

**CHAPTER 11: COMPREHENSIVE ACTION LISTS FOR
NORTH LAKE WASHINGTON TRIBUTARIES**

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NORTH LAKE WASHINGTON POPULATION (Tier 1 Subareas)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Redmond, Sammamish, Woodinville, Bothell, Kenmore, Mill Creek, Everett, King County, Snohomish County</p> <p>Growth pressures (inside UGA): Redmond, Sammamish, Woodinville, Bothell, Kenmore, Mill Creek, Redmond Ridge Urban Planned Development (UPD), unincorporated King Co (including Bothell PAAs, Redmond PAAs), and unincorporated Snohomish Co. (including Maltby UGA, Bothell Municipal Urban Growth Area (MUGA), Mill Creek MUGA, Everett MUGA).</p> <p>Percent of basin inside UGA: UGA runs through reach 6 of Bear Creek (in Lower Bear Subarea); 16% of all three Tier 1 subareas combined is inside UGA.</p> <p>Program/mitigation opportunities: Brightwater mitigation, I-405 mitigation, Bear Creek Basin Plan (adopted by King Co. Council in 1992, resulted in stormwater changes, and adoption of 150 ft. stream buffers and 35% clearing limit in 1995)</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • <i>Lower Bear</i> Subarea: Tier 1 - Core Chinook use; Moderate watershed function • <i>Upper Bear</i> Subarea: Tier 1 - Core Chinook use; High watershed function • <i>Cottage Lake</i> Subarea: Tier 1 - Core Chinook use; High watershed function <p>Watershed evaluation summary:</p> <p><u>Lower Bear Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume • Moderate – total impervious area, % of high gradient streams • Low - road crossings <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Moderate – riparian forest cover • Low – forest cover <p><u>Upper Bear Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Moderate – flow volume, % of high gradient streams • Low - road crossings, total impervious area <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High – forest cover, riparian forest cover, wetland area • Moderate – % of low gradient streams <p><u>Cottage Lake Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Moderate – flow volume • Low - road crossings, total impervious area, % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High – wetland area, % of low gradient streams • Moderate – forest cover, riparian forest cover

**LAND USE ACTIONS FOR BEAR/COTTAGE LAKE CREEKS (NLW TRIBUTARIES)
BASED ON TECHNICAL RECOMMENDATIONS IN
WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Identify and protect headwater areas, wetlands, and sources of groundwater (e.g., seeps and springs) to maintain natural hydrologic processes and temperatures that support Chinook. Sources of groundwater inflow to Cold Creek should be identified and protected.

- There is considerable growth pressure on the Bear/Cottage Lake Creek headwater areas; jurisdictions should hold firm and not move the Urban Growth Boundary. See detail on this action described below under *protect forest cover*.
- N1 Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support these approaches with appropriate public outreach to convey reasons behind regulations and other programs to protect groundwater sources. Jurisdictions should coordinate with appropriate entities to nominate high quality headwaters and spawning habitat as Outstanding Resource Waters (through Wash. Department of Ecology guidelines) to increase protection of these areas under the Clean Water Act.
- N2 In Upper Bear, better mapping is needed in the headwaters to determine critical groundwater recharge areas to protect.
- N3 Planning and implementation of SR 522 expansion should try to minimize impacts on Bear and Cottage Lake Creek headwaters, e.g., locate as far away as possible from headwaters, minimize road width, and minimize stream crossings.
- N4 Determine sources and flow paths of the Cold Creek groundwater springs in Cottage Lake Creek and develop measures to adequately protect them. Cold Creek headwaters cross the Urban Growth Boundary; growth within Woodinville should be managed to minimize impacts. Critical aquifer recharge area protections (CARAs) should be used to protect groundwater sources for preserving salmon habitat, as well as for water quality for domestic water supplies.

Protect and restore forest cover, soil infiltrative capacity and wetlands, and minimize increases in impervious surfaces, to maintain watershed function and hydrologic integrity (especially maintenance of sufficient baseflows).

- N5 Continue to absorb majority of growth inside the Urban Growth Area (UGA), while protecting and restoring forest and promoting low impact development, to maintain and improve water quality and flows in urban areas.
- N6 Outside the UGA, there is considerable growth pressure in Bear/Cottage Lake Creeks as urban-type development and related infrastructure, such as roads and sewer/water lines, continue to expand. Examples include Maltby UGA, Redmond Ridge UPD, and city parks. Jurisdictions should not move the Urban Growth Area boundary, unless such change is beneficial to salmon, and they should discourage urban densities and the extension of sewer lines outside the UGA. Jurisdictions should encourage low impact development, clustering, and other approaches to protect environmental functions in rural areas. The Snohomish County Reduced Drainage Discharge Demonstration Program and the Snohomish Sustainable Development Task Force provide opportunities for public and private stakeholders to work together to plan and implement low impact development techniques. King Co. should continue to provide technical assistance to small forest landowners to encourage improved forest management through forest stewardship plans. It may be necessary to acquire high quality rural properties in the vicinity of urban areas to insure their long-term protection.
- N7 Continue the approach taken in King County during the past decade to protect forest cover and riparian buffers, including: adoption of stronger regulations, providing a range of incentives to protect habitat (e.g., acquisition, current use taxation, conservation easements), offering a basin steward to do targeted outreach to streamside landowners, and providing forest stewardship plans. Evaluate which element(s) were most effective in protecting and restoring habitat and try to replicate these again in Bear and in other watersheds; this could be an element of adaptive management. Strong enforcement, and prohibiting exemptions and variances from clearing/grading and buffer regulations are key to effectiveness of any regulatory approach taken.
- N8 Jurisdictions should develop a policy on lands acquired for habitat purposes to manage the types and level of human use to ensure that habitat goals are not threatened by overuse or competing interests. Different partnerships among local jurisdictions, developers, and non-governmental organizations should be tried to maintain these lands, including stewardship and monitoring for adaptive management over the long term.

- N9 Protect wetland function to attenuate peak flows wherever possible in the basin, through adoption and enforcement of adequate wetland buffers through critical areas ordinances.
- N10 The Upper Bear subarea is in relatively good shape and is a regionally significant resource area. King and Snohomish Counties should adopt and strictly enforce stream and wetland buffers and forest cover protections through their critical areas ordinance updates. King County completed their CAO update in 2004. Snohomish County's transferable development rights (TDR) program for farmland could be extended to protect high quality salmon habitat areas. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration.
- N11 Protect spawning areas throughout Cottage Creek, through buffer protections, prohibiting floodplain development, forest protection, minimizing impervious area, livestock BMPs and cost share, etc.

Protect and restore riparian vegetation to improve channel stability, provide sources of large woody debris that can contribute to creation of pools, and reduce peak water temperatures that favor non-native species.

- See recommendation above under *protect forest cover*, to continue approach taken during past decade to protect forest and riparian areas through stewardship, incentives, and regulation.
- N12 Adopt and enforce regulations to protect existing riparian buffers, including implementation of livestock ordinances. Jurisdictions need to limit impacts of trails and other facilities in buffers. Redmond is currently doing their Shoreline Master Program and critical area ordinance updates; support the city's effort to be more proactive about protecting buffers through these regulatory updates, and the continued use of incentives (e.g., fee simple purchase and conservation easements) to protect riparian corridors.
- N13 Encourage reforestation in upland and riparian areas, e.g., through streamlined permit process, tax breaks, mitigation banking and other flexible tools and incentives. Conifer underplantings in buffers should be encouraged. Properties where there are already conservation easements or that are in the King County PBRS program are potential locations for restoration (from site specific basinwides recommendations). Support King County's Urban Forestry Program to increase forest cover and forest health on public lands in urban areas.
- N14 Jurisdictions should address encroachments into Native Growth Protection Easements; this has been identified as a particular problem in reach 3 of Cottage Lake Creek.

Protect and restore floodplain connectivity and increase off-channel habitat by minimizing road crossings, reducing channel confinement, and removing floodplain structures. Protect and increase channel complexity, including large, woody debris, which contribute to channel stability and development of pools, trap sediment, and reduce water temperature.

- N15 Limit new development in floodplains; develop and apply standards which minimize impacts to salmon. The number and width of new roads should be minimized to maintain floodplain connectivity, through transportation planning and implementation.
- N16 In Lower Bear and in Cottage Lake Creek, where property owners have ditched and armored the creek, use education and incentives to encourage restoration of channel complexity and riparian condition.
- N17 Where wetland mitigation banking is being considered along Lower Bear, adopt a policy that wetland banking needs to consider salmon habitat needs first. Some wetland banks have precluded flooding and restoration of floodplain functions, which limits opportunities for salmon habitat restoration.

Protect and restore water quality from fine sediments, metals, high temperatures, and bed-scouring high flows. Adverse impacts from non-point source pollution (particularly road runoff) should be prevented through stormwater BMPs and minimization of number and width of roads.

- N18 Identify sources and adopt source control of fine sediments and metals in mainstems and tributaries through stormwater management erosion and sediment controls, clearing and grading ordinances, and livestock management programs. Likely sources of sediment include new construction during clearing and grading, sand on roads, horse farms and over pasturing. Adopt and enforce regulations and best management practices consistent with Washington Department of Ecology's 2001 Stormwater Management Manual (or beyond), as part of the NPDES Phase 1 and Phase 2 permit requirements.
- N19 Outside UGA, jurisdictions should enforce livestock ordinances, making highest priority those areas that are most susceptible due to fine soils. Work with farmers to adopt and implement farm plans to

address water quality (e.g., to reduce fine sediment inputs) and habitat management (e.g., to restore riparian areas). Coordinate with other stewardship and education programs (e.g., Horses for Clean Water).

- N20 Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention, and low impact development (LID) BMPs. Low impact development should be encouraged through incentives, training, demonstration projects, and regulations to increase stormwater infiltration wherever possible.
- N21 Adverse impacts from road runoff should be prevented through stormwater BMPs and by minimizing number and width of roads. Road widening projects should be designed to minimize impacts, and can provide mitigation opportunities. State/local transportation departments should address runoff from all roads and retrofit existing roads as part of major maintenance, expansion or upgrade projects. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should be addressed.
- N22 In Lower Bear, there's limited water quality treatment for road runoff; work with Wash. DOT and local jurisdictions (e.g., King Co. Roads) to pursue opportunities to retrofit existing roadways with stormwater BMPs, particularly on SR 520 and Avondale Road.
- N23 In Lower Bear, commercial/industrial development areas should be investigated for water quality and runoff issues and potential stormwater facilities planned and built.

Provide adequate stream flow to allow upstream migration and spawning. Impact of surface water and groundwater withdrawals on flow conditions should be investigated and addressed.

- N24 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards and practices.
- N25 Investigate and address impact of municipal and other water withdrawals (including Class A water utilities, Class B systems, irrigation pumps, and private wells) on flow conditions throughout basin. As population increases, demand on municipal systems will grow. As water rates increase, incidence of illegal withdrawals and exempt wells may increase. Work closely with Dept. of Ecology, local health departments, and water suppliers on regulations, enforcement, incentives, and education related to these withdrawals and maintaining baseflows.
- N26 Certain groundwater withdrawals are exempt from Ecology regulation; these exempt wells include wells serving residences not exceeding 5000 gallons a day (also referred to as 6-packs, or not more than 6 homes on one well), watering of a lawn or garden not exceeding ½ acre. Work with local departments of health to improve enforcement related to exempt wells. Policies prohibiting or discouraging multiple exempt wells may be necessary.
- N27 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, and infiltration standards. Explore opportunities during redevelopment to improve management of flows and water quality by redesigning and retrofitting stormwater facilities. Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities.
- N28 Promote availability of water conservation education and incentive programs to decrease household, commercial, landscaping, and agricultural water consumption throughout the watershed.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR SAMMAMISH RIVER (Migratory Tier 1)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Kenmore, Bothell, Woodinville, Redmond, King County</p> <p>Growth pressures (inside UGA): Kenmore, Bothell, Woodinville, Redmond, King County (including Planned Annexation Areas - PAAs)</p> <p>Percent of basin inside UGA: All except portion of reach 4 is within UGA [need to calculate %?]</p> <p>Program/mitigation opportunities: Brightwater mitigation, I-405 mitigation, mitigation banks, Sammamish River Action Plan</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • Lower Sammamish Valley Subarea: Tier 1 – Migratory area; Moderate watershed function • Upper Sammamish Valley Subarea: Tier 1 - Migratory area; Moderate watershed function <p>Watershed evaluation summary: [to be completed if applicable]</p> <p><u>Lower Sammamish Valley Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • <p><u>Upper Sammamish Valley Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> •

**LAND USE ACTIONS FOR SAMMAMISH RIVER
BASED ON TECHNICAL RECOMMENDATIONS
IN WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect and restore cool clean water sources and inflows to the Sammamish River by protecting and restoring large and small tributaries to the Sammamish River, and protecting sources of groundwater. Impact of surface and groundwater withdrawals on flow conditions should be investigated and addressed. Protect and restore water quality.

- N29 Reduce unauthorized water withdrawals. According to Sammamish River Action Plan, there are a significant number of unauthorized water withdrawals that adversely effect base flow and temperature. These include: un-permitted withdrawals, permitted withdrawals that may exceed their authorized volumes, and exempt wells. Specific actions include:
- ✓ Highest priority should be enforcement against illegal withdrawals.
 - ✓ Determine extent of illegal withdrawals in all sectors, e.g., residential, commercial, industrial, and agricultural.
 - ✓ Work with WA Department of Ecology to ensure that issuance of new water rights will not adversely affect flows or water quality in the Sammamish River.
 - ✓ Work with the WA Department of Ecology and the Seattle-King County Department of Public Health to develop mechanisms for metering water withdrawals at locations where there is significant potential for adverse impacts to the river from excessive or cumulative water withdrawals.
 - ✓ Use regional salmon funds to fund a position at Dept. of Ecology to educate about and enforce illegal withdrawals in Bear Creek basin.
 - ✓ Exempt wells (also referred to as 6-packs) are subject to Seattle-King Co. Dept. of Public Health site review. WRIA jurisdictions should work with Seattle-King Co. Dept. of Public Health, King County DDES, and state Dept. of Ecology to more effectively monitor and enforce the limit to ½

acre of irrigated land per exempt well. Could also encourage King County to place more restrictions on use of exempt wells. Note that proposed revisions to KC Comprehensive Plan include policies that would limit 6 packs (e.g., no more than one exempt well per development), and encourage users to hookup to existing water systems.

- N30 Research potential for reclaimed water facilities. King County is constructing a demonstration reclaimed water production facility near NE 116th St. by 2007. Need to investigate grey water usage, and related legal and regulatory issues?
- N31 Continue to investigate presence and quality of groundwater in Sammamish River corridor. King Co. has conducted some initial studies.
- N32 Research groundwater sources in vicinity of Norway Hills, Bothell. Protect cold groundwater sources as necessary. (Near Term Action Agenda (NTAA) project P3)
- N33 Increase water conservation in Sammamish watershed to increase and maintain summer base flows and reduce summer water temperatures. Reduction of groundwater and surface water withdrawals is needed. Reduction of groundwater withdrawals in Bear Creek basin is particularly important since Bear confluence is in vicinity of where river experiences its warmest temperatures (Sammamish River Action Plan, p.70). Specific tools include:
- ✓ Adopt more residential and commercial water conservation programs, such as those administered by Seattle Public Utilities.
 - ✓ Provide education, incentives, and local code provisions to encourage use of drought tolerant landscaping in all sectors.
 - ✓ Adopt conservation-based rate structures to encourage decreased water use.
 - ✓ Shift water supply sources to maximize summer flows in Sammamish R. and tributaries. For example, could City of Redmond use more Tolt River water between June and October, and therefore less water from local wells during those months when flows are greatest issue in Sammamish? Use BAS (including normative flows study) to consider ecological consequences of any shift in withdrawals and flows.
 - ✓ Work with Central Puget Sound Water Suppliers Forum to identify alternative water supply sources, maximize interties, and regulate timing of withdrawals to maximize summer flows in Sammamish watershed.
 - ✓ Use regional salmon funding to cover extra costs to local jurisdictions if they shift sources and timing of water supply purchases to benefit salmon.
- N34 Protect and restore water quality and flows in tributaries through critical areas ordinances (e.g., forest retention standards and aquatic buffers), stormwater management programs, groundwater protection (through King County's Groundwater Protection Program and the Redmond-Bear Creek Valley Groundwater Protection Committee), and other regulations and incentives.
- N35 Address stormwater impacts from residential, commercial, industrial and agricultural uses, through NPDES permit updates. Note that details on stormwater standards, including Dept. of Ecology's 2001 Stormwater Management Manual and Tri-County guidance, are included in AppendixD. General stormwater recommendations include:
- ✓ Promote low impact/sustainable development along shoreline and throughout sub-areas (e.g., develop guidelines, offer simpler permit review, reduce requirements for capital projects). Infiltration of stormwater, e.g., as a result of LID practices, is critical in Sammamish River as it affects flows as well as water quality.
 - ✓ Address high stormwater runoff in urban creeks (which drain into the river), through low impact development, on-site stormwater detention for new and redeveloped projects.
 - ✓ Enhancement of tributary mouths is high priority for restoration projects. Better control of urban runoff into these tributaries is needed to control water quality impacts.
- N36 Address water quality issues, including pesticides and herbicides, through stormwater regulations, best management practices, education, and incentives. Effort should be targeted at agricultural, commercial (including golf courses), industrial, and residential landowners.
- N37 Encourage agricultural practices which benefit salmon through a variety of means:
- ✓ Maintain agricultural uses in the Sammamish Valley with improved practices for water quality and riparian habitat. Encourage King County to work with farmers in Sammamish Agricultural Production District (APD) to adopt and implement farm plans, which address water quality (including sediments, excess nutrients), livestock management and horticultural practices, and fish and wildlife habitat management and restoration. Note that majority of agriculture in Sammamish APD is horticulture; horticultural farm plans are voluntary unless there has been a water quality violation.

- ✓ Use King County's Agricultural Drainage Assistance Program (ADAP), Cost Share Program, and farm plans to encourage riparian plantings where temperature is a problem.
- ✓ Assess potential impact of water temperature in small lateral tributaries on Sammamish River temperature. Determine change in temperature in the lateral tributaries as they traverse the valley, depending on degree of shading from riparian vegetation (or lack thereof), and relative temperature of the water when it enters the river. This research will help determine priorities for public monies (e.g., shading the small lateral tributaries versus revegetating at mouths where tributaries enter the river). Note that tall riparian plantings can create shading problems for horticulture.
- ✓ Involve agricultural owners in developing and implementing conservation actions. Clarify what is needed for salmon habitat restoration and protection and involve agricultural owners in figuring out how to get there. Recognize constraints on properties, especially those under the Farmlands Preservation Program.
- ✓ Use all available tools to bring all farms into compliance with water quality standards. Continue to work with agricultural landowners (using regulatory and incentive tools) to minimize erosion and pesticide runoff.
- ✓ Look into alternative forms of agriculture that would be more compatible with the Sammamish River ecosystem (e.g., blueberries which grow in wetland setting).

N38 Work with Dept. of Ecology on water quality issues listed in TMDLs. Sammamish River is on 303(d) list for temperature, elevated fecal coliform bacteria levels, low dissolved oxygen, and pH.

Protect and restore riparian vegetation along the mainstem and tributaries to the Sammamish River to provide shade and reduce water temperatures as well as provide future sources of large woody debris. In reaches 3 through 6, restore floodplain connections and increase meandering of river by regrading river banks, creating flood benches at or below ordinary high water mark.

N39 When implementing revegetation requirements and incentives, consider needs and opportunities for regrading banks to create shallow juvenile rearing habitat. Regrading should occur first (prior to revegetation), to avoid wasted effort and to make revegetation part of a larger restoration of the river channel.

N40 Adopt and enforce adequate riparian and wetland buffers on mainstem and tributaries. While some jurisdictions already have strong protections in place, consistent and effective enforcement is important. Where riparian buffers, wetlands, or stream mouths have been restored, protect them from any further degradation through critical areas ordinances and Shoreline Master Programs.

N41 Many structures along the river and tributaries are nonconforming with development regulations. The degree of nonconformity will become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.

N42 Encourage bank regrading and revegetation of riparian buffers during new construction and redevelopment in exchange for regulatory flexibility. Analysis of site-specific tradeoffs – including upland land use impacts to the river - would be necessary to insure a net benefit to salmon.

Examples of regulatory flexibility include:

- ✓ Reductions in building setbacks, modest increases in lot coverage or impervious area (or increased density for multi-family) could be allowed if applicant regrades bank and/or restores a degraded riparian buffer.
- ✓ Reduce prescriptive buffer widths if buffers are planted with appropriate native vegetation and a science-based evaluation determines that no negative impact results and a reduction is appropriate.
- ✓ Allow or encourage variances from front yard setbacks to avoid allowing variances from back yard setbacks that would cause development to encroach further toward the river or a tributary.

N43 Offer incentives to encourage voluntary bank regrading and revegetation of riparian buffers.

Incentives include:

- ✓ Provide expertise (e.g., provide templates for riparian planting plan, bank design)
- ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)

- ✓ Provide and streamline applications for tax breaks through programs such as the Public Benefit Rating System (PBRs), if landowner commits to stewardship activities (above and beyond regulatory protection requirements) through permit process. PBRs would likely provide most benefit to/be most appropriate for larger, suburban lots within urban areas or in rural areas.
 - See agricultural recommendations above under *cool water sources*, for agricultural actions to improve riparian buffers.
- N44 Regulatory flexibility and incentives for bank regrading and revegetation should also address maintenance responsibilities for these riparian buffers.
- N45 Support private actions by developers to restore and/or improve shorelines as part of redevelopment projects. As an example, the LakePointe project in Kenmore will complete a significant site cleanup and restore its Sammamish River shoreline as part of the project.
- N46 Support education and demonstration programs, for shoreline property owners and landscape and development contractors, to show real world examples of river bank restoration and revegetation.
- N47 Local jurisdictions should share information among themselves about ordinance language, templates and specifications.
- N48 Work with U.S. Army Corps of Engineers to revise maintenance practices on Sammamish R. banks and levees in order to improve and restore salmon habitat functions. (NTAA project P6) Modeling for Sammamish R. Transition Zone project may provide useful information on restoration projects and flood management.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NORTHERN LAKE WASHINGTON (Migratory Tier 1)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: Seattle, Lake Forest Park, Kenmore, Kirkland, King County</p> <p>Growth pressures (inside UGA): Seattle, Lake Forest Park, Kenmore, Kirkland Planned Annexation Area (PAA in King Co.), Kirkland</p> <p>Percent of basin inside UGA: 100%</p> <p>Program/mitigation opportunities:</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • <i>West Lake Wash.</i> Subarea: Tier 1 – Migratory area; Lower watershed function • <i>East Lake Wash.</i> Subarea: Tier 1 – Migratory area; Lower watershed function <p>Watershed evaluation summary: Not applicable</p>

**LAND USE ACTIONS FOR NORTH LAKE WASHINGTON
MIGRATORY AREA BASED ON TECHNICAL RECOMMENDATIONS
IN WRIA 8 CONSERVATION STRATEGY**

Notes:

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- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Reduce predation to outmigrating juvenile Chinook by: reducing bank hardening, restoring overhanging riparian vegetation, replacing bulkheads and rip-rap with sandy beaches with gentle slopes, and use of mesh dock surfaces and/or community docks.

- N49 Use WRIA 8 Conservation Strategy as one of the “best available science” resources during current critical areas ordinance (CAO) revisions and Shoreline Master Program (SMP) revisions. Recognize that softening or removal of bulkheads is the most important action to improve shoreline habitat. In addition, riparian/shoreline buffers should be increased to the extent practicable.
- N50 This area is mostly developed, with little undisturbed landscape left to protect, and much of the shoreline is privately owned. Many structures in the lake shore area are nonconforming with development and environmental regulations; the degree of nonconformity will become even greater as buffers and other shoreline protections become more restrictive. In order to decrease the level of nonconformity over the long term (50-100 years), jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied, where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N51 Discourage construction of new bulkheads. Develop guidelines to better assess need for bulkheads and restrict height to that necessary to protect the structure; height increases would be allowable only after appropriate analysis based on fetch, waves, wind velocity and direction, etc. Guidelines should take into account tradeoffs with other environmental impacts (e.g., presence of contaminated soils) and public safety hazards.
- N52 Encourage salmon friendly shoreline design during new construction and redevelopment of shoreline properties, and properties that border tributaries, by offering regulatory flexibility. However, analysis of these tradeoffs – including upland land use impacts to the lake - would be necessary to insure a net benefit to salmon. Examples of regulatory flexibility include:

- ✓ Reductions in building setbacks, modest increases in lot coverage or impervious area (or increased density for multi-family) could be allowed if applicant removes, sets back or softens bulkhead and restores shoreline “vegetative management area” (riparian/lakeshore buffer).
 - ✓ Reduce prescriptive buffer widths if buffers are planted with appropriate native vegetation and a science-based evaluation determines that no negative impact results.
 - ✓ Allow or encourage variances from front yard setbacks to avoid allowing variances from back yard setbacks and/or riparian buffers that would cause development to encroach further toward the lake.
- N53 Offer incentives to shoreline property owners to voluntarily remove bulkheads, revegetate shoreline, improve habitat at creek mouths, change dock design. Incentives include:
- ✓ Provide expertise (e.g., provide templates for shoreline planting plan, bulkhead design)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
 - ✓ Provide and streamline applications for tax breaks through programs such as Public Benefit Rating System (PBRs) if landowner commits to stewardship activities (above and beyond regulatory protection requirements) through permit process. PBRs would likely provide most benefit to/be most appropriate for larger, suburban lots within urban areas.
 - ✓ Provide incentives for establishment of community docks or mooring buoys, rather than individual lot docks.
- N54 Address disincentive in Shoreline Management Act that can discourage shoreline restoration because ordinary high water mark (OHWM) can be moved landward as a result of removal of a bulkhead, resulting in additional use restrictions placed on adjacent or applicant’s property. Local jurisdictions have some ability to limit impact of setback from OHWM, but cannot move the 200-foot shoreline jurisdiction. May require change at state level.
- N55 Support joint effort by NOAA Fisheries, WDFW, USACOE, USFWS to develop specifications for new and expanded piers. Goal of this effort is for streamlined federal/state permitting for piers that meet these specifications (affects Corps Section 404, Section 401 water quality certification, HPA). COE is developing Regional General Permit for new and expanded overwater structures in Lake Washington. NOAA Fisheries hopes to work with local jurisdictions to adopt similar permit requirements at local level; they will meet with lakeshore jurisdictions throughout spring '04.
- N56 Support development of federal/state/local specifications and streamlined permitting for salmon friendly bulkheads.
- N57 Explore need for regulation and/or education related to impacts of power boat speed near shorelines on bulkheads, shoreline vegetation. Power boats are getting bigger; determine if there is a need to set guidance for boat speed within a certain distance of shoreline, depending on the location in the lake.
- N58 Research pros and cons of allowing fill at edge of lake, as a way of providing a vegetated buffer. This could balance desire by property owners to maintain usable yard area and need to increase shoreline buffer for salmon habitat. Look into scientific validity and legal/institutional issues. Will need to evaluate such projects on a site-by-site basis.
- N59 Offer landscape, bulkhead, or dock contractor training and certification programs.
- N60 Support education and demonstration programs so that shoreline property owners can see examples of how salmon friendly bulkheads, docks, etc. actually work, and will therefore better understand and accept regulations/incentives about these docks and bulkheads.
- N61 Local jurisdictions should share information among themselves about ordinance language, templates and specifications.
- N62 Jurisdictions should continue to apply shoreline restoration, appropriate use of pesticides, native landscaping, etc. in parks, street ends, and other publicly owned property.

