Puget Sound Partnership and Recovery Implementation Technical Team
2010 Three Year Work Program Review
Nisqually Watershed (WRIA 11)

Introduction

The 2010 Three-Year Work Program Update is the fifth year of implementation since the Recovery Plan was finalized in 2005. The Puget Sound Partnership, as the regional organization for salmon recovery, along with the Recovery Implementation Technical Team (RITT), as the NOAA-appointed regional technical team for salmon recovery, perform an assessment of the development and review of these work programs in order to be as effective as possible in the coming years.

These work programs are intended to provide a road map for implementation of the salmon recovery plans and to help establish a recovery trajectory for the first three years of implementation.

In April 2010, two of the fourteen watershed chapter areas submitted early three-year work program updates on accomplishments, status of actions, and proposed actions that built on the work programs since 2006. The remaining twelve watershed chapter areas submitted their three-year work program updates in May 2010, with one submitting in June 2010.

The feedback below is intended to assist the watershed recovery plan implementation team as it continues to address actions and implementation of their salmon recovery plan. The feedback is also used by the RITT, the Recovery Council Work Group, and the Puget Sound Partnership to inform the continued development and implementation of the regional work program. This includes advancing on issues such as adaptive management, all H integration, and capacity within the watershed teams. The feedback will also stimulate further discussion of recovery objectives to determine what the best investments are for salmon recovery over the next three years.

Guidance for the 2010 work program update reviews

Factors to be considered by the RITT in performing its technical review of the Update included:

1) *Consistency question*: Are the suites of actions and top priorities identified in the watershed's three-year work plan/program consistent with the hypotheses and strategies identified in the Recovery Plan (Volume I and II of the Recovery Plan, NOAA supplement)?
2) *Pace/Status question*: Is implementation of the salmon recovery plan on-track for achieving the 10-year goal(s)? If not, why and what are the key priorities to move forward?
3) *Sequence/Timing question*: Is the sequencing and timing of actions appropriate for the current stage of implementation?
4) *Next big challenge question*: Does the three-year work plan/program reflect any new challenges or adaptive management needs that have arisen over the past year?

Watersheds were also provided with the following four questions, answers to which the Recovery Council Work Group and the Partnership ecosystem recovery coordinators assessed in performing their policy review of the three-year work program:

1) *Consistency question*: Are the suites of actions and top priorities identified in the watershed's three-year work plan/program consistent with the needs identified in the Recovery Chapter (Volume I and II of the Recovery Plan, NOAA supplement)? Are the suites of actions and top priorities identified in the watershed's three-year work plan/program consistent with the Action Agenda?
2) *Pace/Status question*: Is implementation of salmon recovery on-track for achieving the 10-year goals?
3) *What is needed question:* What type of support is needed to help support this watershed in achieving its recovery chapter goals? Are there any changes needed in the suites of actions to achieve the watershed's recovery chapter goals?
4) *Next big challenge question*: Does the three-year work program reflect any new challenges or adaptive management needs that have arisen over the past year either within the watershed or across the region?

Review

The following review consists of four components: a regional technical review that identifies and discusses technical topics of regional concern; a watershed-specific technical review focusing on the specific above-mentioned technical questions and the work being done in the watershed as reflected by the three year work plan; a regional policy review that identifies and discusses policy topics of regional concern; and a watershed-specific policy review focusing on the specific above-mentioned policy questions and the work being done in the watershed as reflected by the three year work plan. These four components are the complete work plan review.

I. Puget Sound Recovery Implementation Technical Team Review

The RITT reviewed each of the fourteen individual watershed chapter's salmon recovery three-year work program updates in May and June 2010. The RITT evaluated each individual watershed according to the four questions provided above. In the review, the RITT identified a common set of regional review comments for technical feedback that are applicable to all fourteen watersheds, as well as watershed specific feedback using the four questions. The regional review, along with the watershed specific review comments, is included below.

Regional Technical Review: 2010 Three-Year Work Plans – Common Themes

In addressing the review questions at the watershed level, as outlined above, the RITT also noted general comments common to all watersheds within the region. Four of these region-wide themes are listed below.

