



National Coastal Wetland Conservation Grant Application

Nooksack River: Smuggler's Slough Estuary Restoration



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National Coastal Wetland Conservation Grant Program 2006

c. Project Statement: SMUGGLER'S SLOUGH ESTUARY RESTORATION

c(1). PROJECT DESCRIPTION AND NEED

The Washington Department of Ecology, in partnership with the Lummi Indian Nation, proposes to restore and conserve 250 acres of Nooksack River estuarine wetlands and restore tidal hydrology and fish access to 7.35 miles of slough and 38 acres of palustrine wetland habitats on and adjacent to this land. The Nooksack estuary is one of the most pristine and undeveloped estuaries in Puget Sound, and presents high potential for protection and restoration.

Wetland and tidal slough conservation actions will have beneficial impacts to numerous estuary-dependent fish, migratory birds, and other wildlife species. The Nooksack and its associated wetlands and estuarine channels provide important spawning, rearing and saltwater transition habitat for multiple salmonid stocks, including ESA listed anadromous bull trout and Nooksack native Chinook salmon, plus species of concern coho salmon, and ESA-proposed steelhead trout. Sockeye, pink and chum salmon also use these habitats, as well as sea run cutthroat trout, a winter spawning population of eulachon, and rare Nooksack dace and Salish sucker stocks. Preserving and restoring these habitats will provide long-term habitat benefits that address limiting factors for rearing and transitioning juvenile salmonids identified for the Nooksack Estuary in Water Resource Inventory Area 1 (WRIA 01) Salmon Recovery Plan.

This estuarine floodplain habitat also provides winter foraging and nesting habitat for federally listed bald eagles and dozens of other raptor species which nest and prey on large concentrations of migratory waterfowl including trumpeter swans, Canada geese, cavity-nesting and dabbling ducks, several species of herons, and shorebirds. A recent wildlife inventory of the nearby Tennant Lake Wildlife Area identified a number of state-listed and monitor species that use the site including peregrine falcons, ospreys, common loon, redneck grebe, green heron, wood duck, goshawk, merlin, band-tailed pigeon, snowy owl, black swift, pileated woodpecker, Pacific shrew, and the Townsend's big-eared bat. The restoration and conservation of this estuary slough, wetland, and river habitat is key to the long-term protection of these important rearing, foraging, nesting, and transportation habitats that are in turn critical to the health of numerous wildlife and fish species.

Acquisition and restoration of this tidally-influenced estuary wetlands is a priority for fish, wildlife, and natural resource scientists from Washington Department of Ecology, Washington Department of Fish and Wildlife (WDFW), the Nooksack and Lummi Indian Nations, Whatcom County, the Natural Resource Conservation Service, (NRCS), The Coastal Program in Puget Sound, and Ducks Unlimited, Inc. (DU). The Nooksack Recovery Team (NRT) and the Nooksack Salmon Enhancement Association (NSEA), broad-based community-supported watershed organizations, also fully support the project. The project is located in one of their targeted focus areas for salmonid recovery. Several of the above entities have committed to obtain funding and provide expertise to expand upon ongoing conservation and restoration work over the next 5-10 years.

In 1888, U.S. Coastal and Geodetic Survey maps prepared by J.J. Gilbert showed 8,785 acres of Nooksack estuarine wetlands. In 2004, wetlands mapping conducted by the Lummi Nation's Natural Resources Department identified 3,211 acres of wetlands remaining. Although this 64% loss of wetlands could be considered modest in comparison to other Puget Sound estuaries, the potential for preservation and restoration of these remaining wetlands is feasible and particularly compelling. Of the remaining 3,211 acres of wetlands, more than half is disconnected from its natural hydrology and fish access by dikes, roads and tide-gates.

Implementation of this project will support the *Pacific Coast Joint Venture Strategic Plan: Washington Component (1996)* (Section 7.2) and its objective of permanent securement of an additional 28,000 acres of marine, estuarine, and freshwater wetlands and associated upland habitats. More specifically, the project supports the finer-scale objective of securing an additional 2,000 acres of wetland habitats in the Nooksack Watershed, within the Whatcom County Target Area (Section 7.4.1). The project also supports the Focus Area plan objective to restore an additional 1,100 acres of diked wetlands in the same area (Section 7.2). These habitat securement and restoration activities will contribute to the Focus Area plan objectives for supporting waterfowl populations of 250,000 ducks, 20,000 Pacific Brant, 35,000 Wrangell Island Snow Geese, 10,000 trumpeter swans, and 500 Canada Geese (Section 7.3).

Estuarine wetland habitats have also been identified as a priority for shorebird conservation in the *Northern Pacific Coast Regional Shorebird Conservation Plan* (Section VII). This project supports regional objectives in the shorebird plan to "acquire diked former tidal wetlands and remove dikes to restore natural tidal influence of estuarine marsh." Additionally, the affected project area drains into Lummi Bay, which supports at least 4,000 shorebirds annually and has been identified in the regional shorebird plan as an important feeding and staging

area in western Washington.

The project contained in this proposal will advance the recommendations of the Washington State Water Resources Inventory Area 1 (WRIA 01) Salmon Recovery Plan (LNR, NNR 2005). The Nooksack Estuary is identified as the #2 Priority Area for Preservation and Restoration in the Plan. Recovery Plan priorities are based on the results of an Ecosystem Diagnosis and Treatment (EDT) salmon habitat model built for the Nooksack River (Moberg Biometrics 2003). This model developed hypotheses for factors limiting salmonid productivity and prioritized habitat protection and restoration efforts. The EDT model suggests factors limiting chinook abundance and productivity such as lack of juvenile rearing habitat, transitional habitat, lack of primary pools, elevated levels of fine sediment, excessive water temperatures, bed scour and diminished riparian function. The EDT model also identifies priority areas where protection and restoration efforts are expected to produce significant results. The *WRIA 1 Recovery Plan's Salmonid Habitat Restoration Strategy* priorities determine local project rankings and endorsements attached to projects submitted to the state, federal and private funding agencies for consideration for funding.

The proposal implements the following goals of *WRIA 01 Salmon Habitat Restoration Strategy*:

1. *Prioritize critical habitat to priority species*

The project targets limiting habitat factors for ESA-listed chinook and bull trout as well as other salmonid stocks of tribal significance, including coho salmon, a species of concern under ESA, and chum and pink salmon, steelhead, proposed for listing as threatened, and cutthroat trout. The Nooksack estuary has been designated in the *WRIA 1 Salmonid Restoration Strategy* as a High Priority for the restoration of habitats critical to the recovery of these species. The following table summarizes the respective priority rankings of estuary habitats in the *Restoration Strategy* for the respective Listed Species. Designation "A" is the highest priority ranking and "E" is the lowest.

2. *Focus on disruption of habitat-forming processes*

Restoration of the full hydrologic function to isolated wetlands and formally tidally influenced watercourses will restore natural habitat forming processes.

3. *Provide for life history-stage refugia and connecting habitats*

Restoring fish passage to 7.35 miles of channel and 38 acres of open emergent and palustrine wetlands that can serve as rearing and refugia habitats for juvenile salmonids.

