

WRIA 9 Salmon Habitat Plan – 2007 Amendments

Project MG – Icy Creek Acquisition

Project Description

This project is identified as a priority acquisition in King County’s “Last Best Places in the Green River Watershed”, State Parks Gorge Preservation plan, by the WRA 9 Steering Committee and by King County Executive Ron Sims. The project would protect 270 acres of forested uplands along the last wild section of the Green River Gorge. The project would also protect the instream flows of Icy Creek. Icy Creek is a year round spring fed stream with flows of 40-60 cubic feet per second. It has been classified as a source of clear, cold, pathogen free water that feeds the Green River. Chinook, Coho, and Steelhead spawn at the mouth of Icy Creek as it enters the Green River. It also protects numerous springs that feed into the Green River. There are five or more springs that either directly flow into the Green River or flow into Icy Creek from the gorge walls below the Icy Creek uplands.



Opportunities and Constraints

- Part of the last undeveloped upland view corridor on the Gorge.
- Adjacent to Hanging Gardens State Park to the east and by other land owned by Palmer Coking and Coal to the west. To the west the adjacent land is the Bass Lake / Icy Reach and would serve as the reach between Icy creek and the Bass Lake Complex.
- It is high quality habitat for bear, cougar, bobcat, elk, deer, coyote, pileated woodpecker, bald eagle, osprey, and hawks.
- By preserving the uplands it would provide a route for a regional trail from Flaming Geyser to Kanasket State park. It would also separate development from the Gorge and enhance the survival of wildlife in a rapidly developing area.
- It has existing historic trails as well as a network of hunting, horseback, mountain bike, and hiking trails.

LINKAGES
<p><i>Conservation Hypotheses Addressed</i></p> <p>Protecting water quality (All-1)</p> <p>Protecting and improving riparian vegetation (All-2)</p> <p>Protecting and creating/restoring habitat that provides refuge, habitat complexity (MG-1)</p>
<p><i>Habitat Management Strategies</i></p> <p>Rehabilitate riparian areas by establishing suitable native vegetation along banks of the mainstem and tributaries</p> <p>Substitute loss of slow water areas by creating new off-channel habitats and/or placement of large woody debris along banklines</p> <p>Substitute ecological processes with habitat features</p>

Project MG –

Lower Soos Creek Channel Rehabilitation Between Creek Miles 0.0 and 0.9 (Both Banks)

Project Description

This project would place large woody debris (LWD) pieces and jams along the lower 0.9 miles of Soos Creek, one of the two largest tributaries to the Green River downstream of the Howard Hanson Dam. Currently, there is a significant lack of wood in this reach. Lower Soos Creek provides overwintering refuge and year-round refuge for Green River salmonids.

Wood placed in the lower mile of Soos Creek would create scour pools, provide hydraulic and overhead cover, and increase habitat complexity for salmonids in a currently simplified channel. Deep pools will provide adult holding habitat for returning wild-origin and hatchery spawners. The wood placement also would provide refuge habitat for juvenile Chinook and other salmonids during high flows and provide rearing year-round rearing habitat. The installed wood would not impair upstream passage of adult salmonids or juvenile passage downstream. The LWD would not pose a risk to users of the Hatchery Natural Area. Also, if the LWD eventually enters the Green River, the logs would be within a zone restricted from boating (downstream of Highway 18).

Approximately 150 logs would be strategically placed by helicopter along the length of this lower reach. Large woody debris would be sized to the stream, flows, and gradient. Some anchoring would take place.

Opportunities and Constraints

- This reach is actively used by Chinook for overwintering and rearing.
- This project would complement the eight years of work that has gone into converting a plant community dominated by reed canarygrass, knotweed, blackberries, and English ivy into a native plant riparian community with over 8,000 planted trees and shrubs.
- This project would occur on King County natural resource lands and does not require the participation of nor would it affect other property owners.