Protect and restore water quality in tributaries and along shoreline. Restore coho runs in smaller tributaries as control mechanism to reduce the cutthroat population. Reconnect and enhance small creek mouths as juvenile rearing areas.

- N63 Protect and restore water quality and other ecological functions in tributaries to reduce effects of urbanization and reduce conditions which encourage cutthroat. Protect and restore forest cover, riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools.

- N64 Address stormwater impacts from residential, commercial, industrial uses, through NPDES permit updates, consistent with Dept. of Ecology's 2001 Stormwater Management Manual (or beyond, e.g. to Tri-County guidance - see Appendix D). General stormwater recommendations include:
- ✓ Promote low impact/sustainable development along shoreline and throughout sub-areas through regulations, education, and incentives (e.g., develop guidelines, offer simpler permit review, reduce requirements for capital projects).
 - ✓ Adopt policies on pesticide use consistent with the January 2004 federal ruling banning certain pesticide use along salmon-bearing streams in the northwest. Application of pesticides should be in accordance with source control best management practices (BMPs) in Ecology's 2001 Stormwater Management Manual.
 - ✓ Address high stormwater runoff in urban creeks (which drain into Lake Washington), through low impact development, on-site stormwater detention for new and redeveloped projects.
 - ✓ Address point sources that discharge directly into the lake.
 - ✓ Address stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years). Address stormwater impacts from State Route 520 Bridge.
- N65 Address water quality associated with marinas; note that marinas are regulated directly by Dept. of Ecology.
- N66 Reevaluate government policies toward aquatic weed control to minimize impacts to salmon habitat; coordinate with relevant agencies.

**LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR
NORTH LAKE WASHINGTON POPULATION (Tier 2 subareas)**

[Note: Kelsey Creek is addressed separately]

POLICY/INSTITUTIONAL CONTEXT:	SCIENCE CONTEXT:
<p><i>Jurisdictions:</i> Redmond, Sammamish, Woodinville, Bothell, Mill Creek, Everett, King County, Snohomish County</p> <p><i>Growth pressures (inside UGA):</i> Redmond, Sammamish, Woodinville, Bothell, Mill Creek, Redmond Ridge Urban Planned Development (UPD), unincorporated King Co. and unincorporated Snohomish Co. (including Maltby UGA, Bothell Municipal Urban Growth Area (MUGA), Mill Creek MUGA, Everett MUGA).</p> <p><i>Percent of basin inside UGA:</i> North Creek is almost entirely within the UGA (incorporated areas or MUGAs for Everett, Mill Creek, and Bothell); a small part of Little Bear is inside UGA (Woodinville, Maltby UGA, and Silver Firs area), while majority is outside UGA; Evans Creek is divided between inside UGA (Sammamish, Redmond, Redmond Ridge UPD) and outside.</p> <p><i>Program/mitigation opportunities:</i></p> <ul style="list-style-type: none"> • I-405 watershed characterization • Brightwater wastewater treatment facility mitigation plan and funding • North Creek Fecal Coliform Total Maximum Daily Load, Submittal Report, June 2002, Ecology Publication No. 02-10-020 • North Creek Fecal Coliform Total Maximum Daily Load, Detailed Implementation Plan, September 2003, Ecology Publication No. 03-10-047 • Basin plans including: North Creek Watershed Management Plan, September 6, 1994, Snohomish County Public Works Surface Water Management • Snohomish County Drainage Needs Reports for North Creek [and others?] • Little Bear Creek Corridor Habitat Assessment, prepared for City of Woodinville by David Evans and Associates, July 2002 	<p><i>Watershed evaluation rating:</i></p> <ul style="list-style-type: none"> • <i>Lower North</i> Subarea: Tier 2 - Satellite Chinook use; Moderate watershed function • <i>Upper North</i> Subarea: Tier 2 - Satellite Chinook use; Moderate watershed function • <i>Little Bear</i> Subarea: Tier 2 - Satellite Chinook use; Moderate watershed function • <i>Evans</i> Subarea: Tier 2 - Satellite Chinook use; High watershed function <p><i>Watershed evaluation summary:</i></p> <p><u><i>Lower North Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume • Moderate - total impervious area, road crossings • Low - % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Low – forest cover, riparian forest cover <p><u><i>Upper North Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume, total impervious area • Moderate – road crossings • Low - % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Moderate – riparian forest cover • Low – forest cover <p><u><i>Little Bear Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume • Moderate - % of high gradient streams, road crossings, total impervious area <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area [rating changed per recent Snohomish Co. data] • Moderate - forest cover, riparian forest cover <p><u><i>Evans Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Moderate – flow volume, total impervious area, % of low gradient streams • Low – road crossings <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Moderate – forest cover, riparian forest cover

**LAND USE ACTIONS FOR NORTH, LITTLE BEAR, EVANS CREEKS
BASED ON TECHNICAL RECOMMENDATIONS IN
WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect forest cover and soil infiltrative capacity, wetland areas, and minimize impervious areas, to maintain watershed function and hydrologic integrity (especially maintenance of sufficient base flows) and protect water quality. North is largest of Tier 2 subareas and most likely to have historically supported Chinook; restoration and enhancement will likely increase productivity/abundance. Little Bear is least altered of Tier 2 subareas and may support productivity/abundance in short and long term; protection of ecosystem processes is therefore important.

N67 North, Little Bear, and Evans subareas are facing intense growth pressure. Therefore, the following actions are essential:

- ✓ Jurisdictions should not move the UGA boundary, unless such change is beneficial to salmon. Jurisdictions should accommodate most new growth inside the UGA within existing incorporated areas, MUGAs, and PAAs. When considering a change to the Urban Growth Boundary, a jurisdiction should be required to evaluate and mitigate for the cumulative impacts to the salmon resource of changing that line.
- ✓ Manage new residential, commercial, and industrial development in urban or rural areas to minimize impacts on forest cover, aquatic buffers, water quality, and instream flows, by emphasizing low impact development (see specific recommendations on low impact development below under *water quality*).
- ✓ Where regulations and incentives are not effective, acquire key habitat as current opportunities for protection will be lost forever.
- ✓ Public education and outreach related to impacts of growth/development on salmon habitat are necessary to support effective implementation of land use actions discussed below. Work with existing organizations (e.g., Adopt-A-Stream Foundation, Little Bear Creek Protective Association) on education and outreach.

N68 Brightwater wastewater treatment plant will affect watershed function both on and off site. The following actions should be implemented:

- ✓ In terms of onsite features, support King County's plans to incorporate reforestation, wetland restoration, and low impact development features as part of its stormwater management system.
- ✓ Brightwater mitigation will fund a number of offsite mitigation projects. Selection of mitigation projects should be based on WRIA 8 action lists and priorities. Mitigation projects should include support for local jurisdiction planning to encourage low impact development, projects that protect watershed function, and stream restoration and water quality improvements in Little Bear Creek.
- ✓ Brightwater should be used as a growth management tool, e.g., to limit sewer service in rural areas and to encourage it for redevelopment of urban villages and other high density, mixed use areas within the UGA.

N69 In rural areas, adopt and enforce regulations and incentives to protect majority of existing forest cover and to minimize impervious areas. Development practices in rural areas are promoting sewer hookups, allowing additional urban type development; this practice should be discouraged.

Applications of rural standards should consider:

- ✓ Where 65-10 is adopted, forest protection standards should take into account soils, substrate, topography, and vegetation to maximize retention and infiltration of precipitation.
- ✓ Where 65% forest protection standard is not applied, consider modifying rural cluster development standards so they include LID features, they preserve large contiguous natural areas, and they are limited in size (e.g., to 14 houses per development) in order to achieve overall goal of 65% forest retention.

- ✓ Incentives are also necessary to encourage reforestation of cleared land; see tools below under *riparian function*.
- N70 In urban areas, protect and restore forest cover through tree retention and tree replacement programs, landscaping guidelines, street tree programs, and urban reforestation programs (e.g., King County's Urban Forestry Program). Could require that new development over a certain size use clustering to preserve a certain portion of open space (e.g., 50% of site). If developer protects more open space, could offer incentives, such as density bonuses.
- N71 In North Creek subarea, there are serious flooding and peak flow issues. Protect remaining forest cover and wetlands, and reduce impervious surfaces, through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. Support update of 1993 North Creek Watershed Plan and 2002 Drainage Needs Report to address groundwater detention and recharge issues. See also recommendations about North Creek under *adequate stream flows* below.
- N72 Use flexible development tools, such as transferable development rights (TDRs) or environmental mitigation banking, to shift development to areas which are less environmentally sensitive and/or to mitigate impacts by restoring areas with highest ecological functions. In Snohomish County, encourage use of TDRs to protect farmland in the near-term and forests and wetlands in the future. In King County, encourage use of mitigation reserve areas; this program matches mitigation needs with habitat restoration and preservation needs on a subbasin or basin level.
- N73 Continue to acquire parcels or conservation easements along creeks and upland that are not sufficiently protected by regulations (e.g., NTAA mentions Evans Cr. Greenway program, Snohomish County's ESA Priority Land Acquisition Program). See discussion of maintenance of protected lands below under *riparian function*.
- N74 Identify and protect headwater areas, including seeps, springs, wetlands in all three subareas. Do additional mapping and field monitoring to determine critical groundwater recharge areas to protect. Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures in fish bearing streams, rather than solely for groundwater quality protection for potable water supply. Work to avoid possible road construction in Evans Creek headwater wetlands as part of development of Redmond Ridge East, an Urban Planned Development/Fully Contained Community (UPD/FCC), which is the final phase of Redmond Ridge UPD east of the City of Redmond.
- N75 Protect wetlands and their buffers through critical area ordinance (CAO) revisions. Where wetland protection regulations are weakened, seek alternative means through incentives or acquisition to maintain equal level of wetland function.
- N76 Recognize importance of enforcement for these and all regulatory recommendations included below. Note that public education about why regulations exist is key part of making enforcement more effective. Effective enforcement must also include monitoring and adaptive management, so that effectiveness of regulations (and related mitigation projects) is measured, and adjustments are made over time.

Protect and restore riparian function, including revegetation, to provide sources of large woody debris to improve channel stability, contribute to pool creation, to reduce peak water temperatures.

- N77 Continue to tighten regulations affecting riparian buffers, including larger stream buffers, more restricted application of buffer averaging, fewer allowable uses in buffers (e.g., not allowing trails and stormwater facilities). Could approve administrative variances of development standards (on case-by-case basis) in order to avoid encroaching into a sensitive area buffer.
- N78 Nonconforming uses are significant challenge in developed areas. Many existing structures along creeks encroach into required stream buffers and are nonconforming with development and environmental regulations. The degree of nonconformity could become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), local jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N79 Encourage or require revegetation and enhancement of riparian buffers where existing buffer vegetation is inadequate (i.e. lacking in tree/shrub vegetation or dominated by non-native invasive species) to restore wetland or stream functions. Restoration should include underplanting of conifers

in riparian buffers. Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly for redevelopment. However, any granting of regulatory flexibility needs to analyze site-specific tradeoffs – including upland land use impacts to the creek - to insure a net benefit to salmon.

- N80 Offer existing and new incentives to continue to protect and restore riparian and upland parcels beyond those that are protected through regulations. Incentives include current use taxation (e.g., Public Benefit Rating system – PBRs), Native Growth Protection Area programs, transfer of development rights programs.
- N81 Protection programs should include a stewardship element to ensure management and maintenance of these natural areas over the long term. Maintenance can be handed over to a local jurisdiction for public management, or if areas are managed privately or by non-profit organizations, standards for review and enforcement should be established. Regardless of what type of organization manages the area, long term stewardship and maintenance is a real cost and should be planned and accounted for. One approach in NLW Tier 2 combines resources of public, private, and non-profit organizations: In Evans subarea at Redmond Ridge UPD, Cascade Land Conservancy (CLC) is working with King County and Quadrant to secure funding so that CLC will both maintain recreational facilities and provide hands-on monitoring, adaptive management, and stewardship at a protected wetland site, as well as work with the homeowners association and nearby schools to make them more aware of wetlands/watershed issues.
- N82 Specific areas should be targeted for incentives to restore degraded riparian buffers; these areas include Lower Evans, Little Bear below Maltby Rd., North Creek south of SE 164th St. (as noted in NTAA). Technical Committee discussed lack of buffer in lowest reaches of Evans (Redmond's industrial area); should offer incentives to improve stream corridor in Reach 2 through redevelopment and/or through stormwater retrofit. Incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains include:
- ✓ Provide expertise (e.g., provide templates for riparian planting plan, assist private landowners with applications for grants to restore habitat)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
- N83 In order for incentive and technical assistance programs to be effective, they must receive adequate funding and be supported by technically trained staff.

Protect and improve water quality to prevent adverse impacts from fine sediments, metals (both in sediments and in water), and high temperatures to key Chinook life stages. Adverse impacts from road runoff should be prevented through stormwater BMPs and the minimization of the number and width of roads in the basin.

- N84 Washington Dept. of Ecology is updating the Phase 1 NPDES permit now and anticipates new permits will be issued to Snohomish and King Counties in spring 2005. In the long term, stormwater management programs should try to return more rainwater into the ground and keep it out of stormwater ponds with controlled discharge structures. Local and state government should use the NPDES permits to address these strategies in conjunction with salmon protection under ESA. King County's stormwater manual update places greater emphasis on low impact development BMPs; other jurisdictions should follow this approach.
- N85 All cities in NLW Tier 2 subareas are scheduled to be issued NPDES Phase 2 permits in the next year. As with Phase 1, these permits should address water quality and flow issues that affect salmon habitat, as detailed in the actions listed below.
- N86 Adopt stormwater BMPs to reduce sediment inputs from bank-scouring high flows.
- N87 Adopt stormwater BMPs to address heavy metals and pollutants.
- N88 Adopt source control BMPs to reduce fine sediment inputs to system (e.g., from new construction, erosion, and sedimentation from livestock access to streams). Enforcement is currently reactive (i.e., complaint driven); it should be more proactive (e.g., targeting construction sites, problem farms). Enforcement of stormwater regulations, as well as of critical areas requirements, could be strengthened through a "green" inspector group that would share expertise about various environmental incentives and regulations. Adequate enforcement staff should be made available in all jurisdictions.
- N89 Work with businesses in Evans Reach 2 on BMPs; explore options for getting businesses off septic systems and wells, and onto sewer and public water.

- N90 Work with livestock owners on BMPs in Little Bear and Evans. Address institutional barriers to stream restoration in agricultural use areas in Evans, Reaches 4 and 5.
- N91 Jurisdictions should control new development to minimize impacts on water quality, instream flows, and aquatic buffers, through low impact development. Jurisdictions should consider a moratorium on development until a specific low impact development standard is adopted. Low impact development (LID) in new and existing development can be encouraged through regulations, incentives, and education/training; examples include:
- ✓ Develop, adopt, and update as needed, local regulations and ordinances that improve the ability of builders to design LID projects, and for local government staff to review and approve those projects. For example, local staff from fire, surface water management, building, and public works departments have different responsibilities related to public and private development, and need to find solutions which can support LID. Local staff should coordinate with Department of Ecology, Puget Sound Action Team, and Washington State Cooperative Extensive Service staff working on LID issues. Snohomish County has adopted a Reduced Drainage Discharge Demonstration Programs; participation in the program is voluntary and incentive driven.
 - ✓ Analyze local road standards so that they promote, and don't discourage LID, in public and private roads; see details below.
 - ✓ Requirements for engineered stormwater facilities should be decreased for low-impact developments, since they should produce less runoff.
 - ✓ Encourage low impact development by providing technical assistance, incentives (e.g., PBRs-type tax break), and demonstration projects so that other planners and developers can see hands-on examples.
 - ✓ Benefits and tradeoffs (in terms of stormwater management, cost, marketability) need to be illustrated based on real life examples. Existing examples include Maltby Joint Ventures-Chinook Homes, King County's three LID demonstration projects, Seattle's natural drainage program for retrofitting existing neighborhoods, Issaquah Highlands.
 - ✓ Monitor existing facilities (e.g., green roofs, permeable pavements, etc.) to improve understanding of and quantify benefits of LID techniques.
 - ✓ Investigate and implement low-cost stormwater control retrofit projects in key groundwater infiltration areas to reduce stormwater runoff; this includes retrofitting existing properties with amended soils, rain gardens, rain barrels, and other low cost tools that can be installed without purchase of new land or development of new stormwater facilities.
 - ✓ Mitigation for development impacts should increasingly include partnering with owners of large parking lots (e.g., big box stores, churches, schools) to replace impervious surfaces with pervious concrete and other pervious pavements. Such public/private partnerships will provide multiple benefits of pervious pavements (e.g., water quality treatment, reduced temperature, high flow attenuation, low flow recharge).
 - ✓ Support task forces (e.g, Snohomish Co. Sustainable Development Task Force) and citizen organizations which are working to promote sustainable and low impact development.
- N92 Jurisdictions should invest in high performance street sweepers. These sweepers can be cost-effective if shared among jurisdictions. They are recommended for cleaning pervious pavements.
- N93 Through planning for new roads or road widening projects, assess and recommend ways to minimize impacts on water quality, instream flows and sensitive areas. Low impact development includes BMPs for narrower roads, more pervious surfaces, reduced parking areas, maximized infiltration of stormwater, etc. Road widening should incorporate fish friendly culverts and drainage away from direct discharge of road runoff.
- N94 Adopt and implement Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.
- N95 Retrofit existing roads to improve water quality treatment and flow control with an emphasis on infiltrating stormwater wherever it is feasible. Need BMPs for herbicides and pesticides along roads and power lines.
- N96 A Water Cleanup Plan (i.e., TMDL) for bacteria in North Creek was approved by EPA in August 2002, and a Detailed Implementation Plan (DIP) was completed September 2003. The North Creek Fecal Coliform DIP calls for local governments to develop "Bacterial Pollution Remediation Plans." Local jurisdictions should develop and implement these plans through their General Municipal Stormwater Phase I and II permits. While the TMDL did not specifically analyze low-flow trends in North Creek, it does take a conservative approach to protecting stream flows and recommends infiltration of stormwater wherever feasible. This not only prevents the introduction of polluted stormwater, but also will help ensure that adequate long-term groundwater resources might be protected. The TMDL

recommends that all entities examine their stormwater pathways and assess the feasibility of infiltrating stormwater onsite. Ecology should support TMDL implementation through the Centennial Clean Water Fund, along with other funding mechanisms.

- N97 Ecology has also initiated a Water Cleanup Plan (TMDL) for bacteria on Little Bear Creek (August 2004). Ecology should work with Snohomish County and groups such as Little Bear Creek Protective Association, to develop the initial water cleanup plan for submission to EPA. Little Bear Creek Water Cleanup implementation might include resources from the Brightwater mitigation funding.
- N98 Recognize and support the state Dept. of Ecology in adding three stormwater staff at NWRO to oversee compliance with industrial and construction general permits in the winter of 2004-5. Ecology also anticipates adding two additional stormwater staff to inspect stormwater at industrial and construction facilities in July 2005, and up to 3 staff to oversee compliance with the Phase II Municipal Stormwater Permit in July 2005, pending legislative approval.

Maintain and restore floodplain connectivity and channel complexity. Road crossings should be minimized to maintain floodplain connectivity.

- N99 Limit new development (including roads) in floodplains; develop and apply standards which minimize impacts to salmon.
- N100 Continue to buyout structures in floodplains, for future restoration projects.
- N101 Offer incentives and regulatory flexibility to encourage removal of bank armoring; see detailed examples described above under *riparian function* and *water quality*.

Provide adequate stream flow to allow upstream migration and spawning by establishing in-stream flow levels, enforcing water rights compliance, and providing for hydrologic continuity.

- N102 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards and practices.
- N103 Determine extent of unauthorized withdrawals in all sectors (residential, commercial, industrial). Develop and/or use existing database on extent of surface and groundwater withdrawals.
- N104 Work with Dept. of Ecology on education about and enforcement of unauthorized water withdrawals (e.g., un-permitted withdrawals, permitted withdrawals that exceed authorized volumes). Note that the Greater Lake Washington basin is currently closed to new surface water withdrawals.
- N105 Certain groundwater withdrawals are exempt from Ecology regulation; these exempt wells include wells serving residences not exceeding 5000 gallons a day (also referred to as 6-packs, or not more than 6 homes on one well), watering of a lawn or garden not exceeding ½ acre. WRIA jurisdictions should work with Dept. of Ecology, local departments of health, and local planning and building departments (e.g. KC DDES) to more effectively monitor and enforce restrictions related to exempt wells. Jurisdictions should consider addition restrictions on exempt wells, e.g., KC Comprehensive Plan proposed revisions include policies that would limit 6 packs – i.e., no more than one exempt well per development - and encourage users to hookup to existing water systems.
- N106 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, and infiltration standards. Explore opportunities during redevelopment to improve management of flows and water quality by redesigning and retrofitting stormwater facilities. Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities. See additional stormwater management recommendations above under *protecting water quality*.
- N107 Inadequate base flows, flooding, and flashy hydrology pose serious problems in North Creek (see additional actions above under *forest protection*). Address these through stormwater management (e.g., improved retention of high flows and increased infiltration), improved information about and enforcement of surface and groundwater withdrawals, TMDL implementation, more aggressive water conservation, etc. Analyze feasibility of restoring base flows in North Creek by:
- ✓ Studying where retrofitting stormwater facilities could have greatest benefit in restoring base flows and implement results (in part through redevelopment opportunities).
 - ✓ Exploring augmentation of flows, potentially by pumping or injecting treated water into shallow or deeper aquifers to the infiltrative layer, during extreme dry season low flow conditions.

- N108 Reduce inflow and infiltration (I&I), which captures and diverts ground and surface water into storm or wastewater pipe systems and removes it from the basin's water budget.
- N109 Aggressive water conservation measures should be promoted by all jurisdictions and water purveyors to reduce impacts of water withdrawals throughout WRIA 8. Water conservation measures could include leak detection and repair, pricing structures that encourage more efficient water use and eliminate subsidies to large water users, water efficiency audits, and rebates for commercial and residential water-efficient plumbing fixtures and appliances. Water re-use should also be considered as a way to reduce demand.
- N110 Look into other water resource allocation processes that could suggest potential actions for this basin (e.g., 2514 processes elsewhere, state law on water conservation – 1338).

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NLW POPULATION (Kelsey Creek, Tier 2 subarea)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p>Jurisdictions: City of Bellevue</p> <p>Growth pressures (inside UGA): City of Bellevue and Bellevue Potential Annexation Areas (PAAs).</p> <p>Percent of basin inside UGA: 100% within the UGA</p> <p>Program/mitigation opportunities:</p>	<p>SCIENCE CONTEXT:</p> <p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • Lower Kelsey Subarea: Tier 2 - Satellite Chinook use; Low watershed function • Upper Kelsey Subarea: Tier 2 - Satellite Chinook use; Low watershed function <p>Watershed evaluation summary:</p> <p><u>Lower Kelsey Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume, total impervious area, road crossings • Low - % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Low – forest cover, riparian forest cover <p><u>Upper Kelsey Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume, total impervious area, road crossings • Low - % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams • Low – forest cover, riparian forest cover, wetland area

**LAND USE ACTIONS FOR KELSEY CREEK
BASED ON TECHNICAL RECOMMENDATIONS IN
WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy (and the 1/21/04 WRIA 8 Technical Committee meeting) are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that City of Bellevue is doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect existing levels of forest cover, soil infiltrative capacity and wetland areas, and minimize impervious areas, to maintain watershed function and hydrologic integrity (especially maintenance of sufficient base flows) and protect water quality.

- N111 Consistent with Growth Management Act, Bellevue should continue to absorb much new residential, commercial, industrial growth. Regulate new development to minimize impacts on water quality, instream flows, and aquatic buffers consistent with City's critical areas regulations. See specific recommendations for low impact development below under *water quality*.
- N112 Protect and restore forest cover through tree retention and tree replacement programs (especially in large parking lot areas), landscaping guidelines, street tree programs, and urban reforestation programs. Establish impervious surface limits within all zoning districts except Downtown. Work with Transportation Dept. on landscaping guidelines and give credit for stormwater BMPs and low impact development techniques.
- N113 Consider stricter protections for Kelsey Creek subareas, given their importance to Chinook population. Such protections could be achieved through overlay zones, or through the application of an "off ramp" (or biological evaluation) mechanism.

