



Puget Sound Steelhead East Kitsap DIP Recovery Plan

EXECUTIVE SUMMARY

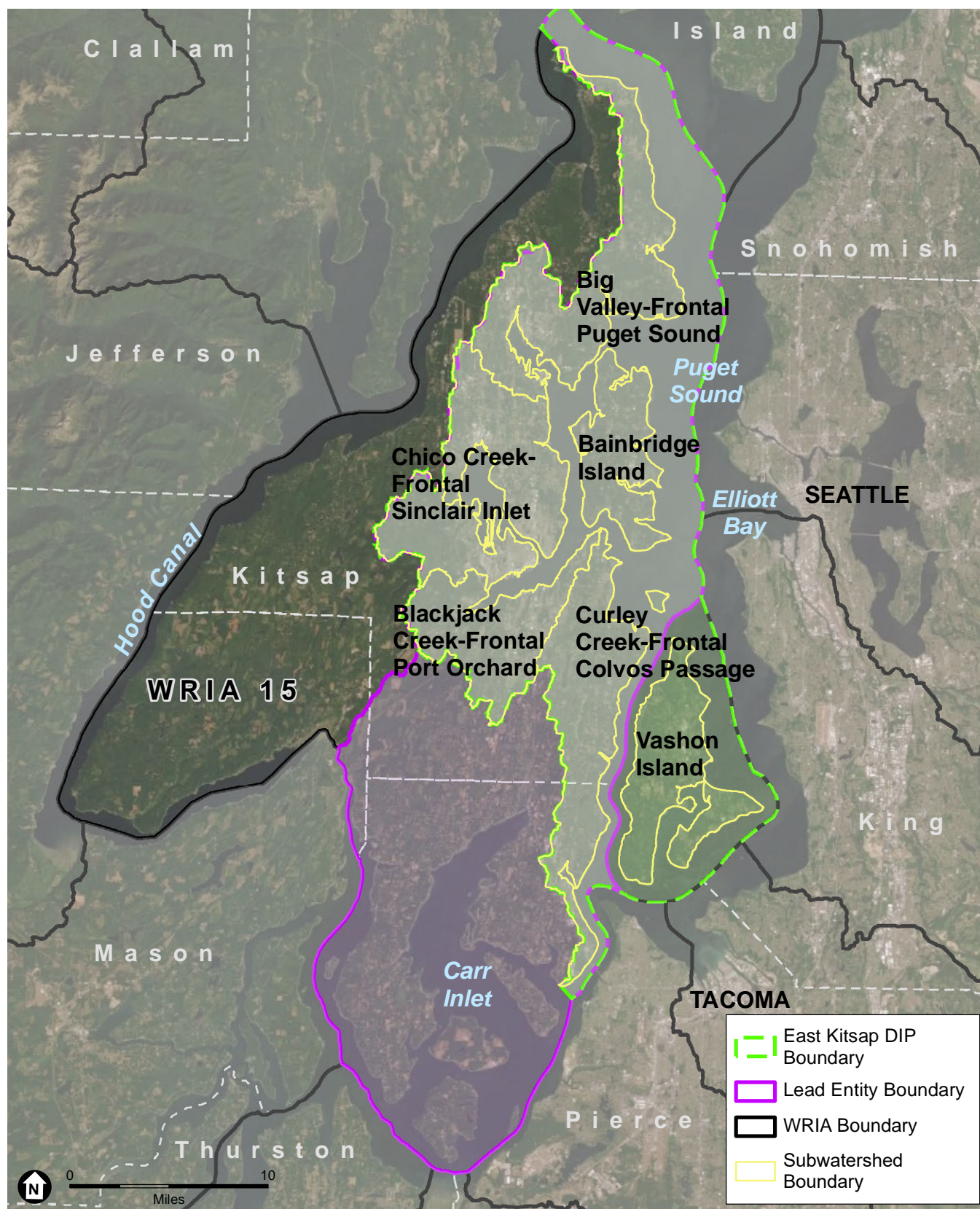
The Suquamish Tribe - April 2020

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Background

The National Marine Fisheries Service (NMFS) listed Puget Sound steelhead as a threatened species under the Endangered Species Act in 2007. In December 2019, NOAA released the final version of the Endangered Species Act Recovery Plan for Puget Sound Steelhead (Regional Plan). Thirty-two populations of Puget Sound steelhead are grouped into three major population groups (MPGs): Northern Cascades MPG, Central and South Puget Sound MPG, and Hood Canal and Strait of Juan de Fuca MPG. The East Kitsap Demographically Independent Population (DIP) is a part of the Central and South Puget Sound MPG and the focus of this recovery plan. The East Kitsap DIP is further divided into seven subwatersheds.