Nooksack Estuary ESA Stocks Habitat Recovery Priorities		
Stock	Protection	Restoration
South Fork Early Chinook	A	A
North Fork Early Chinook	B	B
Fall Chinook	A	A
Bull Trout	C	C

The WRIA 01 Salmonid Habitat Restoration ranking for bull trout is probably understated due to a lack of specific knowledge of how this anadromous stock uses Nooksack estuary habitats. However, the USFWS Draft Bull Trout Recovery Plan outlines the following recovery actions that are accomplished by Smuggler’s Slough restoration activities:

a. Kwina Slough and Lummi Bay Tidegate Remediations – *“Bull Trout Recovery Action 1.2.4. Identify and eliminate or modify tide gates, pump stations, and flood gates blocking access to bull trout habitat. Inventory all tide gates, pump stations, and flood gates and evaluate the habitat blocked by each structure. Remove or modify those structures that block access to significant rearing and foraging habitats. ”*

b. Marine Drive Culvert Blockage – *“Bull Trout Recovery Action 1.2.3. Identify and eliminate culvert barriers. Inventory road crossing for blockages to upstream fish passage and where beneficial to bull trout and other native fish, remove, replace or improve existing culverts that impeded passage. Use existing inventories from State, Tribal, County, and U. S. Forest Service survey and watershed analyses, Water Resource Inventory Area's habitat limiting factors analysis, and WRIA's Ecosystem Diagnostic Treatment modeling, and conduct additional inventories where needed to identify key problem culverts. Develop a prioritized program with schedules for barrier culvert removal, replacement, or modification in local populations.”*

Citation: U.S. Fish and Wildlife Service. 2004. Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout (*Salvelinus confluentus*). Volume I (of II): Puget Sound Management Unit. Portland, Oregon. 389 + xvii pp.

The wetlands preservation purchases and the associated restoration projects proposed in this application are among the most immediately feasible Restoration Options from the Nooksack Estuary Habitat Assessment (Brown et al. 2005).

C (2). PROJECT OBJECTIVES

Protect and Restore

This proposed project will use National Coastal Wetlands Conservation Grant funds matched by the Washington State Salmon Recovery Funding Board State funds, to purchase and restore 250 acres of estuary wetlands. Within the acquisition target area (see Map #2) are 38 acres of palustrine emergent flooded, partially drained wetlands, 57 acres of palustrine emergent seasonally flooded, partially drained wetlands, 35 acres of forested and scrub-shrub wetlands and 116 acres of wetlands converted to agriculture.

Purchasing these properties will bring project partners a long way towards the overall objective of removing and modifying dikes and seawalls to restore the full tidally-influenced hydrology to this historical intertidal wetlands area. The restoration action supported by this grant will also remove three fish passage blockages which prevent access to the 38 acres of semi-permanently flooded palustrine emergent wetland habitat. The 116 acres of drained agricultural land in the project area is at the lowest topographic point in the Nooksack/Lummi River estuary and was historically high-quality wetland habitat. Once tide-gates and drainage ditches are removed, this area will again receive tidal influence from both Bellingham Bay and Lummi Bay tides. This potential change in hydrology makes it a superb target for wetlands restoration.

These fish passage projects are just the first in a number of ambitious estuary restoration projects to be developed based on a tribal study. The restoration treatment design for the Smuggler's Slough project is underway, having been funded by the Washington State Salmon Recovery Funding Board and the USFWS Tribal Landowner Incentive Program.

Specific Grant Objectives

Acquisitions for Preservation and Restoration

The property acquisition objective is to protect 250 acres of palustrine emergent, palustrine forested and converted wetlands by acquiring them and putting them under an environmentally protected status. The land is all current and historic wetlands and will be purchased Fee Simple by the Lummi Nation with an Environmental Easement deeded to Whatcom Land Trust to protect the property in perpetuity. The land purchases are also specifically designed to allow Lummi Natural Resources and its project partners to restore the tidal hydrology to Smuggler's Slough and Slater's Slough without the risk of flooding having an

adverse impact on adjacent landowners. Instead, the increased flooding will facilitate wetlands restoration objectives. The restoration of natural hydrology will also allow fish passage into the Howell wetland complex through Smuggler's Slough, potentially as far as Lummi Bay.

Restoration Treatments

Restoration elements of this project in the Nooksack estuary will remove two simple fish passage blockages and reconnect an historic channel. The treatments included in this proposal are based on the draft prescriptions of The Nooksack Estuary Salmon Habitat Assessment (Brown et al. 2005). These projects are just the first in a number of ambitious estuary restoration projects to be developed based on the study.

1. Kwina Slough Tide Gate: The first blockage to be removed is a non-functioning tide gate on the right bank of Kwina Slough at River Mile 0.5 (fig. 3). This flow and fish passage barrier is a one-way, concrete box culvert "flapper-type" tide gate embedded in the right-bank dike of Kwina Slough, a side channel that branches off of the main channel just above the Marine Drive Bridge and returns to the river at Fish Point. This tide gate blocks bi-directional flow and fish passage between side channel habitat and off-channel marsh and wetlands to the north. This wetland marsh habitat drains into the Smuggler's Slough channel that connects to Lummi Bay, where high salt marsh habitat and eelgrass meadows are maintained. We propose to remove the existing tide gate and replace it with equipment that will maintain flood protection but allow bi-directional fish and flow passage.
2. Marine Drive Culvert Replacement: The second blockage to be removed is a culvert that drains the marsh wetlands into the Smuggler's Slough channel beneath Marine Drive (fig. 3). The existing culvert is undersized, does not accommodate high flows and is perennially clogged with beaver dam materials. We propose to remove this culvert and replace it with a larger-diameter pipe. In addition, beaver dam "deceiver" devices will be attached to both ends to prevent debris clogging.
3. Lummi Bay Tide Gate Replacement: The third blockage to be removed is a series of functioning concrete box culvert, one-way "flapper-style" tide gates at the mouth of Smuggler's Slough in Lummi Bay (fig. 2). When the gates function as intended, they pass drainage out through the open flap door into Lummi Bay at low tides, and close upon the return of the tide. This action not only effectively blocks fish passage, but it also prevents salt water intrusion and tidal channel scour behind the tide gates. This has resulted in the destruction of historic salt marsh habitat and the

infilling of tidal channel habitat (LNR 2005). We propose to remove one or more of the five tide gates at the Lummi Bay mouth of Smuggler's Slough and replace it with self-regulating tide gate mechanisms that provide fish passage and good drainage. However, an inexpensive alternative to replacing tide gates at this site is the removal of one or more flaps on the existing culverts, allowing fish and water to pass bi-directionally, and natural habitat-forming processes to establish salt marsh and tidal channel habitat where it once existed.

Removing blockages #1 and #2 will restore tidal flows and fish passage to 38 acres of the Howell wetlands beaver pond complex's salmon rearing habitat and 7.35 miles of Smugglers' slough stream channel. With blockage #3 removed and both ends of the slough re-opened, it will provide a potentially important transportation corridor between the two bays. Lummi Bay is much shallower than Bellingham Bay, where the Nooksack River currently discharges. It provides abundant eelgrass habitat, which could serve as rearing habitat to emigrating juvenile salmon, dabbling ducks and other migratory bird species.

C (3). DISCRETE PROJECT BENEFITS

Project Benefits

This project will provide for the purchase and protection of 250 acres of palustrine wetlands and converted wetlands. The proposed restoration treatments will provide access to 7.35 miles of tidally influenced floodplain slough habitat and 38 acres of palustrine wetland that is currently blocked by tidegates, levees, and impassable culverts. The project also reopens the historic freshwater connection between the Nooksack River and Lummi Bay through Smuggler's Slough and Slater Slough. The project treatments will enhance important refuge habitat in the Kwina Slough transitional area. The purchases also provide future opportunities to restore wetlands functions to 116 acres of wetlands currently in agricultural status.

The wetlands preservation and restoration actions will have beneficial impacts on multiple species, including the ESA-listed salmon stocks. This estuarine floodplain habitat provides winter foraging and nesting habitat for federally listed bald eagles and supports unusual winter concentrations of migratory waterfowl including tundra and trumpeter swans, great blue herons, widgeon, pintail, mallard, canvasback, green-winged teal, and scaup. A recent wildlife inventory of the nearby Tennant Lake Wildlife Area identified a number of state listed and monitor species using the site including peregrine falcons, ospreys, common loon, redneck grebe, green heron, wood duck, goshawk, merlin, band-

tailed pigeon, snowy owl, black swift, pileated woodpecker, Pacific shrew, and the Townsend's big-eared bat.

Water quality benefits will result from the reduction in the use of agriculturally derived pollutants (fine sediments, manure, pesticides) and water temperature reduction due to improved riparian shading which is part of the restoration.