Lower Soos Creek. Note healthy riparian vegetation and lack of large woody debris. Not visible are the hundreds of juvenile salmonids rearing in the stream when the photo was taken. July 2007 photo.

- This section of Soos Creek receives a very high use by the public in the fall because in most fishing seasons, children are allowed to fish for salmon in this area. This creates a good opportunity to educate people on how natural streams function and the role of LWD, as recommended in Salmon Habitat Plan Program WW-7: Increase Public Awareness about What Health Streams and Rivers Look Like and How to Enjoy Recreating on Them (page 7-7). Interpretive signs would be installed to explain the purpose of LWD, complementing signs already explaining the value of native riparian vegetation.

LINKAGES
<p><i>Conservation Hypotheses Addressed</i></p> <p>Protecting and creating/restoring habitat that provides refuge, habitat complexity (MG-1)</p> <p>Preserving and restoring spawning and rearing habitat in lower Newaukum and Soos Creeks (MG-4)</p>
<p><i>Habitat Management Strategies</i></p> <p>Substitute loss of slow water areas by creating new off-channel habitats and/or placement of large woody debris along shorelines</p>

**Project LG –
Frager Road Lower Riparian Improvement, RM 19.5-18.0 (Left Bank)**

Project Description

This project would set back some or all of Frager Road from RM 19.5 (the pedestrian bridge over the Green) and RM 18 (S. 212th Street Bridge). The road also functions as the levee and has an overly steep bank as well as one significant slump. Presently, the road does not provide sufficient freeboard above the base flood elevation so setback would allow improved flood protection as well. Levee setback would allow restoration on the resulting excavated bench and river bank involving placement of large woody debris and planting of native vegetation.



Upstream end of Frager Road Lower project area. Note 200 foot setback of homes on left bank. July 2007 photo.

Opportunities and Constraints

- Recent major residential developments in this area have provided Kent with a 200-foot shoreline setback, which may be used for future levee relocation to a stable, landward position.
- In addition to the shoreline setbacks already secured, the precise extent of this project may depend on voluntary participation by additional property owners (landward of Frager Road in the northern portion of the project) through easement or sale.
- There is a small grove of mature cottonwoods on a narrow floodplain terrace managed as a small park just upstream of S. 216th St. that would serve as a portion of the overall project action area.
- Upstream of S. 218th St., Frager Road has been closed to vehicular traffic and is managed by Kent as a paved trail.

Consistency with Policy MS-1

The project would be consistent with the policy to provide rearing habitat for the Lower Green River

LINKAGES
<i>Conservation Hypotheses Addressed</i>
Protecting and improving riparian vegetation (All-2)
Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)
Protecting and creating/restoring habitat that provides refuge, habitat complexity (Low-1)

Habitat Management Strategies

Rehabilitate existing banklines to create low velocity and/or shallow water habitat during juvenile migration

Rehabilitate riparian areas by establishing suitable native vegetation along banks of the mainstem and tributaries

Substitute loss of slow water areas by creating new off-channel habitats and/or placement of large woody debris along banklines

Substitute ecological processes with habitat features

**Project LG –
Riverview Plaza Off-Channel Habitat Rehabilitation, RM 13 (Left Bank)**

Project Description

This project would remove armoring on the existing shoreline, excavate approximately 1.7 acres of flood refuge for juvenile salmonid rearing habitat, install large woody debris and plant native vegetation to create riparian wetland and upland.



Riverview Plaza property, looking upstream on left bank. Photo courtesy of City of Tukwila.