East Kitsap DIP



Vision

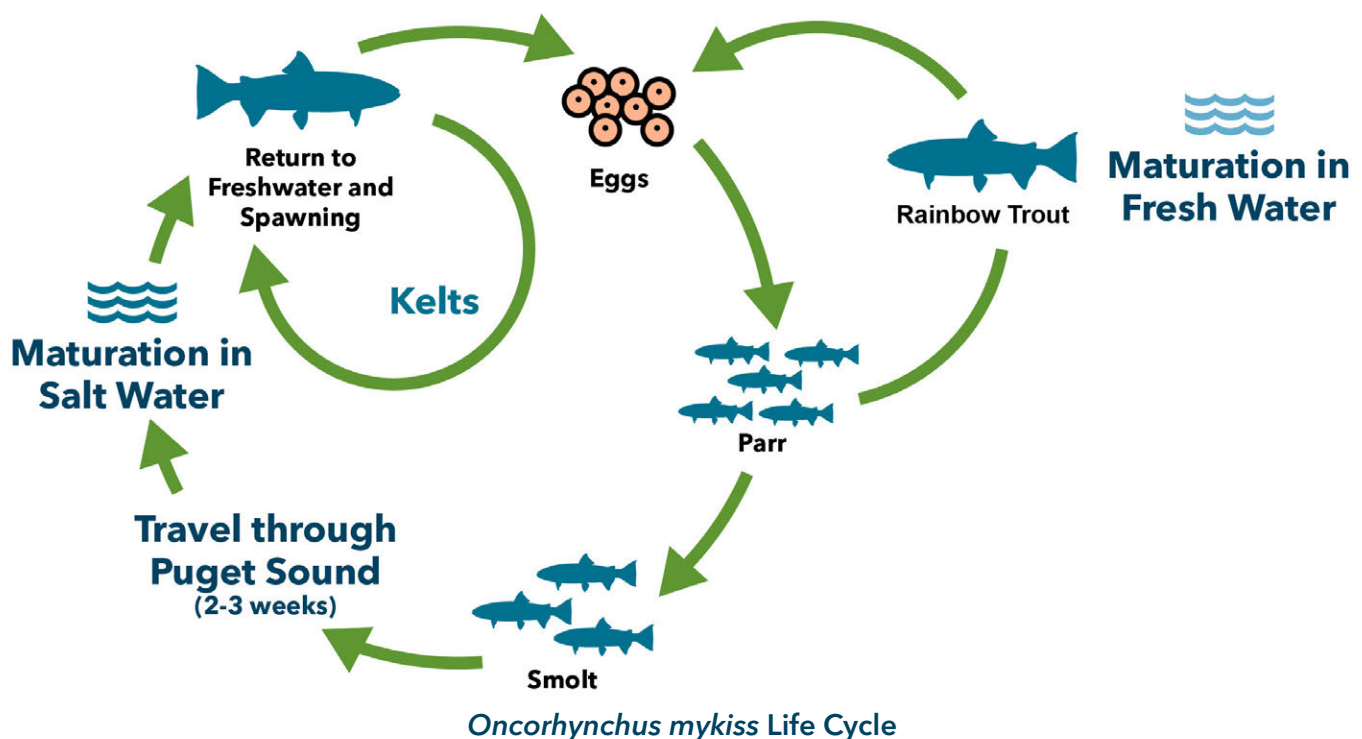
We envision steelhead recovery in East Kitsap that results in: abundant, productive, diverse, and resilient steelhead and salmon populations that support ecosystem processes; an East Kitsap steelhead population that contributes to the viability of Puget Sound steelhead and that supports recreational, ceremonial, and subsistence harvest; an East Kitsap ecosystem that supports the full exercise of tribal treaty harvesting rights; the best and most productive stream systems and habitats being accessible, functioning, and in long term protective status; and significant progress in restoring impacted stream systems.

Steelhead: What Makes Them Unique?

Puget Sound steelhead (*Oncorhynchus mykiss*) exhibit one of the most complex life cycles of all the salmonid species. This species may be anadromous, moving between salt water and freshwater throughout their life, or remain exclusively in freshwater (referred to as rainbow trout). Puget Sound steelhead typically spend one to three years rearing in freshwater, with most spending two years in streams and rivers before migrating to the ocean (Busby et al., 1996).