1. H-Integration

The work plans continue to emphasize habitat restoration projects for understandable reasons. However, salmon recovery also requires habitat protection, and hatchery and harvest management actions. **H-integration** has been considered in a number of watersheds by assessing progress towards plan goals in all of the H's. New projects using EPA funds to specifically address habitat protection for some watersheds came about because an overview of progress in all H's showed that habitat protection had received less attention than the other H's. It is important for all watersheds to assess how the work in each H will affect and be affected by the other H's. For example, do exploitation rate ceilings in harvest management provide sufficient fish to take advantage of newly restored habitat; is progress in restoring one type of habitat negated by the loss of the same kind of habitat due to inadequate protection? These kinds of questions will be an important component of adaptive management. Therefore, it would be advantageous to address them in subsequent 3-year work plans.

A challenge that still has not been met in most watersheds is to coordinate actions in all H's to the same set of hypotheses and strategies that underlie the watershed's recovery plan chapter. For example, it should be clear how a hatchery program set up to supplement production addresses the limiting factors for that watershed in a fashion complimentary to the habitat restoration and protection work in the same watershed. It is important to keep in mind that actions in all H's are aimed at moving the populations towards recovered levels of the same set of VSP parameters. Therefore, it would be advantageous for the managers of all the H's to work with each other towards a common vision of how their actions, in combination, will achieve this recovery.
Six steps of H-integration were suggested at a Shared Strategy workshop in 2006 to help groups begin this process). Some watersheds are working through them in a systematic fashion. We continue to support these steps as useful guidance for assuring that all H's are part of each watershed's recovery plan implementation.

1. Identify the people needed to participate, covering all Hs. Bring them into the process.
2. Gain a common understanding of how the H's influence the salmon system.
3. Agree upon common goals for improving salmon.
4. Select a suite of complimentary actions covering the Hs that address the goals (these should then be placed in the work plans).
5. Document implementation of actions and expected outcomes (in work plans).
6. Monitor, report, and adjust (adaptive management!).

2. Adaptive Management

One of the biggest challenges that the RITT has consistently identified for implementing the Puget Sound Chinook Recovery Plan is the development of realistic, useful, and applicable **adaptive management plans** at the watershed level. The Recovery Plan identified these as the key tool for addressing the scientific uncertainties inherent in the plan, yet developing this tool remains a challenge in 2010. To help identify needs, to

provide a consistent template for planning and prioritizing monitoring, to develop a process for refining short-term objectives and 10-year goals, and to increase the technical capacity of the watersheds to complete these plans, the RITT began working with three watersheds – San Juan Islands, Skagit, and Hood Canal - using the Open Standards conservation planning approach with the intent of expanding the work sequentially to other watersheds. As this work began, however, watersheds that did not want to wait for the RITT asked that it develop a template that they could use to prepare for RITT involvement. The template will be completed by July 1, 2010. The RITT will continue to work with watersheds on developing adaptive management plans using this template under a revised timetable. Although RITT support will be available to each watershed, the process of building the adaptive management and monitoring plans will still demand time, commitment, and resources from the watershed leads, planners and implementers of actions associated with the Recovery Plan.

3. Climate Change

Climate change is expected to affect the fundamental aquatic and terrestrial processes that control the quality and quantity of habitats for Pacific salmon. This change is the subject of global and regional research, modeling, and planning. For the RITT, Puget Sound Partnership, watershed groups, and other salmon recovery entities, climate change is likely to become a core issue when considering the types and designs of restoration efforts. Specific watershed-scale planning guidance regarding the effect of climate change on salmon and their habitats will require additional study. However, empirical data clearly demonstrate rising air temperatures in the Pacific Northwest during the 20th century, and regional climate models predict that this trend will continue. Resulting changes can be expected in watershed hydrology (magnitude and timing of peak and base flows), stream and ocean temperatures, ocean currents and coastal circulation, salinity gradients, sea level, and biological diversity. Salmon production is intimately linked with many of these variables.

As ecosystem processes and functions respond to climate change, adaptive strategies will need to be developed to mitigate and compensate in the implementation of salmon recovery efforts. The Puget Sound Chinook Recovery Plan and accompanying NOAA Supplement both indicate that climate change impacts on salmon need to be considered in evaluating recovery. The NOAA Supplement also identifies climate change as one of several "specific technical and policy issues for regional adaptive management and monitoring." To this end, the RITT will work with watershed groups, Puget Sound Partnership, and other stakeholders to develop of adaptive management plans that address climate change.