- N114 Encourage clustering for those sites that are two acres or more in size and that are significantly constrained by critical areas (more than 20% of gross site area), or where large amounts of open space can be effectively set aside for conservation or other open space purposes. Such a provision will: result in better management of critical areas by consolidating them in separate tracks not lots, ensure efficient compact communities, and result in reduced demand for point discharge stormwater facilities, further relieving impacts on critical areas downstream.
- N115 Use flexible development tools, such as transferable development rights or environmental mitigation banking, to shift development to areas which are less environmentally sensitive and/or to mitigate impacts by restoring areas with highest ecological functions.
- N116 Review City policy regarding land acquisition and restoration of critical habitat (including floodplains, wetlands and wildlife habitat) to ensure that all departments have acquisition of open space as a high priority.
- N117 Recognize that existing public open space serves multiple functions ranging from critical habitat to recreational use. Tailor regulation to ensure those areas most suited to habitat protection are insulated from impacts and wildlife is protected from harassment (e.g. could limit board walks in wetlands). Other open space areas are more appropriate for multiple uses, including education and recreation. Where multiple uses are allowed, urban infrastructure including utilities, roads and passive recreational amenities such as trails, boardwalks, and bridges should be planned and designed to prevent impact to the environmental values and benefits of the site.
- N118 Acquire parcels or conservation easements along Kelsey Cr, as identified in Greenways Program, that are not protected by regulations (NTAA, P2).
- N119 Maintain or increase Bellevue's Native Growth Protection Area Program to acquire lands.
- N120 Identify and protect headwater areas, including seeps, springs, wetlands in Upper Kelsey subarea. Do additional mapping and field monitoring to determine critical groundwater recharge areas to protect. Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures in fish bearing streams, rather than solely for groundwater quality protection for potable water supply.
- N121 Wetlands in Kelsey subareas are in relatively good shape; protect wetlands and their buffers through science –based CAO revisions.
- N122 Where impacts to wetlands are unavoidable, mitigation shall occur on site first and then within the basin if no feasible alternative exists on site.
- N123 Recognize importance of enforcement for these and all regulatory recommendations included below. Note that public education about why regulations exist is key part of making enforcement more effective. Effective enforcement must also include monitoring and adaptive management, so that effectiveness of regulations (and related mitigation projects) is measured, and adjustments are made.

Protect and restore riparian function, including revegetation, to provide sources of large woody debris to improve channel stability, contribute to pool creation, to reduce peak water temperatures.

- N124 Offer existing and new incentives to continue to protect and restore riparian and upland parcels beyond those that are protected through regulations. Incentives include current use taxation (e.g., Public Benefit Rating system – PBRs), Native Growth Protection Area program, transferable development rights programs. Protection programs need a stewardship element to ensure management and maintenance of these areas over the long term. Maintenance can be handed over to the city for public management, or if areas are managed privately, standards for review and enforcement must be established. If areas are privately managed, may be necessary to provide an inducement (e.g., additional tax break) in addition to education about value of properties and importance of maintenance.
- N125 Adopt special use guidelines to allow public access in some riparian buffers, where public use would increase education about riparian buffer functions. Recognize tradeoff between potential environmental impacts and benefits of public education.
- N126 Require where feasible the use of bioengineering techniques to stabilize channel and streambank conditions including, the use of large woody debris and underplanting of conifers in riparian buffers.
- N127 With new development and redevelopment, require the removal of invasive species and prohibit the planting of inappropriate (invasive) non-native vegetation adjacent to riparian corridors and throughout the basin.

- N128 Continue to tighten regulations affecting riparian buffers, including more restricted application of buffer averaging, fewer allowable uses in buffers (e.g., not allowing stormwater facilities). Could approve administrative variances of development standards (on case-by-case basis) in order to avoid encroaching into a sensitive area buffer.
- N129 Nonconforming uses are significant challenge. Many existing structures along creeks encroach into required stream buffers and are nonconforming with development and environmental regulations. The degree of nonconformity could become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), Bellevue should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N130 Encourage revegetation and enhancement of riparian buffers where existing buffer vegetation is inadequate (i.e. lacking in tree/shrub vegetation or dominated by non-native invasive species) to protect wetland or stream functions. Restoration should include underplanting of conifers in riparian buffers. Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly for redevelopment. However, any significant regulatory flexibility needs to be accompanied by site specific analysis to identify site-specific tradeoffs – including upland land use impacts to the creek - to insure a net benefit to salmon. This can be achieved through programmatic review as part of a detailed mitigation “template” or through individual site review.
- N131 Offer incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains. Incentives include:
- ✓ Provide expertise (e.g., provide templates for riparian planting plan, assist private landowners with applications for grants to restore habitat)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
- N132 Remove regulatory barriers that limit work within floodplains and riparian corridors to allow for fish habitat enhancement projects.
- N133 Ensure that mitigation and restoration projects associated with new development and redevelopment specify appropriate monitoring, and require financial assurance security to ensure the success of the proposed mitigation.

Protect and improve water quality to prevent adverse impacts from fine sediments, metals (both in sediments and in water), and high temperatures to key Chinook life stages.

- N134 Adopt NPDES Phase 2 permit, consistent with anticipated Dept. of Ecology guidance.
- N135 Stormwater regulations need to adopt a standard definition of “existing conditions” so that stormwater management will be improved during redevelopment. There is currently a lot of redevelopment being done without stormwater mitigation. WRIA 8 could facilitate a discussion across jurisdictions to develop a common definition. If stricter definition is adopted, public should help pay for stormwater improvements.
- N136 Control new development to minimize impacts on water quality, instream flows, and aquatic buffers. Encourage low impact development (LID) through regulations, incentives, and education/training. Examples include:
- ✓ Encourage low impact development by providing technical information to developers about on-the-ground examples of what does and does not work in LID approaches; promoting demonstration projects through incentives and technical assistance, so that other planners and developers can see hands-on examples.
 - ✓ Existing examples to show developers and planners include King County’s three LID demonstration projects currently underway, Seattle’s natural drainage program for retrofitting existing neighborhoods. Bellevue’s development manual will provide technical examples for developers and homebuilders about LID techniques.
 - ✓ Promotion of LID techniques in Bellevue will require interdepartmental coordination, i.e., between PCD, Transportation, Utilities and Fire departments.
 - ✓ Bellevue has hired a consultant to evaluate applicability of various LID techniques given geology, soil types, slope, etc. to more realistically assess LID opportunities throughout the city.
 - ✓ Monitor existing facilities (e.g., green roofs, permeable pavements, etc.) to improve understanding of benefits of LID techniques (NTAA, R4 and R5).
- N137 Identify sources and adopt source control BMPs to reduce fine sediment inputs to system.

- N138 Adopt stormwater BMPs to reduce sediment inputs from bed scouring high flows.
- N139 Adopt stormwater BMPs to address heavy metals and pollutants. Note various research actions regarding water quality (NTAA, R7-11).
- N140 Enforcement is currently reactive (i.e., complaint driven); it should be more proactive as it relates to protection of critical areas. Enforcement of stormwater, as well as of critical areas requirements, could be strengthened through a "green" inspector group that would share expertise about various environmental incentives and regulations.
- N141 Note that in addition to enforcement of stormwater standards by local jurisdictions to comply with their NPDES permits, the state Dept. of Ecology is adding three stormwater staff at NWRO to oversee compliance with industrial and construction general permits in winter 2004-5.

Adverse impacts from road runoff should be prevented through stormwater best management practices and minimization of number and width of roads in the basin. Opportunities to retrofit existing roadways with stormwater treatment BMPs should be pursued. Road crossings should be minimized to maintain floodplain connectivity.

- N142 Through planning for new roads or road widening projects, assess and recommend ways to minimize impacts on water quality, instream flows and sensitive areas. Low impact development includes BMPs for narrower roads, more pervious surfaces, etc.
- N143 Adopt and implement Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.
- N144 Retrofit existing roads to improve water quality treatment. Need BMPs for herbicides and pesticides along roads and power lines.
- N145 Limit new development (including roads) in floodplains, except in accordance with critical area regulations.
- N146 Continue to buyout structures in floodplains.

Provide adequate stream flow to allow upstream migration and spawning by establishing in-stream flow levels, enforcing water rights compliance, and providing for hydrologic continuity.

- N147 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards.
- N148 Determine extent of unauthorized withdrawals in all sectors (residential, commercial, industrial). Develop and/or use existing database on extent of surface and groundwater withdrawals.
- N149 Evaluate various flow data, stormwater facility operations, etc. to better understand stream flows and impacts on stream stability (NTAA, R1,2,3,5).
- N150 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, infiltration standards.
- N151 Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities (NTAA, AA4).
- N152 The limitations of available riparian land to help mitigate stormwater along urban watercourses are contributing to destabilizing flows for fish. Bellevue should identify opportunities to plan new or retrofit existing facilities on publicly-owned riparian land to help stabilize urban stormwater flows and temperatures (i.e. there are opportunities to use public parks and sports fields as multifunction stormwater facilities). Some parks and open space lands could be used to develop in-stream facilities (e.g., pond storage) for flow amelioration.
- N153 Water conservation measures to encourage the efficient use of water should be promoted by City of Bellevue to reduce impacts of water withdrawals throughout WRIA 8. Water conservation measures could include leak detection and repair, pricing structures that encourage more efficient water use, water efficiency audits, and rebates for commercial and residential water-efficient plumbing fixtures and appliances.
- N154 Look into other water resource allocation processes that could suggest potential actions for this basin (e.g., 2514 processes elsewhere, state law on water conservation – 1338).

PROTECTION: Prioritization of Lower Bear Creek Site-Specific Protection Projects

Please note: Prioritization of site-specific projection potential projects is based on both reach priority (using EDT model) and whether or not the potential project is a priority in an existing science-base protection program (such as Waterways). Existing priorities in the Bear Creek Waterways Program are shaded in following chart.

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 7: Cottage Lake Creek confl. to 133 rd St.	N222	Continue Bear Creek Waterways program in reach. In particular, protect forested area near Classic Nursery.	H	M/L
	N223	Protect riparian forested buffers in reach.	H	M/L
	N224	Protect contiguous forest cover in reach.	H	M/L
	N225	Protect instream flows in reach.	H	L
Reach 6: Trailer park to Cottage Lake Creek confl.	N216	Protect forested areas in reach, particularly south of Puget Power Trail & at 116th and Avondale Rd.	H	H
	N217	Protect riparian forested buffers in reach.	H	M/L
	N218	Protect undeveloped properties in reach.	H	M/L
Reach 5: Evans confl. to trailer park	N213	Protect floodplain and wetland areas adjacent to Keller Farm property (spans Reaches 4 and 5).	H	M
Reach 3: RR tracks to Avondale Rd.	N207	Protect property owned by WA Department of Transportation off NE Redmond Way.	M	M
Reach 4: Avondale Rd. to Evans confl.	N210	Protect floodplain and wetland areas adjacent to Keller Farm property (spans Reaches 4 and 5).	H	M

PROTECTION: Prioritization of Upper Bear Creek Site-Specific Protection Projects

Please note: Reaches 15/16 were unranked by EDT Model because reaches are above Chinook distribution for Bear Creek. However, the WRIA 8 Technical Committee placed reaches 15/16 as top priority for protection because the headwater area affects all reaches downstream.

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 15/16: .5 miles above Woodinville- Duvall Rd. to Paradise Lake	N277	Protect forested headwaters of Cottage Lake Creek and Bear Creek (700 acres) (spans Reaches 15, 16).	H	H
	N279	Ensure that Paradise Valley is used consistently with habitat protection.	H	M/H
	N272	Bear Creek Waterways Reach A, particularly Stevens & Dolittle properties.	H	M/L
	N273	Protect forested headwaters of Cottage Lake Creek and Bear Creek (700 acres) (spans Reaches 15, 16).	H	M/L
	N274	Protect riparian forested buffers in reach.	H	M/L
	N275	Protect instream flows in Reach 15.	H	L
	N278	Protect instream flows in Reach 16.	H	L
Reach 14: Top end of beaver dam complex to .5 miles above Woodinville- Duvall Rd.	N268	Bear Creek Waterways Reaches A and B.	H	M/L
	N269	Protect forest cover in reach.	H	M/L
	N270	Protect riparian forested buffers in reach.	H	M/L
	N271	Protect instream flows in reach.	H	L

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 13: 160 th to top end of beaver dam complex	N263	Protect forest cover in reach.	H	M/L
	N264	Bear Creek Waterways Reach B.	H	M/L
	N265	Protect riparian forested buffers in reach.	H	M/L
	N266	Protect instream flows in reach.	H	L
Reach 9: 141 st to top of beaver dam complex	N238	Protect forest cover in reach.	H	M/L
	N239	Bear Creek Waterways Reach D, particularly, Grandstan property.	H	M/L
	N240	Protect riparian forested buffers in reach.	H	M/L
	N241	Protect instream flows in reach.	H	L
Reach 10: Top of beaver dam complex to Struve Creek confluence	N245	Protect forest cover in reach.	H	M/L
	N246	Bear Creek Waterways Reach B, particularly contiguous, forested riparian parcels in reach.	H	M/L
	N247	Protect riparian forested buffers in reach.	H	M/L
	N248	Protect instream flows in reach.	H	L
Reach 8: 133 rd St. to 141 st crossing	N232	Bear Creek Waterways Reach D, particularly, forested riparian parcels contiguous to already protected areas and Swanson Horse Farm.	H+	M
	N231	Protect forest cover in reach.	H	M/L
	N233	Protect riparian forested buffers in reach.	H	M/L
	N234	Protect instream flows in reach.	H	L
Reach 11: Struve Creek to 158 th crossing	N252	Protect forest cover in reach.	H	M/L
	M253	Bear Creek Waterways Reach B.	H	M/L
	N254	Protect riparian forested buffers in reach.	H	M/L
	N255	Protect instream flows in reach.	H	L
Reach 12: Bear Cr. from 158 th to 160 th	N256	Protect forest cover on Granston property.	H	M/L
	N257	Bear Creek Waterways Reach B.	H	M/L
	N258	Protect riparian forested buffers in reach.	H	M/L

PROTECTION: Prioritization of Cottage Lake/Cold Creeks Site-Specific Protection Projects

Please note: Reaches Cold Creek Reaches 1/2 were unranked by EDT Model because reaches are above Chinook distribution for Cottage Lake/Cold Creeks. However, the WRIA 8 Technical Committee placed Cold Creek Reaches 1/2 as top priority for protection because the headwater area affects all reaches downstream.

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Cold Creek Reaches 1,2	N328	Protect Cold Creek Headwaters/Recharge Area.	H	H
	N326	Determine the source of and protect the aquifer for Cold Creek groundwater.	H	M
	N327	Protect forest cover in reach.	H	M/L
	N329	Bear Creek Waterways Reach C, particularly forested parcels south of NE Woodinville Rd.	H	M/L
	N330	Protect riparian forested buffers in reach.	H	M/L
	N331	Protect instream flows in reach.	H	L
Reach 3: Good habitat to 2 nd Avondale Way	N304	Protect buffers from encroachment into Native Growth Protection Easements.	H	M
	N302	Protect forest cover in reach.	H	M/L

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
crossing	N303	Bear Creek Waterways Reach E.	H	M/L
	N305	Protect instream flows in reach.	H	L
Reach 2: 1 st Avondale Way crossing to good habitat	N292	Protect forest cover in reach.	H	M/L
	N293	Protect 40-acre parcel on Cottage Lake Creek (Nickels Farm).	H	M/L
	N294	Bear Creek Waterways Reach E.	H	M/L
	N295	Protect riparian forested buffers in reach.	H	M/L
	N296	Protect instream flows in reach.	H	L
Reaches 1, 4 & 5/6 Tied in Priority				
Reach 4: 2 nd Avondale crossing to wetland below lake	N310	Protect Cold Creek Headwaters & Recharge Area.	H	H
Reach 5/6: Head-waters of Cottage Lake Creek	N319	Protect Cold Creek Headwaters & Recharge Area.	H	H
Reach 1: Mouth to 1 st Avondale Way crossing	N284	Protect Forest Cover.	H	M/L
	N285	Protect riparian forested buffers.	H	M/L
	N286	Bear Creek Waterways Reach E.	H	M/L
Reach 4: 2 nd Avondale Way crossing to wetland below lake	N309	Protect forest cover in reach.	H	M/L
	N311	Bear Creek Waterways Reach C.	H	M/L
	N312	Protect riparian forested buffers in reach.	H	M/L
Reach 5/6: Head-waters of Cottage Lake Creek	N318	Protect forest cover in reach.	H	M/L
	N320	Bear Creek Waterways Reach C.	H	M/L
	N321	Protect riparian forested buffers in reach.	H	M/L
Reach 1: Mouth to 1 st Avondale crossing	N287	Protect instream flows in reach.	H	L
Reach 4: 2 nd Avondale crossing to wetland below lake	N313	Protect instream flows in reach.	H	L
Reach 5/6: Head-waters of Cottage Lake Creek	N322	Protect instream flows in reach.	H	L

RESTORATION: Priority of Lower Bear Creek Restoration Projects

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
A Reaches				
Reach 5: Evans Creek confluence to	N211	Evans/Bear Creek Restoration - In-channel restoration through the former dairy farm (spans reaches 4 and 5).	H+	H
	N212	Install buffer strips to reduce fine sediments (spans	H	M

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
trailer park		Reaches 4 and 5).		
Reach 4: Avondale Rd. to Evans Creek confluence	N208	Evans/Bear Creek Restoration - In-channel restoration through the former dairy farm (spans Reaches 4 and 5).	H+	H
	N209	Install buffer strips to reduce fine sediments (spans Reaches 4 and 5).	H	M
Reach 1: Mouth to bottom of restoration area	N201	Lower Bear Creek channel restoration.	H+	H
	N202	Add water quality treatment for stormwater runoff from freeway.	H	M
Reach 3 – RR tracks to Avondale Rd.	N206	Riparian restoration on publicly owned land in reach.	H	H
	N205	Add large woody debris to reach.	H	M
Reach 6: Trailer park to Cottage Lake Creek confl.	N214	Riparian restoration in Friendly Village development & equestrian center.	M	L
	N215	Reduce bank armoring & restore riparian vegetation, NE 116th & Avondale Pl.	M/L	H
Reach 7: Cottage Lake Creek confl. to 133 rd St.	N219	Add large woody debris to reach.	H	H
	N221	Work with private property owners to restore riparian areas, increase in-channel complexity.	H	M/L
	N220	Reforest cleared areas in reach.	M	H
B Reaches				
Reach 2: Restoration area to RR tracks	N203	Restore 300 ft. of creek downstream of railroad bridge.	M	H
	N204	Remove constriction of channel caused by remnant of railroad bridge.	L	M

RESTORATION: Priority of Upper Bear Creek Restoration Projects

Reach # (Listed in Priority Order)	Proj. #	Description Note: Shaded Projects are an existing priority in the Bear Creek Waterways Program.	Benefits to Chinook	Ease of Implem.
A Reaches				
Reach 10: Top of beaver dam complex to Struve Creek confluence	N242	Add large woody debris to reach.	H	H
	N243	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add large woody debris.	H	M/L
	N244	Underplant alders with conifers on publicly owned properties in reach.	M	H
Reach 9: 141 st to top of beaver dam complex	N235	Add large woody debris to reach.	H	M/L
	N236	Work with private property owners to restore riparian areas, increase in-channel complexity.	H	M/L
	N237	Replant cleared, former pasture area in reach.	H	M/L
Reach 8: 133 rd St. to 141 st crossing	N226	Add large woody debris to reach.	H	H
	N228	Riparian restoration and reduction of fine sediments on Swanson Horse Farm property.	H	M
	N229	Plant southside of golf course ponds to shade them, if found to influence temperatures on Bear Creek.	H	M
	N230	Add large woody debris to reach.	H	M/L

Reach # (Listed in Priority Order)	Proj. #	Description Note: Shaded Projects are an existing priority in the Bear Creek Waterways Program.	Benefits to Chinook	Ease of Implem.
	N227	Reforest 10-acre wetland area on golf course in reach.	M	M
Reach 14: Top of beaver dam complex to .5 miles above Woodinville- Duvall Rd.	N267	Riparian planting in wetland area south of Woodinville Duvall Rd.	H/M	H
B Reaches				
Reach 13: 160 th to top end of beaver dam complex	N260	Add large woody debris in reach.		
	N262	Work with private property owners to restore riparian areas, increase in-channel complexity.	H	M/L
	N261	Work with private property owners in reach to reduce water quality impacts.	M	M
Reach 11: Struve Creek to 158 th crossing	N249	Add large woody debris to reach.	H	M/L
	N250	Work with private property owners to restore riparian areas, increase in-channel complexity.	H	M/L
	N251	Remove bank hardening and restore riparian area at Tolt Pipeline crossing.	M	H
Reach 16: .5 miles above Woodinville- Duvall Rd. to Paradise Lake	N276	Riparian restoration in Paradise Valley Conservation Area.	H	M/L

RESTORATION: Priority of Cottage Lake/Cold Creeks Restoration Projects

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 4: 2 nd Avondale Way crossing to wetland below lake	N307	Work with private property owners in reach to restore riparian areas, increase in-channel complexity.	H	M/L
	N308	Work with private property owners in reach to reduce water quality impacts.	M	M
	N306	Add large woody debris to this reach.	M	L
Reach 3: Good habitat to 2 nd Avondale Way crossing	N298	Work with private property owners to restore riparian buffers in reach.	H	M/L
	N300	Work with private property owners in reach to restore riparian areas, increase in-channel complexity.	H	M/L
	N299	Reforest cleared properties in reach, particularly in open space tracts.	M	M
	N301	Work with private property owners in reach to reduce water quality impacts.	M	M
	N297	Add large woody debris to this reach.	M	L
Reach 1: Mouth to 1 st Avondale Way crossing	N280	Add large woody debris to this reach.	H	M/L
	N281	Work with private property owners in reach to restore riparian areas, increase in-channel complexity.	H	M/L
	N282	Improve floodplain connection in reach by removing riprap or artificial constrictions.	H	M/L
	N283	Work with private property owners in reach to reduce water quality impacts.	M	M
Reach 2: 1 st Avondale Way	N290	Work with private property owners in reach to restore riparian areas, increase in-channel complexity.	H	M

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
crossing to good habitat	N288	Add large woody debris to reach.	H	M/L
	N289	Restore riparian conditions on Nickels Farm and reduce inputs of fine sediments.	H	M/L
	N291	Work with private property owners in reach to reduce water quality impacts.	M	M
Reach 5/6: Head-waters of Cottage Lake Creek	N314	Add large woody debris to reach.	H	H
	N316	Work with private property owners in reach to restore riparian areas, increase in-channel complexity.	H	M/L
	N317	Work with private property owners in reach to reduce water quality impacts.	M	M
Cold Creek 1/2	N324	Work with private property owners in reach to restore riparian areas, increase in-channel complexity.	H	M/L
Reach 5/6: Head-waters of Cottage Lake Creek	N315	Restore altered bog in Cold Creek Natural Area (Spans 5/6 Cottage Lake Creek and 1/2 Cold).	M	H
Cold Creek 1/2	N323	Restore altered bog in Cold Creek Natural Area (Spans 5/6 Cottage Lake Creek and 1/2 Cold).	M	H
Cold Creek 1/2	N325	Work with private property owners in reach to reduce water quality impacts.	M	M

PROTECTION: Prioritization of Site-Specific Protection Projects for the Sammamish River

Please note: The Sammamish River reaches were not prioritized using the EDT Model, so prioritization based on expert opinion of Benefits to Chinook and Feasibility.