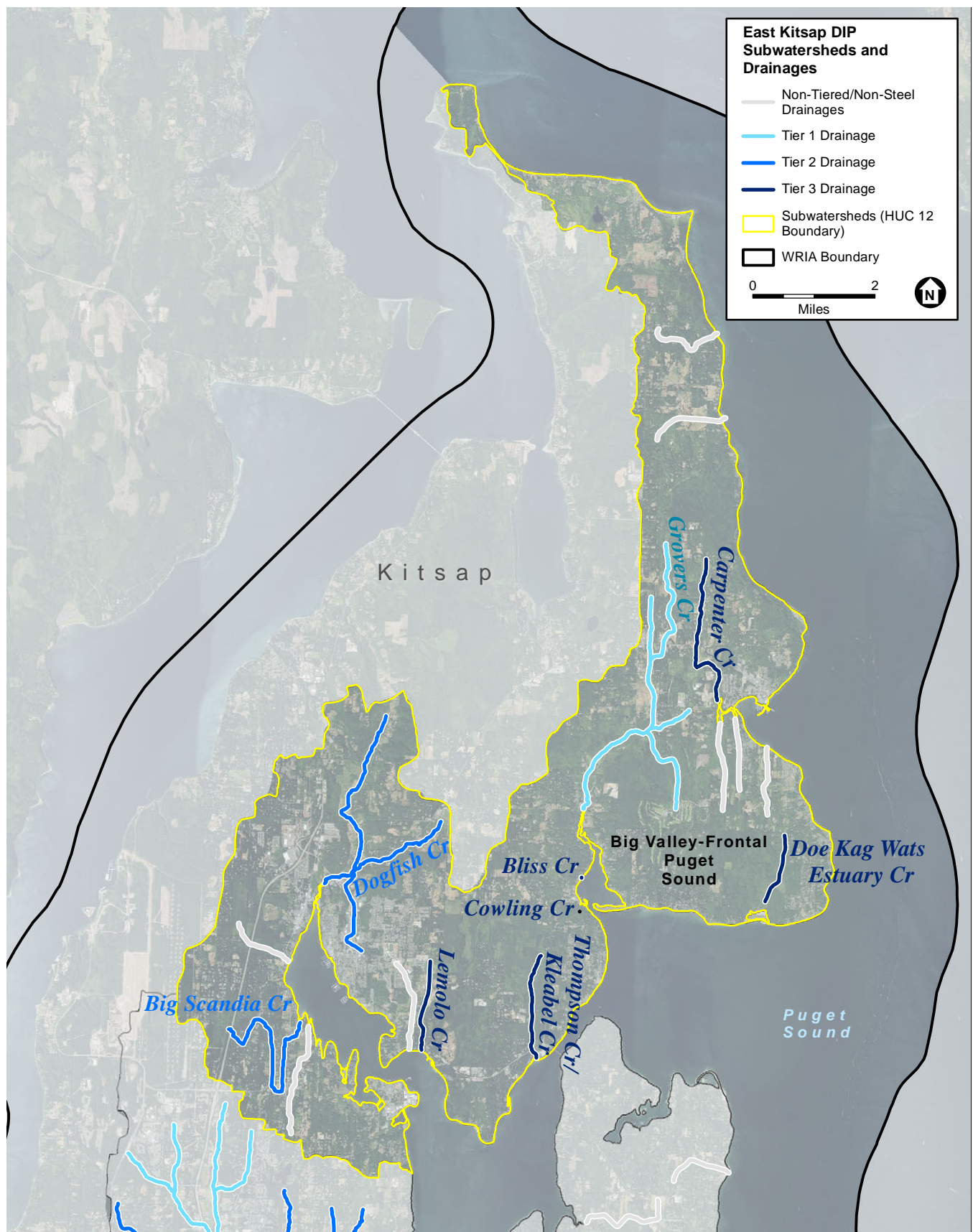
Because of the biological differences between steelhead and other threatened Pacific salmon species in Puget Sound, the management of steelhead demands a unique approach.

- The streams that steelhead use are often smaller than those used by Chinook salmon.
- Steelhead can extend further upstream in watersheds than chinook or chum.
- Unlike chum and Chinook, and more similar to coho, steelhead spend more time in streams before they migrate to Puget Sound, making them susceptible to water quality and quantity stressors, including low flows and warm temperatures in summer.
- After spawning, some female steelhead survive and can return to spawn again (kelts). These individuals are believed to dramatically boost the productivity of the population.
- Steelhead smolts are larger than those of other salmon species and they may be prone to higher rates of predation once they reach Puget Sound.