The properties to be protected and restored are adjacent to Lummi Nation and Washington State Department of Natural Resources properties already placed in protected status. Lummi Nation will own 202 acres of property within and adjacent to the project footprint. The preservation parcels and restoration sites in this proposal are just across the river from the 535-acre Tennant Creek - Silver Creek - Marietta Slough natural area owned by the Washington State Department of Fish and Wildlife (WDFW). This wildlife and fisheries habitat site is protected primarily under a USDA Natural Resource Conservation Service conservation easement. Over 350 acres of the Tennant Creek - Silver Creek - Marietta Slough property have been restored, with instream and riparian work completed. North of the Tennant Creek natural area is an additional 1,580 acres of left bank Nooksack natural area preserved by WDFW and Whatcom County Parks running from Slater Road to the City of Ferndale. The currently protected adjacent property provides a total of 2,020 acres of environmental preserve along the tidally influenced lower Nooksack left bank and 202 acres in the Kwina Slough - Slater Slough right bank wetlands complex. Purchases in this proposal will bring the total protected acreage in the area up to 2,422.

Other benefits to the public will include improved access to a large natural area with opportunities for hiking, biking, wildlife viewing, waterfowl hunting, fishing, and improved opportunities for educational programs through local schools, universities and Whatcom County Parks. A trail will connect the Nooksack Delta to the Lummi River Delta and will feature interpretive stations. A kiosk at the trail-head will provide information on the project's environmental benefits and the partnership that made them possible.

Restoration Project Monitoring

Without significant monitoring, project benefits cannot be verified, therefore, the Lummi Natural Resources Department is developing an *Estuary Instream Project Monitoring and Evaluation Plan*, which will seek to find out if the conditions of the channel, fish habitat and hydrology are responding to the project as expected. The plan will follow the formats presented in the *Standard Methodology for Conducting Watershed Analysis* (Washington Forest Practices Board 1997) and *Guidelines for Preparing TFW Effectiveness Monitoring Plans* (Schuett-Hames 2000) and the applicable Ambient Monitoring Program modules. Funding outside

National Coastal Wetland Grant funds will be sought to accomplish the monitoring work.

Habitat elements that will be monitored include salinity and salinity stratification of Kwina Slough and Smuggler's Slough to assess changes in salt wedge penetration. Hydraulic connectivity and flow at various river stages and tides will be monitored in reconnected channels. Lummi Natural Resources will monitor changes in channel cross-section and in the availability of salmon food resources, as well as map other changes in habitat quality produced by the hydraulic modifications. For most of the monitoring attributes, data will be collected at least annually.

In addition to monitoring habitat and channel processes restored by the project, the monitoring plan will address fish utilization of the project sites in comparison to reference reaches. The goal of the fish utilization monitoring is to demonstrate an association of targeted salmonid species with the project at a variety of spatial scales. The association will be expressed in changes in the distribution and abundance of salmonid adults and juveniles over a period of at least five years. The assumptions of the fish utilization monitoring include (Washington Forest Practices Board 1997):

- Fish distribution is a function of the quantity and quality of available habitat types.
- Fish abundance is dependent on the success of each life phase, which is limited in part by the quantity and quality of habitat available for each life stage.
- Factors that limit salmonid abundance can be accurately described as the sum of reach level habitat conditions.
- Habitat conditions within a reach accurately reflect incremental impacts to both salmonid habitat and production.

Fish presence and utilization data will be gathered frequently during spring and summer juvenile rearing periods.

Duration of Benefits

The restoration projects will be designed to function with a minimum of ongoing monitoring and maintenance for 25-50 years. This is well within the window of opportunity to reverse the decline of target salmon species, and to protect and provide habitat for migratory birds. The acquisition activities will extend into perpetuity.

C(4). PROJECT APPROACH TO MEET OBJECTIVES

The Nooksack River Smuggler’s Slough project will be implemented through a project partnership between the Washington Department of Ecology (WDOE) and Lummi Indian Business Council. Lummi Indian Business Council (LIBC) will implement the project and provide the bulk of the match. Land acquired will be held in title by LIBC (in the case of Native Trust Properties, by the BIA for LIBC). Whatcom Land Trust will hold an Environmental Easement on the property to ensure that its environmental value is protected in perpetuity. WDOE will hold a third-party beneficiary interest in the Environmental Easement.

Additional participating agencies will include Northwest Indian College, Nooksack Salmon Enhancement Association for public outreach and education, and Washington Department of Fish and Wildlife, the Whatcom County Public Works Road Division, and Whatcom County Diking District #1. The contributions of the latter two agencies will consist of review and approval of design alternatives, detailed project design and construction practices and standards. The NRCS Wetlands Reserve Program and Ducks Unlimited, Inc. will be involved in coordinating companion projects for wetlands restoration. NRCS has funding allocated in 2007 for these federally supported companion projects.

The Realty Division of the Lummi Indian Nation Planning Department will make the land purchases and is currently developing Purchase and Sale Agreements for two SRFB-funded acquisition parcels totaling 76 acres. There are two other landowners who have already expressed an interest in selling property for the project and outreach is being done to other property owners within the project footprint. (See Map 2)

Project Milestones

Activity	Estimated Date	Responsible Entity
Complete appraisals	Summer 2007	Lummi Realty Division
Complete purchase and register deeds with Environmental Easement	Spring 2008	Lummi Realty Division
Complete preliminary restoration project design	Winter 2007	Lummi Natural Resources
Complete engineering design	Spring 2007	Lummi Natural Resources

Acquire Permits	Winter 2008	Lummi Natural Resources
Complete channel, tide-gate and levee modification work	Summer 2008	Lummi Natural Resources
Monitor project results	Summer 2008 Thru 2012	Lummi Natural Resources

C (5). PROJECT LOCATION

The project is located at the mouth of the Nooksack River in Whatcom County (T 38N, R2E, Sec. 7) in the northwest corner of Washington State.

The attached project maps show various details in order to provide a geographic context to the proposal. Map 1. shows the general location of the project area in Whatcom County within the state of Washington. Map 2. shows the project area in the Nooksack estuary and distinguishes between property already in Lummi Indian Business Council ownership and parcels within the project footprint in other ownerships.

Attached Maps 1 & 2

Vicinity Map
Project Site map

Attached Photos 1 & 2

C(6). PROJECT BUDGET

National Coastal Wetlands Conservation Grant 2006			6-1-06
Washington State Department of Ecology - Lummi Indian Business Council			
Nooksack River Watershed			
Smuggler's Slough Estuary Restoration			
	Coastal	State Funds	Total
Item	Funds	Match	Project
Administrative Costs	\$ 10,000	\$ 0	\$ 10,000
Appraisals, fees, etc	\$ 30,355	\$ 16,999	\$ 47,354
Subcontracted Restoration	\$ 120,000	\$ 140,000	\$ 240,000
Capital Purchases 250 ac	\$ 545,000	\$ 135,000	\$ 680,000
Subtotal	\$ 705,355	\$ 291,999	\$ 997,354
Total Match %		29%	
Secured Non-Fed Match	\$ 264,338	91%	
Pending Non-Fed Match	\$ 27,661	9%	

The most significant expenditures in the project budget are “Capital Purchases” for the land acquisitions and “Subcontracted Restoration” that will cover costs of consultants for restoration project design and permitting and for contractors for alterations to tide gates, sea walls and culverts.

C (7). Attached

C (8). Attached

C (9) DESCRIPTION OF STATE TRUST FUND

Washington has a trust fund for habitat conservation. One component of this trust fund is a state fund created for acquisition and restoration of lands critical to salmon species recovery in Washington and administered by the Salmon Recovery Funding Board (SRFB). Under this program key salmon habitat improvements are identified by local communities in the watershed, and ‘lead-entities’ prioritize these and make requests to the SRF Board for project support. The Nooksack Basin (WRIA 1) has received over \$6,000,000 in the past six years from the SRFB for salmon recovery work. Among the SRFB projects that support

this effort, but not included as match, are the 71-acre Kwina Slough purchase and the 320-acre Lower Nooksack – Marietta Slough project.