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 4B: Willow Golf Course to NE 116th St.	N354	Acquire 20-acre parcel Across from Willows Run Golf Course for restoration.	H	M
Reach 1B: 96th St Bridge to 68th St. Bridge	N336	Acquire property near mouth of Swamp Creek for inclusion Swamp Creek Park Restoration.	H/M	H/M
Reach 6B: Lake Sammamish to Weir	N364	Protect existing high quality riparian vegetation in Marymoor dogwalk and Lake Sammamish Rowing areas.	H/M	H

RESTORATION: Prioritization of Restoration Projects for the Sammamish River

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 2: North Creek Confluence (RM 4.5) to 96th St Bridge (RM 2.5)	N339	Explore restoration of minor tributaries and enhance confluences.	H/M	H
	N338	Enhance and reconnect wetlands and remnant side channels adjacent to 102nd Avenue bridge on left bank.	H/M	H/M
	N337	Wetland restoration downstream of 102nd Avenue bridge on right bank.	H/M	M
	N340	Evaluate creation of pools in the Norway Hill area.	M	M

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 1: 96th St Bridge to Sammamish Mouth	N333	LakePointe property riparian and aquatic restoration.	H	H
	N332	Sammamish River Mouth wetland restoration.	H	H/M
	N334	Enhance and reconnect riparian wetlands at Wildcliff Shores.	H/M	H
	N335	Swamp Creek Park wetland and stream restoration.	H/M	M
Reach 5: Willow Golf Course to Bear Creek Confluence	N355	Lower Bear Creek restoration and pool creation.	H+	M
	N356	Regrade banks, create shallow rearing habitat, and restore riparian vegetation in reach.	H	M
	N357	Enhance tributary confluences at Willows Creek and Peters Creek.	H/M	M
Reach 3: NE 145th to North Creek Confluence	N343	Regrade banks, create shallow rearing habitat, and restore riparian vegetation in reach.	H	M
	N342	Enhance tributary confluences of Derby, Gold and Woodin Creeks.	H/M	H/M
	N344	Enhance and reconnect riparian wetlands near Gold Creek.	H/M	L
	N341	Restore and reconnect riparian wetlands adjacent to I-405/SR 522 Interchange.	M	L
Reach 4: Willow Golf Course to NE 145th St.	N346	Enhance tributary confluences in reach.	H	M
	N347	Reconnect Wetland 38 to river.	H	M
	N350	Wetland and side channel restoration across from Willows Run Golf Course.	H	M/L
	N348	Restore full meander in Reach 4A.	H	L
	N351	Riparian restoration between Willows Golf Course and NE 116 th .	H/M	H/M
	N349	Restore small meanders in Reach 4A.	H/M	M
	N345	Restore historic channel habitat on left bank between 116th and 124th.	H/M	M/L
	N352	Enhance Tributary 0101 confluence.	M	M
Reach 6: Lake Sammamish to Bear Creek Confluence Unranked because primarily used by Issaquah population. Projects in Reach 6 that influence ecosystem processes (such as temperature) versus more localized benefit could benefit NLW Chinook as well and would be a higher priority.	N363	Enhance mouths of two unnamed tributaries in reach.	H	H
	N358	Sammamish River Transition Zone Restoration.	H	H/M
	N360	Enhance existing pools and create new pools in reach.	H	H/M
	N359	Regrade banks, create flood benches and restore riparian vegetation in reach.	H	M
	N362	Riparian revegetation between Lake Sammamish and weir.	H/M	H
	N361	Riparian revegetation between weir and confluence of Bear Creek.	M	H

North Lake Washington Tributaries Tier 2: Prioritization of Site Specific Projects for North Creek, Little Bear Creek, Evans Creek and Kelsey Creek

PROTECTION: Prioritization of Site-Specific Protection Projects for Lower North Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 5: 208 th St culvert to 196 th St culvert	N380	Pursue conservation easement on property adjacent to Twin Creeks Restoration Project.	H	?
Reach 4: 228 th SE Canyon Park Rd crossing to 208 th St culvert	N376	Protect forested wetland south of Malby Road.	H/M	M/L
Reach 3: Upstream end of business park to 2228 th SE Canyon Park Rd crossing	N372	Protect forested property north of 240 th .	H	M/L
Reach 2: From Cascadia Restoration project to upstream end of business park	N370	Protect Boy Scouts property.	H+	L
	N371	Protect forested property to east of Reach 2.	H+	L

PROTECTION: Prioritization of Site-Specific Protection Projects for Upper North Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 10+: Downstream of McCollum Park to headwaters	N397	Acquire 5-acre parcel for future retention/detention.	H	L
	N396	Protect North Creek headwaters: Acquire 10 acre parcel.	H	?
Reach 9: Mill Ck development area to downstream of McCollum Park	N393	Protect forested wetlands in reach.	H	M
Reach 6: 196 th St culvert to confluence Nickel Ck and North Ck Regional Park boundary	N385	Protect large forested parcels in Reach 6.	H	M
Reach 7: Confluence Nickel Ck to confluence Penny Ck	N389	Acquire 53 acres of forest/wetlands adjacent to North Creek Regional Park.	H	M
Reach Silver 1: Mouth to 196 th culvert	N398	Acquisition of parcel including frontage on both Silver and North Creeks.	M/L	?

RESTORATION: Prioritization of Site-Specific Restoration Projects for Lower North Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 2: From Cascadia Restoration project to upstream	N367	Floodplain restoration in Reach 2.	H	M
	N369	Restore riparian wetland south of North Creek	M	L

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
end of business park		Parkway N.		
	N368	Restore riparian wetland north of 195th.	M/L	H
Reaches 4 & 5 Tied in Priority				
Reach 4: 228 th SE Canyon Park Rd crossing to 208 th St culvert	N375	Enhance North Creek in Thrashers Corner area.	H	H
Reach 5: 208 th St culvert to 196 th St culvert	N377	Expand Twin Creeks restoration.	H	H
	N378	Continue to work with school in Reach 5 restore creek on their property.	H	H
	N379	Work with Landowners in Reach 5 to restore riparian vegetation and to do stream enhancements.	H	H
Reach 4: 228 th SE Canyon Park Rd crossing to 208 th St culvert	N373	Floodplain restoration north of 228 th .	H	H/M
	N374	Enhance mouth and lower reaches of Palm Creek.	M	H
Reach 1: Mouth to Cascadia Restoration project	N365	Add conifers to Cascadia Project.	M	H
	N366	Restore lowest reach of North Creek.	M/L	M/L

RESTORATION: Prioritization of Site-Specific Restoration Projects for Upper North Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 8: Confluence Penny Ck to Mill Creek development area	N390	Restoration within city-owned reach of North Creek.	H	H
Reaches 7 & 6 Tied in Priority				
Reach 7: Confluence Nickel Ck to confluence Penny Ck	N386	North Creek Regional Park stream channel enhancement.	H	H
	N388	Work with landowners in Reach 7 to restore riparian vegetation and to do stream enhancements.	H	H
Reach 6: 196 th St culvert to confluence Nickel Ck and North Ck Regional Park boundary	N381	Buyout frequently flooded home and restore floodplain.	H	H
	N382	Add large woody debris in reach.	H	H
	N384	Work with landowners in Reach 6 to restore riparian vegetation and to do stream enhancements.	H	H
Reach 7: Confluence Nickel Ck to confluence Penny Ck	N387	Acquire property north of the North Creek Regional Park and remove dike, reconnect creek to floodplain and wetlands.	H	H/M
Reach 6: 196 th St culvert to confluence Nickel Ck and North Ck Regional Park boundary	N383	Replanting cleared parcel north of 192nd and East of Waxon Road.	H/M	?
Reaches 9, 10 & Penny 1 Tied in Priority				
Reach 9: Mill Ck development area to downstream of	N391	Work with landowners in Reach 9 to restore riparian vegetation and to do stream enhancements.	H	H

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
McCollum Park				
Reach 10+: Downstream of McCollum Park to headwaters	N394	Work with landowners in Reach 10 to restore riparian vegetation and to do stream enhancements.	H	H
	N395	Install grade control structures (very large logs) from Northwest Stream Center to 128th in McCollum Park.	H	H
Reach 9: Mill Ck development area to downstream of McCollum Park	N392	Riparian and instream restoration in creek below McCollum Park designated as Native Growth Protection Area.	M	H
Reach Penny 1: Mouth to retention pool	N399	Improve fish passage at two culverts along Mill Creek Community Trail.	L	H

PROTECTION: Prioritization of Site-Specific Protection Projects for Little Bear Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 10: Little Bear Rd culvert to 51 st St culvert	N424	Protect undeveloped, forested wetlands in reach covering approximately 110 acres.	H	H
Reach 11: 51 st St culvert to 181 st SE culvert	N427	Protect 88 acres of mature second-growth forest on right bank of Little Bear Creek in Reach 11.	H	H
Reach 12: 180th SE Culvert to upper extent coho potential (near Silver Firs Subdivision)	N429	Protect forested, headwater wetlands North of 180th to 156th, an ~2-mile stretch of Little Bear Creek.	H+	H/M
Reach 9: Confluence with Great Dane to Little Bear Rd culvert	N422	Protect ~100 acre, undeveloped forested wetland on both Little Bear and Great Dane Creeks. (Also under Great Dane Creek Reach 1).	H	H
Reach GD1: Mouth to SR 524 crossing	N430	Protect ~100 acre, undeveloped forested wetland on both Little Bear and Great Dane Creeks. (Also listed under Reach 9).	H	H
Reach 9: Confluence with Great Dane Ck to Little Bear Rd culvert	N421	Maltby Road property, five parcels totaling 35 acres of mature second-growth upland forest.	?	?
Reach 7: Canyon Park culvert to confluence with Cutthroat Ck	N417	Protect forested, undeveloped parcels in Reach 7 west of Little Bear Creek.	H	M
Reach 2: 132 nd Ave NE to Hwy 522 crossing	N406	Protect riparian area in Reach 2 that is partially in public ownership.	H	H
Reach 8: Confluence with Cutthroat Ck to confluence with Great Dane Ck	N419	Seek conservation easements on undeveloped forested parcels in Reach 8.	H	M/L

RESTORATION: Prioritization of Site-Specific Restoration for Little Bear Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reaches 1 & 2 Tied in Priority				
Reach 2: 132 nd Ave NE to Hwy 522 crossing	N402	Improve Fish Passage at 134th Avenue NE at RM 0.5.	H	H
	N401	Improve Fish Passage at 132nd Avenue NE at RM .45.	H	H
	N403	Restore riparian vegetation up to SR 522 and add LWD.	H	H
	N404	Construct water quality treatment and retention/detention stormwater facilities for SR 522 at 195 th .	H	H
	N405	Add Large Woody Debris at downstream end of Reach 2 as alternative to bank armoring.	M	H
Reach 1: Mouth to 132 nd Ave NE crossing	N400	Plant riparian vegetation where possible in Reach 1.	M	H
Reaches 3, 4, 5 & 6 Tied in Priority				
Reach 5: Begin industrial reach to confluence Howell Ck	N411	Continue Creek Restoration at Alphine Rockeries.	H	H
	N412	Snohomish Co. to continue to work with business owners in Reach 5 and Howell Creek to improve water quality.	H	H
Reach 3: Hwy 522 crossing to confluence with Rowlins Ck	N408	Add large woody debris in Reach 3 particularly in publicly-owned section from 195th to house.	H	H
	N407	Improve fish passage at NE 195th Street at RM 1.8.	H	H/M
Reach 6: Confluence Howell Ck to Canyon Park culvert	N413	Buyout frequently flooded home, add large woody debris and restore riparian vegetation.	H	M
Reach 4: Confluence with Rowlins Ck to begin industrial reach	N409	Add large woody debris in Reach 4.	H	L
Reaches 7 & 8 Tied in Priority				
Reach 7: Canyon Park culvert to confluence with Cutthroat Ck	N415	Restore floodplain to remainder creek where creek is currently constrained by Route 9.	H	H/M
	N414	Work with landowners in Reach 7 to restore riparian vegetation and add large woody debris.	H	M
Reach 8: Confluence with Cutthroat Ck to confluence with Great Dane Ck	N418	Work with private property owners to add large woody debris and restore riparian vegetation in Reach 8.	H	M/L
Reach 7: Canyon Park culvert to confluence with Cutthroat Ck	N416	Improve fish passage at privately owned barrier in lower reach of Cutthroat Creek.	M/L	L
Reaches 9 & 10 Tied in Priority				
Reach 10: Little Bear Rd culvert to 51 st St culvert	N423	Improve fish passage at 51st Ave. NE, RM 6.5.	M/L	H
Reach 9: Confluence with Great Dane Ck to Little Bear Rd culvert	N420	Replace failing culvert of creosote logs under SR 524.	M/L	M
Reaches 11 & 12 Tied in Priority				
Reach 11: 51 st St culvert to 181 st SE culvert	N425	Enhance large woody debris recruitment and frequency between 180th St. SE and Maltby Road.	H	H/M

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 12: 180th SE Culvert to upper extent coho potential (near Silver Firs Subdivision)	N428	Retrofit retention/detention facilities and Silver Fir development stormwater system to cool water and augment base flows at 156 th Street SE.	H	L
Reach 11: 51 st St culvert to 181 st SE culvert	N426	Improve fish passage at 180th Street SE at RM 7.2.	H/M	H

PROTECTION: Prioritization of Site-Specific Protection Projects for Evans Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Headwaters	N440	Protect and maintain 700 acre wetland that drains to Evans & Bear Creeks and the Snoqualmie River (is designated open space as part of Redmond Ridge).	H	H
Reach 1: Confluence with Bear Ck to 188 th St	N431	Consider increasing buffer in Reach 1.	M	L
Reach 3: 196 th St crossing	N436	Protect existing habitat in undeveloped Johnson Park.	H/M	H
Reach 4: 196 th St crossing to 196 th St crossing and Redmond-Fall City Rd	N438	Work with private property owners in reach to protect existing wetlands.	L	L

RESTORATION: Prioritization of Site-Specific Restoration Projects for Evans Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 3: Union Hill Rd crossing to 196 th St crossing	N435	Work with private property owners in Reach 3 to improve riparian and instream conditions.	H/M	M
	N434	Restoration of Evans Creek within Johnson.	M	H
Reach 5: 196 th St crossing and Redmond-Fall City Rd to Redmond-Fall City Rd crossing	N439	Move Evans Creek away from Redmond Fall City Road, re-meander, increase buffer and channel complexity and restore riparian vegetation.	M/L	M
Reach 2: 188 th Street to Union Hill Rd crossing	N433	Restore Evans Creek In-Place - If creek is not relocated away from industrial area, enhance stream conditions in existing location.	M	L
	N432	Evans Creek Relocation Study - Study feasibility of relocating Evans Creek to the North, away from industrial area and restoring.	?	M
Reach 4: 196 th St crossing to 196 th St crossing and Redmond-Fall City Rd	N437	Conduct pilot project to address high sedimentation, invasive reed canary grass, and to restore riparian vegetation.	M	L

PROTECTION: Prioritization of Site-Specific Protection Projects in Kelsey Creek

Please note: Kelsey Creek reaches were not prioritized for protection using EDT Model. Therefore these potential projects are prioritized based on expert opinion of Benefits to Chinook and Ease of Implementation only.

Reach # (Not Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 6: Main Street to headwaters	N495	Maintain headwater wetlands.	H	H
Reach 2: Lake Hills	N465	Acquire parcels just south of SE 7 along wetland	H	H

Reach # (Not Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
connector to lower end of Glendale Golf Course		buffer.		
Reach 4: Olympic pipeline structure to confluence with Valley Ck	N482	Protect existing riparian habitat, especially in larger parcels where stream could meander and buffers could be wider.	H	H
Reach 5: Confluence with Valley Creek to Main Street	N492	Protect wetlands along 148 th .	H	H
Reach 7: Richards Creek – mouth to SE 32 nd St	N504	Acquire undeveloped properties or easements along reach 77-02 & 78-01.	H	H
Reach 9: West Tributary – mouth to Bellevue-Redmond Road	N514	Acquire parcels just south of SE 7 along wetland buffer.	H	H
Reach 2: Lake Hills connector to lower end of Glendale Golf Course	N466	Implement farm management BMPs.	H	M
	N467	Investigate and remove illegal water withdrawals in reach.	H	M
	N468	Investigate opportunities to utilize alternative water sources for legal water withdrawals in reach.	H	M
Reach 4: Olympic pipeline structure to confluence with Valley Ck	N483	Investigate options for more natural stream channel during Bel-Red commercial redevelopment process.	H	M
Reach 5: Confluence with Valley Creek to Main Street	N491	Protect existing coniferous riparian habitat along Kelsey Creek upstream of Ilahee Apt to 148th Ave NE.	H	M
Reach 10: Goff Creek – mouth to Bellevue-Redmond Road	N515	Purchase riparian forested buffers or conservation easements in stream segment 81-01 of Goff Creek.	H	M
Reach 3: Grade control passage obstruction at golf course to Olympic pipeline structure	N476	Continue to Implement Golf Course BMPs.	M	H
Reach 7: Richards Creek – mouth to SE 32 nd St	N503	Purchase 2 parcels to protect hillside springs/seeps and forest.	M	H

RESTORATION: Prioritization of Site-Specific Restoration Projects for Kelsey Creek

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
Reach 3: Grade control passage obstruction at golf course to Olympic pipeline structure	N473	Improve fish passage at concrete weirs.	H	H
	N469	Install large woody debris in stream segments 76-03a through 76-08.	H	M
	N470	Restoration of riparian areas in reach.	H	M
	N472	Improve fish passage at NE 8th St.	H	L
	N474		H	L

Remove riprap, setback banks, and bioengineer

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
		banks.		
	N475	Restore stream channel & off-channel habitat upstream of NE 8th.	H	L
	N471	Work with streamside property owners north of NE 8th to establish native riparian buffers.	M	M
Reach 4: Olympic pipeline structure to confluence with Valley Creek	N477	Install large woody debris in stream segments 76-03a through 76-08.	H	M
	N478	Restoration of riparian areas in reach.	H	M
	N480	Improve fish passage at Olympic Pipeline weirs.	H	M
	N479	Use bioengineering and bank slope setbacks to remove severely eroding gabion walls and stabilize stream banks.	H	L
	N481	Re-establish more natural channel through Bel-Red area.	H	L
Reach 2: Lake Hills connector to lower end of Glendale Golf Course	N454	Install large woody debris in stream segments 76-03a through 76-08.	H	H
	N457	Restoration of riparian areas in reach.	H	H
	N459	Remove invasive non-native plants and restore native vegetation in reach.	H	H
	N462	In lower Glendale, establish wetland along mainstem Kelsey, allow floodplain connectivity.	H	H
	N458	Install large woody debris in stream segments 76-03a through 76-08.	H	M
	N460	Set back or remove berm on reach 76-05 and expand buffer and channel migration zone.	H	M
	N463	Allow natural channel migration to occur in lower Glendale reaches and Kelsey Creek Farm.	H	M
	N464	Enlarge Riparian Buffer through Glendale Country Club.	H	M
	N461	If berm on reach 76-05 cannot be moved, then explore opportunities to utilize man-made tributary through pastures as secondary channel.	H/M	M
	N456	Restore stream channel through segments 76-03 through 76-05.	M	H
	N455	Enhance wetlands to restore off-channel and riparian wetland habitats along stream segment 76-05.	M	M
N453	Improve fish passage at Lake Hills Connector.	M	L	
Reach 9: West Tributary – mouth to Bellevue-Redmond Road	N510	Install large woody debris in stream segments 80-01 through 80-02 in the West Tributary.	H	H
	N511	Restore original stream channel of the West Tributary through Kelsey Creek Farm.	H	H
	N512	Reduce invasive non-native plants in high Chinook usage reaches of West Tributary.	H	H
	N513	Place large woody debris in floodplain near channel and spanning logs.	H	H
	N509	Improve fish passage at NE First Street on West Tributary.	H	M
Reach 1: Mouth to confluence with Richards Creek and Lake Hills culvert	N442	Riparian restoration in Mercer Slough.	H	H
	N449	Improve fish passage at 121st Avenue SE.	H	H
	N452	Above I-405, reach 76-03: install large woody debris; restore riparian vegetation.	H	H
	N443	Enhance Mercer Slough cool water refuges.	H	M

Reach # (Listed in Priority Order)	Proj. #	Description	Benefits to Chinook	Ease of Implem.
	N446	Replace culverts beneath I-405 with bridge and restore stream habitat.	H	M
	N448	Above I-405, reach 76-03: remove riprap in stream channel bottom, install large woody debris, and restore habitat.	H	M
	N451	Above I-405, reach 76-03: improve connections with cold water seeps/springs off Woodridge Hill for refugia.	H	M
	N445	Remove creosote wall near I-90.	H	M/L
	N441	Mercer Slough floodplain restoration.	M	H
	N444	Reduce pesticide use and protect water quality in the Mercer Slough Blueberry Farm.	M	H
	N447	Above I-405, reach 76-03: check sewage pump station/force mains for potential problems.	M	H
	N450	Above I-405, reach 76-03: investigate opportunities to connect wetlands on north side of SE 8 th .	M	M
Reach 8: Valley Creek – mouth to Bellevue Municipal Golf Course	N505	Daylight Valley Creek through Bellevue Golf Course.	H	H
	N508	Install large woody debris in stream segment 83-01 of Sears Creek.	H	H
	N506	Improve fish passage at culverts beneath SR 520.	H	M
	N507	Install large woody debris in stream segments 82_01 through 82-05 of Valley Creek.	H	L
Reaches 5 & 7 Tied in Priority				
Reach 5: Confluence with Valley Creek to Main Street	N490	Improve fish passage at 148th Ave NE.	H	H
Reach 7: Richards Creek – mouth to SE 32 nd St	N498	Improve fish passage at at Lake Hills Connector.	H	H
	N499	Install large woody debris in stream segment 77-02 through 77-03 of Richards Creek.	H	H
	N502	Reduce invasive non-native plants in high Chinook usage reaches of Richards Creek.	H	H
Reach 5: Confluence with Valley Creek to Main Street	N485	Install large woody debris in stream segment 76-03a through 76-08 of Kelsey Creek.	H	M
	N486	Purchase riparian forested buffers or conservation easements in stream segments 76-08 and 76-09.	H	M
	N489	Improve fish passage private culverts that limit passage and flow.	H	M
	N484	Channel restoration through apartment complex.	H	L
	N488	Reduce bank armoring, lay back banks, and use bioengineering to restore banks and riparian area.	H	L
Reach 7: Richards Creek – mouth to SE 32 nd St	N500	Install large woody debris in stream segment 79-01 of Sunset Creek.	H	L
	N496	Improve fish passage at SE 26th Street on East Creek.	M	H
	N497	Improve fish passage at SE 30 th Street on Richards Creek.	M	H
	N501	Purchase riparian forested buffers or conservation easements in stream segments 77-01 through 77-03 of Richards Creek.	?	?

Preliminary DRAFT North Lake Washington Chinook Population - Tier I - Initial Habitat Project List Includes Potential Restoration and Protection Projects by Reach.

Bear Creek Lower Reaches 1-7

Ranking Notes:

- LWD feasibility determined by ownership (H for public and M/L for private).
- Many non-specific restoration and protection projects received H Benefit Rankings and M/L feasibility until specific projects are identified.

Basinwide Recommendations:

Project #	Description
N601	Study is needed to determine where LWD is most needed. Adding LWD most feasible on PBRs and conservation easement properties.
N602	Landowner outreach and education is needed about the habitat values provided by beavers and beaver dams.
N603	Need to policy to manage both the types and level of human use on lands acquired for habitat purposes to ensure that habitat goals are not threatened.

Reach 1: Bear Creek from mouth to bottom of restoration reach

Restoration

Technical Hypothesis: Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N201	1	3 of 7	4	Lower Bear Creek Restoration: Provide an enhanced channel alternative to the ditched and leveed lower 3,000 feet of Bear Creek, including a new refuge confluence with the Sammamish River. Add LWD, restore riparian conditions.		Currently proposed Corps/City of Redmond project only covers 2,000 feet of reach. Restoration is needed for full reach. Lots of community support for project. Project also listed in Sammamish.	H+	H
N202	1	3 of 7	new	Add water quality treatment for stormwater runoff from freeway in this reach.		Explore stormwater retention in this reach that does not conflict with maintaining current buffer on creek.	H	M

Protection

Technical Hypothesis: Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	1	7 of 7		9	No projects identified at this time.				

Reach 2: Bear Creek from bottom of restoration reach to RR tracks (WDFW trap)

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N203	2	7 of 7	3	Restore 300 foot section of creek downstream of railroad bridge that was not part of past restoration efforts in this reach. Plant riparian buffer and add LWD.		Not much riparian vegetation currently exists in this section.	M	H
N204	2	7 of 7	new	Remove constriction of channel caused by remnant of railroad bridge.		Causes erosion downstream of bridge. Expensive project for the area effected. Not sure about ownership and railroad/trail rights.	L	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
	2	1 of 7			No projects identified at this time.				

Reach 3: Bear Creek from RR tracks (WDFW trap) to Avondale Rd Crossing (potential restoration reach)

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N205	3	4 of 7	3	Add Large Woody Debris to reach.		Lots of public land in reach. Adding LWD in urban areas may be more difficult.	H	M
N206	3	4 of 7	9	Riparian restoration in reach. Most of the reach is publicly owned, but need to remove invasive plants and replant with native vegetation.			H	H

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N207	3	5 of 7		9	The Washington Department of Transportation owns property off NE Redmond Way in this reach. If the Department sells this property, should be protected from development.		Could City of Redmond secure first right of refusal for property? There is not much available land in this part of the watershed and therefore anything available should be considered a valuable opportunity. May be possible to convince WSDOT to use this as a mitigation site. Development on this site should really not be a concern anyway given that it is in the floodplain.	M	M

Reach 4: Bear Creek from Avondale Rd Crossing (potential restoration reach) to Evan Cr confluence

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N208	4	2 of 7	5	Evans/Bear Creek Restoration: In-channel restoration is needed in Bear Creek and Evans Creek through the former dairy farm at the confluence; RM 1.25 to RM 2.5 on Bear Creek and RM 1.2 to RM 4.6 on Evans Creek (Same as Keller Farm). Reconfigure channel where it has been widened due to past farm practices, enhance riparian area, add LWD, replant.		Feasibility study needed to determine scope of project. Seen by local experts as one of the largest opportunities for habitat restoration in Bear Creek. Creation of a wetland mitigation bank is an option here if can be done in a way that meet both wetland and stream restoration needs. Owner may have some interest in selling property to the right buyer.	H+	H
N209	4	2 of 7	new	Install buffer strips to reduce inputs of fine sediments into the creek from farm land (has been tilled in recent years).		Landowner would have to be willing to cooperate. Perhaps Adopt-A-Stream could approach landowner.	H	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N210	4	6 of 7		new	Protect floodplain and wetland areas adjacent to Keller Farm property in this reach.		Possible opportunity for protection in this reach is acquisition for the Bear and Evans Creeks Greenway Program. However, if trail comes through this area, need to minimize impacts to creek. This area has also been identified as a possible wetland mitigation bank site. Stream and wetland restoration actions in this reach need to be compatible and coordinated.	H	M

Reach 5: Bear Creek from Evans Cr confluence to Trailer Park (Keller Farm reach)

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N211	5	1 of 7	5	Evans/Bear Creek Restoration: In-channel restoration is needed in Bear Creek and Evans Creek through the former dairy farm at the confluence; RM 1.25 to RM 2.5 on Bear Creek and RM 1.2 to RM 4.6 on Evans Creek (Same as Keller Farm). Enhance riparian area, add LWD, replant, add pools, increase off-channel complexity (oxbows, backwater areas).		Feasibility study needed to determine scope of project. Seen by local experts as one of the largest opportunities for habitat restoration in Bear Creek. Creation of a wetland mitigation bank is an option here if can be done in a way that meet both wetland and stream restoration needs. Owner may have some interest in selling property to the right buyer. Son of owner approached Muckelshoots about selling land. Trust for Public Lands contacted them with no success. Should continue to follow up on this.	H+	H
N212	5	1 of 7	new	Install buffer strips to reduce inputs of fine sediments into the creek from farm land (has been used tilled in recent years).		Landowner would have to be willing to cooperate. Perhaps Adopt-A-Stream could approach landowner.	H	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N213	5	4 of 7		new	Protect floodplain and wetland areas adjacent to Keller Farm property in this reach.		Possible opportunity for protection in this reach is acquisition for the Bear and Evans Creeks Greenway Program. However, if trail comes through this area, need to minimize impacts to creek. This area has also been identified as a possible wetland mitigation bank site. Stream and wetland restoration actions in this reach need to be compatible and coordinated.	H	M

Reach 6: Bear Creek from Trailer Park (top Keller Farm reach) to Cottage Lake Creek

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N214	6	5 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects. In particular, restoration needed throughout Friendly Village development in downstream end of reach and equestrian center near middle of the reach.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued. There are a lot of private landowners in this reach.	M	L
N215	6	5 of 7	new	Reduce or remove bank armoring and restore riparian vegetation at NE 116th and Avondale Place.		Proposed for King County acquisition. Adjacent to Redmond proposed acquisition. Feasibility H if acquired, but L otherwise.	M/L	H

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N216	6	3 of 7		7	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments. Particularly forested area south of Puget Power Trail and at corner of 116th and Avondale Road.		One parcel being considered by King County, 2 acres. Funding in process for this site. Feasibility H for King County parcel, M for rest of the reach.	H	H
N217	6	3 of 7		8e	Protect riparian forested buffers along Bear Creek, Cottage Lake Creek, and other salmonid tributaries.		Not many protection opportunities remain in this reach.	H	M/L
N218	6	3 of 7		new	Protect undeveloped properties in reach.			H	M/L

Reach 7: Bear Creek from Cottage Lake Creek to 133rd St (King County gage site)

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N219	7	6 of 7	3	Add Large Woody Debris to Bear Creek: Particularly in already protected area with intact riparian forest. Good opportunity in this reach in large properties that are in public ownership.			H	H
N220	7	6 of 7	new	Explore opportunities to reforest cleared areas in this reach in order to increase forest cover.			M	H
N221	7	6 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued.	H	M/L

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibil. H, M, L
N222	7	2 of 7	Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, there may be opportunities to protect forested area near Classic Nursery.			H	M/L
N223	7	2 of 7		8e	Protect riparian forested buffers along Bear Creek.			H	M/L
N224	7	2 of 7		7	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments. Good opportunities in reach to protect contiguous forest cover.		This reach begins the rural zoning the Bear Creek basin.	H	M/L
N225	7	2 of 7		new	Protect instream flows in reach: Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Preliminary DRAFT North Lake Washington Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Bear Creek Upper Reaches 8-16

Ranking Notes:

- LWD Feasibility determined by ownership (H for public and M/L for private)
- Many non-specific restoration and protection projects received H Benefit Rankings and M/L feasibility until specific projects are identified.