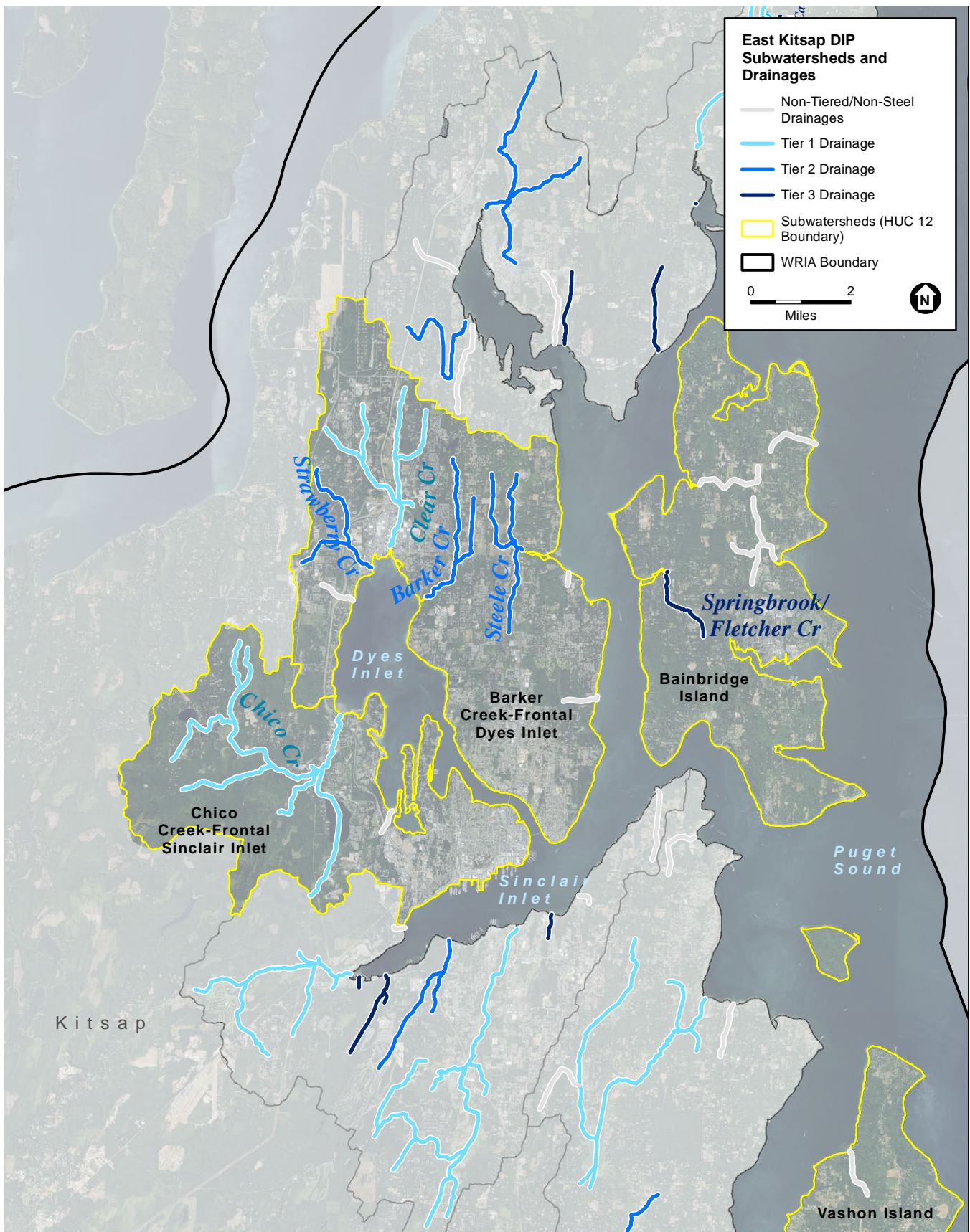


East Kitsap Geography

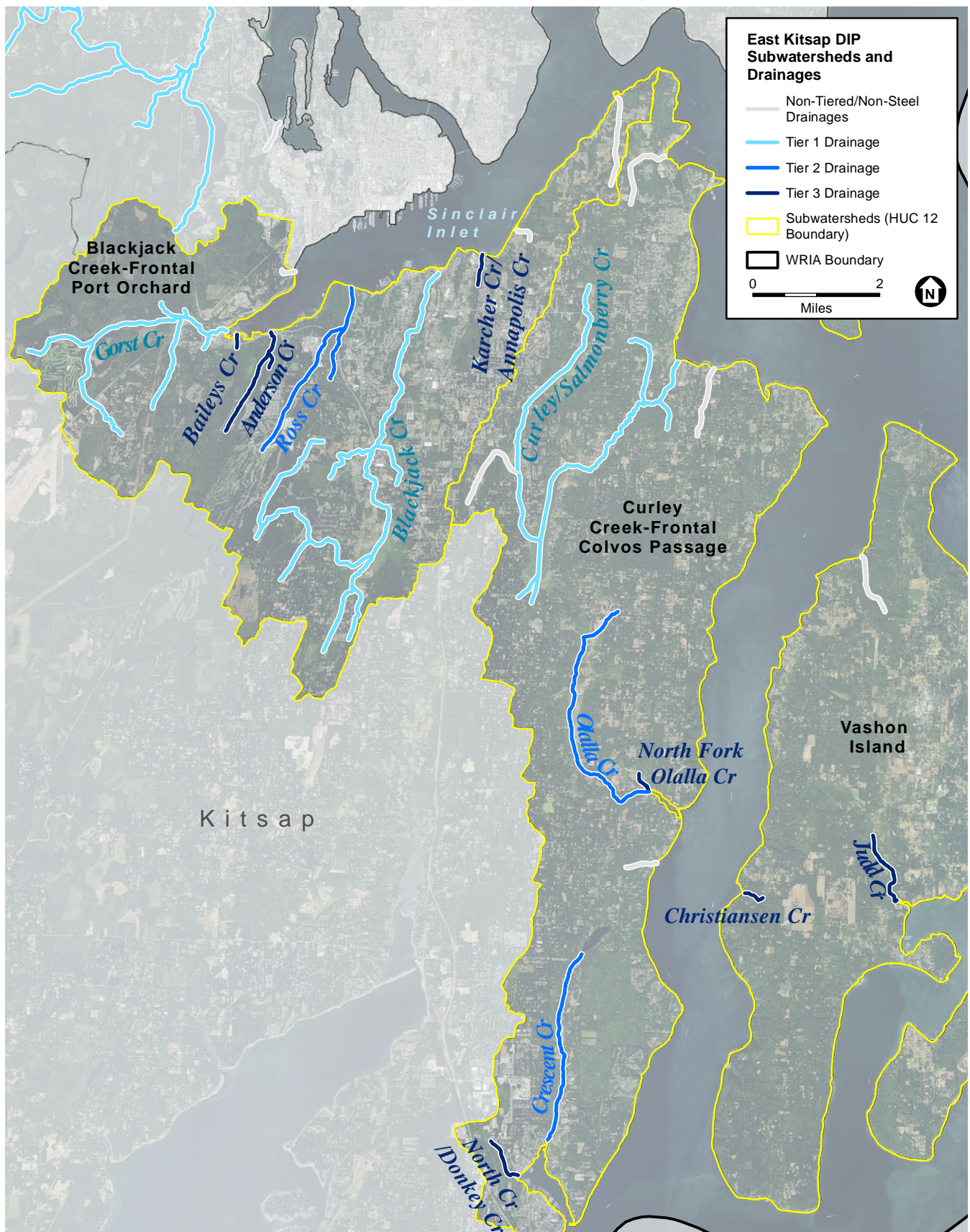
The East Kitsap DIP is comprised of 7 subwatersheds. Streams within each subwatershed were grouped into three tiers based on the extent of historically available steelhead habitat. Tiering priorities should be used in the development of future projects and as guidance rather than a strict requirement. Projects in lower tiers are still important to consider when consistent with the recovery strategies and where there is a demonstrated need.



