

WRIA 1 3-YEAR IMPLEMENTATION PLAN

WRIA 1 Watershed Recovery Strategy

The ultimate goal for salmon recovery in WRIA 1 is to recover self-sustaining salmonid runs to harvestable levels through the restoration of healthy rivers and natural stream and estuary/nearshore marine processes, careful use of hatcheries, and responsible harvest, and with the active participation and support of local landowners, businesses, and the larger community. In the near-term (10-year time frame), however, the objectives are to: (1) focus and prioritize salmon recovery efforts to maximize benefit to the two Nooksack early chinook populations; (2) address late-timed Chinook through adaptive management, focusing in the near-term on identifying hatchery- versus naturally-produced population components; (3) facilitate recovery of WRIA 1 bull trout by implementing actions with mutual benefit to both early chinook and bull trout and by removing fish passage barriers in presumed bull trout spawning and rearing habitats in the upper Nooksack River watershed; and (4) address other salmonid populations by (a) protecting and restoring WRIA 1 salmonid habitats and habitat-forming processes through regulatory and incentive-based programs; and (b) encouraging and supporting voluntary actions that benefit other WRIA 1 salmonid populations without diverting attention from early chinook recovery. Planning targets for the priority Nooksack early chinook populations are presented in Table 1. Focusing efforts on early chinook is consistent with regional salmon recovery – current abundance and productivity for the two populations is very low and recovery of both populations is critical to delisting and recovery of Puget Sound Chinook.

Table 1. Planning targets for Nooksack Early Chinook.

Population	Adult Return¹	Spawners (Natural Origin)²	Productivity³	Diversity Index⁴
North Fork early chinook	10,600	3,400	3.1	97%
South Fork early chinook	7,600	2,300	3.3	98%

¹ Ocean Recruits at MSY

² Spawners at MSY

³ Productivity at MSY

⁴ Diversity Index refers to the percentage of estimated potential life history trajectories that are sustainable.

10-Year Action Plan

The WRIA 1 Salmonid Recovery Plan (Appendix B) identified 8 actions to be implemented over the next 10 years that would address the near-term priorities presented above:

1. Establish a South Fork gene bank/supplementation program
2. Restore anadromous fish passage at early chinook barriers (Middle Fork diversion dam and Canyon Creek)

3. Habitat restoration in the Forks, mainstem Nooksack River, and major early chinook tributaries
4. Habitat protection and restoration in estuarine and nearshore areas
5. Integrate salmon recovery needs into floodplain management planning
6. Integrate salmon recovery needs into local Critical Areas Ordinance and Shoreline Management Program updates
7. Establish new instream flows and begin implementation of instream flow management programs
8. Restore functioning riparian and water quality conditions and reconnect isolated habitats in lower mainstem tributaries and independent tributaries in WRIA 1

Expected results of the 10-Year Action Plan were modeled through EDT and are presented in Table 2. The results represent the long-term benefits of actions implemented in the 10-year time frame, rather than the expected population status after 10 years.

Table 2. Estimated benefits of 10-year plan on Nooksack early chinook populations.
 Note: Benefits are projected over the long term and assume no net degradation from land use.

Population	Adult Return	Spawners (Natural Origin)	Productivity	Diversity Index
North Fork early chinook	3,400	1,600	2.2	89%
South Fork early chinook	1,900	860	3.3	87%