Reach 8: Bear Creek from 133rd St (King County gage site) to 141st crossing
Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N226	8	3 of 7	3	Add Large Woody Debris to Bear Creek, particularly in areas that are already publicly owned in reach.			H	H
N227	8	3 of 7		Reforest 10-acre wetland area on golf course in reach that is part of dedicated open space for property.		Not sure if wetlands are hydraulically connected to creek.	M	M
N228	8	3 of 7	new	Restoration needed on Swanson Horse Farm property on NE 140th St. Reduce fine sediments, restore riparian areas. Pursue farm plan to address impacts to Bear Creek.			H	M
N229	8	3 of 7	new	Determine whether or not ponds on golf course are hydrologically connected to Bear Creek and source of warm water. If found to add to temperature problems on the creek, recommend planting south side of ponds to shade them.		Rating assumes that the ponds are hydraulically connected to creek and access to land is granted.	H	M
N230	8	3 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD.			H	M/L

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N231	8	5 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N232	8	5 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, forested riparian parcels contiguous to already protected properties. Also protect undeveloped properties that can be restored like the Swanson Horse Farm.		Property currently for sale on the north side of 133rd St includes five parcels but all owned by same owner.	H+	M
N233	8	5 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N234	8	5 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 9: Bear Creek from 141 St crossing to top end of beaver pond complex

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N235	9	2 of 7	3	Add Large Woody Debris to Bear Creek as opportunities arise in this reach.			H	M/L
N236	9	2 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD.			H	M/L
N237	9	2 of 7	new	Replant cleared, former pasture area in reach. Area is wetland so plant with appropriate trees for wetland environment (eg black cottonwood).		Unsure how many parcels/landowners this project would involve.	H	M/L

Protection
Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N238	9	3 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N239	9	3 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, pursue protection of the Grandstan property at the upstream end of this reach and undeveloped properties that could be restored.			H	M/L
N240	9	3 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N241	9	3 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 10: Bear Creek from top end of beaver pond complex to confluence with Struve Creek

Restoration
Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N242	10	1 of 7	3	Add Large Woody Debris to Bear Creek, particularly in areas that are already publicly owned in reach.			H	H
N243	10	1 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD.			H	M/L
N244	10	1 of 7	new	On already protected properties in reach, underplant existing alder stands with conifers.		In process on King County land (planting fall 2004)	M	H

Protection
Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N245	10	4 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N246	10	4 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach B". There are blocks of contiguous forested riparian area that should be protected.			H	M/L
N247	10	4 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N248	10	4 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 11: Bear Creek from confluence with Struve Creek to 158th Crossing
Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N249	11	7 of 7	3	Add Large Woody Debris to Bear Creek as opportunities arise in this reach.			H	M/L
N250	11	7 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD.			H	M/L
N251	11	7 of 7	new	Remove bank hardening and restore riparian area at Tolt Pipeline crossing.		This site is used for public fish viewing so the primary benefit of this project would be an opportunity to educate the public about what good fish habitat looks like. King County is planning to do some vegetation planting work here this fall. Not sure about bank hardening. Also looking into options for fencing and restricting equestrian access to the creek.	M	H

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N252	11	6 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
M253	11	6 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach B".		There are many one-acre parcels in this reach so high potential for impacts from development.	H	M/L
N254	11	6 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N255	11	6 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 12: Bear Creek from 158th Crossing to 160th crossing (lower end beaver pond complex)

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	12	4 of 7	new	No projects identified at this time.				

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N256	12	7 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments. Particularly protect forest cover on the Granston property.			H	M/L
N257	12	7 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach B"			H	M/L

N258	12	7 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N259	12	7 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 13: Bear Creek from 160th crossing (lower end beaver pond complex) to top of beaver pond complex

Restoration

Technical Hypothesis: Reduce fine sediment inputs, add LWD, restore riparian conditions.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N260	13	6 of 7	3	Add Large Woody Debris to Bear Creek , particularly in areas that are already publicly owned in reach.			H	H
N261	13	6 of 7	new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M
N262	13	6 of 7	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD.			H	M/L

Protection

Technical Hypothesis: Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N263	13	2 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N264	13	2 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach B".			H	M/L
N265	13	2 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N266	13	2 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 14: Bear Creek from top of beaver pond complex to upper extent chinook in Bear Creek (0.5 miles upstream of Woodinville-Duvall Rd)

Restoration

Technical Hypothesis: Reduce fine sediment inputs, add LWD, restore riparian conditions.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N267	14	5 of 7	new	Riparian planting in wetland area on the south side of Woodinville Duvall Road.		Site is publicly owned. King County project is in process.	H/M	H

Protection

Technical Hypothesis: Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N268	14	1 of 7	Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach A and B".			H	M/L
N269	14	1 of 7		new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N270	14	1 of 7		new	Protect riparian forested buffers along Bear Creek.			H	M/L
N271	14	1 of 7		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 15: Bear Creek from upper extent chinook (0.5 miles upstream of Woodinville-Duvall Rd) to Paradise Lk (presumed upper extent coho)

Restoration

Technical Hypothesis: Reduce fine sediment inputs, add LWD, restore riparian conditions.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	15		new	No project identified at this time.				

Protection
Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N272	15		Y	new	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach A". In particular, protect Stevens and Dolittle properties.			H	M/L
N273	15			new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments. In particular, acquire fee interests or conservation easements in Snohomish County on forested headwaters of Cottage Lake Creek and Bear Creek (700 acres in four ownerships). Zoning is rural, 5-acre.			H	M/L
N274	15			new	Protect riparian forested buffers along Bear Creek.			H	M/L
N275	15			new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L

Reach 16:
Restoration
Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N276	16		new	Remove invasive plants and plant riparian buffer along Bear Creek through out Paradise Valley Conservation Area.		Currently no money is available to do this project.	H	M/L

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning habitat.*

Project #	Reach #	Reach Protect. Benefit Rank	Existing Protect. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N277	16			new	Forest Cover Protection: Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments. In particular, acquire fee interests or conservation easements in Snohomish County on forested headwaters of Cottage Lake Creek and Bear Creek (700 acres in four ownerships). Zoning is rural, 5-acre.			H	H
N278	16			new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals.	H	L
N279	16		Y	new	Protect Paradise Valley , headwaters for Bear Creek. Ensure that protected property is used consistently with habitat protection.		Site is already in public ownership. There is an issue with bike trails on the site.	H	H/M

Preliminary DRAFT North Lake Washington Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Cottage Lake Reaches 1-6 & Cold Creeks Reaches 1-2

Ranking Notes:

- LWD Feasibility determined by ownership (H for public and M/L for private)
- Many non-specific restoration and protection projects received H Benefit Rankings and M/L feasibility until specific projects are identified.

NOTE: It may be valuable to prioritize protection projects in Cottage/Cold Creeks over those in Bear given the highly productive nature of this system

Reach 1: Cottage Creek from mouth to Avondale Way crossing
Restoration

Technical Hypothesis: Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.

Project #	Reach #	Reach Restoration Benefit	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N280	1	3 of 4	3	Add Large Woody Debris to Cottage Lake Creek as opportunities arise in this reach.			H	M/L
N281	1	3 of 4	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued.	H	M/L
N282	1	3 of 4	new	Explore opportunities to improve floodplain connection in reach by removing riprap or artificial constrictions.			H	M/L
N283	1	3 of 4	new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M

Protection
Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning areas.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N284	1	3 of 5		7	Forest Cover Protection - Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N285	1	3 of 5		8e	Protect riparian forested buffers along Cottage Lake Creek.			H	M/L
N286	1	3 of 5	Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach E."			H	M/L
N287	1	3 of 5		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals. Instream flows are critical in Cottage/Cold Creeks because flows are so low.	H	L

Reach 2: Cottage Creek from Avondale Way to beginning of good quality habitat

Restoration
Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restoration Benefit	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N288	2	4 of 4	3	Add Large Woody Debris to Cottage Lake Creek as opportunities arise in this reach.			H	M/L
N289	2	4 of 4	new	Restore riparian conditions along Cottage Lake Creek on Nickels Farm. Reduce fine sediment inputs from equestrian area.			H	M/L
N290	2	4 of 4	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued.	H	M
N291	2	4 of 4	new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning areas.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N292	2	2 of 5		7	Forest Cover Protection - Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N293	2	2 of 5		8a	Protect 40-acre parcel on Cottage Lake Creek (Nickels Farm).			H	M/L
N294	2	2 of 5	Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach E."			H	M/L
N295	2	2 of 5		8e	Protect riparian forested buffers along Cottage Lake Creek.			H	M/L
N296	2	2 of 5		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals. Instream flows are critical in Cottage/Cold Creeks because flows are so low.	H	L

Reach 3: Cottage Creek from beginning of good quality habitat to 2nd Avondale Way crossing

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restoration Benefit	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N297	3	2 of 4	3	Add Large Woody Debris to Cottage Lake Creek as opportunities arise in this reach. There are a few wide spots through Cross Roads development where LWD could be added.		LWD not as important here. Not much opportunity for channel movement in this reach.	M	L
N298	3	2 of 4	new	Work with private property owners upstream of Native Growth Protection Easements in reach to restore riparian buffers.		Invasives (nightshade) are a problem in this reach.	H	M/L
N299	3	2 of 4	new	Explore opportunities to reforest cleared properties in reach, particularly in open space tracts.			M	M

N300	3	2 of 4	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued.	H	M/L
N301	3	2 of 4	new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning and spawning areas.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N302	3	1 of 5		7	Forest Cover Protection - Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N303	3	1 of 5	Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach E."			H	M/L
N304	3	1 of 5		8e	Protect riparian forested buffers along Cottage Lake Creek. In particular, stop encroachment into riparian buffers that are part of Native Growth Protection Easements in reach.			H	M
N305	3	1 of 5		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Explore whether or not withdrawals at nursery site in reach is a problem. Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals. Instream flows are critical in Cottage because flows are so low.	H	L

Reach 4: Cottage Creek from 2nd Avondale Way crossing to begin wetland below lake

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restoration Benefit	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N306	4	1 of 4	3	Add Large Woody Debris to Cottage Lake Creek as opportunities arise in this reach.		Opportunities are limited in this reach - lots of houses close to the creek. Not much wood present.	M	L
N307	4	1 of 4	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued. Look for and remove invasive nightshade.	H	M/L
N308	4	1 of 4	new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning areas.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N309	4	3 of 5		7	Forest Cover Protection - Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N310	4	3 of 5		8b	Protect Cold Creek Headwaters/Recharge Area.		There are three springs near this reach.	H	H
N311	4	3 of 5	Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach C."			H	M/L
N312	4	3 of 5		8e	Protect riparian forested buffers along Cottage Lake Creek.			H	M/L
N313	4	3 of 5		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals. Instream flows are critical in Cottage/Cold Creeks because flows are so low.	H	L

Reach 5 & 6:

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions.*

Project #	Reach #	Reach Restoration Benefit	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N314	5,6	5 of 6	3	Add Large Woody Debris to Cottage Lake Creek, particularly in areas that are already publicly owned.			H	H
N315	5,6	5 of 6	new	Portion of Cold Creek Natural Area is an altered bog in need of restoration.		Will need to study restoration needs of bog. Possibly fill cross channels and ditches in bog. Remove spirea.	M	H
N316	5,6	5 of 6	new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued.	H	M/L
N317	5,6	5 of 6	new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M

Protection

Technical Hypothesis: *Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning areas.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N318	5,6	3 of 5		7	Forest Cover Protection - Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N319	5,6	3 of 5		8b	Protect Cold Creek Headwaters/Recharge Area.		There are three springs near reach.	H	H
N320	5,6	3 of 5	Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach C."			H	M/L
N321	5,6	3 of 5		8e	Protect riparian forested buffers along Cottage Lake Creek.			H	M/L

N322	5,6	3 of 5		new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.		Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals. Instream flows are critical in Cottage/Cold Creeks because flows are so low.	H	L
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Cold Creek Reach 1-2:

Restoration

Technical Hypothesis: Reduce fine sediment inputs, add LWD, restore riparian conditions.

Project #	Reach #	Reach Restoration Benefit	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N323	1,2		new	Portion of Cold Creek Natural Area is an altered bog in need of restoration.		Will need to study restoration needs of bog. Possibly fill cross channels and ditches in bog. Remove spirea.	M	H
N324	1,2		new	Continue to work with private property owners in reach to restore riparian areas, increase in-channel complexity and add LWD. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.		In King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects habitat problems were identified, prioritized and solutions identified. Report covers LWD, in-channel restoration as well as riparian restoration. Information is still relevant and identified projects that have not yet been done should be pursued.	H	M/L
N325	1,2		new	Work with private property owners in reach to reduce water quality impacts of their landscaping practices.			M	M

Protection

Technical Hypothesis: Protect pool habitat and the habitat features that support the creation of pools (lwd, riparian function, and channel connectivity), and spawning areas. Protect cold water temperatures by protecting headwaters and sources of groundwater.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N326	1,2			6	Cold Creek Protection - Determine the source of and properly protect the aquifer for the Cold Creek groundwater springs in Cottage Lake Creek. (Note: groundwater flows from incorporated Woodinville and possibly parts of Little Bear subarea and Lake Leota.)			H	M
N327	1,2			7	Forest Cover Protection - Acquire forest property, development rights/conservation easements, and provide enhanced incentives to retain and plant forest area environments.			H	M/L
N328	1,2			8b	Protect Cold Creek Headwaters/Recharge Area.			H	H

N329	1,2		Y	8c	Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach C." In particular, large forested parcels south of NE Woodinville Road.			H	M/L
N330	1,2			8e	Protect riparian forested buffers along Cold Creek.			H	M/L
N331	1,2			new	Protect instream flows in reach. Begin by identifying legal and illegal water withdrawals.	Several strategies could be used to deal with illegal water withdrawals. Education, incentives and enforcement could all be used to achieve goals. Instream flows are critical in Cottage/Cold Creeks because flows are so low.		H	L

Preliminary DRAFT North Lake Washington Chinook Population - Tier I - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Sammamish River Reaches 1-6B

Reach 1A-1B: Mouth to 68th St. Bridge; upper extent template delta (68th St. Bridge) to 96th St Bridge (RM 2.5)

Sammamish Action Plan Reach 1 = EDT Reach 1A-B

Restoration

Technical Hypothesis: *Add big LWD and jams (larger than attempted in past), Set back levees, Restore riparian vegetation along the Mainstem Sammamish and its tributaries. Focus on addition of backwater pool areas, restoration of side channels, and the use of LWD as cover, to restore functions and processes.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N332	1A	2 of 5	new - Sammamish Action Plan	Sammamish River Mouth Wetland Restoration: Restore wetlands on King County property near mouth and on island.		The wetlands are publically owned.	H	H/M
N333	1A	2 of 5	new - Sammamish Action Plan	Lake Pointe Property Riparian and Aquatic Restoration: 45 acre property on Lake Washington at right bank of Sammamish River mouth is targeted for cleanup of hydrocarbons and other pollutants. Restore shoreline as part of redevelopment.			H	H
N334	1B	2 of 5	Sammamish River #14a	Enhance and Reconnect Riparian Wetlands at Wildcliff Shores: Enhance and reconnect riparian wetlands to river, as described in the Sammamish River Corridor Action Plan, at Wildcliff Shores, across from Swamp Creek. Restore riparian vegetation.		Riparian revegetation in progress in 2004. City of Kenmore secured Community Salmon Fund grant. Property is privately owned but community supports work. Project includes some funding to study feasibility of reconnecting wetlands on site.	H/M	H
N335	1B	2 of 5	Sammamish River #15	Swamp Creek Regional Park Wetland and Stream Restoration: As identified in the Sammamish River Corridor Action Plan, restore large, publicly owned wetland complex at the confluence of Swamp Creek and the Sammamish River, creating a diversity of wetland elevations and habitats in the floodplain.		In Corps G.I. Historically an area of many wetlands that are now degraded. Has been identified as a potential mitigation banking site. King County park may go to City of Kenmore.	H/M	M

Protection

Technical Hypothesis: Areas of relatively high-quality habitat forming features (LWD, riparian function, and channel connectivity) and those providing cover and cold water refuge for critical life stages should be protected and maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N336	1B	not ranked		Sam. River #9	Acquire Undeveloped Property at Mouth of Swamp Creek: Purchase parcel to the east of Swamp Creek Regional Park for inclusion in N335 Swamp Creek Regional Park Wetland and Stream Restoration (described above).			H/M	H/M

Reach 2: 96th St Bridge (RM 2.5) to North Creek Confluence (RM 4.5)

Sammamish Action Plan Reach 2 = EDT Reach 2

Restoration

Technical Hypothesis: Add big LWD and jams (larger than attempted in past), Set back levees, Restore riparian vegetation along the Mainstem Sammamish and its tributaries. Focus on addition of backwater pool areas, restoration of side channels, and the use of LWD as cover, to restore functions and processes.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N337	2	1 of 5	Sammamish River Action Plan	Wetland Restoration on Right Bank in Bothell: Restore historic wetlands on right bank downstream of 102nd Avenue bridge to be seasonally inundated wetlands with small channels connecting them to the river.			H/M	M
N338	2	1 of 5	Sammamish River 14b	Enhance and Reconnect Riparian Wetlands and remnant side channels adjacent to 102nd Avenue bridge on left bank.		Property is in public ownership.	H/M	H/M
N339	2	1 of 5	Sammamish Action Plan and Samm River # 13a	Explore Restoration Opportunities at Minor Tributaries (Tributaries 0057A, 0068, and 0069) and Enhance Tributary Confluences: Projects should include as appropriate correction of fish passage barriers, riparian restoration, placement of large woody debris, and creation of cool-water refuge pools. Some restoration work has been done already on Tributary 0057(Horse Creek) but additional measures may be warranted to create a cool-water refuge.		Concern with cutthroat predation. Cold water not as important here. Trail in this reach too. Reach is forested with high banks.	H/M	H
N340	2	1 of 5	Sammamish River #3	Norway Hills Enhancement: Evaluate creation of pools in the Norway Hill area of the river where some groundwater sources are piped to the river as part of the stormwater system. Determine if groundwater inflows at Norway Hill are in need of special protection or mitigation.		Some restoration has been done. River goes underground for a long distance and then daylighted, then underground again.	M	M

Protection

Technical Hypothesis: Areas of relatively high-quality habitat forming features (LWD, riparian function, and channel connectivity) and those providing cover and cold water refuge for critical life stages should be protected and maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	2			new	No projects identified at this time				

Reach 3A-3B: North Creek Confluence (RM 4.5) to NE 175; NE 175th St (downstream end of agriculture area) to NE 145th (RM 7.5 - agriculture area)

Sammamish Action Plan Reach 3 = EDT Reach 3 A-B

Restoration

Technical Hypothesis: Add big LWD and jams, Set back levees, Restore riparian vegetation along the Mainstem Sammamish and the Sammamish River tributaries. Focus on restoring floodplain connections and promote meandering as a way to increase connections with cool groundwater sources.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N341	3A	4 of 5	Sammamish River #14c	Restore and Reconnect Riparian Wetlands Adjacent to I-405/SR 522 Interchange at the publicly owned historic wetland area, as described in the Sammamish River Corridor Action Plan.		Historically very large wetland near Cascadia Campus. Feasibility effected by WDOT concerns, wetland degradation, trail and levees block connection, and expensive.	M	L
N342	3B	4 of 5	Sammamish River #13e, 13f, 13g	Enhance Tributary Confluences of Derby, Gold and Woodin Creeks: Enhance tributary confluence of Derby Creek with Sammamish River. Project should include as appropriate correction of fish passage barriers, riparian restoration, placement of large woody debris, and creation of cool-water refuge pool. Fish passage improvements and riparian restoration has already been done on Gold and Woodin Creeks, create pools at mouths for cool water refuge.		Creation of pools at tributary mouths in Corps GI.	H/M	H/M
N343	3B	4 of 5	Sammamish River #5,11,12	Regrade Banks, Create Shallow Rearing Habitat, and Restore Riparian Vegetation: Regrade banks, create flood benches at or below high-water mark, and plant banks and benches with native vegetation. Particular focus should be given to the upper river (RM 11 to RM 13.6) and downstream of the major tributaries. An "emerging" bench/ wetland would provide juvenile salmonid shallow rearing habitat.		Right bank is in Agricultural District. Left bank is business park.	H	M
N344	3B	4 of 5	Sammamish River #14d	Enhance and Reconnect Riparian Wetlands Near Gold Creek: Enhance and reconnect riparian wetlands to river, as described in the Sammamish River Corridor Action Plan, at the historic wetland and meander area near Gold Creek.		Private ownership. Similar example is Cascadia Campus North Creek.	H/M	L

Protection
Technical Hypothesis: Areas of relatively high-quality habitat forming features (LWD, riparian function, and channel connectivity) and those providing cover and cold water refuge for critical life stages should be protected and maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3B			new	No projects identified at this time				

Reach 4A-4B: NE 145th St. to NE 116th St.;NE 116th St. to Lower end of City of Redmond urban area (Willow Golf Course)

Sammamish Action Plan Reach 4 = EDT Reach 4 A-B

Restoration
Technical Hypothesis: Add big LWD and jams, Set back levees, Restore riparian vegetation along the Mainstem Sammamish and the Sammamish River tributaries. Focus on restoring floodplain connections and promote meandering as a way to increase connections with cool groundwater sources. The impact of surface water and groundwater withdrawals on flow conditions should also be investigated

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N345	4A	5 of 5	new	Explore Restoration of Historic Channel Habitat: Reconnect historic side channel to river on left bank between 116th and 124th and restore riparian vegetation.		King County may acquire portion of property. There is community support for project. Kirkland High School wilderness group conducted survey of old meander. Interest in soccer field at site. Part of area is within agricultural district and part in City of Remond.	H/M	M/L
N346	4A	5 of 5	Sammamish River #13b and #4	Enhance Tributary Confluences with Sammamish River at Tributary 0095 A, Left bank Tributary 0095 (misnamed), and Tributary 0096: Restore riparian vegetation, improve connection of tributary to the river, enhance the mouths and create cool water refuge pools. Trib 0095B has had substantial work done as part of the 124th Street mitigation.		Work will be more difficult in upstream part because this area is an agricultural district. Restoration at mouth should be feasible. Care should be taken to not drain groundwater.	H	M
N347	4A	5 of 5	new	Reconnect Wetland 38: Reconnect wetland 38 to the Sammamish River. King County Wetland 38 is located at the south end of the City of Woodinville on the Redhook Brewery site.		Would need to evaluate whether reconnecting wetland to the river would drain the wetland. Land owned by Red Hook Brewery.	H	M
N348	4A	5 of 5	new	Restore Full Meander in Reach with a connection to alluvial fan. Restore riparian vegetation.		In agricultural district which would make it more difficult to do. Benefit would be cooling water. Uncertainty due to how much river has been lowered, expense, and need for property acquisition.	H	L
N349	4A	5 of 5	new - Sammamish Action Plan and Sammamish River #5/11	Restore Small Meanders and Riparian Restoration: This reach is the most straightened reach of the river. Explore restoration of small meanders (similar in scale to Redmond RiverWalk Project) and regrade. Then restore riparian vegetation.		Restoration would need to be consistent with Farmland Preservation Program. Lower benefits than full meanders for funds spent.	H/M	M

N350	4B	5 of 5	Sammamish River #14e; Sammamish Action Plan	Wetland Restoration and Side Channel Restoration on Right Bank across from Willows Run Golf Course: Restoration elements could include removal of non-native vegetation, excavation of side channel, and placement of LWD in channel. Enhance and reconnect riparian wetlands to river. Explore remeandering river at this location. See N354 as well.	Significant benefit if cold water from creeks is restored to area. Potential significant constraint at site is location of King County sewer line under the trail, which will make construction of an open channel for reconnection more difficult depending on pipe elevation. Need an easement for restoration. Project is identified in Corps G.I.	H	M/L
N351	4B	5 of 5	Sammamish River #5/11	Riparian Restoration between Willows Golf Course and NE 116th: Restore riparian vegetation in remainder of reach 4B and remove invasives. One-third to one-half of vegetation already restored on left bank.	Good candidate for revegetation because no regrading to be done in reach. Area is blackberry infested, hot and without shade. KC Parks long-term plan is to soft-surface equestrian trail on left bank.	H/M	H/M
N352	4B	5 of 5	Sammamish River #13c	Enhance Tributary 0101 Confluence: Replace culvert with bridge. Explore adding LWD, pool, and riparian vegetation to create cool-water refuge areas at Tributary 0101.	Is one of the few tributaries without roads, very cold, good gravel source. Concern expressed that the tributary is working well the way it is - high fish use. Maybe should do not be restored to avoid disturbing it. Constraints include steep entrance under trail and presence of sewer line.	M	M
N353	4B	5 of 5	new - Sammamish Action Plan	Wetland Restoration in Willows Run Golf Course: Explore opportunities for reconnection of wetlands/ponds with river.	Landowner willingness unknown. May be water quality issues with proposal. Golf courses is potential user of King County wastewater reclaimed water pilot project; need to coordinate. Also need to consider hydrology - don't drain area. Project is not in Corps G.I.	M/L	L

Protection

Technical Hypothesis: Areas of relatively high-quality habitat forming features (LWD, riparian function, and channel connectivity) and those providing cover and cold water refuge for critical life stages should be protected and maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N354	4B	not ranked	Y	Samm River 10	Acquire Property Across from Willows Run Golf Course: Acquire 20-acre parcel on right bank across from Willows Run Golf Course for floodplain and wetland restoration.		There are some KCD and Redmond Funds for project.	H	M

Reach 5: Lower end of City of Redmond urban area (top of Willow Golf Course) to Bear Creek Confluence.