The following online references synthesize various agencies' efforts at understanding the potential impacts of climate change on natural resources in Washington State:

- University of Washington Climate Impacts Group. 2009. The Washington climate change impacts assessment: Evaluating Washington's future in a changing climate. http://cses.washington.edu/cig/res/ia/waccia.shtml

- University of Washington Climate Impacts Group. 2010. Hydrologic climate change scenarios for the Pacific Northwest Columbia River basin and coastal drainages. http://www.hydro.washington.edu/2860/

- Lawler, J.J. and M. Mathias. 2007. Climate change and the future of biodiversity in Washington. Report prepared for the Washington Biodiversity Council. http://www.biodiversity.wa.gov/documents/WA-Climate-BiodiversityReport.pdf

- National Wildlife Federation. 2009. Setting the stage: Ideas for safeguarding Washington's fish and wildlife in an era of climate change. http://wdfw.wa.gov/wlm/cwcs/nwf_climatechange09.pdf

For a comprehensive listing of resources regarding climate change impacts, preparation, and adaptation, see the Washington Department of Ecology website: http://www.ecy.wa.gov/climatechange/ipa_resources.htm.

4. Protection of Ecosystem Functions

An important element of recovering salmon in Puget Sound is the protection of existing habitat. Adequate protection of salmon habitat in Puget Sound continues to be an issue in all watersheds and continued degradation is noted throughout the area. While habitat restoration is relatively easy to implement by watersheds, given funding, protection of existing habitat is reliant on local regulations and their enforcement. Many regional policy drivers impact salmon habitat, including the Shoreline Management Act, Growth Management Act, National Marine Fisheries Service's Biological Opinion on the Federal Emergency Management Agency's implementation of the National Flood Insurance Program, and the Army Corps of Engineers' revised levee vegetation management policy. These regulations address many of society's concerns about the environment, but not necessarily salmon recovery first and foremost. Stakeholders in salmon recovery (e.g., the watershed groups, PSP, and RITT) need to develop ways to provide the

technical input for integrating, to a greater extent, actions that promote salmon recovery into these local and regional decisions and regulations affecting salmon habitat.

Watershed Specific Technical Review: Nisqually Watershed (WRIA 11)

In general, the major direction of the three-year work program has not changed over the last several years. This year, however, the work program outlines implementation of major changes in population management – a revised harvest management plan and a weir for managing the proportion of hatchery fish on the spawning grounds - that have been anticipated and planned for several years.

1. ***Are the suites of actions and top priorities identified in the watershed's three-year work plan/program consistent with the hypotheses and strategies identified in the Recovery Plan (Volume I and II of the Recovery Plan, NOAA supplement)?***

Yes, the work program is consistent with the hypotheses and strategy for the watershed. As noted in the work program description, the watershed has spent considerable effort developing watershed hypotheses and protection and restoration strategies based on modeling using the Ecosystem Diagnosis and Treatment model (EDT) and more recently the All H Analyzer (AHA model). The work program continues to use the conclusions of those modeling efforts to guide and prioritize watershed restoration and salmon recovery. The work program includes projects aimed to improving all four attributes of viable salmonid populations (abundance, productivity, diversity and spatial structure).

2. ***Is the implementation of the salmon recovery plan on-track for achieving the 10-year goal(s)? If not, why not and what are the key priorities to move forward?***

The implementation of habitat actions needed to meet 10-year goals appears to be on track. The watershed continues to emphasize habitat protect and restoration. With over 75% of the habitat in the watershed protected, the Nisqually is among the best-protected watersheds in the Puget Sound. A useful analysis to judge progress would be to model this level of protection against the 10-year goal of "no further degradation." Likewise, using EDT modeling as a gage of effectiveness, analyses suggest that the work plan restoration activities when completed will increase diversity from a current level of 80% to 93% of historical.

