the PM's revise the work plan, leading in turn to a revised Feasibility Cost Share Agreement. The remaining two NTPs will require:

1. Anchor GIS liaisons to support UW's analysis
2. Conduct data queries and prepare materials to display results and findings

The fly-byes are NST's term-of-art for conducting a quality assurance review of the GIS datasets for each sub-basin. Cross-walks are re-classifications required between SSHIAP's geomorphic shoreform naming convention and the NSTs. The cross-walk effort is included in Task Order #3 and will be reviewed during the fly-byes.

The Strategic Needs Assessment is expected to require examination of key data and facts about process units. To better equip the team for SNAR, the Project Management Team scoped two-page facts sheets for each process unit and sub-basin that would serve as ready planning reference tools. However, the cost to prepare the fact sheets exceeded available funds so the effort was re-scoped to only include template development. The PMT envisioned these facts sheets could be bound in multiple printed volumes and/or electronic versions. While important for PSNERP, the fact sheets may have application beyond the SNAR team. Bound as an atlas or inventory of all 900-process units, the atlas may serve many planning efforts with historic/current data/maps, showing change analysis results relevant to the unit with impairment scales. The atlas may serve too as a foundational baseline comparable to the 1970s Puget Sound environmental atlas or the 1990s ShoreZone database.

1. Can “fly-by” QA/QC generate error rates sub-basin to check with data QA/QC.
2. End goal ~ anyone on Steering Committee can describe this analyses, why it was done, and what outputs are
3. Need QA/QC at various points in the analysis.
 - a) Primer input summaries
 - b) Primer output ~ impairment spreadsheets
 - c) Peer review needs to understand our QA/QC process and that it is robust and independent.
4. To what degree are we working collaboratively with NOAA and other parts of PS Partnership, and what is the rationale for that degree?
5. Bernie’s four issues for the Steering Committee:
 - a) Steering Committee is aware of the late October delivery of sound-wide change analysis and that PSP expects a product in August. How to modify or explain and justify?
 - b) Help NST to create an alternate working group to populate data/tables for ecological functions, goods, and services vs. impairments, typology, etc.
 - c) Data gaps 1) levees and dikes gap could be done by SSHIAP group for use in change analysis. Also 2) tier 2 roads and rails data layer needs to get done.
 - d) Process unit fact sheets are needed for SNAR analysis, but it is too expensive and time consuming to replicate per prototype ~ need more \$\$.
6. EFG&S
 - a) At PMT meeting bring up...concern about schedule; resolve potentially duplicative methods; and concern RE: lack of transparency and oversight in this item.
 - b) Methods resolution w/ TNC, NOAA (Curtis, Jacques, GIS, NOAA, Si participate)
 - c) Check back with Steering Committee and NST depending on answer.

Nearshore Retreat

Objective: Review of agenda and logistics for the retreat

Focus is on decision/action items that require involvement of all Nearshore Partnership team members. Add to the agenda 1) a condensed recap of symposium plus Curtis’ Overview and coverage of other portions of our program’s science foundation; 2) peer review

Science Symposium

Objective: Debrief and lessons learned; keep it simple

The Nearshore Science Symposium was successful in increasing members understanding for three major areas of technical analyses (Change Analysis, Strategic Needs Assessment, Alternative Future Scenarios). This will assist members to (1) participate in future discussions of program direction; (2) provide necessary background to understand Work Plan discussions scheduled for Retreat; and (3) allow for members to accurately portray the work of PSNERP with others. Presentations are posted at:

http://www.pugetsoundnearshore.org/meeting_archives.htm

Jacques: How can I determine the degree to which biological, spatially-explicit data is going to be used in our decision-making? (no species specific data).

Objective: Highlight policy level items for the StC.

Implementation Team – IT Co-chair responsibilities assigned to new “Nearshore Policy Analyst” position in WDFW Nearshore Program. Selection process may be completed in time for announcement at May 21 Steering Committee meeting. IT leadership nearing resolution with two new co-leads identified.

Stakeholder Involvement is a issue of renewed program focus. The Steering Committee will have a key role in assisting the issue lead in defining our needs and how to proceed. Margen Carlson will be assuming lead responsibilities for Nearshore Partnership Stakeholder Involvement. This transition will occur with the start date of the new WDFW Nearshore team member described above, with some of Margen’s current responsibilities transferred to the new employee. Beginning inventory of program Stakeholder Involvement needs will be a main theme for the June Retreat.

Programmatic Peer Review Panel will convene first review meeting June 3-5 in Seattle, and provide report in time for August Executive Committee Meeting. Panelists are:

- Dr. Denise Reed, Professor, Univ. of New Orleans (**Chair**)—coastal sedimentology and geomorphology; restoration planning and assessment; extensive background in restoration and coastal management review panels
- Dr. Colin Levings, Senior Research Scientist, Department of Environment, Fisheries and Oceanography, Canada—estuarine/coastal ecologist, with extensive experience on juvenile Pacific salmon
- Mr. David Marmorek, Pres. ESSA Technologies Ltd.—limnologist, but more recently one of leading proponents and practitioners of Adaptive Environmental Assessment and Management (AEAM) to solving environmental problems in aquatic ecosystems
- Dr. Susan Peterson—Vice President of Watershed Systems L.L.D,— cultural anthropologist, with experience in various issues of coastal restoration
- Dr. John Wells, Univ. North Carolina-Chapel Hill—coastal sedimentologist, with emphasis on estuarine and delta sedimentation and beach and shelf processes
- Dr. Maggi Kelly, UC Berkeley – Director of the College of Natural Resources' Geospatial Imaging and Informatics; expertise in the field of GIScience, geography and landscape ecology

See attached “Peer Review Background.pdf” for meeting agenda and program summary document sent to panel.

Deb Hunemuller is leaving WDFW and the Department is working to backfill Nearshore Project Database position, job posted May 14 for three week opening.