Another component of Washington’s trust fund is the Washington Wildlife and Recreation Program (WWRP), which supports the acquisition of wildlife habitat and recreation lands that contribute to the ecological benefit and recreational needs of the state. In the first five years of the program from 1990 to 1995, \$179 million was spent, resulting in thousands of acres of habitat and recreation land protection. That effort continues in 2006, with a legislative appropriation of \$50 million for the 2005-07 biennium. Although these funds do not constitute the match for this particular proposal, they are an important piece of the state’s habitat trust fund and afford a great opportunity to state agencies as match dollars for federal grant land-securing proposals.

A third component of the state’s trust fund is the Washington State Interagency Committee for Outdoor Recreation’s Aquatic Lands Enhancement Account (ALEA), which uses funds raised from shellfish harvest fees to protect coastal resources through purchase and conservation easement, assists with restoration, and provides for public access.

C (10) OTHER CURRENT COASTAL ACQUISITION, RESTORATION, ENHANCEMENT AND MANAGEMENT ACTIONS

Smuggler’s Slough builds upon the impacts of three previous National Coastal Wetlands Conservation Grant projects that have had a direct bearing on the objectives of the Smuggler’ Slough Estuary Restoration.

1. Lower Nooksack River Acquisition and Restoration 2002. This 324-acre project has restored tidally influenced estuarine channels and wetlands on the Nooksack left bank directly west from the Smuggler’s Slough site (See Project Site Map). This Lower Nooksack River – Marietta Slough project not only contributes to over 2000 acres of Nooksack river estuarine wetlands restoration on the river’s left bank, but serves as a model for potential treatments in the Smuggler’s Slough project.

2. North Fork Nursery 1999. This 151-acre acquisition and riparian restoration project in the Nooksack North Fork was sponsored by Whatcom Land Trust, with LIBC providing riparian restoration treatments to the properties purchased and preserved. The North Fork Nursery project impacts spawning habitat for all Nooksack salmonid species, including North Fork chinook salmon, bull trout and steelhead trout. Juveniles produced in the North Fork depend upon the Nooksack estuary for critical rearing and transitional habitats.

3. Middle Fork Meander 1999. This 116-acre acquisition and riparian restoration project in the Nooksack Middle Fork was sponsored by Whatcom Land Trust, with LIBC providing riparian restoration treatments to the properties purchased and preserved. The Middle Fork Meander project impacts spawning habitat for all Nooksack salmonid species, including North Fork chinook salmon, bull trout and steelhead trout. Juveniles produced in the Middle Fork depend upon the Nooksack estuary for critical rearing and transitional habitats

C (11) PUBLIC INVOLVEMENT AND EDUCATION

The project site will serve as an outdoor classroom for Lummi Tribal School and Northwest Indian College (NWIC) students. (See NWIC Letter of Commitment.) NWIC students have frequently been recruited in the past to collect and analyze field data for LNR-directed projects, and were recently tapped to collect water quality and macro-invertebrate data in Smuggler's Slough for the estuary habitat assessment (LNR, 2005). NWIC science faculty have committed to working with LNR staff to develop a monitoring plan that will be partially implemented by NWIC students eligible for National Science Foundation stipends.

Lummi Tribal School students participate in the Nooksack Salmon Enhancement Association's (NSEA) Students for Salmon program that provides an environmental curriculum for fifth through seventh grade students. This program is based on the study of and participation in watershed restoration activities and projects. Projects in the past have included winter tree planting in riparian areas of the Nooksack River and its tributaries, guided by NSEA staff and LNR restoration department staff (See NSEA Letter of Commitment). Other outreach vehicles will include regular articles in the Lummi Squol Squol Magazine and the Bellingham Herald. Thousands of strollers, bird watchers and dog walkers will view the scientific benefits of the project on at a project kiosk and have native plants identified along an interpretive trail (part of a subsequent project phase). A professionally produced project video will be viewed on local cable TV and be of the quality required for national distribution.

**Summary Information for Ranking National
Coastal Wetlands Conservation Grant Program Proposals**

Title: Nooksack River: Smuggler’s Slough Estuary Restoration

Costs: Coastal Wetlands Program Request	\$ 705,355
State (Interlocal)	\$ 20,000
Other (Federal)	\$
Other (Non-Federal)	\$ 271,999
Total	\$ 997,344

Project Match consists of Washington State Salmon Recovery Funding Board grant money awarded to the Lummi Indian Business Council (LIBC) for the project and contributed by LIBC under the terms of and Interlocal Agreement.

Summary: Description of the project and its resource benefits.

The Washington Department of Ecology, in partnership with the Lummi Indian Nation and other partners, proposes to conserve, restore and protect 250 acres of Nooksack River estuarine wetlands and restore tidal hydrology to habitats on and adjacent to this land that are significant to the recovery of ESA-listed chinook salmon, bull trout and wetland dependent plant and wildlife species.

(1) Wetlands Conservation: What is the breakdown by habitat type for the wetlands being conserved? (Only include the acres covered by this proposal)

This proposed project will use National Coastal Wetlands Grant funds matched by Washington State Salmon Recovery funding board State funds to purchase and restore 250 acres of estuary wetlands. Within the acquisition target area (See Map #2) are 38 acres of palustrine emergent flooded, partially drained wetlands, 57 acres of palustrine emergent seasonally flooded, partially drained wetlands and 35 acres of forested and scrub-shrub wetlands and 116 acres of wetlands converted to agriculture.

In 1888 U.S. Coastal and Geodetic Survey maps prepared by J.J. Gilbert showed 8,785 acres of Nooksack estuarine wetlands. In 2004, wetlands mapping conducted by the Lummi Nation’s Natural Resources Department identified 3,211 acres of wetlands remaining. This project will use NCWC funds to purchase and preserve 250 acres of palustrine emergent, palustrine forested and converted wetlands. Although much of this property has been drained and cultivated for pasture and cropland, much of it is reverting to shrub-scrub and forested wetland habitat. Some of the historic riparian corridor remains intact along Smuggler’s Slough. An on-site native vegetation seed bank that will

facilitate restoration of native plant communities to previously cultivated areas. There are sections of the channel lined with mature red alder and a mix of willow, Nootka rose, snowberry, red elderberry, salmonberry, pacific ninebark, hardhack, and red-osier dogwood. In perennially inundated areas, native cattails have established.

Habitat type	Number of acres	Percentage of total project area
Declining coastal wetlands	250	100%
Stable coastal wetlands		
Total wetlands	250	100%
Upland		
Total project acres	250	100%

(2) Maritime Forest on Coastal Barriers: What plant species are present that are indicative of maritime forest as defined in the criteria?

This project occurs in the Pacific Northwest so criteria are not applicable. This project does not impact maritime forests on coastal barrier islands.

Common name	Scientific name	Prevalence (rare, common,
N/A		

(3) Long-term conservation: How long will the habitat benefits be provided by the project?

The restoration projects will be designed to function with a minimum of ongoing monitoring and maintenance for 25-50 years. This is well within the window of opportunity to reverse the decline of target salmon species, and to protect and provide habitat for migratory birds and other wildlife. The acquisition activities will be extended into perpetuity.

	Benefits in perpetuity (number of acres)	Benefits for 26-99 years (number of acres)	Benefits for 10- 25 years(number of acres)
Easements			
Fee-title (no restoration)			
Fee-title (that will also be restored)	250		
Not acquired, Restored only			
Not acquired, Enhanced only			
Other (please explain)			
Total	250		

(4) Coastal watershed management: How will this project help achieve the goals of specific management plans and efforts?