A major 10-year goal is to have 1200 natural origin Chinook on the spawning grounds while allowing less than 5% of the natural spawning population to be hatchery origin fish. The five-year benchmark is to reduce the proportion of hatchery fish on the spawning grounds from 76% to 10%. The three-year work plan describes projects to achieve these goals. These include installation of a seasonal main stem weir this year and revision of harvest management plans, including exploration of alternative selective fishing techniques. A proposed study of fish passage at the Centralia Diversion Dam, although not identified as the highest priority, will also provide information on whether the recovery actions will be able to meet five-year and 10-year goals.

3. Is the sequencing and timing of actions appropriate for the current stage of implementation?

The strategy for sequencing and timing of actions in the work program is appropriate. This has not changed much in the last few years. As noted earlier, the watershed has invested considerable effort in protection of key habitats and restoration of the estuary. Protecting existing habitat and restoring additional habitats are essential first steps in the sequence if subsequent changes in hatchery management or harvest are to succeed in rebuilding natural production. Beginning restoration activities early in the recovery sequence is important because it takes longer for habitat to recover to the point that it produces the desired responses in fish populations. Hatchery actions do not take as long to produce desired affects on some fish population characteristics, such as abundance and spatial distribution, and harvest can produce some the quickest responses when adequate habitat is available.

Much of the initial work was focused on priority freshwater and estuarine habitat. As these actions are implemented, the watershed is also increasingly focused on protection and restoration of the Puget Sound shorelines, which although they not necessarily within the geographical boundaries of individual watershed recovery planning areas are important for the growth, migration, and survival of Nisqually River Chinook. This sequencing and timing seems appropriate, especially as scientific frameworks for assessing and prioritizing nearshore habitat and projects have matured.

4. Does the three-year work plan/program reflect any new challenges or adaptive management needs that have arisen over the past year?

Yes. Capacity and funding remain challenges here as in all other watershed. The continued development of the Nisqually Adaptive Management Framework, however, has highlighted a number of needs that will be important in continuing progress in this watershed. A major challenge identified in work plan is the need to coordinate restoration and protection of shoreline. This is both a scientific and policy challenge. A second challenge is getting better information on population responses. The watershed has been actively conducting monitoring in many areas but more monitoring or research will be needed. The proposed study of fish passage at the Centralia Diversion Dam is one example. The proposed change in hatchery management strategy from a segregated hatchery program to a "stepping stone integrated hatchery program"[i] will also require addition monitoring and research to resolve key uncertainties if it is to work.

The Nisqually watershed group has been innovative in their use of EDT to model, predict, and monitor progress. One advantage of this approach is to summarize monitoring of multiple quantitative and qualitative variables and to translate complex ecological relationships into a simple index or statistic. As we have noted in the past, we recommend that if EDT modeling is used to generate metrics to measure progress, the modeling and results must incorporate uncertainty. For example, point estimates of productivity of 3.7 (current) versus 5.3 (expected from work program) may appear to be significant progress, but after including the confidence intervals, the two estimates may not be detectably different. We strongly recommend incorporating uncertainty into EDT analyses if they are to be used to gage effectiveness and progress.

II. Policy Review Comments

The Recovery Council Work Group, an interdisciplinary policy team made up of lead policy staff in federal, state, local agencies, as well as a lead policy staff representative from the Northwest Indian Fisheries Commission, evaluated each of the fourteen watershed work plans. In addressing their review questions, outlined above, the interdisciplinary team noted both general comments common to all watersheds within the region, as well as significant advancements and issues needing advancement that are watershed specific and need special attention. The general and watershed specific comments follow below.

Regional Policy Review: 2010 Three-Year Work Plan – Common Themes

The region wants to call attention to the significant amount of work and effort that each of the watershed groups put into updating the three-year work plan narratives and spreadsheets. Each year, the watershed groups build off of the previous year's reviews and information, incorporating this into the update. The watershed groups continue to demonstrate an increasing amount of sophistication in implementing the recovery plan, advancing strategically important projects by doing long-term planning, sequencing work, and ultimately prioritizing where funding is focused.

We look forward to continuing to work with watersheds to identify and facilitate high priority projects to move forward and to refine the process and three-year work plans.

Adaptive Management and Monitoring

Advancing monitoring and adaptive management remains a high priority both regionally and at the watershed scale. The majority of watersheds continue to indicate that this is a significant, 'next big challenge' in their areas. The NOAA Supplement has identified this gap in the Recovery Plan as a critical weakness. As part of the approval process, NOAA indicated that developing this plan was a requirement.