3-Year Prioritized Implementation Plan

Process for Identification of Actions

Earlier this year, the Steering Committee of the WRIA 1 Salmon Recovery Board tasked the WRIA 1 Salmon Recovery Work Group with developing a near-term salmon recovery implementation plan. To develop the 3-year implementation plans requested by the Puget Sound Salmon Recovery Council, the Work Group hosted workshops for two geographic areas for which reach assessments/restoration planning efforts were complete or underway: the South Fork and the North Fork Nooksack River. Local, state, tribal, and federal agency and regional fisheries enhancement group staff with relevant knowledge and expertise were invited to the workshops, wherein salient findings of the reach assessments and preliminary project concepts were presented and discussed. Reach assessment leads and Work Group members incorporated feedback from the workshops into the action lists for each of the South and North Forks. Actions identified for the lower South Fork (RM 0 -14.3), where reach assessments have been completed, are more developed than for either the lower North Fork (RM 36.5 - 57) or upper South Fork (RM 14.3-31), where reach assessments are currently underway. Comprehensive assessment and restoration planning has also been completed for the Estuary and projects for the 3-year time frame were identified by the assessment lead (Lummi Natural Resources). Projects in other geographic areas (Middle Fork, mainstem, nearshore) were identified by Work Group staff and discussed through a series of Work

Group meetings. Reach assessment and associated restoration planning is proposed for each of these areas; until complete, actions proposed for these areas will tend to be more opportunistic than in areas where comprehensive restoration planning has been completed. Programmatic actions were also identified by Work Group staff. Throughout all areas, actions were selected that were deemed important for Nooksack early chinook or, in some cases, other salmonid populations *and* are ready to proceed from a planning perspective. Important early chinook actions are those that either substantially address the most important limiting factors for early chinook (Appendix A) or support adaptive management.

It is important to recognize the proposed actions are based on our current scientific knowledge as it pertains to salmon recovery. Our ability to implement these actions will depend on the community's willingness to act and support these actions. This support can be realized provided the WRIA 1 Salmon Recovery Board devotes the resources needed to involve local communities in the development and implementation of salmon recovery projects. In addition, and in many cases, a salmon recovery project may be part of a larger project having multiple objectives, such as a flood hazard or bridge replacement project. Ultimately our success will depend on our ability to engage the community in a way that supports salmon recovery while addressing other community needs.

Prioritization of Actions

After actions were identified, the Work Group assigned a priority level to each action. Prioritization scheme follows:

- Priority 1A: Highest priority actions for Nooksack early chinook populations, i.e. those expected to yield relatively quick and significant improvement in population abundance and productivity by addressing important limiting factors through improvements in holding, spawning, incubation, and early rearing habitat. Habitat/watershed restoration projects that address important limiting factors in the Forks (including reach assessments that will lead to projects), instream flow negotiations for the Middle Fork, and the South Fork supplementation program comprise this category.
- Priority 1B: Actions that are a lower relative priority for Nooksack early chinook but seek to build community support and/or integrate salmon recovery with flood hazard management.
- Priority 1C: Studies to fill nearshore data gaps and habitat and chinook population monitoring to support adaptive management.
- Priority 2: Moderate priority actions for Nooksack early chinook populations, i.e. those expected to improve population abundance, productivity, spatial structure, and diversity through improvements in rearing habitats. Habitat restoration projects that address important habitat limiting factors in the mainstem Nooksack and Nooksack/Lummi estuary comprise this category.
- Priority 3: Actions that are lower priority in this time frame for Nooksack early chinook populations, i.e. those expected to improve population abundance, productivity, spatial structure, and diversity through improvements in nearshore rearing and transitional habitats. Habitat projects addressing limiting factors in Bellingham Bay are found in this category.

- Priority 4: Actions that primarily benefit other WRIA 1 salmonids. Fish passage restoration including non-chinook habitats, population monitoring of other species, and habitat and instream flow restoration in tributaries to the lower mainstem comprise this category. Actions that opportunistically take advantage of funding opportunities that will not affect funding available for priority salmon recovery projects.

Overview of 3-Year Implementation Program

The WRIA 1 3-year implementation program establishes an ambitious pace for and constitutes substantial progress towards implementation of the 10-year action plan.

An overview of the key actions of the 3-year plan, organized by 10-year action, are presented below. The category number below is also listed in the accompanying spreadsheet for specific actions associated with each item.

