

What actions have been taken to restore habitat on the Nisqually Delta?

In the summer of 2008 a new exterior dike was constructed to protect 246 acres of freshwater wetlands and headquarters facilities and to prepare for estuary restoration. The dirt to construct this dike was taken from the seasonal freshwater wetland area to deepen and enlarge seasonal ponds. In May 2009 the major dike removal phase commenced. The majority of the Brown Farm Dike was gradually lowered, the borrow ditch was filled, rock armoring was removed, and several major sloughs were reconnected with Puget Sound. This extensive work was necessary to fully restore natural processes, including tidal circulation, channel formation and migration, sediment transport, nutrient exchange, and to provide habitat connectivity.

A 25-acre riparian surge plain forest area was created above the high tide line northeast of the Twin Barns, including snags for use by raptors. It will be replanted with native trees and shrubs over the next two winters. Other work included construction of an engineered logjam near the River overlook to protect the new dike from erosion while creating habitat for fish and wildlife.

Old levees and water control structures were removed and new cross levees built to allow improved management of freshwater wetlands. Completion of the freshwater wetland area will continue during the summer of 2010. The restoration of tides in October 2009 has already begun to reestablish channels, providing habitat for fish and birds and initiating the natural processes which will restore the Nisqually estuary.

How will the restoration area be managed and monitored?

The restoration area will be closed to public access, including boating, except for the new trail and boardwalk. This is necessary to allow natural processes to heal the estuary and provide sanctuary habitat for fish and wildlife, particularly migratory waterfowl. The Refuge has partnered with the US Geological Survey and the Nisqually Tribe to monitor the changes that have already started to occur in the restoration area. Monitoring will include data collection on bird and fish use, invertebrates, vegetation, tidal inundation, sediment transport, salinity, geomorphology, and effects on the nearshore.

How is the project being accomplished?

Many partners have joined the Refuge to help make this project a reality, including the Nisqually Indian Tribe and Ducks Unlimited. The Tribe recently restored 140 acres of estuary habitat on the east side of the Nisqually River and together these projects will restore more than 900 acres in the Nisqually estuary. Funds contributed by partners include Ducks Unlimited; the Salmon Recovery Funding Board or Puget Sound Acquisition and Restoration funds from all five south Puget Sound watersheds; the Estuary and Salmon Restoration Program administered by Washington Department of Fish and Wildlife; National Fish and Wildlife Foundation; National Oceanic and Atmospheric Administration, and Environmental Protection Agency.

How can I find out about the changes ?

The Refuge will make every effort to keep the public informed about any temporary trail closures and other important events. For on-going information you may:

- Call the Refuge anytime at (360) 753-9467. If you don ' t get a live person, follow the prompts to " Refuge updates " .
- Check the Refuge website at fws.gov/nisqually. Go to Events and News button.
- Get on the Refuge mailing list to receive the Refuge ' s quarterly newsletter " The Flyway " .

Also, watch for signs at the fee station, Visitor Center reader board, and on the trails.

How can I find more about the entire project?

The Nisqually NWR Comprehensive Conservation Plan, which details the changes, effects to wildlife and many other things can be found on line. Go to: <http://www.fws.gov/pacific/planning/main/docs/WA/docsnisqually.htm>.

Also see: www.nisquallydeltarestoration.org for science information.

Estuary Restoration

The Return of the Nisqually Delta



The first incoming tide on the newly connected Shannon Slough

Cover Photo: The Nisqually Estuary from Interstate 5



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What has been restored at Nisqually National Wildlife Refuge?

Nisqually NWR has restored 762 acres of the Nisqually estuary, by removing dikes and introducing tidal waters after an absence of more than 100 years. Riparian surge plain forest will be replanted on 25 acres to provide more of this rare but important habitat for juvenile salmon and songbirds. Enhancement of 246 acres of freshwater wetlands will allow intensive management for migratory birds and other wildlife.

Why is habitat restoration needed?