Management plan or effort	How this project helps implement its goals
<i>Puget Sound Chinook Salmon Draft Recovery Plan WRIA 1 Salmon Recovery Plan (WRIA 1 Lead Entity 2005) (NOAA 2006)</i>	Preservation and restoration of estuary habitats critical for multiple life stage needs of anadromous fish including 3 ESA Listed stocks.
<i>WRIA 1 Salmon Recovery Plan (WRIA 1 Lead Entity 2005)</i>	Preservation and restoration of estuary habitats critical for multiple life stage needs of anadromous fish including 3 ESA Listed stocks.
<i>Nooksack River Estuary Habitat Assessment (LNR 2005)</i>	This proposal implements specific recommendations for preservation and restoration contained within the report.
<i>Washington Comprehensive Wildlife Conservation Strategy (WDFW 2005)</i>	The project will benefit identified Species of Greatest Conservation Need and their habitats by acquiring and restoring diked former tidal wetlands and restoring natural tidal influence.

<i>Northern Pacific Coast Regional Shorebird Management Plan (sec. VII)</i>	The project will acquire and restore diked former tidal wetlands and restore natural tidal influence to improve shorebird habitat.
<i>Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3). Northern Puget Sound Focus Area</i>	As part of a networked strategy for managing migratory populations of waterfowl, shorebirds, falcons, raptors, and neo-tropical species on a flyway basis, this project will address the objectives of the PCJV Strategic Plan (Washington 1996 Update) and link with projects to the north sponsored by Ducks Unlimited Canada, the Canadian Fish & Wildlife Service and B.C. Fish & Wildlife.
<i>Significant Wildlife Areas of Whatcom County, (Whatcom County Planning, 1993)</i>	The project will preserve and restore wetlands areas listed in the plan.
<i>Regional Wetland Concept Plan (USFWS, 1990)</i>	The project will preserve and restore wetlands areas listed in the plan.
<i>Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout (Salvelinus confluentus).(USFWS, 2004)</i>	The project will eliminate or modify culverts, tide gates, pump stations, flood gates and other blockages to bull trout habitat. The project addresses recovery actions 1.2.4 and 1.2.3.
<i>Lummi Nation Storm Water Management Plan (LNR, 2000)</i>	The project will protect Reservation surface water and tribal tideland resources from contamination by reducing the potential for Ag. Land runoff.
<i>Lummi Nation Wetland Management Program (LNR, 2000)</i>	The project will protect surface water resources including tidelands and estuaries and also protect both wetland functions and property owners.
<i>Washington State Priority Habitat and Species (WDFW)</i>	Protects and restores freshwater and tidally influenced wetland habitats important to all species.
<i>Puget Sound Water Quality Management Plan (Puget Sound Action Team)</i>	The protection of estuarine habitat in Puget sound is designated as a high priority in this plan,
<i>Puget Sound Conservation and Recovery</i>	Puget Sound is one of 17 estuaries

<i>Plan 2005-2007 (Puget Sound Action Team)</i>	included in the National Estuary Program. The project will address the following program priorities: restore degraded nearshore and freshwater habitats, and Conserve and recover orca, salmon, forage fish and groundfish
<i>Lummi Nation Flood Damage Reduction Plan (LNR, 2001)</i>	This project implements specific recommendations to improve channel complexity, increase habitat quality and quantity for salmonids, and reconnect the river with the floodplain.
<i>Lower Nooksack River Comprehensive Flood Hazard management Plan (Whatcom County Department of Public Works, 1999)</i>	This project implements specific recommendations for property development buyouts in the 100-year floodplain of the Nooksack River
<i>Partners in Flight Westside Lowlands and Valleys Plan (Altman 2000) and Westside Coniferous Forest Plan (Altman 1999)</i>	The project will preserve and restore wetlands used as foraging habitat for several upland nesting focal species (i.e., aerial insectivores) and upland habitats used for nesting by several focal species
<i>FWS Regional Wetland Concept Plan</i>	The Nooksack Delta is identified as a “key wetland acquisition site”
<i>Concept Plan for Wintering Waterfowl</i>	Lummi Bay habitats are listed as potential acquisition sites.

The project addresses specific recommendations of the WRIA 1 Salmon Recovery Plan and the Nooksack Estuary Assessment. It also addresses the Draft Recovery Plan for Coastal Puget Sound Bull Trout. Implementation of this project will support the objective for permanent securement of an additional 28,000 acres of marine, estuarine, and freshwater wetlands and associated upland habitats in the Northern Bays and Straits Focus Area of the *Pacific Coast Joint Venture Strategic Plan: Washington Component* (Section 7.2). More specifically, the project supports the finer-scale objective of securement of an additional 2,000 acres of wetland habitats in the Nooksack Watershed of the Whatcom County Target Area (Section 7.4.1). The project also supports the Focus Area plan objective to restore an additional 1,100 acres of diked wetlands in the same area (Section 7.2). These habitat securement and restoration activities will contribute to the Focus Area plan objectives for supporting waterfowl populations of 250,000 ducks, 20,000 Brant, 35,000 Snow Geese, 10,000 swans, and 500 Canada Geese (Section 7.3).

(5a) Conservation of Threatened and endangered species: What are the benefits to federally listed species?

Common Name	Scientific Name	Status	Project Benefits	Does the project support goals of a Recovery Plan or HCP?
S.F. Spring chinook salmon	<i>Oncorhynchus. tshawytscha</i>	Threatened	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
N.F. Fall chinook salmon	<i>Oncorhynchus. tshawytscha</i>	Threatened	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
bull trout	<i>S. confluentis</i>	Threatened	transitional habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions. Draft Recovery Plan for the Coastal-Puget Sound bull trout, recovery actions 1.2.4 and 1.2.3
coho salmon	<i>O. kisutch</i>	Candidate	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
eulachon	<i>Thaleichthys pacificas</i>	Candidate	spawning habitat	No
bald eagle.	<i>Haliaeetus leucocephalus</i>	Threatened	nesting, feeding, roosting and wintering habitats preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
peregrine falcon	<i>Falco peregrinus</i>	Recently de-listed	Winter foraging	Pacific Coast Joint Venture

			habitat & nesting territory preserved	Strategic Plan (sec 7.2 & 7.3).
marbeled murrelet	<i>Brachyramphus marmoratus marmoratus</i>	Threatened	migration corridor	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Species of concern	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).

The estuarine channels and wetlands of the Nooksack River provide important rearing and salt water transition habitat for multiple salmonid stocks, including ESA-listed anadromous bull trout and Nooksack native chinook salmon, plus species of concern coho salmon, and proposed steelhead trout. Sockeye, pink and chum salmon also use these habitats. Preserving and restoring these habitats will provide long-term habitat benefits that address limiting factors for rearing and transitioning juvenile salmonids identified for the Nooksack Estuary in the WRIA 1 Salmon Recovery Plan.

This estuarine floodplain habitat provides winter foraging and nesting habitat for federally listed bald eagles and dozens of other raptor species which nest and prey on large concentrations of migratory waterfowl. Trumpeter swans, geese, cavity-nesting and dabbling ducks, several species of herons, and shorebirds. A recent wildlife inventory of the nearby Tenant Lake Wildlife Area identified a number of state listed and monitor species using the site including peregrine falcons, ospreys, common loon, redneck grebe, green heron, wood duck, goshawk, merlin, band tailed pigeon, snowy owl, black swift, pileated woodpecker, Pacific shrew, and the Townsend's big-eared bat. The restoration and conservation of this estuary slough, wetland, and river habitat is key to the long term protection of these important rearing, foraging, nesting, and transportation habitats critical to the health of numerous wildlife and fish species.