Nearshore Science Team

"Fundamentals of Nutrient Cycling and Retention in Wetlands: The Role of Vegetation in Improving Water Quality" Irv Mendelsohn (LSU) **Highlights:** Sediment retention is the most important factor affecting net nutrient exchange: restoration should design for management measures, site context, etc. to optimize sediment trapping if nutrient cycling and retention is a primary goal of action. Sea level rise is a factor! Any management measure inhibiting sediment accretion or production of organic matter below ground (also above ground relative to sediment trapping) inhibits a marsh’s ability to keep up with sea level rise and will alter nutrient retention.

NST initiative: Developing principles for restoration and conservation strategies. Highlight: This initiative should help provide critical scientific structure and guidance for SNAR and Implementation Team development of restoration portfolios, as well as broader Puget Sound restoration/conservation initiatives (e.g., ESRP, PSP).

Future Risk Assessment Project (FRAP) – development of RFP to assess risk of future change that can be used to run a ‘future change analysis’

- Miles and Si have drafted a potential RFP, entitled “Nearshore Futures: A Regional Analysis of Development Futures that Pose a Risk to Nearshore Ecosystem Restoration,” belovedly referred to FRAP. The purpose is to seek proposals for a study design to assess what the potential changes in spatially-explicit land use, land cover, and associated physical (anthropogenic) characteristics of nearshore ecosystems (e.g., beaches, estuaries, deltas) of Puget Sound by the year 2060.
- This RFP is intended to provide data that is entirely or closely compatible to the Change Analysis assessment of nearshore ecosystem (process) impairment, providing the capability to generate exactly the same analyses for conditions in 2060. The results could provide spatially-explicit identification of key shoreline and delta process units (PU’s) that will face change without the Project’s management measures, and thus jeopardize the long-term intent of the Project’s portfolio.

Proposals will be required to describe scenarios (e.g., trends and patterns status quo, unregulated growth, growth controls, or selected from six FWOP-UEG scenarios) of future change, methods, and output. PSNERP would be providing primary (initial) datasets, i.e., land cover/land use, and define metrics to be predicted.

Highlight: This RFP is due to be implemented within the month, and will hopefully identify a contractor and initiate study by mid-June; hope is to have deliverables for comparison with Change Analysis, and use by SNAR, within 6 months.

Wrap – Up		ALL	2:15 – 2:30 p.m.
<i>Objective: Review of assignments; next month’s agenda items, announcements.</i>			
1) OP Completion Date Oct ’08		Curtis figure out how to link to PSP	
StC Help explain new schedule to PS		Stick to date???	
Conservation Commission or help compress schedule		How fits into PSP Outputs.	
Action Item:	Person responsible:	Deadline	
	Michael, Debby, Jacques	Meeting scheduled for July 7, 2008	
2) NST could benefit from participation in EFG&S			
StC help create a work plan working arrangement to complete			
Curtis – NST knows what they need = relate EFG&S to Change Analyst			
Action Item:	Person responsible:	Deadline	
Methods resolution / check back with NST & StC	PMT		
3) Challenge with filling Data Gaps		With PNNL	
- Levies & dikes in delta PUs			
StC help figuring out who else might do this		Converse with SHIAPP	
Develop methods & populate Tier 2 with roads & rails			
StC ?Heads up?		Report back to StC	
4) Need process unit fact sheets – 100 of man hours			
Action Item:	Person responsible:	Deadline	
Help find more \$\$\$ to complete this task	Steering Committee		

Other Information

Mon/Wed, June 9-11

Nearshore Partnership Retreat

[Fort Worden State Park Conference Center](#)

Wednesday, June 18

Steering Committee Meeting

9:00 a.m. - 3:00 p.m.

[Tukwila Community Center - Meeting Rm A.](#)

PSNERP General Investigation Study Current Tasks

Stage 3 Workplan

Alternative Strategies/Coarse Level Task list	description of alt. Strategies used by other lg. Scale ecosystem restoration programs for feasibility report preparation; plan formulation task list	Anchor
Workplan (scope, schedule, budget)	description of what GI study will deliver, when it is anticipated to be complete, and how much it will likely cost	Corps/PMT

Strategic Needs Assessment

Methods development and description	defining a systematic approach to generating the Strategic Needs Assessment Report	Doug Myers and IT
Restoration and Conservation Strategies	summary of conservation biology/landscape ecology literature principles as they apply to nearshore ecosystem restoration	NST
Future Risk Assessment	derivation of Sound-wide 2050 landcover map; dev't of models linking landcover change predictions to NS ecosystem stressors	NST scoping, WDFW to contract and fund
Restoration Objectives	"how much of what is impaired will we attempt to address"	Goals & Objs Workgroup --> IT

Technical Reports

Geomorphic Classification	aka "Typology Report"	Shipman
Management Measures	restoration and protection actions described and linked to nearshore ecosystem processes	IT

Future Without Project Analysis

Alternative Future Scenarios Rpt.	definition of 6 plausible future scenarios for the Puget Sound region as defined by two key driving forces, eight other drivers	Urban Ecology Resarch Lab (Alberti et al)
FWOP	measure of change in ecosystem condition over time without implementation of new large scale ecosystem restoration efforts	FWOP Work group

joint mtg w/ hybrid work group created.