East Kitsap: North



East Kitsap: Central



East Kitsap: South

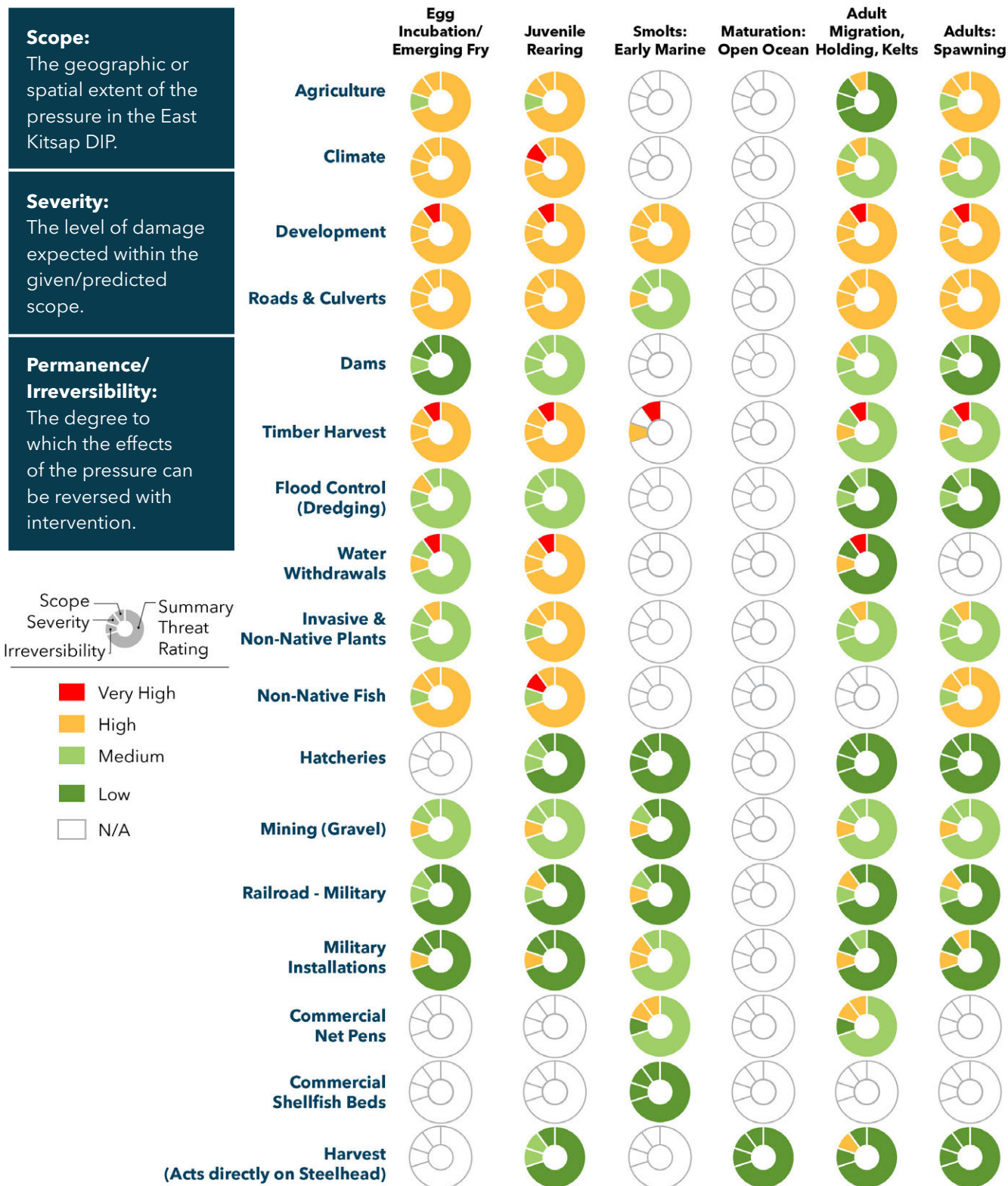
A pressure assessment was conducted to evaluate how numerous impacts from human activities affect the different steelhead life history stages in the East Kitsap steelhead population.