(5b) Benefits to State species of concern

Common Name	Scientific Name	Status	Project Benefits	Does the project support goals of a Recovery Plan or HCP?
S.F. Spring chinook salmon	<i>Oncorhynchus. tshawytscha</i>	Threatened	250-acres of transitional and rearing habitats preserved and restored.	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
N.F. Fall chinook salmon	<i>Oncorhynchus. tshawytscha</i>	Threatened	250-acres of transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
bull trout	<i>S. confluentis</i>	Threatened	250-acres of transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions. Draft Recovery Plan for the Coastal-Puget Sound bull trout, recovery actions 1.2.4 and 1.2.3.
coho salmon	<i>O. kisutch</i>	Species of concern	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
Steelhead trout	<i>O. mykiss</i>	Proposed for listing as threatened		WDFW management plan is being developed.

eulachon	<i>Thaleichthys pacificas</i>	Candidate	spawning habitat	No
bald eagle.	<i>Haliaeetus leucocephalus</i>	Threatened	nesting, feeding, roosting and wintering habitats preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
peregrine falcon	<i>Falco peregrinus</i>	Sensitive	winter foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
common loon	<i>Gavia immer</i>	Sensitive	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Piliated woodpecker	<i>Dryocopus pileatus</i>	Candidate	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Western grebe	<i>Aechmophorus occidentalis</i>	Candidate	Non-breeding season foraging habitat	PCJV Strategic Plan (sec. 7.2 & 7.3)
northern goshawk	<i>Accipiter gentilis</i>	Species of concern	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
merlin	<i>Falco columbarius</i>	Species of concern	winter foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Vaux's swift	<i>Chaetura vauxi</i>	Candidate	Breeding season foraging habitat	Partners in Flight Westside Coniferous Forest Plan
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Candidate	foraging habitat & nesting territory preserved	No

purple martin	<i>Progne subis</i>	Candidate	summer foraging territory reserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Slender billed white breasted nuthatch	<i>Sitta carolinensis aculeata</i>		migratory foraging territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Great blue heron	<i>Ardea herodias</i>	Species of Greatest Conservation Need	Year-round foraging habitat	Washington CWCS Species of Greatest Conservation Need
Northern pintail	<i>Anas acuta</i>	"	Nonbreeding season foraging habitat	Washington CWCS Species of Greatest Conservation Need
Greater scaup	<i>Aythya marila</i>	"	Nonbreeding season foraging habitat	Washington CWCS Species of Greatest Conservation Need
Lesser scaup	<i>Aythya affinis</i>	"	Nonbreeding season foraging habitat	Washington CWCS Species of Greatest Conservation Need
Willet	<i>Catoptrophorus semipalmatus</i>	"	Migratory foraging habitat	Washington CWCS Species of Greatest Conservation Need
Marbled godwit	<i>Limosa fedoa</i>	"	Migratory foraging habitat	Washington CWCS Species of Greatest Conservation Need
Tree swallow	<i>Tachycineta bicolor</i>	Focal Species	Breeding season nesting and foraging	Partners in Flight Westside Lowlands and

			habitat	Valleys Plan Focal Species
Willow flycatcher	<i>Empidonax traillii</i>	Focal Species	Breeding season nesting and foraging habitat	Partners in Flight Westside Lowlands and Valleys Plan Focal Species
Swainson's thrush	<i>Catharus ustulatus</i>	Focal Species	Breeding season nesting and foraging habitat	Partners in Flight Westside Lowlands and Valleys Plan Focal Species
Downy woodpecker	<i>Picoides pubescens</i>	Focal Species	Year-round nesting and foraging habitat	Partners in Flight Westside Lowlands and Valleys Plan Focal Species
Rufous hummingbird	<i>Selasphorus rufus</i>	Focal Species	Breeding season nesting and foraging habitat	Partners in Flight Westside Coniferous Forest Plan Focal Species
Pacific-slope flycatcher	<i>Empidonax difficilis</i>	Focal Species	Breeding season nesting and foraging habitat	Partners in Flight Westside Coniferous Forest Plan Focal Species
Common snipe	<i>Gallinago gallinago</i>	Species of High Concern	Non-breeding season foraging habitat	Northern Pacific Coast Regional Shorebird Plan Species of High Concern
Dunlin	<i>Calidris alpina</i>	Species of High Concern	Non-breeding season foraging habitat	Northern Pacific Coast Regional Shorebird Plan Species of

				High Concern
Greater yellowlegs	<i>Tringa melanoleuca</i>	Species of High Concern	Non-breeding season foraging habitat	Northern Pacific Coast Regional Shorebird Plan Species of High Concern
Killdeer	<i>Charadrius vociferus</i>	Species of High Concern	Year-round foraging habitat	Northern Pacific Coast Regional Shorebird Plan Species of High Concern
Short-billed dowitcher	<i>Limnodromus griseus</i>	Species of High Concern	Non-breeding season foraging habitat	Northern Pacific Coast Regional Shorebird Plan Species of High Concern
Western sandpiper	<i>Calidris mauri</i>	Species of High Concern	Non-breeding season foraging habitat	Northern Pacific Coast Regional Shorebird Plan Species of High Concern

Acquisition and restoration of this tidally influenced estuary wetlands is a top priority of the area's fish, wildlife, and natural resource scientists from Washington Department of Ecology, Washington Department of Fish and Wildlife (WDFW), the Nooksack and Lummi Indian Nations, Whatcom County, the Natural Resource Conservation Service, (NRCS), and Ducks Unlimited, Inc. (DU). The Nooksack Recovery Team (NRT) and the Nooksack Salmon Enhancement Association (NSEA), broad-based community supported watershed organizations, fully support the project. The project is located in one of their targeted focus areas for salmonid recovery. Several of the above entities have committed to obtain funding and provide expertise to expand upon ongoing conservation and restoration work over the next 5-10 years.

(6) Benefits to fish: what are the benefits to specific coastal-dependent or migratory species?

Common name	Scientific name	Project benefits	Does the project help meet specific management goals? List plan and goal.
S.F. Spring chinook salmon	<i>Oncorhynchus. tshawytscha</i>	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
N.F. Fall chinook salmon	<i>Oncorhynchus. tshawytscha</i>	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
bull trout	<i>S. confluentis</i>	transitional habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions. Draft Recovery Plan for the Coastal-Puget Sound bull trout, recovery actions 1.2.4 and 1.2.3.
coho salmon	<i>O. kisutch</i>	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
steelhead trout	<i>O. mikis.</i>	transitional and rearing habitats preserved and restored	WRIA Salmon Recovery Plan (LNR,NNR 2005) 5.1.6.16 Estuary 10-year actions
eulachon	<i>Thaleichtys pacificas</i>	Spawning habitat preserved	No

The estuarine channels and wetlands of the Nooksack River provide important rearing and salt water transition habitat for multiple salmonid stocks, including ESA-listed anadromous bull trout and Nooksack native chinook salmon, plus species of concern coho salmon, and proposed steelhead trout. Sockeye, pink and chum salmon also use these habitats. Preserving and restoring these habitats will provide long-term habitat benefits that address limiting factors for rearing and transitioning juvenile salmonids identified for the Nooksack Estuary in the WRIA 1 Salmon Recovery Plan.

The *Salmon and Steelhead Habitat Limiting Factors Natural Resource Inventory for WRIA 1* (Smith, 2002) documents the habitat-related threats to the Nooksack River's salmonid species' diversity and abundance. There are serious threats to

the continued natural production of as many as 19 different salmon and trout stocks, including 3 native char stocks (*Salvelinus confluentus*, *S. malma*), 4 possible stocks of chinook salmon (*Oncorhynchus tshawytscha*), 2 chum stocks (*O. keta*), 1 coho stock (*O. kisutch*), 3 pink stocks (*O. gorbuscha*), 1 riverine sockeye stock (*O. nerka*), 4 steelhead stocks (*O. mykiss*), and 1 cutthroat stock (*O. clarkii*).

These anadromous salmon species exhibit unique life history strategies that require diverse habitats for successful production and maintenance. Yet some of these stocks have been significantly depleted; bull trout in WRIA 1 constitute a component of the Coastal-Puget Sound Distinct Population Segment (DPS), listed as Threatened (64 FR 58910, Nov. 1, 1999), and both early South Fork Nooksack chinook and early North Fork/Middle Fork Nooksack chinook stocks are considered essential for recovery of the ESU, and have been listed as threatened (64 FR 14308, Mar. 24, 1999). Further, Puget Sound/Strait of Georgia coho salmon, including Nooksack coho, is a species of concern, and NOAA Fisheries has accepted a petition for the listing of Puget Sound steelhead as threatened, and is conducting a biological review of its condition. Because the Nooksack basin represents such an important component of the Puget Sound diversity for both ESA-listed bull trout and chinook salmon, it has become a major focus for salmon recovery.