Task Status

- Task currently underway
- Task scoped, not yet initiated
- Task not yet scoped

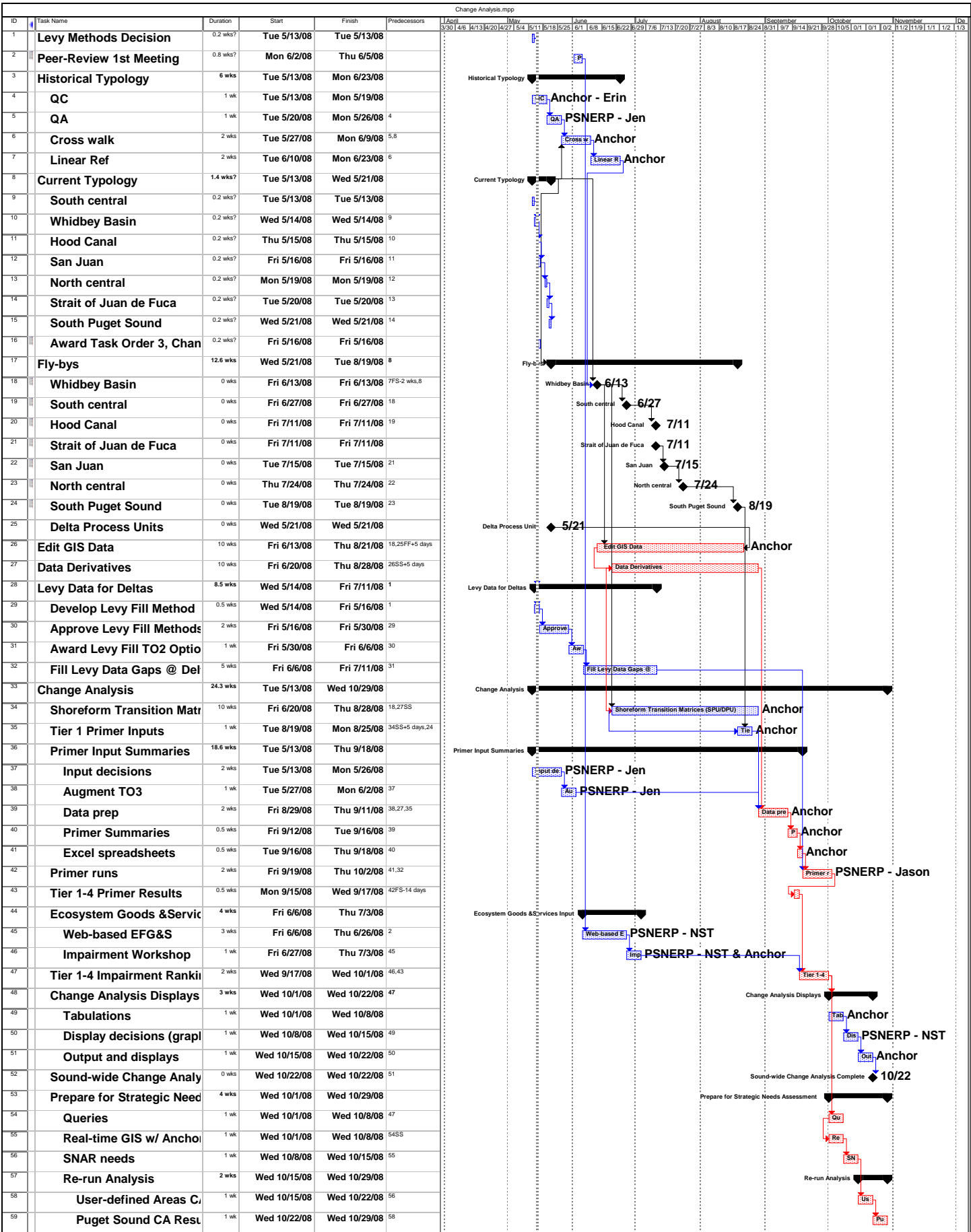
PSNERP General Investigation Study Current Tasks

Outcome

Task	Description	Assigned to:
Strategic Science Peer-Review		
1st Peer Review Panel Mtg	Review of PSNERP Science background materials, including Change Analysis Report from Peer Review Panel Chair (Denise Reed) to Executive Committee co-chairs	WDFW (logistics, honorarium), NST (content) Peer Review Panel, Executive Committee
1st Panel Report		
2nd Peer Review Panel Mtg	Review of PSNERP Strategic Needs Assessment components, methods and results Report from Peer Review Panel Chair (Denise Reed) to Executive Committee co-chairs	WDFW (logistics, honorarium), NST (content) Peer Review Panel, Executive Committee
2nd Panel Report		
Sound-wide Change Analysis		
historic shoreline classification	application of geomorphic classification to historic shoreline	Anchor
current shoreline classification	application of geomorphic classification to current shoreline	SSHAIP
ecological functions, goods and services	matrix of relationship between nearshore ecosystems and Milineum Ecosystem Assessment framework for EFG&S	NST
data gaps	acquisition of data necessary for Change Analysis not already available comparison of historic/current conditions, application of statistical analysis to data,	Anchor
change analysis	derivation of impairment levels	UW/Anchor

- 2008

Task Status	
Task currently underway	
Task scoped, not yet initiated	
Task not yet scoped	



Project: Change Analysis
Date: Thu 5/19/08

Task		Milestone		Rolled Up Critical Task		Split		Group By Summary	
Critical Task		Summary		Rolled Up Milestone		External Tasks		Deadline	
Progress		Rolled Up Task		Rolled Up Progress		Project Summary			

