Final Environmental Assessment

Nooksack River – Ritter Road Levee

Emergency Repair of Flood Control Works
Whatcom County, Washington

September 2004

US Army Corps
of Engineers®
Seattle District

Nooksack River Ritter Road Levee
Emergency Repair of Flood Control Works
Draft Environmental Assessment
September 2004

Responsible Agency: The responsible agency for the rehabilitation of flood control works is the U.S. Army Corps of Engineers, Seattle District.

ABSTRACT:
This Environmental Assessment (EA) evaluates the environmental effects of the repair and reconstruction of Ritter Road levee, located on the Nooksack River Whatcom County between Lynden and Ferndale, Washington. The Ritter Road repair site is located approximately 1,200 feet east of the terminus of Ritter Road, and approximately 700 feet south of the left bank of the Nooksack River. The levee protects agricultural lands, residences, and public infrastructure. The U.S. Army Corps of Engineers, Seattle District (Corps), repaired the following project under the authority of Public Law 84-99 (33 USCA 701n). The project consisted of repairing the weak points along the top of the levee with well graded material (a total of 1000 cubic yards of gravel/soil) and placing a 10 inch layer of clay on approximately 800 linear feet of the riverward face of the levee (a total of 500 cubic yards of clay). The levee face was dressed and finished with an 8-inch layer of topsoil (a total of 500 cubic yards of topsoil) and hydro seeded. In addition, a large scour hole located on the northwest end of the levee was filled in with approximately 3,000 cubic yards of well-graded material.

The Nooksack River rose above the zero damage flood stage in October 2003 resulting in severe erosion to approximately 80 linear feet of the levee in this area. On 23 October 2003, the Corps responded to a request for emergency assistance from Whatcom County Washington to repair an 80-foot breach in a flood control levee between Lynden and Ferndale, Washington. The County and Corps fought the flood by placing 8” minus rock into the scour hole and finally repaired the breach. The Corps constructed a 1,190-foot road to access the breached levee, and repaired approximately 260 feet of the existing levee. In total, 996.54 tons of 8” minus rock was used for the road and turnout areas, and 8,406.3 tons of pit run material was used to repair the breach and to finish the road and turnout. The repair resulted in a porous levee that is vulnerable to failure, and it is estimated to provide protection for a 2-yr flood event. In November 2003, Whatcom County Public Works Department requested assistance under the PL84-99 Program in implementing a repair project at this location. The Corps determined that the levee was in need of permanent repair and repaired approximately 800 feet of the levee. Approximately 70% of levee including the back, top, and riverward slope is vegetated with grass or volunteer crop species and 25% is devoid of any vegetation. The northwest end of the levee (approximately 5.0 % of the total length) was vegetated with several cottonwood and alder trees that were removed.

The project did not constitute a major Federal action significantly affecting the quality of the human environment.

This document is also available online at:
http://www.nws.usace.army.mil/ers/envirdocs.html

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1. INTRODUCTION

This Environmental Assessment (EA) evaluates the environmental effects of the repair and reconstruction of the Ritter Road levee section along the Nooksack River in Whatcom County between Lynden and Ferndale, Washington. A temporary repair was undertaken beginning 24 October and continued through 28 October 2003 following an approximately 80-foot breach in the levee, which allowed floodwaters to enter adjacent properties. The temporary repair consisted of building an approximately 1190-foot access road to the breach, repairing the levee at the breached area and re-grading portions of the adjacent levee to decrease the slope and potential for future scour and rebreaching. In November 2003, Whatcom County Public Works Department requested assistance under the PL84-99 Program in implementing a repair project at this location. The Corps has determined that the levee was in need of permanent repair and repaired approximately an 800-foot section of the levee. The Corps repaired sections of the levee top by placing well graded material to assure structural soundness, filling in a scour hole, and placing 10 inch layer of clay along the riverward slope of the levee.