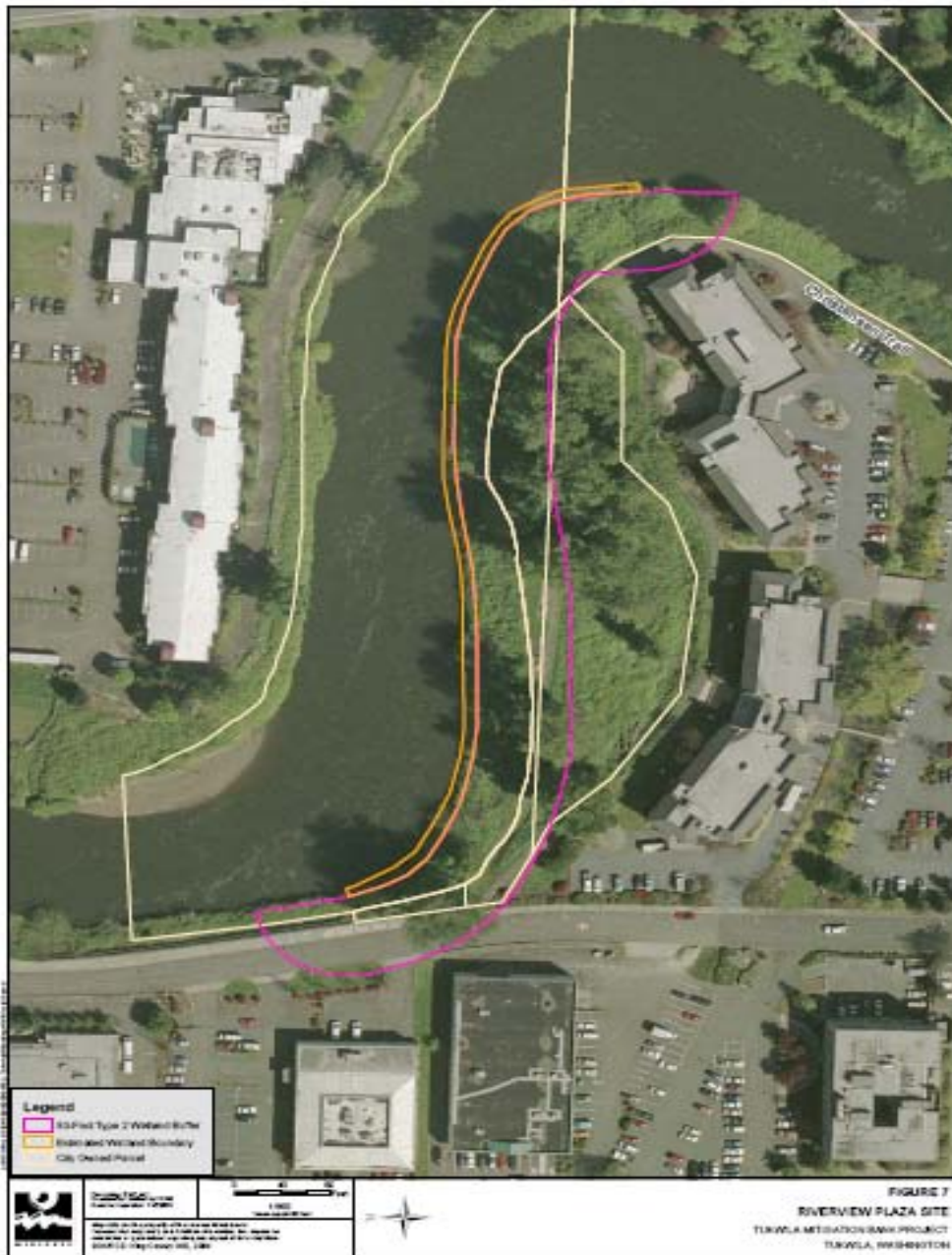
Opportunities and Constraints

- Part of the property is owned by the City of Tukwila and is used as a park (Duwamish/Green River Trail and picnic area). The rest of the area is in easements. The entire site is about 2.5 acres.
- The upland edge of the site is bordered by a Federal 205 Levee, which would provide continued flood protection. Rehabilitation work on existing levee may be necessary as part of the project
- Park use of the picnic area is relatively low and only the lower bicycle trail would be impacted. Public access to the river and interpretive signs could be incorporated into the project for non-motorized small craft launching and public education about salmonid habitat.
- Significant invasive vegetation exists in much of the site (Himalayan blackberry).
- Large existing cottonwood trees would be impacted by the project.