1. South Fork chinook supplementation program, designed to conserve the South Fork early chinook population until habitat conditions improve. **Priority 1A.**
2. Restoration of passage at the two identified early chinook barriers, Middle Fork diversion dam and Canyon Creek. **Priority 1A.**
3. Habitat restoration of early chinook freshwater habitats.
 - a. South Fork. The lower South Fork (RM 0 – 13) is one of the primary focus areas for restoration efforts since it is the most important reach to restore for the SF population and because reach assessments and restoration planning have been completed. The upper South Fork is also important although conditions are less degraded; reach assessment and restoration planning is currently underway. Projects in the South Fork address the following limiting factors: (1) habitat diversity by placing wood jams to provide wood cover and increase habitat unit diversity and complex edge habitat, and by restoring floodplain forest; (2) key habitat quantity by increasing quantity of deep pools and reconnecting sloughs; (3) temperature by creating thermal refugia, i.e. deep, complex, pools in areas of cool groundwater influence expected to promote thermal stratification, and restoring tributary riparian areas and wetlands; (4) sediment load by reconnecting forested floodplain areas that can promote fine sediment deposition, or assessing or treating forest roads; and (5) channel stability (impact of which was underestimated in EDT) by removal/setback of levees and/or hardening and a study of the feasibility of construction of a chinook spawning channel. **Priority 1A or 1B.**
 - b. North Fork. The lower North Fork (RM 36.5 to 57) is another primary focus of restoration, since it is the most important reach to restore for the NF/MF population and because reach assessment and restoration planning is underway. Projects in the North Fork (including Canyon Creek, see category 2 above) address the following limiting factors: (1) channel stability, through log jam placement throughout the active channel, including at heads of side channels with upland or groundwater sources of flow; and (2) key habitat quantity, through log jam placement

- that forms pools, side channels and complex edge habitat. Sediment load will be addressed through ongoing forest road management through Forest and Fish and USFS; this action is not described in the detailed descriptions or spreadsheet. **Priority 1A.**
- c. Middle Fork. Reach assessment and restoration planning is proposed for the lower Middle Fork (RM 0-5) to develop strategic projects in the reach. A project is also proposed to mediate flow (ensure low flows, moderate high flows) into a spring-fed side channel that supports increasing numbers of early chinook spawners. **Priority 1A.**
 - d. Mainstem Nooksack. Reach assessment and restoration planning is proposed for the mainstem Nooksack. Additionally, limited small-scale restoration projects (piling jams) and larger projects that address both flood and salmon concerns (see also action #5) are proposed; these address limiting factors of habitat diversity (complex cover) and key habitat quantity (deep pools, backwaters, edge habitat). **Priority 1B or 2.**
4. Estuarine and nearshore marine areas. Proposed actions for estuarine and nearshore areas include the following:
- a. Assessment of Nooksack chinook distribution in and use of nearshore, including study of circulation in Bellingham Bay that would affect juvenile chinook distribution and migratory pathways. **Priority 1C.**
 - b. Restoration of floodplain connectivity upstream of the Nooksack delta (not described further).
 - c. Restoration of connectivity (upstream and downstream) and estuarine habitat quantity and quality on the Lummi delta. **Priority 2.**
 - d. Restoration of non-natal estuary habitat (Squalicum Creek, Whatcom Creek) and other pocket estuary habitat (Post Point lagoon) in Bellingham Bay. **Note: Only Squalicum Creek restoration is described further. Priority 3.**
 - e. Improvement of connectivity along urbanized shoreline habitat benches constructed in association with redevelopment of inner Bellingham Bay (not described further).
 - f. Protection of existing function through Shoreline Master Program updates for Whatcom County and cities of Bellingham and Blaine. **Priority 1A.**
5. Integration of salmon recovery and floodplain management. Salmon Recovery Board members have agreed that integration should be pursued deliberately but carefully to build community vesting and to avoid polarizing stakeholders and landowners. The following steps are proposed for the next 3 years:
- a. Implementation of pilot levee setback projects with mutual benefit for flood management and salmon recovery; lessons learned will be applied to future projects. **Priority 1B.**
 - b. Implement measures to ensure flood and transportation projects maximize benefit to salmon to the extent possible. **Priority 1B.**
 - c. Mainstem Nooksack Reach Assessment. As part of this project, salmon recovery staff will work with County River and Flood staff to evaluate project feasibility and conduct education and outreach of affected landowners and stakeholders. **Priority 1A.**