A coordinated monitoring and adaptive management framework that supports refinement at both the regional and watershed scales is critical to understand the pace and effectiveness of recovery actions. This framework and the resulting programs need to support an integrated approach to recovery implementation tracking, incorporate uncertainties around climate change, and develop or refine recovery plan goals where needed.

The region continues to be committed to supporting watersheds in advancing their efforts to develop and implement a monitoring and adaptive management plan in a way that acknowledges the interaction across habitat, harvest, hatchery, and hydropower management decisions. At the regional scale, several actions have been initiated to advance adaptive management, including:

1. RITT guidance on monitoring and adaptive management
2. RITT/PSP template for monitoring and adaptive management that builds a framework within which each watershed that can connect their monitoring information to other watersheds and the ESU.
3. RITT/PSP coordinated approach to support the development/advancement of monitoring and adaptive management programs in each watershed chapter area.

Significant resources are and will continue to be needed to support involvement in the development of these programs across the Puget Sound and then in the implementation of the programs via focused monitoring funds. Resources need to include having involvement from all sectors of salmon recovery working together: hatchery, harvest, habitat protection, habitat restoration, and hydropower.

Protecting Ecosystem Functions

Preserving options and addressing threats are critical components of recovery implementation both at the local and regional scale. Recovering salmon in Puget Sound requires effective regulatory protection of existing habitat, along with acquisition, incentives, and education and outreach programs around existing land uses. The protection of habitat through these and other approaches remains a high priority.

At this time, there are several opportunities to strengthen the nexus between habitat protection, salmon recovery, and different regulatory mechanisms.

- *Shoreline Master Programs and Critical Area Ordinances*: Local jurisdictions across the Puget Sound are working to update their shoreline master programs, through the Shoreline Management Act, and their critical areas ordinances, through the Growth Management Act. These two regulatory programs are critically important to our collective ability to protect and manage habitat since they address the management of riverine and marine shorelines, streams, wetlands, water recharge zones, and other ecologically important habitats for salmon. There is a strong need to incorporate existing information from the salmon recovery plan and implementation efforts into these regulatory updates in order to strengthen the relationship between land use management and the needs of salmon. Although the watershed groups are not the empowered entity for leading the effort to incorporate information from the salmon plan into the regulatory update, it is the responsibility of everyone involved to support local jurisdictions in adopting the regulations necessary to preserve recovery options for the future. This includes making information accessible as well as understandable within a regulatory context.
- *FEMA's National Flood Insurance Program (NFIP):* NOAA recently issued a Biological Opinion on FEMA's NFIP, concluding that the program jeopardizes and adversely modifies designated critical habitat for salmon recovery. Since this decision in 2009, there has been a significant amount of concern and conversation about how to respond. Local jurisdictions, along with FEMA, NOAA, PSP, and others, are working to identify a clear path forward for protecting floodplains in terms of ecosystem recovery and human health and well being. Implementation of an agreed-upon approach to limit the impacts of development in the floodplain will require additional resources at the local and state level and need to be tracked as part of understanding the status of salmon recovery efforts.
- *Army Corps of Engineers Levee Vegetation Management Policy*: A significant amount of riparian habitat sits on top of levees within the floodplains and deltas of the Puget Sound. The Corps' policy requires the removal of vegetation over two inches in diameter. This new levee vegetation management policy removes significant amounts of vegetation, which provide salmon habitat in already degraded riparian areas. A regional response to this policy is underway and important to continue to support in order to reduce the

negative impact for salmon recovery. Numerous entities, including state agencies, local governments, non-profits, tribes, and the Puget Sound Partnership, sent a letter to the Corps urging that this policy be changed to allow for retention of more trees on levees.

Additionally, there are non-regulatory mechanisms that are timely. This includes:

- *Education and Outreach:* Many of the watersheds identified education and outreach programs as an element of their work plans. Working with the public to advance a comprehensive understanding and individual actions associated with recovery is critically important. Advancing programs across the watersheds and that are mutually supportive within the watersheds will help strengthen the effort.
- *Nearshore Technical Assistance*: protection of the nearshore remains a high priority for salmon recovery across the Puget Sound. There are emerging tools and resources available, including technical work from the General Investigation for the Puget Sound nearshore, the monitoring and adaptive management template, and watershed-based prioritization approaches for nearshore. Continuing to advance the thinking around fish utilization and critical nearshore habitats will support a refined approach to protection and balancing different uses along the nearshore.