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<p align="center">Nearshore Strategic Science Review Panel Meeting 1 Agenda June 3 – 5, 2008 Generally, 8:30 a.m. to 5 p.m. University of Washington Campus and Field Trip Locations</p>				
Objectives: 1. Develop Panel understanding of Puget Sound system and PSNERP restoration program 2. Review and comment on scientific foundation documents as adequate for systematic needs assessment.				
Materials: <ul style="list-style-type: none"> • laptop and memory stick • copy of agenda • PSNERP GI Background document 				
Time	Topic	Process	Who	Background Documents
Day One – UW Campus, Ocean Science Bldg. Dean’s Conf. Room				
8:30	Intro	Welcome & Introductions		
8:45		Review agenda and logistics for field trip		Agenda
9:00	Program Overview	Puget Sound Nearshore Ecosystem Restoration Project <ul style="list-style-type: none"> • Mission and purpose • Relationship with and distinction from other restoration initiatives in Puget Sound • Roles and responsibilities • Timelines • Funding • Guiding Principles 	Hargrave Tanner Others?	PSNERP GI Background
10:00		➤ Discussion: Where is PSNERP science heading and how does the Strategic Science Review Panel fit into this process?		
10:30	BREAK		All	
10:45	Background on Puget Sound nearshore ecosystem structure	Focus on the Puget Sound nearshore ecosystem structure (structured by topic areas) <ul style="list-style-type: none"> • Nearshore Classification (geomorphic typology) • Valued Ecosystem Components 	Shipman Dethier	Typology doc 2007-07 VEC
12:00	LUNCH		All	
1:00	PS Ecosystem (cont’d)	<ul style="list-style-type: none"> • Relationship of nearshore ecosystem structure to processes and function: Nearshore Conceptual Model • “Process Unit” approach and the organization of geospatial data 	Simenstad Burke	2006-03 CM

2:30	BREAK	<i>By this time, panelists need to have a good understanding of the system and how it works and how PSNERP NST has developed a systematic approach to categorizing ecosystem structure, process and function</i>	All	
2:45		<ul style="list-style-type: none"> ➤ Discussion: Q&A between Panel and NST on science background <ul style="list-style-type: none"> ○ Guiding principles ○ Conceptual basis ○ Systematic approach to organizing data on nearshore ecosystems ○ Utility for restoration and preservation ➤ 	SSRP and NST	
3:45	BREAK			
4:00	SSRP Closed Session	Review and discussion of background materials	SSRP	
Day Two – Field Trip				
Objective: Familiarize panel with on-the-ground examples of needs, opportunities and constraints for ecosystem restoration in Puget Sound. To include beach-bluff and delatic systems if possible.				
		Sites To Be Announced, to include sites where restoration actions have been completed and one or more “typical” nearshore ecosystem examples.		
Day Three – UW Campus Ocean Science Bldg. Dean’s Conf. Room				
8:30	Intro	Welcome, introductions, and review agenda (it may be revised by this point)		
8:45	Field Trip Review	Address issues and questions arising from the field trip		
9:30	PSNERP Technical Approach	Change Analysis <ul style="list-style-type: none"> • Approach, strategy and assumptions • Data development and derivates • Change detection 	Burke Simenstad	PowerPoint presentation
10:30	BREAK		All	
10:45	Incorporating science (cont’d)	Change Analysis <ul style="list-style-type: none"> • Data analysis and results • Interpretation 	Simenstad	PowerPoint presentation
11:30		<ul style="list-style-type: none"> ➤ Discussion: Q&A between Panel and NST on technical approach 	SSRP and NST	
12:00	LUNCH		All	
1:00	Closed Session	Strategic Science Review Panel discussion and development of preliminary findings	SSRP	
4:00	Report Out	SSRP reports out to PSNERP	SSRP and NST	
5:00	Adjourn		All	

The Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) Background for Strategic Science Review Panel Members – May 2008

Introduction

This document is intended to provide members of the Strategic Science Review Panel (SSRP) a “high level” overview of the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) and the scientific foundations of the Project’s guidance by it’s Nearshore Science Team (NST). Our objectives in this document are to: (1) provide SSRP members with context useful in understanding more comprehensive background of the Project; (2) reference supporting products; and (3) present a coarse-scale roadmap for embarking on the task of strategic science peer-review.

Purpose of the PSNERP General Investigation Study

PSNERP began as a General Investigation (GI) Study in September 2001, based on a feasibility cost sharing agreement (FCSA) between the Seattle District Army Corps of Engineers and the Washington Department of Fish and Wildlife (WDFW). Substantive work on the project began in Federal Fiscal Year 2002 (October 1, 2001) with the initial funding of the GI study. Details of the FCSA are described in the [Project Management Plan](#) (PMP). The original work plan outlined in the PMP was replaced by a subsequent, more detailed [PSNERP Work Plan](#) as details of the technical approach for the program emerged from the Nearshore Science Team and the Project Management Team.

The purpose of a General Investigation study is to establish a partnership between the federal government (U.S. Army Corps of Engineers) and a local sponsor (in this instance the WDFW) to investigate addressing water resources problems and opportunities. In the case of the PSNERP GI, the purpose is to determine if there is a federal interest in undertaking ecosystem restoration in the nearshore environments of Puget Sound. As defined in the PMP:

“The purpose of the Feasibility study is to evaluate significant ecosystem degradation in the Puget Sound Basin; to formulate, evaluate, and screen potential solutions to these problems; and to recommend a series of actions and projects that have a federal interest and are supported by a local entity willing to provide the necessary items of local cooperation. The recommended plan must significantly contribute to the identified restoration objectives of restoring nearshore habitat of Puget Sound for the benefit of the biological resources and the integrity of the ecosystem, including the functions and natural processes of the basin; additionally the plan must be both technically viable and economically sound.”

Program goals and strategies emerged from early program guidance, and project “team” discussions. These goals are described in the PSNERP Work Plan, and serve to define our work and approach:

The following goals are proposed to guide PSNERP:

- 1. Protect and/or restore natural processes that create and maintain Puget Sound nearshore ecosystems; and*
- 2. Protect and/or restore ecosystem functions and structures that support valued ecosystem components.*

Of special importance in these goal statements is that the Project, and the underlying NST guidance, is: (1) concentrating on shallow-water, nearshore (i.e., shoreline, estuarine) ecosystems; (2) focusing on the (dominantly physical) processes that create and sustain natural ecosystems, rather than on the creation or enhancement of nearshore ecosystem or habitat structure; and, (3) including both restoration and protection strategies. We believe that our attention to the underlying processes supporting these specific ecosystems provides us the fundamental scientific foundation required to protect and restore sustainable ecosystem, rather than technological fixes.