- d. Consultation with salmon recovery staff for flood projects (ongoing, but not described further).
6. Critical Areas Ordinance (CAO)/Shoreline Management Program (SMP) Updates. The Whatcom County and City of Bellingham CAOs were adopted in 2005. Salmon recovery staff participated on the Technical Advisory Committee (TAC) for the Whatcom County Critical Areas Ordinance update and are participating on the TACs for both the Whatcom County and Bellingham SMP updates, which are scheduled for completion/adoption by the end of 2006. The updated Whatcom County CAO and SMP are expected to serve as models for other local government CAO/SMP updates in the 3-year time frame:
 - a. SMPs will be updated for cities of Ferndale, Lynden, Everson, Nooksack and Blaine, as well as Blaine CAO. **Priority 1A.** SMP update for Sumas is lower priority, **Priority 4.**
 - b. In addition to regulatory protection, a program for fee simple or conservation easement acquisition is also proposed (**Priority 1A**), although the primary objective is to acquire lands to facilitate important restoration projects.
7. Instream flows. The goal of the WRIA 1 Watershed Management Project as it relates to salmon recovery is to ensure adequate instream flow levels for spawning, rearing, and migration of all WRIA 1 salmonids. Priority species and life stages were selected in each geographic area that generally represent the most flow-limited in that area. The technical teams have identified flows that are optimal for priority WRIA 1 fish species and life stages subject to current hydrologic model constraints and fish habitat model limitations. These technical recommendations, along with other technical, policy, and legal considerations, including beneficial out-of-stream water needs and existing and future hydrologic constraints, will be used to negotiate a flow regime that is acceptable to the parties and is then adopted. The following actions are proposed for the 3-year time frame:
 - a. Instream flow negotiations. Instream flows will be established for the pilot watersheds (Middle Fork Nooksack, Bertrand Creek), with other watersheds to be negotiated subsequently. Instream flow negotiations for Nooksack early chinook (Forks, lower Nooksack, some Forks tributaries) are high priority (**Priority 1A**), while the negotiations for non-early-chinook habitats are lower priority (**Priority 4**).
 - b. Projects are proposed to be implemented in the Bertrand Creek watershed to restore instream flows. **Priority 4.**
8. Other WRIA 1 salmonid habitats. The primary emphasis for other WRIA 1 salmonid habitats is protection of existing function through implementation of Shoreline Master Programs, Critical Areas Ordinances, and stormwater management programs. Limited activities are also proposed to restore processes and reconnect isolated habitats in Nooksack River tributaries and the independent tributaries to the Fraser River and Strait of Georgia:
 - a. Fish passage barrier removal program to address high priority fish passage barriers. **Priority 4.**
 - b. Riparian restoration program to support ongoing voluntary riparian restoration (e.g. Tenmile Creek partnership, Bertrand Watershed

Improvement District) along lower mainstem and independent tributaries. **Priority 4.**

9. Other programmatic actions.
 - a. Adaptive management for Nooksack early chinook. Generic population and habitat monitoring programs are described herein. Monitoring will follow the adaptive management plan, expected to be developed by the end of 2006. **Priority 1A.**
 - b. Salmon recovery implementation oversight, including integration of harvest, hatchery, and habitat actions. **Priority 1A.**
 - c. Population monitoring for other WRIA 1 salmonids that are ESA-listed (bull trout), proposed for listing (steelhead), or species of concern (coho). **Priority 1C.**