Consistency with Policy MS-1

The project would be consistent with the policy to provide rearing habitat for the Lower Green River.

LINKAGES
<p><i>Conservation Hypotheses Addressed</i></p> <p>Protecting and improving riparian vegetation (All-2)</p> <p>Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)</p> <p>Protecting and creating/restoring habitat that provides refuge, habitat complexity (Low-1)</p>
<p><i>Habitat Management Strategies</i></p> <p>Rehabilitate existing banklines to create low velocity and/or shallow water habitat during juvenile migration</p> <p>Rehabilitate riparian areas by establishing suitable native vegetation along banks of the mainstem and tributaries</p> <p>Substitute loss of slow water areas by creating new off-channel habitats and/or placement of large woody debris along banklines</p> <p>Substitute ecological processes with habitat features</p>



Aerial view of Riverview Plaza Off-Channel Habitat Rehabilitation at RM 13 (left bank)

**Project Duw –
Duwamish Slip 4 Restoration, RM 3.3 (Right
Bank)**

Project Description

This project will combine the cleanup of contaminated sediments with habitat restoration in the inner half of Slip 4. Slip 4 is a 3.8-acre “early action area” within the Lower Duwamish Waterway Superfund Site.

The partly armored/bulkheaded banks will be excavated to remove contaminated soils and laid back to create 0.1 acre of new aquatic habitat and 0.3 acres of new riparian areas. Following removal of contaminated sediments and bank soils, the subtidal, intertidal, and bank areas will be capped with clean sand, gravel, and rock, and large woody debris will be strategically placed.

The City will acquire the land, allowing conversion of land use emphasis from industrial/navigation to habitat. By eliminating deep berthing areas, the project will create new shallow subtidal habitat (0.3 acres at -10 to -4 feet) and upper intertidal habitat (0.5 acres at +4 to +12 feet), with no net change in lower intertidal habitat (-4 to +4 feet).

A concrete pier in Slip 4 will be demolished, removing over-water shading. Following the Superfund cleanup, emergent marsh and upland plants will be planted.

The City of Seattle is the lead for this project and is partnering with King County.

Opportunities and Constraints

- Cleanup and restoration will not go forward until the source control program has effectively minimized the risk of recontamination from stormwater drainage.
- While habitat opportunities have been maximized in the design, protection of adjacent private property and existing storm drainage infrastructure constrains the types and extent of habitat gains.
- The public is interested in participating in revegetation and associated maintenance efforts.



Looking north up Slip 4 from the Boeing Public Access. The project area is at the head of the slip, beyond the barge moored at left. December 2005 photo.

LINKAGES
<p><i>Conservation Hypotheses Addressed</i></p> <p>Protecting and improving riparian vegetation (All-2)</p> <p>Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)</p> <p>Expanding and enhancing vegetated shallow subtidal and intertidal habitats and brackish marshes (Duw-1)</p>
<p><i>Habitat Management Strategies</i></p> <p>Restore intertidal mudflats (below RM 7) and channel edge habitats (upstream of RM 7) to create low velocity and/or shallow water habitat</p> <p>Rehabilitate riparian areas in the entire subwatershed</p> <p>Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5</p> <p>Substitute ecological processes with habitat features</p>

**Project NS –
Camp Kilworth Acquisition in Federal Way**

Project Description

This project would protect 1,000 feet of high-quality, unarmored feeder bluff. It is part of a 25 acre lightly-developed Boy Scout Camp that is being purchased by the City of Federal Way for use as a park/open space. The entire length of shoreline is marked by bluffs that exceed 75 feet in height and are steeper than 40%. Tilting trees, tension cracks in the upper crest, and evidence of recent landslides indicate that this property is contributing sediment to the nearshore ecosystem. Littoral drift is to the west, likely contributing to the health of the unarmored nearshore at Dash Point State Park. The largely mudflat beach has extensive overhanging vegetation, large woody debris (perpendicular to the shoreline), and drift logs.