Our focus on the condition of nearshore ecosystems and their associated processes also diverges from other approaches that focus on ecosystem stressors or limited ‘target’ organisms or functions. The NST has adopted this approach for the preliminary “screening” analyses because: (1) the source of many stressors originate outside nearshore environments and thus cannot be directly addressed by nearshore restoration; (2) the distribution and concentration of many stressors, such as contaminants, are not known comprehensively around Puget Sound, which limits a Sound-wide analysis; (3) many such stressors have been targeted by federal, state and local programs or have recently been the objective of new initiatives (e.g., Hood Canal hypoxia); and, (4) we believe that an ecosystem-approach will widely address many “target” organisms or functions of concern because protection and restoration of nearshore ecosystem processes will benefit all associated functions, goods and services, including but much more than just the ‘valued ecosystem components.

The following strategies will be used to achieve PSNERP goals:

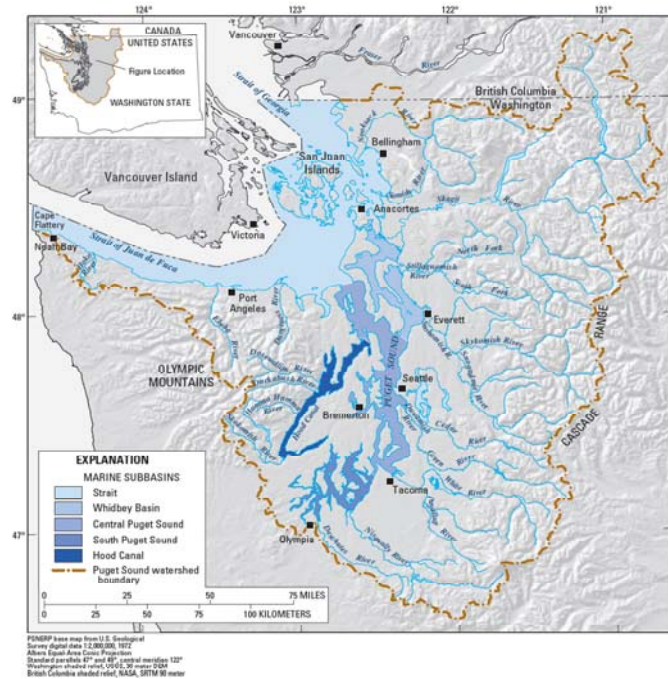
- 1. Increase understanding of the natural processes and functions of the Puget Sound Nearshore;*
- 2. Connect and integrate PSNERP with related restoration and protection efforts;*
- 3. Develop a strategic restoration plan based on a spatially explicit assessment of nearshore ecosystem restoration needs.*
- 4. Secure funding for implementation of actions in the strategic restoration plan;*
- 5. Improve the quality of protection and restoration decision-making through active monitoring and adaptive management.*

Intended Outcome

The outcome of GI studies is delivery of a Final Feasibility Report. We anticipate this study will conclude that there is a federal interest in restoration of Puget Sound nearshore ecosystems, and that there are specific projects that the Corps can feasibly complete. If these assumptions are confirmed, then the local sponsor and others would work to increase federal funding to implement these projects. Options include establishing an ecosystem restoration authority similar to that found elsewhere in the United States, and/or increases in existing authorities and appropriations.

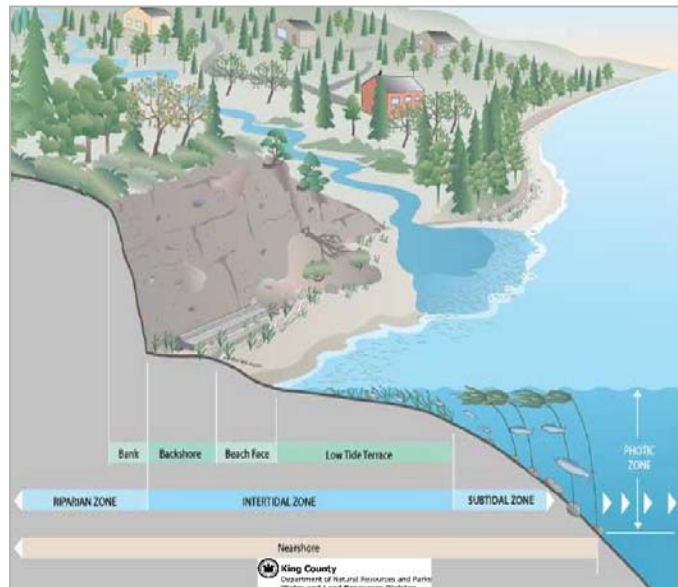
In addition to the opportunity to increase federal support for Puget Sound restoration, the PSNERP GI will also deliver more immediate results. Our approach to conducting the GI will result in a Sound-wide analysis of nearshore restoration and protection needs, and a prioritized list of specific recommended actions to address those needs. We anticipate that such a “Strategic Needs Assessment” will assist on-going and future restoration and protection initiatives by providing a comprehensive, science-based “blueprint” for coordinated action. PSNERP is also

committed to delivering a programmatic adaptive management framework to specifically address areas of uncertainty and risk, and lead to continuous improvement in project selection and implementation.



Project Scope

Topical Scope – Our study is focused on relationships between nearshore ecosystem processes, associated structure, and supported functions. This focus yields results that pertain primarily to physical habitat conditions, and does not address factors such as environmental contaminant impacts on nearshore ecosystems. This is largely driven by the types of actions that can be implemented under authorities of the Corps of Engineers. We recognize that there are a myriad of stressors on nearshore ecosystems, and that restoration and protection need to be coordinated with other actions. We also stress that our scope is explicitly ecosystem focused, and does not address species-specific nearshore habitat requirements *per se*.