The pressure assessment rates the scope, severity, and permanence of each pressure as it relates to the various steelhead life history stages: adult spawning, egg incubation and emergence, juvenile rearing, smolts/early marine, maturation/open ocean, and adult migration, holding, and kelts.

Pressures and Stressors in East Kitsap



Pressure Summary Rating





Climate Change and Steelhead

Climate change is a multi-faceted pressure facing steelhead. This plan addresses climate change by considering impacts that will likely change the structure, extent, or function of habitat or directly affect steelhead survival.

The climate impacts to freshwater ecosystems that directly affect the quantity and quality of steelhead habitat include:

- Increased high flows associated with increased storms
- Decreased low flows in summer
- Higher water temperatures

Additional climate impacts on steelhead outside of freshwater include:

- Warming surface temperatures in the Pacific
- Changes in the marine foodweb, including increased predation
- Coastal squeeze impacting forage fish habitat
- Ocean acidification

The overarching approach for addressing climate change for the East Kitsap DIP is to identify and implement additional strategies and actions that adapt to climate change and address the pressures and stressors exacerbated by climate change, such as water availability, habitat connectivity and water quality.



Recovery Goals

If the strategies and actions identified in this plan are put into place, steelhead recovery goals are expected to be achieved.

Setting steelhead goals helps communicate a quantifiable and achievable population size that aligns with the vision set out for recovery. The Suquamish Tribe and partners based the population goals on historic extent of steelhead in the East Kitsap geography and used estimates of steelhead production from nearby streams. The abundance goal is expressed as a range (841-3,000). If the population is less productive, more spawners are needed to meet the recovery goal. If fewer fish are producing more offspring (higher productivity), then a lower number of spawners can achieve the recovery goal. Achieving the goals identified in the East Kitsap DIP Steelhead Recovery plan will lead to improved spatial structure and genetic diversity for Puget Sound steelhead overall and lead to delisting. Additional information will allow for setting and refining goals as more is known about this population.

East Kitsap DIP population goals

	<i>Productivity scenarios:</i>	
	Low = 1 Recruit/ Spawner	High = 2.62 Recruit/Spawner
<i>Abundance goals:</i>	3,000	841

This plan also sets long-term habitat goals for East Kitsap by identifying the most important habitat types for steelhead:

Upland Forest Cover

By 2070, forest cover extent is increased to or exceeds 65% in all seven subwatersheds.

Specific goals:

Unit: Sub-watershed	Desired Outcome (increase or maintain)	2070 Goal	Current Status
Big Valley-Dogfish	◀▶	≥ current levels	69% 21,621 acres
Barker-Dyes	▲	65%	43% 8,402 acres
Blackjack	▲	65%	61% 12,369 acres
Curley-Colvos	◀▶	≥ current levels	68% 18,123 acres
Chico-Sinclair	◀▶	≥ current levels	75% 9,348 acres
Bainbridge Island	◀▶	≥ current levels	70% 7,022 acres
Vashon Island	◀▶	≥ current levels	73%

Freshwater Wetlands

By 2070, freshwater wetland extent has increased beyond the current status in all seven subwatersheds.

Specific goals:

Unit: Sub-watershed	Desired Outcome (increase or maintain)	2070 Goal	Current Status
Big Valley-Dogfish	▲	> current levels	4.7% 1,477 acres
Barker-Dyes	▲	> current levels	3.9% 745 acres
Blackjack	▲	> current levels	4.2% 925 acres
Curley-Colvos	▲	> current levels	5.2% 1,373 acres
Chico-Sinclair	▲	> current levels	5.7% 703 acres
Bainbridge Island	▲	> current levels	3.7% 372 acres
Vashon Island	N/A	N/A	N/A

Riparian Areas

By 2070, riparian cover in all steelhead streams has increased

Specific goals:

Unit: Sub-watershed	Desired Outcome (increase or maintain)	2070 Goal	Current Status
Blackjack Creek	▲	> current levels	39% cover
Chico Creek	▲	> current levels	56% cover
Clear Creek	▲	> current levels	29% cover
Curley Creek	▲	> current levels	40% cover
Gorst Creek	▲	> current levels	69% cover
Grovers Creek	▲	> current levels	35% cover

Stream Channel: Accessibility

By 2030, steelhead can access 100% of historically accessible habitat in all six of the Tier 1 drainages (Blackjack, Chico, Curley, Clear, Gorst, Grovers).