Sammamish Action Plan Reach 5 = EDT Reach 5

Restoration

Technical Hypothesis: Add big LWD and jams, Set back levees, Restore riparian vegetation along the Mainstem Sammamish and the Sammamish River tributaries. Focus on restoring floodplain connections and promote meandering as a way to increase connections with cool groundwater sources.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N355	5	3 of 5	Sammamish River #2	Lower Bear Creek Restoration and Pool Creation: As identified in Sammamish River Corridor Action Plan, restore lower 2/3 mile of Bear Creek to its confluence with the river. This process will include placement of large woody debris in the river upstream of the confluence to create a cold-water refuge pool and delay mixing of warm river water with much cooler water from Bear Creek.		The scope of the proposed Corps 1135 project on this site does not include the creation of a pool at the mouth. The difficulty in implementing this project in the past (has been in negotiation between Corps, Redmond, and WDOT) is a barrier to feasibility. There is scientific and technical support behind it because there are very high benefits, including critical refuge area for Chinook.	H+	M
N356	5	3 of 5	Sammamish River #5,11,12	Regrade Banks, Create Shallow Rearing Habitat, and Restore Riparian Vegetation: Regrade banks, create flood benches at or below high-water mark, and plant banks and benches with native vegetation. Particular focus should be given to the upper river (RM 11 to RM 13.6) and downstream of the major tributaries. An "emerging" bench/ wetland would provide juvenile salmonid shallow rearing habitat. Explore lowering benches from earlier restoration projects (eg. Mammoth Sammamish north of Willows Creek on west side and Willows Creek outfall). Include riparian revegetation for entire reach but only regrading from NE 90th to NE 100th.		Sammamish Action Plan identifies reaches 5 & 6 as especially important for riparian restoration. Feasibility limited by high cost, existing width of banks and not all properties in public ownership.	H	M
N357	5	3 of 5	Sammamish River #13d	Enhance Tributary Confluences at Willows and Peters Creeks: Enhance tributary confluences with Sammamish River at Willows Creek (# 0102) and Peters Creek (#0104). At Willows Creek: enhance pool at mouth to be more natural, control invasive vegetation, and lower floodplain bench. At Peters Creek: improve fish passage at weir, create pool at mouth and add LWD to create a cool-water refuge pool area.		Project to be done summer 2004 upstream in Peters Creek.	H/M	M

Protection

Technical Hypothesis: Areas of relatively high-quality habitat forming features (LWD, riparian function, and channel connectivity) and those providing cover and cold water refuge for critical life stages should be protected and maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	5	not ranked		new	No projects identified at this time				

Reach 6A-B: Bear Creek Confluence (RM 12.5) to Weir (bottom of Lake Sammamish affected section); Weir to Lake Sammamish (RM 13.6) Restoration

Technical Hypothesis: Add big LWD and jams, Set back levees, Restore riparian vegetation along the Mainstem Sammamish and the Sammamish River tributaries.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N358	6A	not ranked	Sammamish River #7; Sammamish Action Plan	Restore Transition Zone: Restoration of the left meander (Marymoor meander) below the weir as either the main channel or a seasonal channel with wetlands is recommended. Reroute tributary 0141 into wetland. Enhance or create pools at small tributary outlets, at meander bends downstream of the transition zone, and just downstream of the weir. Restoration elements could include excavation of new channel, creation of pools, and an overflow bench with wetland vegetation; removal of non-native vegetation; placement of gravel substrate in new channel; connection to capture hyporehic flows; and revegetation of ripairan and wetland areas with native plants.		This Sammamish River Action Plan considers this reach (EDT Reach A-B) the highest priority for pool enhancement and creation. There are only two deeper areas or pools in reach and they are critically important due to high temperatures. Restoration will need to meet U.S. Army Corps of Engineers requirements for channel conveyance to minimize flood risks to lakeshore properties. Potential achelological site may add difficulty. Need modeling for feasibility - SRFB grant paying for hydrologic model; look at effect of willows on backwater flows, weir ratings for model; important information for future negotiations between Corps and KC. Important for future restoration; good habitat for juveniles, but high temperatures a problem for adults. No sediment bedload so created pools will not be filled.	H	H/M
N359	6A	not ranked	Sammamish River #12	Regrade Banks and Create Flood Benches: Opportunities in this reach to regrade banks, create flood benches at or below high-water mark, and plant banks and benches with native vegetation are near the Marymoor Park entrance. It is very shallow at bridge. Additional pools should be created downstream of the Marymoor Park entrance road on the outside of the meander bend.		Grading should occur prior to expansion of revegetation projects at Marymoor entrance. Left bank should be setback as Metro trunk is on right bank. Other concerns are roads, utilities, and architecture. There is enough flood conveyance with the regrading.	H	M
N360	6A	not ranked	new - Sammamish River Action Plan	Enhance Exisiting Pools and Create New Pools: Create new pools at mouth of recently rerouted tributary on the south side of Marymoor Way and just upstream of the entrance bridge.			H	H/M
N361	6A	not ranked	Sammamish River # 5/11; Sammamish Action Plan	Riparian Revegetation between Weir and Confluence of Bear Creek: A lot of riparian restoration has been done by King County and the City of Redmond in reach 6A. Continue to enhance, maintain, and expand areas of revegetation to provide shade. Control invasive vegetation.		Coordinate with bank regrading projects so that revegetation occurs second or revegetation work is done in a way that does not conflict with future regrading work.	M	H

N362	6B	not ranked	Sammamish River # 5/11; Sammamish Action Plan	Riparian Revegetation Between Lake Sammamish and Weir: Continue and expand projects such as Sammamish Re-Leaf and Redmond Riverwalk to plant early successional riparian vegetation to provide shade. Property is all under public ownership, and future plans for a second trail near this reach of river would provide good opportunities for riparian restoration.		Area needs trees. Explore options to reduce temperatures.	H/M	H
N363	6B	not ranked	new	Enhance mouths of two unnamed tributaries in reach. Add LWD to create a pool at mouths and encourage emergent vegetation. Explore restoration of tributaries to reduce urban runoff into Sammamish River and induce cooler temperatures.		One tributary has the highest flows in Redmond - good source of cool water. One tributary has high sediment. Chinook in reach are mostly Issaquah fish, but some North Lake Washington fish.	H	H

Protection

Technical Hypothesis: Areas of relatively high-quality habitat forming features (LWD, riparian function, and channel connectivity) and those providing cover and cold water refuge for critical life stages should be protected and maintained.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N364	6B	not ranked		new	Protect existing high quality riparian vegetation in reach 6B. Includes Marymoor dogwalk and Lake Sammish Rowing areas. Do not encourage recreational use of left bank.		Possible trail system to be added in reach.	H/M	H

Preliminary DRAFT North Lake Washington Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
North Creek Subarea Reaches 1-10 (plus Silver and Penny Creeks)

Basinwide Recommendations:

Project #	Description
N604	Study where retrofitting stormwater facilities would have greatest benefit in restoring baseflows & implement. H benefit;H feasibility to study, L to construct.

Lower North: Reaches 1-5

Reach 1: North Creek from mouth to top of Cascadia Restoration project

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N365	1	4	new	Add Conifers to Cascadia Project: Add additional conifers to the previously done Cascadia restoration project for future LWD recruitment.	Y		Beavers may affect what areas conifers can be planted; should be taken into consideration during planting plan. Property is 59 acres and owned by the University of Washington.	M	H
N366	1	4		Restore Lowest Reach of North Creek: Explore improving North Creek corridor from mouth to start of Cascadia Project.	Y		Creek is very constrained in this reach by roads and a new interchange is planned in area. Land is owned by King County and WDOT. Potential WDOT mitigation. Reach is 624 linear feet.	M/L	M/L

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
	1	1			No projects identified at this time.					

Reach 2: North Creek from top of Cascadia Restoration project to upstream end of business park

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N367	2	1	new	Floodplain Restoration in Reach 2: Explore possible floodplain restoration on unused baseball diamond north of 195th and privately owned property between 195th and I-405. Setback levee, increase flood storage, restore off-channel habitat and add large woody debris.	Y		Possible WDOT mitigation.	H	M
N368	2	1	new	Restore Riparian Wetland North of 195th: Add large woody debris, and remove invasive plant species and plant native vegetation.	Y		Site experiences high peak flows, well connected with North Creek. Property is 1.46 acres and is in Bothell Business Park.	M/L	H
N369	2	1	new	Restore Riparian Wetland South of North Creek Parkway N: Increase flood storage, setback levee, add large woody debris, remove invasive plant species and plant native vegetation.	Y		Likely to be FEMA issues with project due to high peak floods in reach. Past project done on site to breach levee - may need maintenance. Property owner willingness unknown. 11 acre site within Bothell Business Park.	M	L

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N370	2	5		new	Protect Forested Property to East of Reach 2: Protect forested, steep sloped property to east of business park in reach. Includes wetlands and groundwater recharge areas.	Y		Development proposal in permitting for site. Feasibility would increase if funds were available in near future. Site is 98 acres.	H+	L
N371	2	5		new	Protect Boy Scouts Property: Protect forested, steep sloped property to west of business park in reach. Includes wetlands and groundwater recharge areas.	Y		Potential development proposal for site. Feasibility would increase if funds were available in near future. Property is 31.35 acres.	H+	L

Reach 3: North Creek from upstream end of business park to 228th SE Canyon Park Rd Crossing

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3	3		No projects identified at this time.					

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N372	3	4		new	Protect Forested Property North of 240th: Protect forested, undeveloped property North of 240th through conservation easement or acquisition.	Y		Reach has highest spawning area on North Creek. Last undeveloped portion of North Creek within City of Bothell. Potential upzoning being considered. Feasibility would increase if funds were available in near future.	H	M/L

Reach 4: North Creek from 228th SE Canyon Park Rd Crossing to 208th St Culvert Restoration

Technical Hypothesis: *Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N373	4	2	new	Floodplain Restoration North of 228th: Acquire 16 acre property North of 228th, return creek to natural channel by removing berm that redirected it. Restore riparian vegetation and side channels, add large woody debris. Increase flood storage and flood refuge habitat.	Y		Property is undevelopable.	H	H/M
N374	4	2	new	Enhance Mouth of Palm Creek: Enhance mouth and lower 100 yards of Palm Creek as cold water refuge for juvenile Chinook.	Y		Barriers for coho have been identified in Palm Creek by the Adopt-a-Stream Foundation.	M	H
N375	4	2	new	Enhance Creek in Thrashers Corner Area: Enhance incised stream channel within Thrashers Corner area (owned by the City of Bothell), restore riparian vegetation, plant conifers and add large woody debris.	Y		Beaver on the site will be an issue for riparian restoration.	H	H

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N376	4	3		new	Protect Forested Wetland South of Malby Road: Protect forested, 10.5 acre wetland South of Malby Road, including unnamed tributary.	Y		Property has development potential.	H/M	M/L

Reach 5: North Creek from 208th St Culvert to 196th St culvert

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N377	5	2	new	Expand Twin Creeks Project: Expand existing restoration project upstream and downstream of existing area just upstream of 208th. Restore riparian vegetation, add large woody debris, enhance side channel habitat.	Y			H	H
N378	5	2	new	Continue North Creek School Project: Work with school to do additional riparian restoration, large woody debris addition and side channel enhancements on their property.	Y			H	H
N379	5	2	new	Riparian Restoration and Stream Enhancements: Work with Landowners in Reach 5 to restore riparian vegetation and to do stream enhancements. Adopt-a-Stream Project in Snohomish County portion of North Creek.	Y		Adopt-a-Stream's program could be expanded to Bothell portion of creek. Project is funded.	H	H

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N380	5	2		new	Pursue Conservation Easement on Property Adjacent to Twin Creeks Project: Acquire easement for future stream enhancement work on Asia First property adjacent to Twin Creek project.	Y			H	?

Upper North: Reaches 6-10, Silver and Penny Creeks

Reach 6: North Creek from 196th St culvert to confluence Nickel Creek and North Creek Regional Park boundary (John Bailey Rd)

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N381	6	2	new	Buyout Frequently Flooded Home: Buyout frequently flooded home at end of Waxon Road and restore floodplain and add large woody debris.	Y		If not done will impede further restoration in reach such as adding large woody debris.	H	H

N382	6	2	new	Add Large Woody Debris: Add large woody debris to Reach 6.	Y		Ability to add large woody debris to reach partially depends on whether not flood buyout occurs at end of Waxon Road.	H	H
N383	6	2	new	Reforest Cleared Parcel: Explore replanting cleared parcel north of 192nd and East of Waxon Road.	Y		Property is privately owned.	H/M	?
N384	6	2	new	Riparian Restoration and Stream Enhancements: Work with Landowners in Reach 6 to restore riparian vegetation and to do stream enhancements. Adopt-a-Stream Project in Snohomish County portion of North Creek.	Y		Adopt-a-Stream's program could be expanded to Bothell portion of creek. Project is funded.	H	H

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N385	6	3			Protect Large Forested Parcels: There are several large forested parcels in reach 6 that should be protected through acquisition or conservation easements.	Y		Access limited to sites. No known development proposals. If funding available soon, feasibility increases.	H	M

Reach 7: North Creek from confluence Nickel Creek (in North Creek Regional Park) to confluence Penny Creek (begin Mill Creek development area) Restoration

Technical Hypothesis: *Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N386	7	2	new	North Creek Regional Park Stream Channel Enhancement: Enhance North Creek stream channel within North Creek Regional Park, add large woody debris, encourage meandering of channel and restore riparian vegetation.	Y			H	H
N387	7	2	new	Floodplain Restoration North of Park: Acquire property west of 9th Ave. and north of the North Creek Regional Park and remove dike, reconnect North Creek to floodplain and wetlands.	Y		Enforcement action occurred recently due to illegal ditching on property. Feasibility higher if funds are available sooner. Possible willing seller. Wetlands undevelopable - protected by regulations.	H	H/M
N388	7	2	new	Riparian Restoration and Stream Enhancements: Work with Landowners in Reach 7 to restore riparian vegetation and to do stream enhancements. Adopt-a-Stream Project in Snohomish County portion of North Creek.	Y		Adopt-a-Stream's program could be expanded to Bothell portion of creek. Project is funded.	H	H

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N389	7	5		3a	Upland Forest Cover Protection: Acquire North Creek Hillslope Forest Site, 53 acres of mature second-growth forest/wetlands on right bank of North Creek adjacent to North Creek Regional Park. Includes minor tributaries and groundwater sources.	Y		Developable.	H	M

Reach 8: North Creek from confluence Penny Creek (begin Mill Creek development area ~164th) to top end of Mill Creek development area (appro Restoration

Technical Hypothesis: *Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N390	8	1	new	Restoration within City-Owned Reach of North Creek: Reach 8 is owned by the City of Mill Creek. Implement restoration recommendations from study done by the Watershed Company including riparian restoration, adding large woody debris and using bioengineering techniques to reduce bank erosion.	Y		Partially funded and being pursued by City of Mill Creek.	H	H

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
	8	4			No projects identified at this time.					

Reach 9: North Creek from upper end of Mill Creek development area (approx 156th) to just downstream of McCollum Park

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N391	9	3	new	Riparian Restoration and Stream Enhancements: Work with Landowners in Reach 9 to restore riparian vegetation and to do stream enhancements. Adopt-a-Stream Project in Snohomish County portion of North Creek.	Y		Adopt-a-Stream's program could be expanded to Bothell portion of creek. Project is funded.	H	H
N392	9	3	new	Restoration in Native Growth Protection Area: Area below McCollum Park in Native Growth Protection Easement. Study restoration opportunities and implement such as adding LWD, riparian restoration and conifer underplanting.	Y			M	H

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N393	9	2		new	Protect Forested Wetland: Protect forested wetland in Reach 9 between I-5 and mainstem of North Creek. Includes unnamed tributary and groundwater sources.	Y		May not be developable.	H	M

Reach 10+: North Creek from just downstream of McCollum Park to Headwaters

Restoration

Technical Hypothesis: Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N394	10	3	new	Riparian Restoration and Stream Enhancements: Work with Landowners in Reach 10 to restore riparian vegetation and to do stream enhancements. Adopt-a-Stream Project in Snohomish County portion of North Creek.	Y		Adopt-a-Stream's program could be expanded to Bothell portion of creek. Project is funded.	H	H

N395	10	3	new	McCollum Park Restoration: Install grade control structures (very large logs) from Northwest Stream Center to 128th to reduce peak flows and erosion; restore riparian vegetation.	Y				H	H
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Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N396	10	1		new	Protect North Creek Headwaters: Acquire 10 acre parcel South of Everitt Mall on 3rd Ave SE.	Y		Might have willing seller.	H	?
N397	10	1		new	Acquire 5-acre Parcel for Future Retention/Detention Facility: Acquire 5 acre parcel immediately east of 7.5-acre parcel already owned by City of Everitt (being used for low flow augmentation). Undeveloped, forested. Potential site for future retention/detention facilities.	Y		Land owner unwilling. Very expensive (1.5 million). Possible mitigation project. High benefit if used for retention/detention.	H	L

Silver Creek

Reach 1: Silver Creek from mouth to 196th Culvert

Restoration

Technical Hypothesis: *Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
	Silver 1	4		No projects identified at this time.					

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N398	Silver 1	7		new	Acquisition of Parcel Including Frontage on Both Silver and North Creeks: Abandoned house for sale with parcel that includes frontage on both Silver Creek and North Creek. Once acquired restore riparian vegetation.	Y			M/L	?

Penny Creek

Reach 1: Penny Creek from mouth to Retention pond

Restoration

Technical Hypothesis: *Reduce sedimentation, remove bank armoring, increase channel connectivity, add LWD and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
N399	Penny 1	3	1b	Fish Passage: Two culverts along Mill Creek Community Trail, RM 1.00, are degrading and represent fish passage barriers due to slope conditions or imminent failure.	Y		Project started; willing landowner; needs money. Greater benefit to coho than Chinook.	L	H

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasibility H, M, L
	Penny 1	6		8	No projects identified at this time.					

Preliminary DRAFT North Lake Washington Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Little Bear Creek Subarea Reaches 1-12 Plus Great Dane Creek Reaches 1-2

Reach 1: Little Bear from mouth to 132nd Avenue NE Crossing (City of Woodinville)

Restoration

Technical Hypothesis: Mouth to 522 has greatest potential for restoration. Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N400	1	1	new	Plant Riparian Vegetation: Plant riparian vegetation where possible in Reach 1, particularly in area where there is some existing vegetation; consider options for artificial shading of reach given how constrained opportunities are in reach.	Y		Reach 1 is heavily armored, very constrained with vertical walls and very little room for riparian vegetation.	M	H

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	1	7			No projects are identified at this time.					

Reach 2: Little Bear from 132nd Avenue NE (City of Woodinville) to Hwy 522 Crossing

Restoration

Technical Hypothesis: Mouth to 522 has greatest potential for restoration. Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N401	2	1	1a	Fish Passage Benefiting Chinook: 132nd Avenue NE, RM .45, City of Woodinville; is a low flow blockage.	Y	\$100,000	Permits obtained. Was funded, but Woodinville unable to reach agreement with private landowner so funding reallocated to 134th Ave NE culvert. However there is a new, willing property owner, so the feasibility has greatly increased.	H	H
N402	2	1	1b	Fish Passage Benefiting Chinook: 134th Avenue NE (three cement pipes, broken), RM 0.5, City of Woodinville; low flow blockage.	Y	\$200,000	Project funded. Construction expected 2005.	H	H
N403	2	1	new	Restore Riparian Area in Reach 2: Restore riparian vegetation up to 522 and add LWD.	Y			H	H

N404	2	1	new	Add Water Quality and Retention/Detention Facilities: Construct water quality treatment and retention/detention stormwater facilities for 522 at 195th as part of road widening project. Do in way that protects the creek corridor.	Y			H	H
N405	2	1	new	Add Large Woody Debris at Downstream End Reach 2: Use bioengineering techniques using large woody debris to stabilize bank near existing restaurant as alternative to bank armoring.	Y		Restaurant owner concerned about bank erosion and willing to use bioengineering techniques. There is a concern about not having lwd block downstream culvert. Will need to be considered in design.	M	H

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N406	2	5			Protect Riparian Area in Reach 2: Area is partially in public ownership.	Y		Parcel No. 9517100250 just east of 134th Avenue NE is owned by the City and Parcel No. 9517100220 just west of 134th Avenue NE is owned by the WSDOT. LBC also meanders in and out of WSDOT right of way near the SR 522/NE 195th Street ramps.	H	H

Reach 3: Little Bear from Hwy 522 Crossing to confluence with Rowlin's Creek

Restoration

Technical Hypothesis: Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N407	3	2	1c	Fish Passage Benefiting Chinook: NE 195th Street, degraded vortex weir, RM 1.8, City of Woodinville; low flow barrier.	Y	\$80,000		H	H/M
N408	3	2	new	Add Large Woody Debris in Reach 3: From 195th to house, reach is publically owned. Add large woody debris, remove invasive plants and underplant with conifers.	Y			H	H

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	3	2			No projects are identified at this time.					

Reach 4: Little Bear from confluence with Rowlins Creek to begin industrial reach**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N409	4	2	new	Add Large Woody Debris in Reach 4: Add large woody debris in this privately owned reach.	Y		Reach is forested, mostly glide habitat. Culvert at 205th could be an obstruction. Need to address in project design.	H	L

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N410	4	3		new	Protect Riparian Wetland adjacent to Industrial Park: Protect riparian wetland adjacent to industrial park, east of 58th, through conservation easement or acquisition.	Y		Area proposed for development/possible rezone.	H	M

Reach 5: Little Bear from begin industrial reach (Alpine Rocky Industrial) to confluence Howell Creek (top of industrial area)**Restoration****Technical Hypothesis:** *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N411	5	2	new	Creek Restoration at Alpine Rockeries: Snohomish County project to work with Alpine Rockeries to restore riparian vegetation, add large woody debris and potentially reconfigure stream channel on 800 ft. of stream.	Y		Construction to start in 2005. Partially funded. Concern about low IBI scores in this reach.	H	H

N412	5	2	new	Improve Water Quality in Reach 5: Snohomish County to continue to work with business owners in reach 5 of Little Bear Creek and on Howell Creek to use BMPs to improve water quality.	Y		Concern about low IBI scores in this reach.	H	H
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Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	5	5			No projects are identified at this time.					

Reach 6: Little Bear from confluence Howell Creek (top of industrial area) to Canyon Park Culvert (228th) (Brightwater site)**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N413	6	2	new	Flood Buyout and Restoration: At downstream end of Reach 6, buyout frequently flooded home, add large woody debris and restore riparian vegetation.	Y		Willing landowner.	H	M

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	6	6			No projects are identified at this time.					