Camp Kilworth looking southeast. Building in center is 1934 Rotary Lodge. Nearshore sediment movement is to the west (right). September 2000 photo courtesy of the Washington State Department of Ecology.

It is envisioned that access to the shoreline would be created but no other substantial development would occur on the shoreline or at the top of the bluff.

Opportunities and Constraints

- Funding is nearly complete for acquisition. The project has already received grants totaling over \$1.8 million and the City has committed over \$1 million.
- For several thousand feet to both the east and west, the shoreline is either unarmored or lightly armored and has a high degree of native vegetation cover.
- This project would contribute to Federal Way’s retention of the distinction of having the lowest rate of shoreline armoring (42%) of jurisdictions in King County.

LINKAGES
<i>Conservation Hypotheses Addressed</i>
Protecting and improving riparian vegetation (All-2)
Preventing/removing armoring and fill (All-6)
Protecting/increasing vegetated shallow nearshore and marsh habitats (Near-2)
Protecting and restoring nearshore sediment transport processes (Near-3)
Protecting and expanding forage fish spawning areas (Near-4)

Habitat Management Strategies

Protect sediment recruitment and transport processes

Protect shallow water habitats

Protect intact riparian areas

Protect beaches, backshore and associated plant communities

**Project NS –
Des Moines Creek Estuary Restoration in Des
Moines**

Project Description

Phase I of this project would remove 500 feet of rock armoring near the mouth of Des Moines Creek and along shoreline areas adjacent to Des Moines Beach Park in order to restore natural beach slopes and allow natural sediment beach feeding from the shoreline bluffs north of the park. The stream channel would be re-constructed for a length of 25 to 50 feet. The stream mouth area would be planted with riparian and marsh vegetation.

Phase II includes the removal 250 feet of rock armoring and potential removal of the concrete seawall leading from the south side of the creek mouth to the marina.



Des Moines Creek estuary. July 2002 photo.

Opportunities and Constraints

- Des Moines Creek is the second largest stream in the WRIA 9 mainland nearshore.
- The City of Des Moines is re-developing the park elements that are on the National Register of Historic Places and intends to integrate habitat rehabilitation into that effort to restore the beach/estuary to its historic conditions.
- Millions of dollars has been invested in addressing stormwater quantity upstream, which should reduce the severity of extreme high flows and erosion/sedimentation.
- Fish passage under Marine View Drive was dramatically improved with completion in 2006 of a major culvert replacement project.
- Removing rock armor north of the City-owned park will require cooperation of property owners in the City of Normandy Park. One of these owners incurred expenses for the armoring (done by the City of Des Moines in 1991).
- Phase II requires the cooperation of a private party holding a long term lease from the City.

LINKAGES
<p><i>Conservation Hypotheses Addressed</i></p> <p>Protecting and improving riparian vegetation (All-2)</p> <p>Improving tributary access (All-3)</p> <p>Preventing/removing armoring and fill (All-6)</p> <p>Protecting/increasing vegetated shallow nearshore and marsh habitats (Near-2)</p> <p>Protecting and enhancing pocket estuaries and tributary stream mouths (Near-5)</p>
<p><i>Habitat Management Strategies</i></p> <p>Protect intact riparian areas</p> <p>Restore tributary mouths</p>

Project NS-17 Amendment: Functioning Nearshore Habitat Protection and Restoration on Vashon/Maury Island

Project Description

Approximately 50 different locations along Vashon/Maury Island shoreline were identified as priority for protection in the Salmon Habitat Plan (August 2005). In May 2006, most of these areas were re-identified for habitat protection by Anchor Environmental in "Prioritization of Marine Shorelines of Water Resource Inventory Area 9 for Juvenile Salmonid Habitat Protection and Restoration." Along with re-identifying those 50 areas, the prioritization report also identified an additional 17 sites to protect. These areas were prioritized using the same methodology as the 50 locations originally identified in the August 2005 Habitat Plan. A table showing the results of that analysis is attached (below). The prioritization report also identified four reaches where the Habitat Plan should "conserve/restore" the functioning habitat and 11 reaches to "restore" non-functioning habitat. These 15 areas will need additional analysis in the future to identify specific projects within the reaches.