Habitat degradation is considered the leading cause for the decline of WRIA 1 salmonid populations. Current habitat conditions are substantially less productive than historical conditions. Estimated current adult capacity for each Nooksack early chinook population is less than 10% of historic capacity; similarly, estimated current adult productivity and life history diversity are less than 15% and 45% of historic levels, respectively (Mobrand, Inc., 2003). The Shared Strategy for Puget Sound (2005) recognizes the significance of the recovery of Nooksack chinook stocks to the overall recovery of the Puget Sound endangered stock.

The *Nooksack Estuary Habitat Assessment* (LNR, 2005) provides insight on available habitat for and rearing requirements of bull trout and chinook and other salmonids in the Nooksack River. The *Estuary Habitat Assessment* has identified the restoration of flows through Smuggler's Slough and its floodplain as a priority project for salmonid habitat improvement. For the ESA Listed South Fork early chinook population, the highest priority area for restoration is the Lower South Fork, followed by the Nooksack/Lummi Bay estuary. The *Estuary Assessment* further concludes that for North Fork/Middle Fork early chinook populations, the highest priority areas for restoration are the Middle Fork diversion dam, the lower North Fork, and the Nooksack/Lummi Bay estuary. Citing the physiochemical changes that Nooksack River bull trout undergo as they pass through the estuary between their fresh and salt water habitats, the

document notes that the river's estuary plays an important role in the life cycle of this species, as well.

The *Nooksack Estuary Habitat Assessment (LNR, 2005)* described losses in the quantity and diversity of principal components of habitat in the estuary as:

1. Loss of Cover: This includes the removal of riparian vegetation and instream wood for floodplain drainage and agriculture production.
2. Loss of Transitional Habitat: Tide gates blocking salt intrusion into tidal channels removes salt marsh plants used as food and cover resources by juvenile salmonids. Tidal channel filling and conversion to fresh water drainage channels as a result of this blockage removes overhanging bank habitat accessible to salmonids.
3. Loss of floodplain connectivity: Dikes, levees, and tide gates have straightened channel form, interrupted the delta's natural hydrologic processes, and the maintenance of tidal channel and salt marsh habitat. This has resulted in an increase of flood potential downstream, the reduction of floodplain recharge from bankfull events, and wetland water retention for release into the channel throughout the summer.
4. Loss of Habitat Quantity: Though the delta continues to grow considerably into Bellingham Bay, restructuring (dikes, levees, tide gates) activities on the lower Nooksack River and the Lummi Bay side of the delta have interrupted growth and reduced salmonid rearing opportunities. As a result, over four net miles of tidal channels in salt marsh habitat have been lost through floodplain conversion to agriculture and development.
5. Increased Channel Confinement: Dikes and levees designed to prevent flooding have decreased the diversity of channel pattern, encouraged instream sedimentation, and have reduced the amount of sediment and nutrients deposited onto the floodplain. These structures have also compromised the stability of stream banks due to removal of riparian vegetation and the resulting loss of root cohesion and bank roughness.

The Smuggler's Slough Estuary Restoration will preserve and restore the valuable salmonid limiting habitats described above.

Coastal dependent or migratory birds: What are the benefits to coastal-dependent or migratory birds?

Common name	Scientific name	Benefits	Does project help meet the goals of a specific management plan? List plan and goal.
bald eagle.	<i>Haliaeetus leucocephalus</i>	nesting, feeding, roosting and wintering habitats preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
peregrine falcon	<i>Falco peregrinus</i>	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
common loon	<i>Gavia immer</i>	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
Piliated woodpecker	<i>Dryocopus pileatus</i>	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
northern goshawk	<i>Accipiter gentilis</i>	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
merlin	<i>Falco columbarius</i>	foraging habitat & nesting territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
vaux swift	<i>Chaetura vauxi</i>	summer foraging territory reserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
purple martin	<i>Progne subis</i>	summer foraging territory reserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
slender billed white breasted nuthatch	<i>Sitta carolinensis aculeata</i>	migratory foraging territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).
yellow billed cuckoo	<i>Coccyzus americanus</i>	migratory foraging territory preserved	Pacific Coast Joint Venture Strategic Plan (sec 7.2 & 7.3).

The project will provide major benefits to Migratory Bird Conservation. This estuarine floodplain habitat provides winter foraging and nesting habitat for federally listed bald eagles and dozens of other raptor species which nest and prey on large concentrations of migratory waterfowl. Trumpeter swans, geese, cavity-nesting and dabbling ducks, several species of herons, and shorebirds. A recent wildlife inventory of the nearby Tenant Lake wildlife area identified a number of state listed and monitor species using the site including peregrine falcons, ospreys, common loon, redneck grebe, green heron, wood duck, goshawk, merlin, band tailed pigeon, snowy owl, black swift, pileated woodpecker, and other species of concern.

Provided below are additional details of local sightings and specific benefits to some of the most significant species.

- Bald Eagle (*Haliaeetus leucocephalus*): Listed by USFWS as Threatened. The bald eagle, once depleted from Nooksack River estuary and nearshore habitats, has been making significant strides in population growth in this geographic area. To date, there are fourteen confirmed, active bald eagle nests within three miles of Smuggler's Slough. Of these fourteen, nine are within two miles, and three are within one mile of the project channel. These birds rely heavily on adult salmonids for sustenance. Improving salmonid production through the restoration of their habitat will in turn improve the production of bald eagles.
- Peregrine Falcon (*Falco peregrinus*): Listed by USFWS as Delisted-Monitored. Individuals have been observed in the project reach. They are known to feed in estuary and nearshore habitats, but breed in coastal headland, and Westside Juniper and urban/mixed use environs (Wahl et al. 2005). Estuarine habitat restoration from this project would benefit this species locally by increasing its foraging area in the lowlands.
- Yellow-Billed Cuckoo (*Coccyzus americanus*): Listed by USFWS as a Candidate. Wahl (1995) states that this species is no longer found in western Washington, although studies by DeSante and George (1994) suggest that any future reappearance of the species might first take place near the mouth of the Nooksack River.

(8) Prevent or reduce contamination: What are the contamination benefits?

Contaminant	Benefits	Does project help meet the goals of a specific management plan?
Removal of Fecal coliform	Removing 116 acres from agriculture in which cow manure is spread on corn fields will reduce fecal runoff into nearshore waters contaminating shellfish beds.	TMDL for fecal coliform in Nooksack River
Excess Nutrients	Removing 75 acres from agriculture in which cow manure is spread on corn fields will reduce excess nitrogen and phosphorous runoff into nearshore waters.	No

The exclusion of livestock from riparian areas is a significant element of the Nooksack River Fecal Coliform TMDL Plan. In areas such as the Smuggler’s Slough corridor where farming and grazing are marginally economic, restoring the land to wetlands and excluding all grazing is often the most sensible approach. Although there is no TMDL for excess nutrients, it is recognized that they play a significant role in water quality degradation and they are included on the 303d list for the Lower Nooksack.

Both of these water quality challenges have had serious impacts on shellfish harvest in the Portage Bay area of the Lummi Peninsula. Harvesting of shellfish by Tribal members for cultural, subsistence and commercial uses has been frequently interrupted by tideland closures for exceedence of fecal coliform counts over the past 5 years.

(9) Catalyst for Future Conservation: What other conservation efforts would benefit from this project?