Reach 7: Little Bear from Canyon Park Culvert (228th) (upstream end of potential Brightwater site) to confluence with Cutthroat Creek (RB trib)**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N414	7	3	new	Work with Landowners to Restore Riparian Area: most of Reach 7 is privately owned, work with landowners to restore riparian vegetation and add large woody debris.	Y			H	M

N415	7	3	new	Floodplain Restoration Adjacent to Route 9: Acquire conservation easements on property where Little Bear Creek is close to Route 9 and conduct floodplain restoration to remeander creek in its natural floodplain.	Y		Maybe could be done as part of Route 9 widening.	H	H/M
N416	7	3	2b	Fish Passage Barrier Low in Cutthroat Creek: Improve fish passage at privately owned barrier in lower reach of Cutthroat Creek. May benefit juvenile Chinook (not documented).	Y			M/L	L

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N417	7	4		new	Protect Undeveloped Forested Parcels: Protect forested, undeveloped parcels in Reach 7 west of Little Bear Creek. Includes large wetland complex and groundwater sources.	Y		Issue with sediment source on property and possible clearing and grading violations.	H	M

Reach 8: Little Bear from confluence with Cutthroat Creek (LB trib) to confluence with Great Dane Creek (LB trib)**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N418	8	3	new	Restore Riparian Area in Reach 8: Work with private property owners to add large woody debris and restore riparian vegetation in Reach 8.	Y		May have unwilling land owner.	H	M/L

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N419	8	4		new	Protect Forest Cover in Reach 8: Seek conservation easements on undeveloped forested parcels in reach to protect existing forest cover.	Y			H	M/L

Reach 9: Little Bear from confluence with Great Dane Creek (LB trib) to Little Bear Rd culvert**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N420	9	4	new	Fish Passage: Replace failing culvert of creosote logs under SR 524. Is a water quality problem.	Y			M/L	M

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N421	9	3		3c	Forest Cover Protection: Maltby Road property, five parcels totaling 35 acres of mature second-growth upland forest, without critical areas protection.	Y				
N422	9	3		new	Forest Cover, Wetland Protection: Protect large, undeveloped forested wetland on both Little Bear and Great Dane Creeks. Approximately 100 acres including 10 parcels. Also listed under Great Dane Creek Reach 1.	Y		For sale. Potential WDOT mitigation funds.	H	H

Reach 10: Little Bear from Little Bear Rd culvert to 51st St culvert**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N423	10	4	1e	Fish Passage: 51st Ave. NE, RM 6.5, Snohomish County Public Works; two partial fish barriers at high flows.	Y			M/L	H

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N424	10	1		new	Protect Riparian Wetland in Reach 10: Protect undeveloped, forested wetlands (second growth forest) in reach covering approximately 110 acres and 10 parcels owned by two landowners. Enhance with large woody debris.	Y			H	H

Reach 11: Little Bear from 51st St culvert to 180th SE Culvert**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits with Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N425	11	6	8a	Increase Channel Complexity and Floodplain Connectivity - Enhance large woody debris recruitment and frequency between 180th St. SE and Maltby Road - a stream segment dominated by mixed forest riparian conditions and high canopy cover but lacking an instream abundance of large woody debris.	Y			H	H/M
N426	11	6	1f	Fish Passage Benefiting Chinook: 180th Street SE, RM 7.2, Snohomish County Public Works.	Y			H/M	H

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N427	11	1		3a	Little Bear Creek Headwater Forest: protect 88 acres of mature second-growth forest on right bank of Little Bear Creek. Largest contiguous forested property remaining in Little Bear watershed. Includes 5 parcels.	Y		Near urban growth line. Expensive.	H	H

Reach 12: Restoration

Technical Hypothesis: Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N428	12	6	9	Stormwater Improvements at 156th Street SE: Mitigate heated stormwater effluent at 156th Street SE. Retrofit retention/detention facilities and Silver Fir development stormwater system to cool water and augment base stream flows.	Y			H	L

Protection

Technical Hypothesis: Protect forest cover and wetlands.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits with Tech. Hypoth.	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N429	12	2		3b, 3e, 3f	Forest Cover Protection: Protect forested, headwater wetlands from corner of 51st and 180th upstream approximately 2 miles along Little Bear Creek through conservation easements and acquisition. Includes three wetland complexes totaling over 200 acres: 4 parcels along 180th St. on mainstem; ~7 parcels along Trout Stream from 180th to Interurban Blvd.; and 5 parcels north of 164th Street to 156th Street.	Y		Benefits all of Little Bear Creek reaches for flow and cool temperatures. More feasible if funds available soon.	H+	H/M

Great Dane Creek

Great Dane 1: Great Dane Creek from mouth to SR 524 crossing

Restoration

Technical Hypothesis: Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	GD1	5		No projects are identified at this time.					

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N430	GD1	3		new	Forest Cover, Wetland Protection: Protect large, undeveloped forested wetland on both Little Bear and Great Dane Creeks. Approximately 100 acres including 10 parcels. Also listed under Reach 9.	Y		For sale. Potential WDOT mitigation funds.	H	H

Great Dane Creek SR 524 crossing

Restoration

Technical Hypothesis: *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	GDane R 1	5	1h	No projects are identified at this time.	Y				

Protection

Technical Hypothesis: *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	GDane R 1				No projects are identified at this time.					

Great Dane 2: Great Dane Creek from SR 524 crossing to upper extent coho potential (0.25 miles)**Restoration****Technical Hypothesis:** *Reduce sedimentation, increase pools, add LWD, increase channel connectivity, reduce bank armoring and restore riparian vegetation.*

Project #	Reach #	Reach Restor. Benefit Rank	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	GD2	5		No projects are identified at this time.					

Protection**Technical Hypothesis:** *Protect forest cover and wetlands.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Fits w/Tech. Hypoth. (Y/N)	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	GD2				No projects are identified at this time.					

North Lake Washington Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Evans Creek Subarea Reaches 1-7

Reach 1: Confluence with Bear Creek to 188th Street
Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	1	6 of 7		No projects identified at this time.				

Protection

Technical Hypothesis: Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N431	1	1		new	Increase Buffer: Consider increasing buffer in reach 1. Extensive restoration done in reach as part of Millennium project. Buffer is now 135 feet. Continue to monitor site and maintain vegetation for maximum growth especially on the southside of the creek.			M	L

Reach 2: 188th Street to Union Hill Rd Crossing (leave UGA)

Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N432	2	3 of 7	new	Evans Creek Relocation Study: Study feasibility of relocating Evans Creek to the North, away from industrial area. Potential project elements would include: increasing buffer, connecting wetlands to creek, adding stormwater facilities to improve water quality, adding LWD to increase channel complexity. Some of the property that creek would be relocated to is owned by the City of Redmond.		Need to study hydrology of area and groundwater. Concern about not increasing flooding, keeping existing wetlands viable. Property owner willingness is unknown. Has potential benefits for chinook rearing, but primary benefit might be to other salmon species. Benefit cannot be determined until more is known about geology of area.	?	M

N433	2	3 of 7	new	Restore Evans Creek In-Place: If creek is not relocated, enhance stream conditions in existing location. Project elements include: adding stormwater facilities to improve water quality, increasing buffer, add LWD, increase channel complexity and pools, reduce road crossings and armoring of banks, connect wetlands to creek and restore riparian vegetation.		Would need to work with businesses in reach for restoration to occur. If area is redeveloped would be an opportunity to improve creek conditions.	M	L
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Protection

Technical Hypothesis: *Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	2	3 (tied with R 3, 4)			No projects identified at this time.				

Reach 3: Union Hill Rd Crossing to 196th St Crossing

Restoration

Technical Hypothesis: *Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.*

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N434	3	1 of 7	new	Restoration of Johnson Park: Control invasive, non-native vegetation within park and enhance existing riparian vegetation and enhance channel complexity of Evans Creek through the park.			M	H
N435	3	1 of 7	new	Riparian Restoration in Reach 3: Work with private property owners in Reach 3 to improve riparian conditions, increase buffer, add large woody debris and increase channel complexity.			H/M	M

Protection

Technical Hypothesis: *Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.*

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N436	3	3 (tied with R 3, 4)		new	Protect Johnson Park: Protect existing habitat in undeveloped Johnson Park. There are plans for adding a trail through the park. Should be done in a way that does not harm Evans Creek.			H/M	H

Reach 4: 196th St Crossing to 196th St Crossing - Redmond Fall City Rd Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N437	4	4 of 7	1	Pilot Project to Address Sedimentation, Reed Canary Grass and High Temperatures: Conduct pilot project to address high sedimentation in Evans Creek, invasive reed canary grass that blocks fish passage and to restore riparian vegetation in order to reduce high temperatures in the creek. If successful, expand project to other reaches of Evans Creek.		There is a lot of sedimentation in Evans Creek from past farming practices and development in valley. Sources of sediment have been dealt with. Need to study sediment transport in creek. Potential Corps GI project. Can use lessons learned from Whatcom and Skagit Counties and from Kelsey Creek efforts to control reed canary grass. Will be expensive.	M	L

Protection

Technical Hypothesis: Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N438	4	3 (tied with R 2, 4)		new	Protect Wetlands: Work with private property owners in reach to protect existing wetlands.		Area is designated as farmed wetlands. Landowners mow wetlands in order to keep agricultural designation. There is flooding from beaver activity and high temperatures in reach.	L	L

Reach 5: 196th St Crossing & Redmond Fall City Rd to Redmond-Fall City Rd Crossing (downstream of 208th)

Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N439	5	2 of 7	new	Evans Creek Restoration in Reach 5: Creek is constrained by Redmond Fall City Road in Reach 5 and in agricultural use. Move Evans Creek away from Redmond Fall City Road, reduce channelization and increase buffer. Restore riparian vegetation and increase channel complexity.		Redmond Fall City Road (Rt. 202) is being widened. Maybe too late to identify this work as potential mitigation for widening project. Note: Meeting participants said Reach 6 is the upper extent of chinook in Evans Creek.	M/L	M

Protection

Technical Hypothesis: Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	5	4			No projects identified at this time.				

Reach 6: Redmond-Fall City Rd Crossing (downstream of 208th) to Redmond-Fall City Rd Crossing (upstream of 208th)

Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	6	7 of 7		No projects identified at this time.				

Protection

Technical Hypothesis: Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	6	2 of 7 (tied with R7)			No projects identified at this time.				

Reach 7: Redmond-Fall City Rd Crossing (upstream of 208th) to 224th St Rd Crossing; Upper extent of Chinook

Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	7	5 of 7		No projects identified at this time.				

Protection

Technical Hypothesis: Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	7	2 of 7 (tied with R 6)			No projects identified at this time.				

Evans Creek Headwaters Restoration

Technical Hypothesis: Reduce sedimentation, add LWD, restore riparian conditions and increase channel complexity.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	head-waters	not ranked		No projects identified at this time.				

Protection

Technical Hypothesis: Protect forest cover, wetlands, flows, riparian function, LWD and channel connectivity.

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N440	head-waters	not ranked		new	Protect Headwaters of Evans Creek: Protect and maintain 700 acre wetland complex that drains to Evans Creek, Bear Creek and the Snoqualmie River. The wetland has been set aside as open space as part of the Redmond Ridge development. This wetland needs long-term stewardship to prevent encroachment, incompatible uses of the site, and invasive vegetation. A new urban planned development has been proposed, Redmond Ridge East, that could further alter this headwater wetland.		There is a proposal to have the Cascade Land Conservancy work with the homeowners association to oversee long-term stewardship of this wetland, similar to what has been done on the Hazel Wolf Wetlands Preserve. There are also public outreach and education opportunities with this proposed approach.	H	H

Preliminary DRAFT North Lake Washington Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Kelsey Creek Subarea Reaches 1-10

Basinwide Recommendations:

Project #	Description
N605	Protect Existing Hydrology.
N606	Continue Bellevue's Native Growth Protection Area Program to acquire lands and actively manage areas to maintain ecosystem functions.

Reach 1: Lower Kelsey - Kelsey Creek from mouth to confluence with Richards Creek and Lake Hills culvert (76_01 - 76_03)
Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N441	1	6	new	Mercer Slough Floodplain Restoration: Place LWD along edges and create off-channel habitat (where soils permit).		New concept, no plans/designs/conceptual drawings.	M	H
N442	1	6	new	Riparian Restoration in Mercer Slough: Remove invasive non-native plants and plant successional forests - such as cottonwood, dogwood and willow in wetter areas, and possibly cedar, spruce, etc. where soils and hydrology permit.		Implement in large disturbed areas and work with Bellefields Office Park to create and increase buffers. Include large trees where not safety hazard to buildings or other structures.	H	H
N443	1	6	new	Enhance Mercer Slough Cool Water Refuges: Restore mouth of seeps and springs at Mercer Slough to provide cool refugia areas.		Two spring fed streams are known on East side of Mercer Slough, about mid-way to fish ladder.	H	M
N444	1	6	new	Mercer Slough Blueberry Farm: Implement improved Integrated Pest Management controls and cultural practices to reduce pesticide use and protect water quality in the Mercer Slough Blueberry Farm. Possibly consider organic certification as possible alternative in the future.		Farm currently uses very little chemicals and is analyzing the effects of increased organic cultural techniques on crop yields.	M	H
N445	1	6	new	Mercer Slough Creosote Wall Removal: Remove creosote wall near I-90.		We don't know why wall was built so don't know problems with removal.	H	M/L
N446	1	6	1d	Fish Passage: Replace Washington State Department of Transportation culverts beneath I-405 with bridge and restore stream habitat.			H	M
N447	1	6	new	Above I-405, Reach 76-03: Check sewage pump station/force mains for concerns about sewage smells that have been periodically noted.			M	H

N448	1	6	new	Above I-405, Reach 76-03: Remove riprap in stream channel bottom, install LWD, and restore habitat.		Need to consider Wilburton Trestle stability in restoration actions. Should be done in concert with I-405 bridge.	H	M
N449	1	6	1h	Fish Passage: Modify existing culverts that are partial barriers by placing low-flow deflectors on multichannel box culverts to increase depth of low-flow channel at 121st Avenue SE.			H	H
N450	1	6	new	Above I-405, Reach 76-03: Investigate opportunities to connect wetlands on north side of SE 8th near firestation with Kelsey creek for off-channel habitat.			M	M
N451	1	6	new	Above I-405, Reach 76-03: Improve connections with cold water seeps/springs off Woodridge Hill for refugia in Kelsey Creek.			H	M
N452	1	6	new	Above I-405, Reach 76-03: Install LWD; remove invasive non-native plants, restore native vegetation using successional forest concepts.			H	H

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	1			new	No projects identified at this time.				

Reach 2: Kelsey Park - Kelsey Creek from Lake Hills connector culvert to lower end of Glendale Golf Course (76_04 - 76_05)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N453	2	3	new	Fish Passage: Replace culverts at Lake Hills Connector with bridge.			M	L
N454	2	3	3a	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			H	H

N455	2	3	4	Wetland Restoration: Restore and enhance degraded wetlands to restore off-channel and riparian wetland habitats along stream segment 76-05 of Kelsey Creek, which experienced the impact of a landslide as a result of the Nisqually earthquake.	Riparian corridor completed. Some beaver damage.	M	M
N456	2	3	6b	Stream Channel Improvements: Restore stream channel through Kelsey Creek segments 76-03 through 76-05.	Segment 76-04 complete. Funding from KCD and Waterworks.	M	H
N457	2	3	8a	Restoration of Riparian Areas: Identify and implement opportunities to plant native vegetation to increase cover, including coniferous trees where soils and hydrology permits, in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.		H	H
N458	2	3	3a	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.		H	M
N459	2	3	8b	Restoration of Riparian Areas: Remove invasive non-native plants and restore native vegetation. Use successional plantings in areas of high disturbance and limited canopy. Underplant conifers in areas of deciduous buffers.		H	H
N460	2	3	new	Stream Channel Improvements: Explore opportunities to set back or remove berm on reach 76-05 and expand buffer and channel migration zone.	Moving the berm may conflict with the historical, cultural and recreational uses of the farm. Lack of alternative pasture areas for the livestock could increase resource degradation.	H	M
N461	2	3	new	Stream Channel Improvements: If berm on reach 76-05 cannot be moved, then explore opportunities to utilize man-made tributary through pastures as secondary channel. Improve buffers around tributary with native vegetation and fencing.	Tributary has been fenced and a limited vegetated buffer been restored.	H/M	M
N462	2	3	new	Riparian Wetland Creation/Floodplain Reconnection: In lower Glendale, establish wetland along mainstem Kelsey, allow floodplain connectivity.	Glendale Country Club is willing to alter their course to allow this.	H	H
N463	2	3	new	Channel Migration: Allow natural channel migration to occur in lower Glendale reaches and Kelsey Creek Farm.		H	M
N464	2	3	new	Enlarge Riparian Buffer: Where possible increase native riparian buffer along mainstem Kelsey through Glendale Country Club.	Glendale Country Club is willing to enlarge buffers as long as the greens/course does not have to be modified.	H	M

Protection**Technical Hypothesis:**

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N465	2			new	Acquisition: Acquire parcels just south of SE 7th along wetland buffer.		Parcels are mostly undeveloped and currently excellent wetland buffer for mainstem Kelsey and West Tributary.	H	H
N466	2			new	Farm Management BMPs: Update Farm Renovation and Master Plan and continue to implement Environmental Management Plan BMPs to protect stream from water quality and physical impacts and to enhance and improve fish and wildlife habitat.			H	M
N467	2			new	Illegal Water Withdrawals: Investigate and remove illegal water withdrawals.		DOE has been notified of specific water withdrawals in reach.	H	M
N468	2			new	Water Rights: Investigate opportunities to utilize alternative water sources for legal water withdrawals.		Glendale Country Club has water rights for Kelsey Creek for irrigation. They typically use a stormwater pond for irrigation and use the water right only to maintain their rights.	H	M

Reach 3: Kelsey Golf Course - Kelsey Creek from grade control passage obstruction at golf course to Olympic pipeline structure (76_06 - 76_07)**Restoration****Technical Hypothesis:**

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N469	3	1	3a	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			H	M
N470	3	1	8a	Restoration of Riparian Areas: Identify and implement opportunities to plant native coniferous trees in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			H	M
N471	3	1	new	Riparian Education/Incentives: Work with streamside property owners south of NE 8th to establish native riparian buffers.			M	M

N472	3	1	new	Fish Passage: Replace NE 8th St. culvert with bridge.			H	L
N473	3	1	new	Fish Passage: Reduce jump height at concrete weirs using artificial riffle or other "softer" engineering.			H	H
N474	3	1	new	Remove Bank Armoring: Remove riprap, setback banks, and bioengineer banks.			H	L
N475	3	1	new	Restore stream channel and use wildlife pond for off-channel habitat upstream of NE 8th.			H	L

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N476	3			new	Golf Course BMPs: Have Glendale Country Club maintain National Audubon Environmental Certification and employ BMPs to avoid water quality, temperature, or other impacts to Kelsey Creek.		Glendale currently maintains all levels of environmental certification from Audubon. Work with Glendale should continue and care taken to assure that sand and physical impacts are not an issue.	M	H

Reach 4: Kelsey Below Valley Creek - Kelsey Creek from Olympic pipeline structure to confluence with Valley Creek (76_07)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N477	4	2	3a	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			H	M
N478	4	2	8a	Restoration of Riparian Areas: Identify and implement opportunities to plant native coniferous trees in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			H	M
N479	4	2	new	Bank Restoration: Use bioengineering and bank slope setbacks to remove severely eroding gabion walls and stabilize stream banks.		This area is completely in private ownership. Implementation is uncertain.	H	L
N480	4	2	new	Fish Passage: Improve fish passage at Olympic Pipeline weirs.			H	M

N481	4	2	new	Bel-Red Channel Constraints: Re-establish more natural channel through Bel-Red area, use weirs for grade control at sheet pile wall until stream can be restored.			H	L
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Protection**Technical Hypothesis:**

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N482	4			new	Acquire/Easements: Protect existing riparian habitat, especially in larger parcels where stream could meander and buffers could be wider.			H	H
N483	4			new	Sensitive Development: Investigate and adopt options for more natural stream channel during Bel-Red commercial redevelopment process.			H	M

Reach 5: Kelsey Above Valley Creek - Kelsey Creek from confluence with Valley Creek to Main street (76_08 - 76_09)**Restoration****Technical Hypothesis:** Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N484	5	8 (tied with Reach 7: Richards Creek)	new	Channel Restoration: Enlarge channel cross-section, reconnect floodplain, install large woody debris through apartment complex.			H	L
N485	5	8 (tied with Reach 7: Richards Creek)	3a	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			H	M
N486	5	8 (tied with Reach 7: Richards Creek)	7a	Protection of Forested Buffers: Purchase riparian forested buffers or conservation easements in stream segments 76-08 and 76-09 of Kelsey Creek.			H	M
N487	5	8 (tied with Reach 7: Richards Creek)	8a	Restoration of Riparian Areas: Identify and implement opportunities to plant native coniferous trees in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			M	M

N488	5	8 (tied with Reach 7: Richards Creek)	new	Reduce bank armoring , lay back banks, and use bioengineering to restore banks and riparian area.				H	L
N489	5	8 (tied with Reach 7: Richards Creek)	new	Fish Passage: Replace private culverts that limit passage and flow.				H	M
N490	5	8 (tied with Reach 7: Richards Creek)	new	Fish Passage: Replace culvert at 148th Ave NE with fish friendly culvert or bridge.				H	H

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N491	5			new	Acquisition/Easements: Protect existing coniferous riparian habitat along Kelsey Creek upstream of Ilahee Apt to 148th Ave NE.			H	M
N492	5			new	Acquisition: Protect wetlands along 148th.			H	H

Reach 6: Kelsey Creek Headwaters - Kelsey Creek from Main Street to headwaters (76_10 - 76_12)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N493	6	9	new	Remove culvert and restore stream channel upstream of Main St.			M	L
N494	6	9	new	Replant riparian vegetation through Lake Hills Greenbelt to reduce reed canary grass impacts and keep temperatures lower.			H	H

Protection**Technical Hypothesis:**

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N495	6			new	Maintain headwater wetlands to protect summer base flows and aquatic ecosystem.			H	H

Reach 7: Richards Creek - Richards Creek from mouth to SE 32nd St.**Restoration****Technical Hypothesis:**

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N496	7	8 (tied with Reach 5: Kelsey)	1c	Fish Passage: Obtain permits and build new culvert at SE 26th Street on East Creek.			M	H
N497	7	8 (tied with Reach 5: Kelsey)	1e	Fish Passage: Design, obtain permits, and build new culvert at SE 30 th Street on Richards Creek.		Design work began 2003.	M	H
N498	7	8 (tied with Reach 5: Kelsey)	1j	Fish Passage: Modify existing culverts that are partial barriers by placing low-flow deflectors on multichannel box culverts to increase depth of low-flow channel at Lake Hills Connector.		Design work began 2003.	H	H
N499	7	8 (tied with Reach 5: Kelsey)	3b	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 77-02 through 77-03 of Richards Creek.			H	H
N500	7	8 (tied with Reach 5: Kelsey)	3c	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segment 79-01 of Sunset Creek.			H	L
N501	7	8 (tied with Reach 5: Kelsey)	7c	Protection of Forested Buffers: Purchase riparian forested buffers or conservation easements in stream segments 77-01 through 77-03 of Richards Creek.			?	?
N502	7	8 (tied with Reach 5: Kelsey)	8b	Restoration of Riparian Areas: Reduce invasive non-native plants in high Chinook usage reaches (reed canarygrass and purple loosestrife in segments 77-01 through 77-02 in Richards Creek.			H	H

Protection**Technical Hypothesis:**

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N503	7			new	Acquisition: Purchase two parcels to protect hillside springs/seeps and forest.		Parcels are isolated from stream by Lake Hills Connector and Richards Road, but impacts from development could still impact stream. Includes parcels #0424059002 and	M	H
N504	7			new	Acquisition: Acquire undeveloped properties or easements along reach 77-02 & 78-01.			H	H

Reach 8: Valley Creek - Valley Creek from mouth to Bellevue Municipal Golf Course**Restoration****Technical Hypothesis:**

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N505	8	7	new	Daylight Creek - Daylight Valley Creek through Bellevue Golf Course.			H	H
N506	8	7	1d	Fish Passage: Improve fish passage at Washington State Department of Transportation culverts beneath SR 520.			H	M
N507	8	7	3e	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 82-01 through 82-05 of Valley Creek.		Segment 82-01 complete 2003.	H	L
N508	8	7	3f	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segment 83-01 of Sears Creek.		In permitting 2003.	H	H

Protection**Technical Hypothesis:**

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	8			new	No projects identified at this time.				

Reach 9: West Tributary - West Trib from mouth to Bellevue-Redmond Road (upper extent coho potential)**Restoration****Technical Hypothesis:**

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N509	9	4	1f	Fish Passage: Design, obtain permits, and build new culvert at NE First Street on West Tributary.			H	M
N510	9	4	3d	Installation of Large Woody Debris: Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 80-01 through 80-02 in the West Tributary.			H	H
N511	9	4	6a	Stream Channel Improvements: Restore original stream channel of the West Tributary through Kelsey Creek Farm, segment 80-01.		Kelsey Creek Project , P-AD-65. Consultant hired 2003. Project in design.	H	H
N512	9	4	8b	Restoration of Riparian Areas: Reduce invasive non-native plants in high Chinook usage reaches (reed canarygrass and purple loosestrife in segments 80-01 through 80-02 in the West Tributary).			H	H
N513	9	4	new	Stream Channel Improvements: Place LWD in floodplain near channel and spanning logs, to help maintain channels, increase pool formation, and increase upland habitat diversity.		Do not recommend placing LWD in stream due to instability of channel and sediment deposition.	H	H

Protection**Technical Hypothesis:**

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N514	9			new	Acquisition: Purchase parcels just south of SE 7th along wetland buffer.		Parcels are mostly undeveloped and currently excellent wetland buffer for mainstem Kelsey and West Tributary.	H	H

Reach 10: Goff Creek - Goff Creek from mouth (West Trib) to Bellevue-Redmond Road (upper extent coho potential)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
	10	5		No projects identified at this time.				