<u>Focus on salmon recovery</u>

Salmon recovery implementers continue to be pulled in many directions by other mandates. The Puget Sound Partnership and the Policy Work Group recognize that implementation of salmon recovery actions remains a high priority. Maintaining a focus on the priorities in the salmon recovery plan, as described in each watershed chapter plan, will be increasingly challenging, and will require a continued investment of time, resources and support.

<u>Funding</u>

Establishing consistent, reliable funding for capital and non-capital projects to implement the recovery plan chapters continues to be a challenge. It is critically important to fund implementation of the plan, at an adequate level, in order to keep the momentum and focus on recovery. Lack of capacity across member organizations of watershed groups remains a significant limiting factor for advancing recovery objectives. The advancement of H-integration and adaptive management objectives, in particular, call for continued funding to support ongoing coordination and participation.

<u>Balancing Land Uses</u>

The Puget Sound Partnership funded a report, *Obstacles to Implementing Important Capital Project for Salmon Recovery* (Blackmore Consulting, 08/27/09), to identify obstacles for implementing habitat restoration for salmon recovery around the Puget Sound. The report identified the following key obstacles that continue to be a challenge and require significant regional and local resources:

- Balancing working lands, primarily agriculture and working forests, with salmon recovery. This is especially important in the estuaries where both working agriculture and salmon restoration is located.
- Supporting a decision-making approach that incorporates salmon recovery needs, based on the plan, into decisions at the federal, state, and local scale. This is often difficult due

to variable politics and community support but ultimately has a significant impact on our collective ability to complete capital projects on pace to achieve recovery goals

Watershed Specific Policy Review: Nisqually Watershed (WRIA 11)

Materials: Recovery Plan chapters, 2007, 2008, & 2009 three-year work plan updates and reviews, and 2010 three-year work plan updates

Significant Advancements:

- Nisqually watershed is taking the lead in advancing H-integration, potentially as a model for watersheds across the Puget Sound. Significant resources and time applied to updating the stock management plan with the objective of managing hatchery and natural fish populations to allow the development of natural origin stock that is locally adapted to the Nisqually watershed. The construction of a mainstem weir will advance H-integration by allowing the tribe to maintain harvesting at acceptable levels while ensuring that goals are met for hatchery and native origin stock on the spawning grounds.
- Advancing adaptive management and monitoring planning, including evaluating the status and trends of Chinook in the watershed and in nearshore areas outside the watershed.
- Successfully identified and sequenced priority projects for habitat restoration and protection using current habitat conditions and EDT modeling for both Chinook salmon and steelhead to identify species interaction with habitat needs. This strategy advances recovery through the identification of habitat that is important for species abundance, capacity and life history diversity.
- Successfully completed major restoration work in the Nisqually Estuary that will significantly increase salmonid abundance. This work involved the coordination of multiple entities, funding resources, and technical expertise, and resulted in the return of 762 acres to estuary habitat. Resources were also dedicated to the completion of major restoration projects in the Ohop and Mashel subbasins that will contribute to life history diversity of Nisqually Chinook.

Issues Needing Advancement:

- Continuing to retain the momentum and working to secure funds to advance H-integration will be important for meeting stock management objectives.
- Continuing to advance adaptive management and monitoring to achieve salmon recovery goals in the watershed will be important as a tool to understanding status of recovery efforts. Integration of the existing Nisqually work with the regional approach will help connect Nisqually information to the status of the ESU.
- Continuing to work to secure funds for high priority projects, identified and sequenced through the modeling and ranking process, is critical for recovery.
- Working across watersheds, such as with the South Sound watersheds, to advance and secure resources for the protection and restoration of nearshore habitat is critical to achieving Nisqually Chinook recovery.

[i] Note: Although the concept of a "stepping stone integrated hatchery program" is not new, this terminology will be new to many readers. In future references, we recommend that it explained so that readers know what it is.