By 2070, steelhead can access 100% of historically accessible habitat throughout the East Kitsap DIP geography.

Stream Channel: Floodplain Function

By 2070, increase connectivity and floodplain function in all primary steelhead drainages.

Water availability

By 2070, instream flows are sufficient and cool enough during summer low flow periods for all steelhead life stages to thrive in East Kitsap streams.

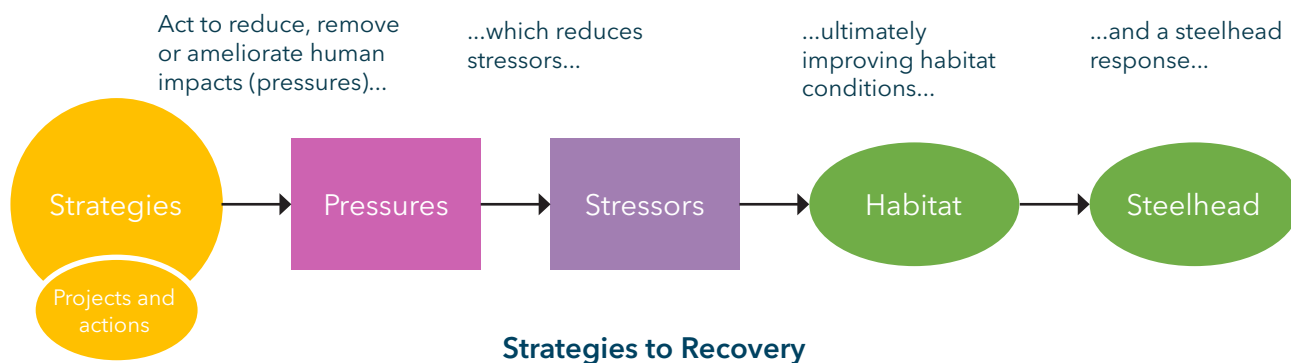
Marine foodweb

By 2070, forage fish have increased access to spawning and rearing habitat in East Kitsap and have robust populations throughout Puget Sound in balance with pinniped populations, so that sufficient numbers of steelhead smolts survive the migration through Puget Sound.

Strategies for Recovery

Over time, steelhead abundance and productivity will increase if stakeholders implement strategies that remove the pressures and reduce the stressors that impact steelhead habitat and populations in East Kistap. Eventually, these collective actions, including capital projects and policy improvements, will lead to recovery of the population.

The graphic below demonstrates how strategies lead to recovery of steelhead and habitat.



The Suquamish Tribe identified five principles to guide strategy development:

- | | | | | |
|---|--|--|--|--|
| <p>1</p> <p>Protect the best (most intact) habitat</p> | <p>2</p> <p>Manage for hydrologic maturity in forestlands</p> | <p>3</p> <p>Restore access and connectivity to freshwater habitats through fish passage and floodplain reconnection</p> | <p>4</p> <p>Protect and restore habitat on large parcels at risk of conversion to residential or commercial development</p> | <p>5</p> <p>Ensure adequate amounts of water in streams critical to steelhead freshwater life histories</p> |
|---|--|--|--|--|

The strategies identified in the plan to reach recovery of steelhead were developed using those identified in the Puget Sound Steelhead Recovery Plan, and local watershed assessments and salmon recovery

plans. The thirteen strategies articulated as necessary to reach recovery encompass freshwater protection and regulations, freshwater habitat restoration, marine improvements, and fisheries management.



Implementation

The strategies identified in this plan are intended to be implemented through projects and actions by a variety of stakeholders in East Kitsap, from elected officials to landowners.

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Certain organizations and stakeholders in East Kitsap will be particularly well suited to execute the strategies identified in the plan. The table below provides examples as to which entity could best implement each strategy

Strategy	Responsible Entities
Acquire and conserve priority steelhead habitat	Counties, cities, Tribes, land trusts, WDNR, WDFW
Enforce and improve land use regulations	Counties, cities, Tribes, non-profit partners
Protect water availability and water quality	Counties, cities, utilities, Tribes, non-profit partners, WDOE, EPA, Navy
Remove barriers to fish passage and longitudinal connectivity	Counties, cities, private landowners, non-profit partners, WDFW, WSDOT, Navy
Improve lateral habitat connectivity in the floodplain	Project sponsors (Counties, cities, Tribes, non-profit partners, WDFW)
Increase channel complexity	Project sponsors (Counties, cities, Tribes, non-profit partners, WDFW)
Restore and improve functional riparian corridors	Counties, cities, Tribes, private landowners, project sponsors
Increase hydrologic function and improve water quality	Counties, cities, Tribes, private landowners, non-profit partners, WDFW, WDOE, EPA
Protect and restore forage fish spawning and rearing habitat	Counties, cities, Tribes, non-profit partners, WDFW, Navy
Address artificial haul-out sites of pinnipeds	NMFS, Tribes, WDFW, PSP, Navy
Reduce predation in freshwater lakes	WDFW, Tribes
Prevent illegal/incidental harvest	WDFW, Tribes
Explore possible native hatchery program	NMFS, Tribes, WDFW