Spatial Scope – The PSNERP GI includes evaluation of the entirety of portions of Puget Sound within the borders of the United States (Figure 1). Within this spatial extent, we are focused on nearshore ecosystems. We define the nearshore environment to include estuarine deltas, marine shorelines and areas of shallow water from the top of the coastal bank or bluffs to water at depths associated with the photic zone (Figure 2).

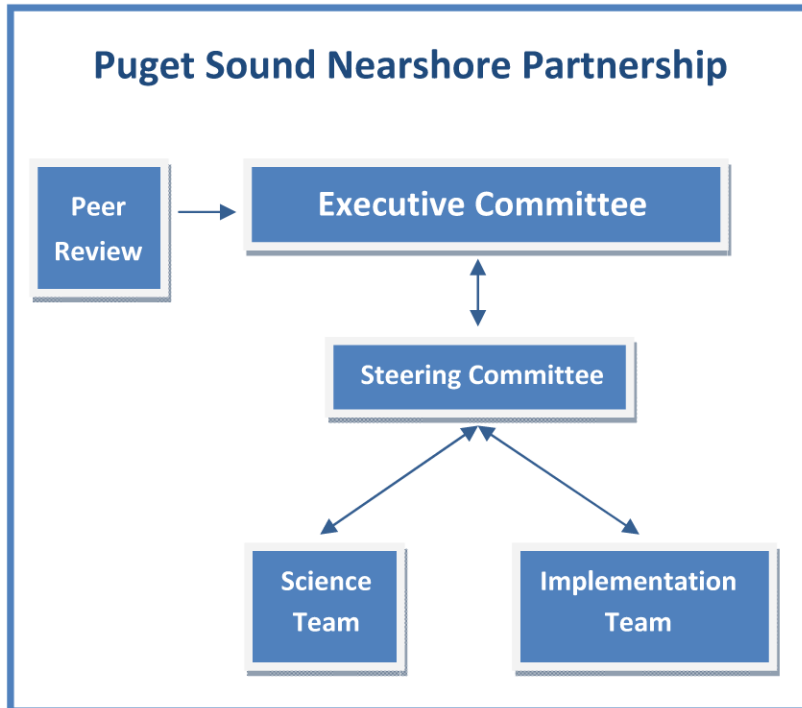
Evolving Scope – As described previously, PSNERP was initiated as a GI study between the Corps and WDFW. Over time, interest in nearshore restoration and

protection and our work has grown. In 2004, we adopted the name Puget Sound Nearshore Partnership to reflect our more diverse base of support and broader range of activities. Nearshore Partnership activities include research and on-the-ground restoration actions that are related to the GI study, but beyond the specific scope of the PMP. A more detailed description of this evolution can be found on the inside back cover of our recent technical reports (2006-07 series).

More recently, an increased focus on the broader range of actions necessary to protect and restore the health of Puget Sound has led to the creation of a new state agency – the Puget Sound Partnership (www.psp.wa.gov). The Puget Sound Partnership describes itself as a “community effort of citizens, governments, tribes, scientists and businesses working together to restore and protect Puget Sound.” The charge given to the Puget Sound Partnership by Governor Gregoire and the Legislature is to create an “Action Agenda that turns things around and leads to a healthy Puget Sound”. We anticipate that the relationship between our Nearshore Partnership and this new, broad Puget Sound Partnership will be one of mutual support. Much of our work will contribute directly to their mandate of a “healthy Puget Sound by 2020” and, more specifically, the Action Agenda.

Program Structure - Nearshore Organization

A complete list of Puget Sound Nearshore Partnership participants can be found on our website at: <http://www.pugetsoundnearshore.org/who.htm>. Our program organization includes the



following elements with specific roles and responsibilities.

Executive Committee Role –
The role of the Executive Committee is to serve as the executive body of the Nearshore Partnership; to oversee implementation of the Partnership’s mission; receive bi-annual progress reports from the steering committee; and to serve as an advocate for the partnership in international, federal, state, tribal, and local government forums.

Steering Committee Role –
The role of the Steering Committee is to steer implementation of the project

management plan; to develop any proposed changes to the project management plan; to advise and recommend actions to the managers related to the implementation of the project management plan; to maintain a set of policies and procedures; and to report to the Executive Committee.

Project Management Team Role – The project management team is comprised of leads from Implementation Team, Nearshore Science Team, and the federal and local project managers. This group works to insure coordination of activities across the program, and to make collective decision on allocation of program resources towards critical path tasks.

Implementation Team Role – The role of the Implementation Team is to identify opportunities at specific geographic locations to apply and test Nearshore Science Team products, guidance, and

principles; and to develop an approach to the identification, evaluation and assessment of potential restoration and protection projects and actions.

Nearshore Science Team Role – The role of the Nearshore Science Team is to identify, develop or acquire, and present the best scientific information available to the Steering Committee for use in steering implementation of the Project Management Plan. The Nearshore Science Team works at the direction of the Steering Committee

PSNERP Technical Framework

The SSRP review in 2008 will be organized around two meetings: (1) the first meeting (June 2008) will concentrate on the formative “building blocks” that the NST has designed and implemented in preparation for their systematic assessment of restoration and preservation needs in Puget Sound; and (2) the second meeting (Fall 2008) will address the technical details of the proposed conceptual and analytical approach, procedures, and products that utilize the building blocks evaluated in Meeting #1. These procedures and products will subsequently be applied to arrive at a portfolio of nearshore ecosystem restoration and preservation actions that would be submitted to the US Congress for funding. The PSNERP components and products, and how their review is partitioned into the initial two SSRP meetings, is illustrated in the following diagram.