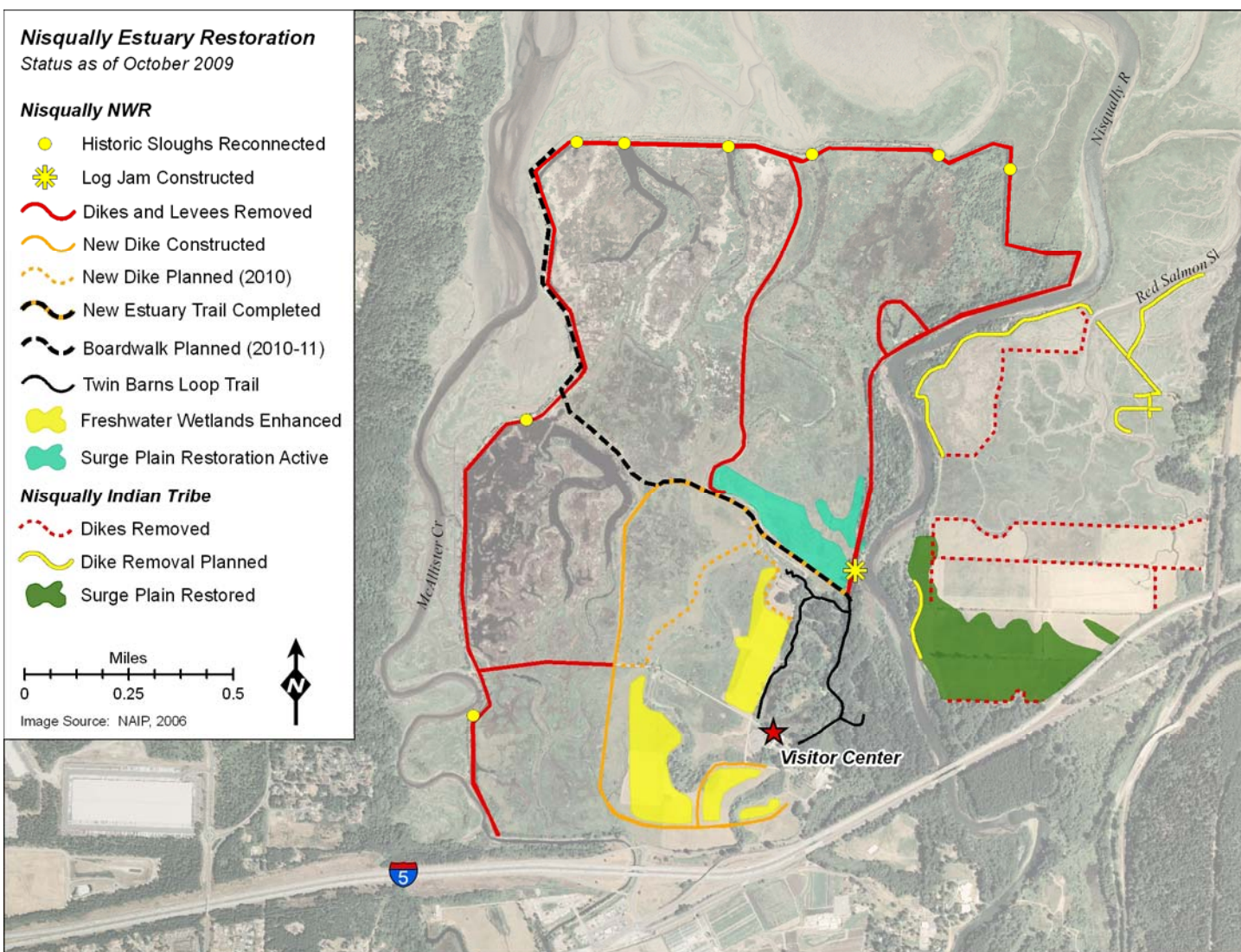
Prior to the late 1800s, the Nisqually estuary was intact. However by the early 1900s, 1000 acres of the Nisqually Delta were diked for farming; cutting off the salt marsh from the Nisqually River, McAllister Creek, and the tides of Puget Sound. Since the 1970s the Refuge has managed this area as freshwater wetlands and grasslands. Overtime, these habitats have become degraded and difficult to manage.

While the importance of estuaries to the health of Puget Sound has become well known, more than 80% of estuary habitat in Puget Sound has been lost due to diking, draining, and development. Many fish and wildlife that are dependent on estuaries are declining.