Vashon/Maury Island shoreline showing healthy nearshore habitat. September 2000 photo courtesy of the Washington State Department of Ecology.

In summary, there are 17 new protection areas, and 15 new reaches prioritized for combined actions of restoration and protection, making a total of 32 additional projects along Vashon and Maury Islands. The scope of the projects will be determined through further analysis, on-site visits, and discussions with property owners regarding whether or not they wish to participate in protection and/or restoration efforts.

Opportunities and Constraints

This project depends on voluntary participation by property owners through easement, sale, or incentives.

LINKAGES
<i>Conservation Hypotheses Addressed</i>
Protecting and improving riparian vegetation (All-2)
Preventing/removing armoring and fill (All-6)
Protecting/increasing vegetated shallow nearshore and marsh habitats (Near-2)
Protecting and restoring nearshore sediment transport processes (Near-3)
Protecting and expanding forage fish spawning areas (Near-4)
Protecting and enhancing pocket estuaries and tributary stream mouths (Near-5)

Habitat Management Strategies

Protect and restore sediment recruitment and transport processes

Protect and restore shallow water habitats

Protect intact riparian areas

Protect stream mouths

Protect water quality where state standards are being met

Protect cool, clean surface and ground water

Protect current water quantity from further modification


Protect beaches, backshore and associated plant communities

Protect remaining salt marshes

Vashon/Maury Island Additional Protection Priorities

Project name	Bluff in Two Drift Cells	Bluff in Single Drift Cell	fish Spawning Habitat	Pocket Estuary	Marsh	Marine Riparian Vegetation	Sum of Points Assigned	Tier Level
North of parcel 24	0	1	4	3	0	1	9	1
North of parcel 1	0	0	4	3	0	1	8	2
Between Green Valley and Parcel 17	0	0	4	3	0	1	8	2
Between North and South Point Robinson Buffer	0	0	4	0	2	0	6	2
Between Dockton and parcel 31	0	1	4	0	0	1	6	2
Portage	0	0	4	0	2	0	6	2
North of Inspiration Point	0	1	4	0	0	1	6	2
Mouth of Shinglemill creek	0	0	0	3	2	1	6	2
South of Inspiration Point	0	0	4	0	0	1	5	2
South of 240th parcels	0	0	4	0	0	1	5	2
Maury Island Marine Park	0	1	0	0	2	1	4	3
Between Beall Beach and Klahanie	0	0	0	0	2	1	3	3
Between parcels 16 and 3	0	0	0	3	0	0	3	3
Between Klahanie and KVI	0	1	0	0	0	1	2	3
West of Tramp Harbor Addition	0	1	0	0	0	1	2	3
Between Tramp Harbor addition and Tramp Harbor East Block	0	0	0	0	2	0	2	3
Between parcels 2 and 16	0	1	0	0	0	1	2	3

Vashon-Maury Priority Project Areas for Discussion Purposes Only 4/4/07

 Vashon Greenprint Focus Areas (Draft 2007)

WRIA 9 Salmon Plan (2005)


 NS-17 Habitat Protection Actions

 Action Project Locations


Prioritization of Marine Shoreline Report (2006)