Meeting One

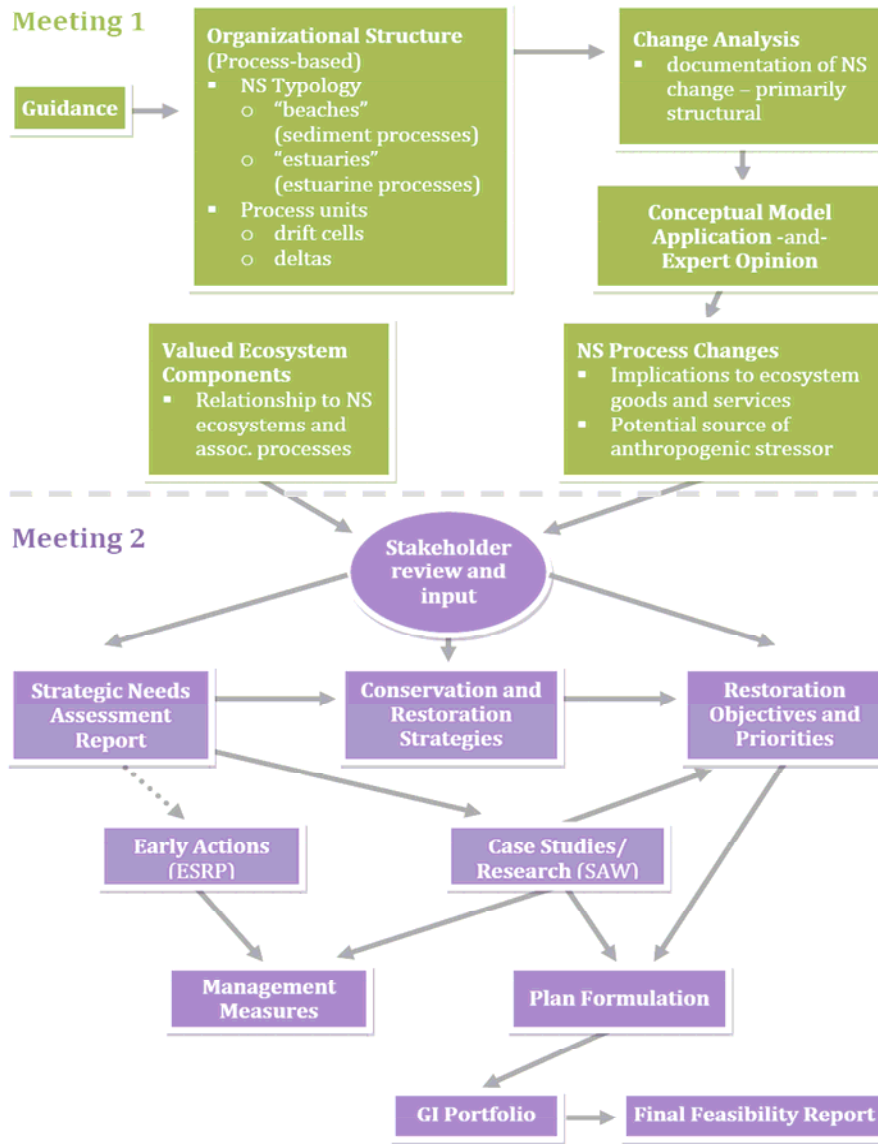
Through the course of this initial (Meeting #1) review, the SSRP is requested to address the following overarching questions about the scientific foundation of PSNERP:

1. Have we sufficiently defined the problem with, or risk to, Puget Sound nearshore ecosystems that explains for the need and our approach to comprehensive restoration/preservation?
2. Is our vision for this program clearly articulated and understandable?
 - If not, what don't you understand?
 - What changes can we make to improve?
3. From the standpoint of your scientific discipline, what is missing from the scientific foundation of this program that could be addressed in the near-term?
4. Based on your experience with large-scale ecosystem restoration programs, do you have any concerns (or any compliments!) about the way we are trying to incorporate the best science?
5. Are there any gaps in the products we are generating, or the logic of the process, that you think may impede our ability to complete our study?
 - What can we change or alter in the steps we have yet to complete?
 - When and how should we increase our ability to achieve interdisciplinary synthesis and integration?

Guiding Principles

In its first formative steps, the NST decided that it needed to establish consensus on three fundamental perspectives: (1) what could be learned from the scientific components of existing large restoration programs about the role and position of scientific input; (2) the guiding restoration principles; and, (3) and the fundamental ecological concepts and assumptions that would constitute the benchmark our scientific approach. They were designed to communicate our understanding of nearshore ecosystems and provide a framework for identifying, evaluating,

and implementing restoration and protection actions for nearshore ecosystems of Puget Sound. These foundation documents were published respectively as PSNERP technical reports 2004-01 (Van Cleve *et al.* 2004: [Application of "Best Available Science" in Ecosystem Restoration: Lessons Learned from Large-Scale Restoration Efforts in the USA](#)), (Fresh *et al.* 2004: [Guidance for Protection and Restoration of the Nearshore Ecosystems of Puget Sound](#)), 2004-03 (Goetz *et al.* 2004: [Guiding Restoration Principles](#))¹.



Conceptual Model
Given in part by the strong direction provided in the Lessons Learned analysis, we developed a conceptual model framework to aid in assessing restoration and preservation measures for nearshore ecosystems in Puget Sound. This model was designed primarily as a synthesis tool to better understand nearshore ecosystem processes and the response of nearshore ecosystems to different stressors, or alternatively, restoration actions. We have designed this model as a framework from which additional,

more explicit “sub-models” can be consistently developed that relate to specific nearshore stressors, landscape segments, functions, or restoration designs. A general description of the NST’s conceptual model was published as PSNERP Technical Report 2006-03 (Simenstad *et al.* 2006: [Conceptual Model for Assessing Restoration of Puget Sound Nearshore Ecosystems](#)).