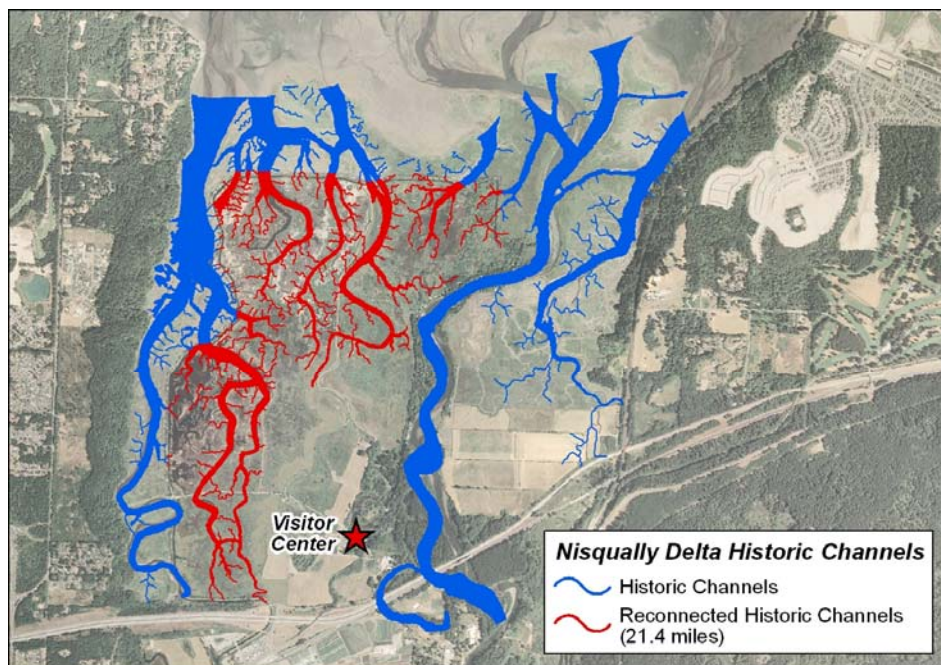
From 1996-2004, the Refuge conducted an extensive planning process with partners and public involvement to consider what would be best for the wildlife resources of the delta. In 2004, the Nisqually NWR Comprehensive Conservation Plan was completed with the decision to restore the estuary. This project is the top priority to recover federally threatened Chinook salmon in the Nisqually watershed. Migratory birds that depend on estuaries will also benefit, including waterfowl, waterbirds, shorebirds, and seabirds.

What is an estuary and why is estuarine habitat so important?

Estuaries are places where freshwater from rivers meet and mix with bodies of salt water like Puget Sound, to create one of the most



Cartography by: J.Cutler, Nisqually Indian Tribe



Data derived from: US Coast Survey, Topography of Puget Sound, Nisqually to Totten Inlet, 1878 - WADNR/UW Puget Sound River History Project. Image Source: NAIP, 2006

Cartography by: J.Cutler, Nisqually Indian Tribe

productive environments on earth. Estuaries support unique communities of plants and animals that make up the basis of the food web, provide a buffer from flooding, filter sediments and pollution, and provide a source of recreation and economic benefits for people.

The Nisqually River estuary is one of the most extensive and productive estuaries in Puget Sound and it provides a unique, large scale restoration opportunity. The magnitude of this project provides regional benefits to the greater Puget Sound area, including for many species of plants and animals that depend on the delta for one or more phases of their life cycles.

How will estuarine restoration change

The Brown Farm Dike Trail was permanently closed on May 4, 2009. The trail to McAllister Creek, the McAllister Creek Bank Fishing Area, the Ring Dike Trail, and the observation tower were also closed permanently to allow restoration. The Twin Barns Loop Trail remains open. The new Nisqually Estuary Trail will include a half mile of the new exterior dike (opens Nov. 12, 2009) and a one-mile boardwalk (a portion to open Fall 2010) to the northwest corner of the delta, near the mouth of McAllister Creek. This unique trail will be 4 miles round trip from the Visitor Center.