1.1 Location and Setting

The Ritter Road repair site is located approximately 1,200 feet east of the terminus of Ritter Road, and approximately 700 feet south of the left bank of the Nooksack River in Whatcom County between Lynden and Ferndale, Washington at Range 2 East, Township 40 North, Section 34. The area is within the historic floodplain of the Nooksack River, which has been converted to agricultural land. There is one single family residence on the east side of Ritter Road at its paved terminus, and one single family residence with associated farm structures on the west side of Ritter Road at its paved terminus. A dirt road continues from the end of Ritter Road north towards the Nooksack to terminate at a third structure, possibly a single-family residence. Aside from these few structures, the surrounding lands are agricultural in nature. At the end of the dirt road, an existing, earthen dike system generally parallels the river. At its closest point, the levee is approximately 15 to 20 feet away from the ordinary high water. As one travels east along the dike, it gradually moves away from the river. In the area near the levee failure, the dike takes an abrupt turn (dogleg) away from the river, heading due south for approximately 300 feet before turning abruptly again to the east (Figure 1). At this corner, the levee merges with a secondary setback levee that runs west to Ritter Road. Approximately ½ mile south of the river and south of the area of the breach, there is a small creek/agricultural ditch that drains to the west through a culvert beneath Ritter Road, and eventually into the Nooksack. The specific project repair area is approximately 700 feet from the river.

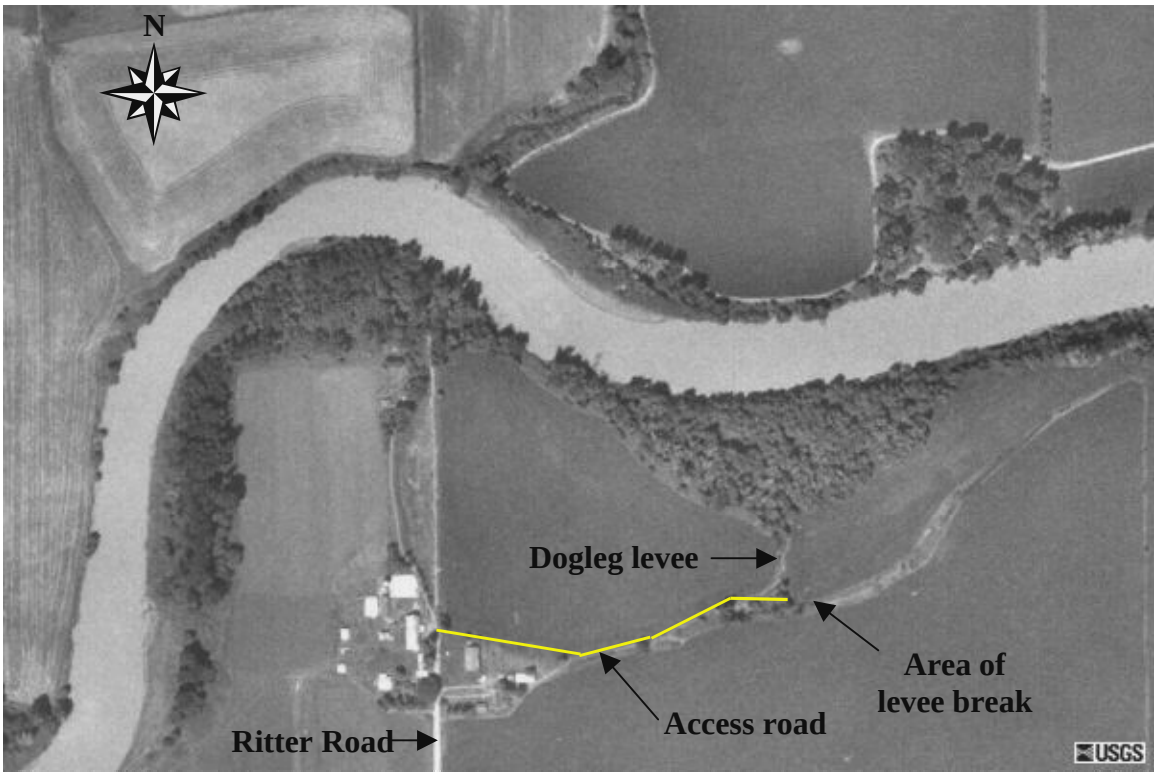

Figure 1: Aerial photo of the Ritter Road levee repair site.