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N515	10			7b	Protection of Forested Buffers: Purchase riparian forested buffers or conservation easements in stream segment 81-01 of Goff Creek.			H	M

**Draft Proposed Outreach & Education Actions for the North Lake Washington Population (Tier 1 and 2 Subareas)
(by WRIA 8 Public Outreach Committee)**

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
N701	Prime salmon habitat -- or critical areas that influence salmon habitat -- in threat of development or degradation	Identify and protect best remaining habitat	Shoreline property owners	Continue WaterWays program--identify and protect best remaining habitat in watershed through acquisition, conservation easements, and tax incentives. Expand incentive programs to include smaller properties not currently eligible under existing program.	High	Public Benefits Rating System, Open Space Current Use Tax (CUT)	High
N702	Prime salmon habitat -- or critical areas that influence salmon habitat -- in threat of development or degradation	Help to restore degraded or protect prime salmon from development or further degradation	Property owners	Work with land trusts to help with acquisition and/or restoration of prime or severely degraded habitat. Draw upon their skill at working with property owners who otherwise might be apprehensive about negotiating with Government. Provide information regard Stewardship Endowments and resources to alleviate the financial burden for those wishing to donate streamside habitat easements.	High	Cascade Land Conservancy, Trust for Public Lands, The Nature Conservancy	High
N703	Lack of riparian vegetation; water quality compromised by landscape practices; higher water use at times when flows lowest.	Protect & restore riparian vegetation to provide sources of refuge and terrestrial food; protect & restore water quality, maintain instream flows	Shoreline property owners	Offer shoreline property owners workshops on "salmon friendly" streamside design. Includes topics: the value of riparian vegetation, invasives, erosion control, value of large woody debris for salmon habitat and potential flood control, preventing channel scour, natural yard care, Include as presenters landscape designers and contractors who have both experience and recognition in such design.	High	Yes, Snohomish County Streamside Courses, Creekside Living, Issaquah	Low
N704	Salmon habitat in need of restoration or protection	Protect and restore forest cover or critical areas such as wetlands and shallow water habitat. Promote watershed health through grassroots messaging.	Shoreline property owners	Identify and encourage shoreline neighborhood and community stewardship associations to foster the ethic of voluntary stewardship, set examples for other neighbors to follow, enlist community support to acquire and restore habitat. Use these groups to build a bridge between property owners, agencies, and locals governments. Increased potential for media coverage when efforts initiated at community level.	High	Lake Forest Park Stewardship Foundation, WaterTenders, Friends of Denny Creek, Friends of Rock Creek Valley	Low
N705	Channel	Soften shorelines,	Shoreline	Reduce permit fees for shoreline stabilization if design is	High		Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
	confinement; loss of riparian vegetation	restore floodplain connectivity and channel complexity	property owners	salmon friendly (employing alternatives to dikes, levees, revetments, and vertical wall bulkheads). Also reduce permit fees (where applicable) for streamside restoration and removal & replacement of non-native vegetation			
N706	Loss of riparian vegetation; water quality compromised by landscape practices; higher water use at times when flows lowest	Restore riparian vegetation and subsequent source shelter producing habitat features and terrestrial food supply; reduce soil erosion and sedimentation	Shoreline property owners	Reduce permit fees (where applicable) for streamside restoration & removal and replacement of non-native vegetation.	High		Low
N707	Riparian vegetation displaced by lawn, invasives, or exotics, providing little food value, source of large woody debris, or soil stability. Water quality compromised by garden chemicals, metals, sediment. Higher water use at times when flows lowest.	Protect & restore riparian vegetation to provide sources of large woody debris/pools/riffles and terrestrial food; protect & restore water quality, maintain instream flows	Shoreline property owners and general public	Update (where necessary) and distribute salmon educational materials such as <i>Salmon Friendly Gardening Practices</i> , <i>Streamside Savvy</i> , and <i>Going Native</i> booklet to shoreline property owners in order to provide household and landscape best management practices, as well as information about opportunities for involvement in community stewardship projects. Also make available at City Hall, libraries, and retail establishments such as nurseries and home improvement centers Continue distribution of this outreach material through Streamside Welcome Wagon organized by Water Tenders for new streamside residents.	Medium	Brochures distributed through existing creekside stewardship programs (Seattle, Snohomish County, Issaquah) Similar outreach efforts by Save Lake Sammamish and Puget Sound Action Team.	Low-Medium
N708	Lack of large woody debris	Overcome public fear and resistance to providing and maintaining woody debris along shorelines	Shoreline property owners and general public	Increase public awareness about the value of large woody debris and native vegetation for flood protection, salmon habitat, and healthy streams. Convey through media (local newspapers, community newsletters); signage along publicly accessible "model" shoreline; and brochures such as <i>King County's Large Woody Debris and River Safety</i> and <i>US Forest Service Large Woody</i>	Medium	Existing King County and US Forest Service brochures	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
		and subsequent source of cover, pools, riffles		<i>Material: The Backbone of a Stream.</i> Distribute to all shoreline property owners and to more of general public, especially recreational boaters.			
N709	Homeowners trying to remove beavers, their dams and woody debris from the riparian ecosystem; increased runoff and decreased wetland function after beavers removed.	Increase understanding of roles beavers play in streamside ecology and concept of sharing streams with native residents	Shoreline property owners	Provide outreach concerning beavers and their benefit to watershed health (improved wetland function; creation of new habitat for plants, fish, and wildlife; slowing storm water runoff; trapping sediment; and maintaining summer base flows) Provide information on how to co-exist with beavers.	Medium/Low	King County website, Salmon Watchers, PAWS, Seattle Public Utilities Beaver Workshops, Snohomish Co Watershed Stewardship programs	Low
N710	Channel confinement, loss of riparian buffer and sources of large woody debris, pools, riffles, and terrestrial food source; reduced channel complexity,	Inspire shoreline property owners to make changes on their own property by providing good examples; increase public support for land acquisition and restoration efforts, as well as landuse policies	Shoreline property owners	Increase interpretation at restoration sites (include signs, tours, and other methods.) When appropriate use restoration sites for demonstration purposes. Due to high visibility, restore streamside habitat at Tolt Pipeline Trail and Bear Creek crossing as a demonstration site.	Medium	Redmond River Walk, Junita Beach, Classic Nursery, Lake Forest Park Stewardship Projects	Medium
N711	Channel confinement, loss of riparian buffer: sources of large woody debris, pools, riffles; reduced channel complexity,	Inspire shoreline property owners to make changes on their own property by providing good examples; increase public support for land acquisition, restoration, and landuse policies.	Shoreline property owners and general public	Use government cable channels to follow progress of specific restoration projects. Use video to document projects before, during, and after restoration. In addition to airing on cable TV, distribute programs to libraries, schools, and communities groups.	Low	Salmon Information TV	Variable
N712	All conditions listed	Protect and	Shoreline	Work with Real Estate industry to help ensure that	Medium	King County	Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
	above.	restore riparian vegetation, channel complexity and connectivity; reduce channel confinement; protect and restore water quality	property owners	potential shoreline buyers are supplied with sufficient information concerning sensitive areas and environmental stewardship of streamside properties. Explore possibility of adding a disclosure to Real Estate Sales Agreement, describing shorelines as sensitive areas, subject to rules and regulations of City and County. Look to model set by King County.		Department of Development and Environmental Services (DDES) puts notice on title concerning sensitive areas.	
N713	Water quality degraded by excessive nutrient inputs (and subsequent decrease in oxygen), erosion and sedimentation, grasses clogging channels	Protect and restore riparian vegetation, protect and restore water quality	Livestock owners (Horse farms)	Provide classes, tours, and assistance in implementing livestock operation best management practices. Gear classes to both larger scale horse farms, and to small "hobby farmers."	High in rural areas	Horses for Clean Water and King Conservation District Programs	Low
N714	Riparian vegetation displaced by lawn, invasives, or exotics; water quality compromised by landscape practices. Higher water use at times when flows lowest.	Protect & restore riparian vegetation; protect& restore water quality, maintain instream flows, Increase likelihood of achieving these goals by bringing on board industry with large influence over the landscapes within watershed.	Landscape Contractors	Offer education to landscape designers/contractors on riparian design, naturescaping, and invasive species. Include topics such as riparian design, plant selection, installation techniques, and use of compost to build healthy soils, efficient watering techniques, control erosion and reduce need for supplemental irrigation. Consider training for non-English speaking participants.	Medium	Washington Assoc. of Landscape Professionals (WALP) trainings	Low – Medium
N715	All conditions listed.	Increase awareness about effects of habitat on salmon and watershed health;	General public, but in particular Shoreline property	Create local informational TV spots that could run on the government cable channels. Focus on those habitat conditions threatening salmon that are affected by our daily personal practices, landscape design, and management practices. Showcase good designs to	Low	Yes, Salmon Information TV, C-TV,	Variable

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
		increase support for land acquisition and restoration efforts as well as landuse policies.	owners	provide models to emulate. Inspire shoreline property owners to make changes on their own property.			
N716	All conditions listed.	Protect and restore salmon habitat.	Community	Increase citizen involvement in voluntary stewardship programs, focusing on restoration projects to meet the needs of the conservation plan through restoration, education, monitoring and restoration site maintenance. Increase number of development sites where native plant salvages occur. Integrate salvage opportunities with naturescaping classes.	High	Cedar River Naturalists, Sammamish ReLeaf, Stream Team; Watertender; Salmon Watchers	Medium
N717	All conditions listed	Cultivate ethic of environmental stewardship; increase watershed awareness and links between manmade habitat and environmental health.	Youth	Link education and community service stewardship projects, e.g. high school community service requirements and Senior Projects. Expand outreach to community/technical colleges & universities.	Medium	Environmental Portal Seattle, Mercer Slough Interns Program, North Shore Utility Tour, Water Tenders.	Low
N718	All conditions listed here.	Improve watershed awareness, possibly prevent future habitat degradation by instilling a better understanding of interrelationship between habitat, daily actions, and watershed health.	Youth	Focus environmental/science curricula on local watershed issues, with particular emphasis on key factors limiting the North Lake Tributaries subpopulation.	Low-Medium	Yes	Medium
N719	Loss of forest cover, decreased infiltration and	Protect forest cover, reduce erosion and	General public, but property	Increase outreach concerning the benefits of trees and basin-wide forest coverage to protect water quality and maintain instream flows. Include information that links	High in rural areas;	Sammamish ReLeaf; Mountains-to-	Variable - Medium

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
	ground water recharge, increased run-off and subsequent flashiness of floods	source of sedimentation, increase infiltration and ground water recharge, decrease flashiness of run off and potential for bed scour; protect and restore	owners in particular	<p>canopy cover to storm water issues_</p> <p>Clarify hazardous tree issues. Suggest hazardous trees be replaced with new plantings.</p> <p>In urban areas, protect remaining trees and encourage reforestation through street tree programs, tree protection regulations, landscaping incentives, and redevelopment.</p> <p>Consider developing a marketing campaign with nurseries and arborists, promoting the benefit of trees to salmon and watershed health.</p>	Medium in urban/s uburban areas.	Sound Greenway; City tree ordinances.	
N720	Reduced forest cover, increased impervious areas, decreased infiltration and groundwater recharge	Mimic natural hydrology more closely; reduce flashiness of run-off with smaller yet more localized storage capacity.	Developers, Architects, Engineers Building Professionals	<p>Provide education to architects, landscape architects, engineers, and developers on sustainable building/design and stormwater management practices. Work with professional associations to highlight building practices that –maintain watershed health. Include Low Impact Development, importance of maintaining canopy cover and limiting impervious surfaces.</p> <p>Provide incentives to builders that demonstrate a use ecologically sensitive designs and/or techniques.</p> <p>Create a campaign that tracks demand among community residents for purchasing green homes and remodeling with green building strategies.</p>	High	High Point Development, Port Blakely Communities and Talus development, Issaquah, Sea Streets	Medium
N721	Reduced forest cover, increased impervious areas, decreased infiltration and groundwater recharge	Control stormwater runoff to more closely mimic natural hydrology, reduce paving and impervious areas, increase infiltration, protect forest cover	Design & Building Professionals	<p>Use recognition as a means to encourage more salmon sustainable designs and construction.</p> <p>In addition to professional association awards, expand recognition to include merit awards celebrated by popular magazines read by a broader sector of the general public.</p> <p>Promote through design competitions and media coverage the use of “rain gardens” and other low impact development practices that mimic natural hydrology. Combine a home/garden tour or “Street of Dreams” type event featuring these landscape /engineering</p>	Medium	American Institute of Archtiects, American Society of Landscape Architects, Sunset Magazine, and Seattle Times Home and Garden awards,	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
				treatments.		King County EnviroStars.	
N722	Lack of groundwater recharge; Insufficient instream Flows	Reduce groundwater withdrawals to maintain source of cold water; decrease household and commercial water consumption to protect and restore flows.	High-end water users that draw from wells.	Increase outreach about illegal water withdrawals, including information about exempt wells (who and what purposes qualify), and maximum quantities that may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen-based watchdog groups to watch for people drawing directly from creeks and streams.	High		Low
N723	Insufficient instream Flows	Decrease household and commercial water consumption to protect and restore instream flows.	High-end water users, general Public	Promote availability of water conservation education and incentive programs (e.g., rebates for efficient toilets, free landscape irrigation audits) to decrease household, commercial, and landscaping irrigation water consumption throughout WRIA 8. Support conservation efforts within the Cascade Water Alliance.	High	Smart & Healthy Landscapes (seattle), Water Cents (City of Redmond & Woodinville Water District)	Low
N724	Water quality degraded by leaks from septic systems, increased organics, hormones, toxics	Protect and restore water quality	Shoreline property owners	Increase outreach regarding siting, maintenance of septic systems, and the disposal of hazardous waste into septic systems.	Low - Medium	King County Dept of Public & Environmental Health septic outreach program, Hood Canal	Medium
N725	Water quality compromised by garden chemicals, metals, sediment. Higher water use at times when flows lowest.	Protect water quality from degradation by pesticides and soil erosion, maintain instream flows by reducing water use, increase organic content in soils to increase water holding capacity	General public and shoreline Property Owners	Target Natural Yardcare Neighborhoods Program to include more communities in the North Lake Washington Tributaries sub-basin. Expand curricula to offer more landscaping guidelines specific to shoreline residences.	Medium	Yes, ongoing program since 2000	Low
N726	Water quality	Protect and	General	Coordinate with local business community to encourage	High-	Puget Sound	Variable –

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
	degraded by toxics, metals, pesticides, nutrient overload	restore water quality	Public	the use of commercial car washes. Offer car kits or alternative funding sources to volunteer fundraisers. Reprint and more actively distribute – poster series developed by the Water Quality Consortium, (cooperative venture between the Puget Sound Action Team, Dept. of Ecology, King County, and the cities of Bellevue, Seattle, and Tacoma).	Medium	Car Wash Association, Businesses for Clean Water, Water Quality Consortium	Low
N727	Water quality degraded by toxics, metals, pesticides, nutrient overload	Protect and restore water quality	General Public	Create a program that addresses impact of car maintenance and offers alternatives that help protect watershed health and water quality.	Medium	Yes. Water Quality Consortium	Low
N728	Water quality degraded by toxics and metal fines.	Reinforce to students and the community the relationship between what goes down storm drain and watershed health via an affordable and easily implemented program.	General Public	Expand storm-drain stenciling program locally and basin-wide. Track locations and dates in a North Lake Washington sub-basin database.	Medium - Low	Yes	Low
N729	Water quality degraded by toxics and metals	Protect and restore water quality	General Public	Build partnerships and seek outreach opportunities with commute trip reduction programs to convey the impacts of automobiles on water quality and salmon habitat. Encourage alternative transportation choices. Work with auto parts retailers and gas stations to increase potential for collection of used motor oil/transmission fluids. Increase outreach about availability and locations of Hazardous Waste Collection sites and special collection events. Make outreach material available to non-English speakers.	Medium - Low	Commute Trip Reduction Programs	Low-Medium
N730	Competition	Ensure that local Chinook habitat	Youth General	Increase outreach on the relationship of hatcheries to wild Chinook populations. Coordinate with teachers to	High		Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/ Model	Level of Financial Commit.
	between naturally spawning and hatchery origin fish.	needs and hatchery management practices are compatible	Public Sport Fishermen	encourage alternatives to "Salmon in the Classroom" curricula. Work with local fishing organizations to encourage better hatchery management practices.			
N731	Water quality degraded by toxics, pesticides, metals, increased nutrient loads, sediment; loss of riparian vegetation	Protect and restore water quality	General Public	Publicize emergency call numbers for public to report water quality and quantity problems, non-permitted vegetation clearing, and non-permitted in-stream grading, and wood removal incidents.	High	King County Water & Land Division, Seattle Public Utilities Hotlines	Medium
N732	All conditions listed above.	Reaffirm integrated conservation planning approach by extending outreach to various staff members that can and might be involved in salmon conservation.	Jurisdictional Staff	Expand outreach to City staff concerning salmon recovery issues, Low Impact Development, and BMP's. Encourage communication among City Departments and Divisions to increase coordination	High	Redmond and King County "Brown Bag" series; Redmond Environmental Committee	Low

**Draft Proposed Outreach & Education Actions for the Sammamish River
(by WRIA 8 Public Outreach Committee)**

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
N733	High water temperatures	Protect ground water sources that can provide upwelling of cooler water Maintain flows in Tier two tributaries which feed main stem	General public, but high water users in particular, especially those on wells or using aquifer water	Increase water conservation outreach efforts through incentive programs such as rebates for more efficient toilets and appliances, free indoor conservation kits, or free landscape irrigation audits. These should all be designed to decrease household, commercial, agricultural, and industrial water consumption. Encourage gray-water capturing for reuse in landscape irrigation through demonstration projects, workshops, and educational materials. Bring together all the key water policy makers that control the water and the way the water utilities are managed.	High	Smart & Healthy Landscapes, Water Cents, utility incentive programs	Low-Medium
N734	High water temps and reduced flows	Protect both ground water resources and maintain base flows in river and tributaries	Homeowners and landscape industry	Increase the availability of water-wise (drought tolerant) landscape classes to both homeowners and landscape industry professionals. Work with nurseries, growers, garden centers to promote these classes, especially the large retailers and chain stores. Offer rebates on water bill or financial incentives for installation of Waterwise landscape. Verification can be coupled with reading of water meter (better suited for customers on metered water service)	High	Saving Water Partnership, Natural Yard Care Program, Seattle Green Gardening Program, King Conservation District RGA	Medium
N735	High water temps and reduced flows	Increase infiltration to enhance ground water recharge	Basin wide property owners	Increase outreach concerning the benefits of trees and basin-wide forest coverage to protect water quality and maintain instream flows. Include information that links canopy cover to storm water issues. Clarify hazardous tree issues and encourage any removed trees to be replaced with new plantings. Coordinate with nurseries, home improvement centers, and arborists to develop a marketing campaign	High	Yes, King County Forestry Program, Green Tree System, National Arbor Day Foundation	

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				promoting the benefit of trees to salmon and watershed health.			
N736	Reduced flows, water quality degraded by pollutants, metals	Maintain base flows; protect water quality	General public, but car owners in particular	<p>Coordinate with local schools and business community to encourage use of commercial car washes over those done in parking lots or at home. Require non-profits that use car washes as fund-raisers to use car wash kits or sell carwash coupons instead.</p> <p>Expand coordinating businesses to include car dealerships which could offer car wash coupons as sales promotions or bonuses.</p>	Medium – High	Puget Sound & WA Car Wash Associations	Low
N737	Water quality degraded by toxics, sediments, pesticides, & excess nutrients	Protect & Improve water Quality	General public	Reprint and more actively distribute – poster series developed by the Water Quality Consortium, (cooperative venture between the Puget Sound Action Team, Dept. of Ecology, King County, and the cities of Bellevue, Seattle, and Tacoma). Series focuses on repercussions of common practices such as car washing, improper disposal of pet waste, use of garden chemicals, car maintenance (or lack there of).	High		Low
N738	Water quality degraded by toxics, sediments, pesticides, & excess nutrients	Protect & Improve water Quality	Agricultural community	Work with farmers to adopt and implement farm plans which address water quality, in particular nutrients, sediments, and pesticide runoff; livestock management; and fish and wildlife habitat management and restoration	High	King Co farm program, Kin Conservation District programs	Low
N739	Lack of riparian vegetation; high water temperatures, lack of shade, cover from predators, and terrestrial food sources	Reduce temperatures to those that can better support cold water fish, provide cover and shade	Private shoreline property owners, especially those downstream of Bothell Landing	<p>Expand the Natural Yard Care program to further promote mutual value of native/riparian vegetation to stream and salmon health, as well as benefits to homeowner (increased landscape color, variety; pest resistance, backyard wildlife; decreased maintenance and erosion).</p> <p>Coordinate with wholesale and retail nursery trades to be sure that native/riparian stock is readily available <u>and</u> promoted.</p>	High – Medium (lower value due mostly to smaller number of private land owners)	City Stream Teams programs, Natural Yard Care programs, NW Natural Yard Days, WRIA 8 Lakeside Living Workshops, King Conservation District's Resource Growers Assoc.	Medium
N740	High water	Reduce	Landscape	Increase outreach about the value of riparian vegetation.	Medium	Washington	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
	temperatures, lack of shade, cover from predators, terrestrial food sources	temperatures to those that can better support cold water fish, provide cover and refugia	designers and contractors	Offer design workshops to industry professionals highlighting design solutions, relatively low maintenance (such as lower water requirements and increased pest resistance), and increased potential for erosion control and backyard wildlife attraction. Add incentives for participation such as design competitions and recognition within design & construction fields, as well as within greater business community (EnviroStars and Daily Journal of Commerce featured businesses)		Assoc of Landscape Professionals (WALP) training on IPM by King Co LHWMP	(industry supported)
N741	Loss of riparian veg	Restore riparian vegetation. Increase cover and thereby reduce predation	Youth – and their parents	<p>Create a “hide & seek” game to increase knowledge about places that young salmon can hide. Make available to daycares, pre-schools, and elementary school systems.</p> <p>Send advice to local parenting publications (which are free and available at libraries, bus stops, and many retail outlets).</p>	Medium	Yes, King County Schools program	Variable. Since pre-schools/daycares privately funded, they may pay for outreach, more self supporting
N742	<p>Loss of riparian veg</p> <p>Lack of pools for returning adults to rest and cool down</p>	<p>Increase cover and thereby reduce predation</p> <p>Increase number of cool water pools for adult migrating fish</p>	Shoreline property owners	<p>Create a marketing campaign about young fish trying to hide. Some possibilities are: <i>Somewhere to run, Nowhere to Hide, Salmon are Shady Characters, Keep Cool</i>, or continue to promote Bellevue’s <i>Cold fish need love too</i>.</p> <p>Create a humorous ad campaign about how tiring the mating/dating game can be. Show a poor over-heated tuckered out returning salmon with a plea for Help to provide them places to rest and “Chill out.”</p> <p>Alternatively, play on presently popular water park themes. Guess who else needs water parks and pools?</p> <p>Employ use of focus groups and surveys to measure the effectiveness of marketing campaigns in bringing about change in public attitude, perception, and behavior.</p>	Low	Yes, Bert the Salmon Series, Bellevue Utilities (Cold fish buttons), Saving Water Partnership for follow-up surveys	Variable, Ad campaigns done for free as in Campaign for Drug Free America

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
N743	Reduced flows instreams and lack of cool ground water reserves to provide source of upwelling.	Maintain sufficient ground water flows by reducing illegal water withdrawals	Well owners	Increase outreach about illegal water withdrawals. Include information about exempt wells (who and what purposes qualify) and maximum quantities which may be withdrawn per day. Clarify distinction between withdrawals taken from wells and diversions taken from the river without a water rights permit. Create citizen based watchdog groups to watch for people drawing directly from creeks and streams.	Medium	WaterTenders	Low
N744	High Water temps caused by reduced flows	Protect ground water resources and maintain base flows in main stem and tributaries	Homeowners and landscape industry	Offer rebates on water bill or financial incentives for installation of waterwise landscape. Verification can be coupled with reading of water meter (better suited for customers on metered water service)	Medium	Requires coord with water utility. Incentives limited to those on metered systems	Low - Medium
N745	Water quality degraded by sediments, pesticides, & excess nutrients	Protect and improve water quality	All property owners/property managers that drain directly into river, or indirectly through storm sewers	Encourage all Sammamish River communities to participate in the Natural Yard Care Neighborhoods Program. Training includes: natural lawn care, pesticide reduction/IPM, building healthy soil, proper watering techniques, right plant right place. Foster cooperation from local golf courses located on river to be used as demonstration sites or place to hold class. Encourage them to practice Integrated Pest Management and natural lawn care techniques by having to set a good example for the community.	Medium – High	Yes, Natural Yard Care Program Bellevue Stream Team Natural Lawn Care classes/demos.	Medium
N746	Water quality degraded by sewage/excess nutrients, decreased Dissolved Oxygen, and toxics	Prevent septic tank failure and improper disposal of toxic chemicals	Shoreline property owners	Increase outreach regarding siting and maintenance of septic systems. Offer incentives to participate in King County's pilot program classes designed for homeowners and real estate professionals. Heighten message that new high tech systems need more maintenance than old-fashioned gravity flow systems. Discourage disposal of hazardous waste into septic systems. Seek funding to offer site inspections and technical assistance.	Medium – High	King County Environmental Health; Hood Canal Coordinating Council, Chesapeake Bay Cleanup Program	Variable
N747	Degraded water quality	Improve and protect	General public	Publicize 24 hour emergency call numbers for community members to report water quality and quantity problems, forest and stream clearing, and in-stream wood removal incidents	Medium	Seattle Public Utilities Surface Water Pollution Prevention	Low

Proj #	Habitat Condition	Desired Outcome	Target Audience	Proposed Action	Priority	Proven Track Record/Model	Level of Financial Commit.
						Hotline & website	
N748	All conditions listed above	Restore those degraded and protect those cherished	Riverfront and forested property owners	Create and distribute "Streamside / Forest Living Welcome Wagon" packages focused on shoreline and forested area stewardship.	Medium	Watertenders	Low-Medium
N749	All conditions listed above	Restore those degraded and protect those cherished	General public, and riverfront property owners through peer pressure	Use interpretive signs, events, restoration projects, stewardship groups to reinforce messages about value of riparian vegetation, water conservation, water quality, and river meanders	Medium - Low	Many examples throughout WRIA	Low
N750	Lack of meanders in river course	Restore them to create source of groundwater interception to cool river	Riverfront property owners and the general public	Create a marketing campaign about the virtue of curves. Possible ideas to draw from: <i>Put some sex-appeal back in the landscape; The river's too straight-laced, We all want curves, or Curves, not just for women anymore</i> General public will need to understand value of river meanders in order to support land purchases that would be necessary to put meanders back in river system.	Low		Variable