 Conserve

 Conserve/Rehabilitate

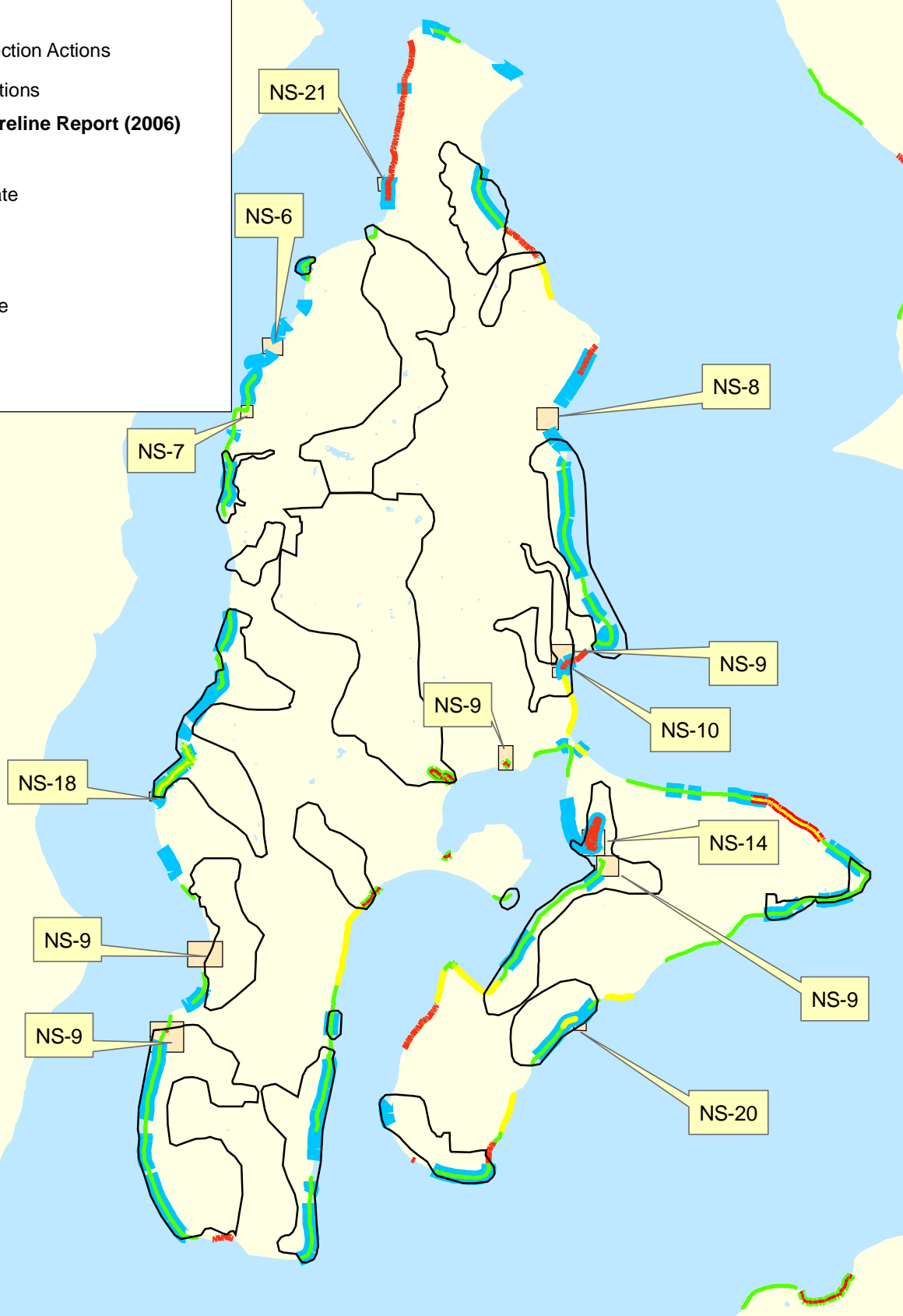
 Conserve/Restore

 Rehabilitate

 Rehabilitate/ Restore

 Restore

 Substitute



King County

 Miles
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