¹ All these documents are provided in pdf form on your PSNERP-NST SSRP ‘memory stick’

Valued Ecosystem Components (VECs)

“Valued ecosystem components,” or VECs, are key elements of the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) conceptual framework for nearshore restoration. Nine abiotic and biotic “icons” of Puget Sound were identified as important to communicate the value of Puget Sound nearshore restoration to managers and the public: (1) native shellfish; (2) nearshore birds; (3) juvenile Pacific salmon; (4) orcas; (5) marine riparian vegetation; (6) marine forage fishes; (7) beaches and bluffs; (8) kelp and eelgrass; and (9) great blue herons. They are believed to embody both economic value and a mix of cultural, spiritual, and aesthetic values. A synthesis of the underlying human values that motivate the choice of VECs was published as PSNERP Technical Report 2007-07 (Leschine and Peterson 2007: [Valuing Puget Sound's Valued Ecosystem Components](#)), and each of the VECs is described in separate documents (2006-04 through 2007-06)¹.

Typological Structure

The NST's analytical template for the scientific analysis that will result in restoration needs and approaches is based on the spatial arrangement of the dominant ecosystem processes along Puget Sound's beaches, estuaries, and river deltas. As first order factors influencing ecosystem processes, we considered sedimentation processes (beaches) and freshwater inflow and mixing (estuaries/deltas) to be the dominant controlling factors. As a basis for this template and given a general lack of process-based information, the NST supported synthetic summarizations of the scientific knowledge (e.g., Finlayson 2006: *The Geomorphology of Puget Sound Beaches*¹) and developed a typology of Puget Sound nearshore landforms (Shipman 2008: *A Geomorphic Classification of Puget Sound Nearshore Landforms*¹). This typology forms the basis of our organization of how nearshore ecosystem processes are spatially organized and how variability in their impairment may be accounted for across Puget Sound.

Change Analysis

To assess the level of impairment of Puget Sound's shorelines, estuaries and deltas at a general “screening” level (sometimes described as “cm deep, Sound-wide”), the NST developed a systematic analysis of historic change between the earliest comprehensive data on nearshore ecosystem structure (e.g., General Land Office surveys of 1850's and US Coast and Geodetic Surveys of 1870's-1890's) and the present (2004-2006). This Change Analysis was organized around the Geomorphic Typology, such that rules were developed to delineate different shoreforms from both the historic and modern geospatial data. The shoreforms became one of the primary accounting units in a geospatial hierarchy of data that included: (1) shoreline drainage units; (2) shoreforms; (3) drift cell or delta hydrogeomorphic components; and (4) various larger (“user defined”) scales of shoreline-delta organization, such as large embayments, sub-basins, etc. of Puget Sound. Thus, data on changes could be assessed at various scales of tabulation and mapping (“units”), but the primary “process units” (PU) that we used for this basic screening effort were the drift cell or delta hydrogeomorphic components of this hierarchy. Early development of this Change Analysis and application of mapping shoreforms to historic data was described in PSNERP Technical Report 2005-01 (Fung and Davis 2005: [Historic Characterization of WRIA9 Shoreline Landforms](#)¹). The Change Analysis assessment is conducted at four tiers of spatial organization: (1) Tier 1: changes in shoreform composition in every Process Unit; (2) Tier 2: changes in Process Unit attributes (either historically mapped, such as wetlands, or obvious anthropogenic modifications) along the shoreline; (3)

anthropogenic changes within 200-m buffer in the adjoining uplands to the Process Unit and to the -10-m depth (e.g., average photic zone limit) offshore; and (4) anthropogenic changes in the total Process Unit drainage area. The NST determined that, at this stage of the analysis, we did not want to weight any of these changes or tiers to be more or less important than any other.

Nearshore Ecosystem Process Changes

The Change Analysis provides the basis for assessing the effect of altered ecosystem processes on nearshore structure, both as a response and as causal factor. In order to translate structural change to actual changes in nearshore ecosystem processes, the NST used the Conceptual Model understanding and expert opinion to attribute and rank the relationships of biotic and abiotic nearshore ecosystem processes to shoreforms, attributes (e.g., wetlands associated with shoreforms), and anthropogenic modifications. To further associate changes in nearshore ecosystem structure and process to social and cultural importance, we generated an NST-based assessment of ecosystem functions, goods and services (EFG&S) that would be associated with all possible changes at all tier levels. This EFG&S assessment was based on the Millennium Ecosystem Assessment (2005) and other variations (e.g., de Groot *et al.* 2002) but the NST did not carry the process to either value the EFG&S nor did we feel qualified to rank their relative importance to the Puget Sound decision-makers and populace; the process developed by the NST does, however, provide a template for various stakeholder input that would allow ranking and setting of priorities among the applicable EFG&S. The NST then applied the ranking of EFG&S by changes at each tier level for each Process Unit to assess a non-dimensional index of nearshore impairment that ranged from 9 (intact) to 1 (highly impaired).

Meeting Two

At this point, we envision that the second meeting of the Strategic Science Peer Review Panel will include:

Stakeholder Involvement – our efforts to incorporate stakeholder input in our process.

Strategic Needs Assessment Report – a program “milestone” document, providing a spatially explicit problem statement to guide Puget Sound restoration and protection actions.

Management Measures – a comprehensive description of the types actions that could be taken to address identified restoration and protection needs (e.g. dike removal, revegetation)

Early Actions – the incorporation of “on-the-ground” actions into our program activities, applying and refining the lessons of our study.

Case Studies/Research – more detailed analysis in specific locations to supplement Sound-wide analysis.

Conservation/Restoration Strategies – NST efforts to assess various conservation and restoration strategies drawn from conservation biology and landscape ecology sciences

Restoration Objectives and Priorities – Results from establishing quantitative restoration objectives

References

- de Groot, R.S., M.A. Wilson, and R.M.J. Boumans. 2002. A typology for the classification, description and valuation of ecosystems functions, goods and services. *Ecol. Econ.* **41**: 393-408.
- Millennium Ecosystem Assessment (MEA). 2005. **Ecosystems and Human Well-Being: Current State and Trends**. Island Press, Washington, DC.