Projects	Benefits
Lummi Bay Delta Restoration	Historic Smuggler’s Slough provides a hydraulic and fish passage connection between Bellingham Bay and Lummi Bay to the northwest. Restoration activities on the Smuggler’s Slough complex will be a demonstration project in the estuary and encourage similar and related preservation and restoration efforts on Lummi River Delta.
Kwina Slough Inlet Restoration.	This project will build support for removal of pilings at the head of Kwina Slough where it exits from the Nooksack at river Mile 1.5. This project, prescribed in the Nooksack Estuary Habitat Assessment, would improve the hydrology of Kwina Slough by allowing improving scour at high flows.

Restoring flows and fish passage into Smuggler’s Slough will provide momentum to efforts to remove sea walls and restore salt marsh and wetland habitats in the Lummi Bay Delta to the north of the Lummi Bay outlet of Smuggler’s Slough (See Project Map). The hydraulic model being built for the Smuggler’s Slough Project will provide a critical design assessment tool for the Lummi Bay project and to evaluate concepts of re-connecting the Lummi River to the Nooksack. The relationships forged with Whatcom County River and Flood and Diking District #1 will be critical in completing future ambitious projects that may generate greater landowner concerns. The Kwina Slough pilings project is one of several projects prescribed in the Nooksack Estuary Habitat Assessment. Smuggler’s Slough Project will add momentum to these and other estuarine recovery projects in the Nooksack and throughout the northwest.

(10) Partners in conservation: What are the sources and amounts of financial support being provided by partners?

Organizations/individuals providing match	Monetary value of support
Lummi Indian Business Council	Total Match (30.03%) - \$286,856 State Source Match - \$182,000 (63%) Secured Other Non-federal - \$104,856 (37%) Pending Total \$ 977,354

The Nooksack River Smuggler’s Slough will be implemented through a project partnership between the Washington Department of Ecology (WDOE) and Lummi Indian Business Council. Lummi Indian Business Council (LIBC) will implement the project and provide the bulk of the match. Land acquired will be held in title by LIBC (in the case of Native Trust Properties by the BIA for LIBC). Whatcom Land Trust will hold an Environmental Easement on the property to ensure that its environmental value is protected in perpetuity.

Additional participating agencies will include Northwest Indian College, Nooksack Salmon Enhancement Association for public outreach and education functions, Washington State Department of Fish and Wildlife, the Whatcom County Public Works Road Division and Whatcom County Diking District#1. The contributions of the latter two agencies will consist of review and approval of design alternatives, detailed project design and construction practices and standards. The NRCS Wetlands Reserve Program and Ducks Unlimited will be involved in coordinating companion projects for wetlands restoration. NRCS has funding allocated in for 2007 for these federally supported companion projects.

Another State of Washington project partner of Lummi Nation is the Washington State Salmon Recovery Funding Board (SRFB). A SRFB grant will allow Lummi Nation to use State derived funds to buy 60 acres of property within the area impacted by the proposed restoration treatments and provide instream project design elements.

(11) Federal share reduced: Is the Federal match share reduced by (contributions from State and other non-Federal sources?)

Total project costs	\$ 977,354
Required State match (Interlocal LIBC)	\$ 244,388
Additional cash contribution (i.e., not in-kind or land in the case of States) by State	\$ 27,661
Percent increase over required match (see instructions)	10%

Match will be provided by through Interlocal Agreement with LIBC. Lummi participation will be supported by Washington State Salmon Recovery Funding Board grant funds of state origin awarded to LIBC for this Smuggler’s Slough Project. Matching funds will include \$120,000 for project design and construction and \$151,999 for the purchase of land and associated appraisals and fees. Additional associated non-state funding from several sources will be contributed to associated projects that will restore wetlands functions to the project area and adjacent wetland sites.

(12) Education/outreach or wildlife-oriented recreation: What site-specific educational or outreach programs or wildlife-oriented recreation programs or products are made possible by this project?

Other benefits to the public will include improved access to a large natural area with opportunities for hiking, biking, wildlife viewing, waterfowl hunting, fishing, and improved opportunities for educational programs through local schools, universities and Whatcom County Parks. A trail will connect the Nooksack Delta to the Lummi River Delta and will feature interpretive stations. A kiosk at the trail-head will provide information on the project’s environmental benefits and the partnership that made them possible.

Site-specific programs or products	Audience/participants	Estimated size of audience/participants
NW Indian College	National Science Foundation Environmental Studies Students	6
Nooksack Salmon Enhancement Association	Students for Salmon Program	30

Interpretive Trail, Poster and Sign	Hikers/ Dog walkers/ Bird Watchers, restoration seminar participants	5,000 per year
Squol Quol magazine articles	Lummi Tribal Members	3,000
Bellingham Herald Articles	Whatcom County residents / Canadians	125,000
Project Video	Cable TV viewers of Whatcom County	125,000

The project site will serve as an outdoor classroom for Lummi Tribal School and Northwest Indian College (NWIC) students. (See NWIC Letter of Commitment). NWIC students have frequently been recruited in the past to collect and analyze field data for LNR-directed projects, and were recently tapped to collect water quality and macro-invertebrate data in Smuggler’s Slough for the estuary habitat assessment (LNR, 2005). NWIC science faculty have committed work with LNR staff to develop a monitoring plan that will be partially implemented by NWIC students eligible for National Science Foundation stipends.

Lummi Tribal School students participate in the Nooksack Salmon Enhancement Association’s (NSEA) Students for Salmon program that provides an environmental curriculum for fifth through seventh grade students. This program is based on the study of and participation in watershed restoration activities and projects. Projects in the past have included winter tree planting in riparian areas of the Nooksack River and its tributaries, guided by NSEA staff and LNR restoration department staff (See NSEA Letter of Commitment). Other outreach vehicles will include regular articles in the Lummi Squol Squol Magazine and the Bellingham Herald. Thousands of strollers, bird watchers and dog walkers will view the scientific benefits of the project on at a project kiosk and have native plants identified along an interpretive trail (part of a subsequent project phase). A professionally produced project video will be viewed on local cable TV and be of the quality required for national distribution.

(13) Other factors: What other benefits does the project provide?

Other factors	How does the project address them
Tribal Natural Resources Department capacity building	Tribal staff will develop their technical capacities to implement a different type of project from previous upland efforts.
Training and employment for	Native tribal employees and

dislocated natural resources workers.	contractors will be employed and receive training associated with the project. Tribally owned small business concerns will perform the construction work.
Project will support federally protected Treaty Rights	The project will support the recovery of treaty protected rights to harvest fish, water fowl, shellfish and native ceremonial and medicinal plants. The recovery of Bald Eagle populations will allow greater harvest of eagle feathers for ceremonial use.
Project will support rebirth of tribal culture	The restored ability of tribal fishers to harvest depleted fish stocks will strengthen a tribal culture based upon traditional fisheries

Other considerations / tie-breakers

1) Is the habitat imminently threatened?

Narrative to explain.

Yes No

Threats	Severity
Invasive Plants	Severe
Housing Development	Moderate and growing
Expanded farming	Moderate
Drainage Projects	Associated with the above - Moderate

Native plants colonizing the sites include reed canarygrass, Himalayan blackberries, Canadian thistle, bind weed, blue knapweed and Scots broom. Riparian restoration treatments associated with the initial project will include weed control but also restore a fungal based soil ecology less conducive to their propagation.

2) Does the site have unique and significant diversity

Yes No

Unique biodiversity	Supportive evidence
Among the two most pristine and undeveloped estuaries in Puget Sound	Nooksack Estuary Habitat Assessment

Despite the inroads of civilization, the Nooksack Estuary still contains significant intact elements, particularly on the Bellingham Bay side below Marine Drive.

3) What are the costs per acre?

Habitat conservation Approach	Costs per acre
Acquisition	\$ 2,924
Easement	NA
Restoration	\$ 860

The estimated cost per acre of the acquisitions is based on June 2006 appraisals of 5 parcels within the project footprint. It includes costs of appraisals and fees. Restoration cost estimates are based on pre-grant research into the costs of design, permitting tide-gates, culvert replacement and earth moving. The project concept budgeted in the design feasibility phase includes removing three blockages.