In this plan, Appendix C outlines a collection of specific recovery projects and action opportunities throughout the East Kitsap DIP referred to as the Ten-year Start List. These projects and actions are sourced from watershed restoration plans recently completed for watersheds in East Kitsap and have been thoroughly vetted by local stakeholders. These projects and actions are grouped into categories:

- Fish passage
- Floodplain restoration
- Riparian plantings
- Increased channel complexity
- Land use and zoning
- Acquisitions
- Nearshore

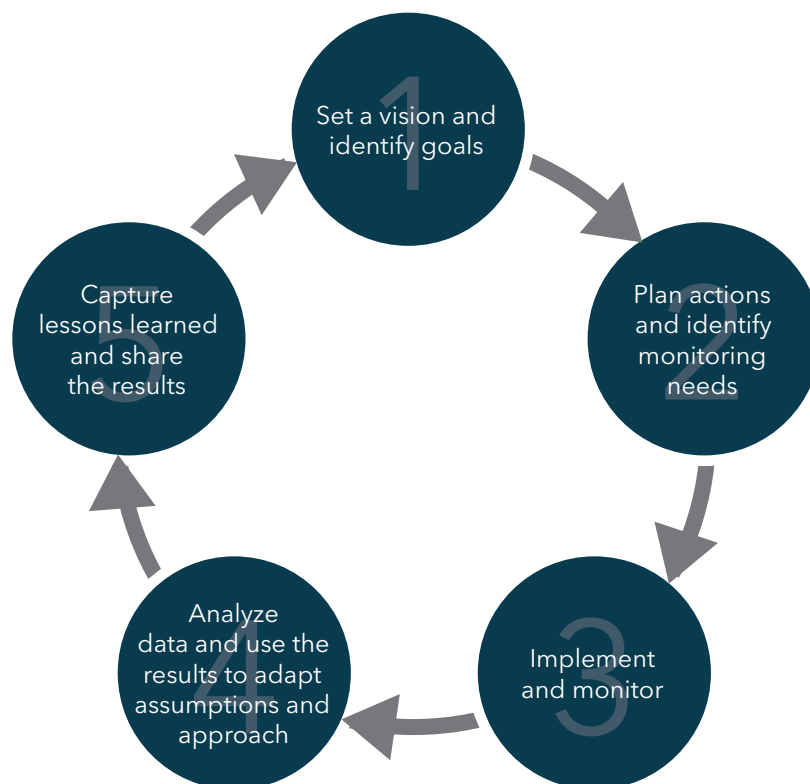
The actions and projects identified in the Ten-year Start List represent a starting point toward steelhead recovery in the East Kitsap DIP. Each project and action identified includes the project name, identification number, description, and projected outcome.



Adapting Over Time

This recovery plan was developed using an adaptive management framework with the understanding that as more research is conducted on East Kitsap and Puget Sound steelhead, gaps in information will be filled with new knowledge to advance the implementation of strategies in the plan.

In general, adaptive management consists of five parts.



The goals, strategies, and actions within the East Kitsap Steelhead Recovery Plan will benefit from new monitoring and research efforts.

Currently, there is little information or data that exists regarding steelhead biology or habitat use in East Kitsap. Collecting and incorporating new data and information about steelhead in the East Kitsap DIP is an important component of the adaptive management framework presented in this plan.

With new knowledge, new projects can be added to the Implementation Schedule, strategies can be revised, and goals can be made more specific with quantifiable targets. An annual steelhead roundtable where new information on steelhead data and projects are shared and discussed will assist with the adaptive management process. Additionally, leveraging the collaboration between stakeholders through the West Sound Partners for Ecosystem Recovery (WSPER) will be an important component in the adaptive management process.



The Suquamish Tribe would like to acknowledge the following organizations for providing their support and expertise to inform the development of this recovery plan:

Suquamish Tribe
Kitsap County
Pierce County
King County
City of Port Orchard
City of Bainbridge Island
City of Bremerton
City of Gig Harbor
City of Poulsbo
Wild Fish Conservancy
Mid-Sound Fisheries Enhancement Group
South Puget Sound Salmon Enhancement Group
Stillwaters Environmental Center
Bainbridge Island Land Trust
Key Pen Parks
National Oceanic & Atmospheric Administration
Puget Sound Partnership
Washington Department of Fish & Wildlife
Washington State Recreation & Conservation Office
Salish Sea Marine Survival Project Steelhead Technical Committee
Northwest Indian Fisheries Commission
West Sound Partners in Ecosystem Recovery

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