1.2 Project Background

Heavy rains from a series of frontal systems from the eastern Pacific Ocean hit western Washington on 20 October 2003, resulting in record rainfall totals for many locations throughout western Washington. Flooding on the Nooksack River at Ferndale began on 21 October when the river rose above National Weather Service zero damage flood stage of 19 feet at the USGS Ferndale gage (USGS 12213100). The river crested at 20.79 feet at 9:00 p.m. on 21 October 2003, and fell below flood stage on 22 October 2003 at 7:00 a.m.

Corps flood team members were notified of the levee breach on 22 October by Whatcom County officials, but were unable to access the levee area to begin repairs. On 23 October, the Corps Flood Engineer examined the breach, and determined that immediate repair was appropriate and necessary. The floodwaters of October 21 and 22 had scoured through the dike at the southernmost turn of the dike system, creating a breach approximately 80 linear feet long, and a scour hole approximately 4 feet deep. The breach allowed floodwaters to spill out into the surrounding agricultural land, overwhelming the small agricultural ditch that flows into the Nooksack, and flooding Ritter Road.

At the start of the construction/repair activities on 24 October, there was no surface water connection between the scour hole and the Nooksack or the agricultural ditch/stream. The scour hole extended through the field at the base of the dogleg levee and beyond the levee breach into the next agricultural field.

The Corps constructed an approximately 15-foot wide, 1,190-foot road to access the breached levee and commence repairs (Figure 2). The access road begins just before the terminus of the paved portion of Ritter Road, and proceeds east to the dike breach. The first 460 feet of the road was built on top of a small existing berm established by the landowner many years ago. This small berm is located just north of the existing single family residence on the east side of Ritter Road and runs east-west, merging into a larger County owned setback levee that intersects with the dogleg levee (North-south portion of the outer levee). The road then drops onto a dirt track that runs at the base of the County owned levee for approximately 730 feet to the intersection with the dogleg portion of the outer levee (Please see Figure 1 for clarity). In developing the road, the top of the small berm (~460 feet) was scraped with the bulldozer blade to create a more level surface, and 8-inch minus rock was placed on the top. On the dirt track, no 8-inch minus material was necessary until near the corner of the dogleg levee. In this area, a turnout for the dump trucks was created. Due to the saturation of the field from the flooding, the turnout needed to be rocked with 8-inch minus to support the trucks. Pit run was used as a finishing material for the entire length of the road.

At the corner where the east-west levee and the dogleg levee converge, it was necessary to remove a Douglas fir tree and breach the corner to allow truck access to the larger breach and scour hole. The trucks dumped the pit run material, and a Daewo 200 series excavator and D4H bulldozer baled, leveled, and compacted it. As the base of the levee was re-established, the loaded trucks backed onto the base to further compact the material. The repaired levee is more gently sloped than the pre-breach levee with side slopes of approximately 5:1. To tie in with the undamaged portions of the levee, and to reduce the likelihood of future breaches, approximately 150 feet of the east-side of the dogleg levee and approximately 30 feet of the levee to the east of the breach was re-graded to reduce the slope. A western red cedar tree was removed from the side of the levee when it was reshaped for the tie in. The more gently sloped levee(s) should act as an overtopping area in the next flood, reducing the likelihood of extensive scour and subsequent levee breaches.

Upon completion of the emergency repair, all exposed areas of the levee repair and re-graded areas were covered with coir fabric and grass-seeded (Figure 3).

In total, 996.54 tons of 8” minus rock was used for the road and turnout areas, and 8,406.3 tons of pit run material was used to repair the breach and to finish the road and turnout.

The Corps has determined that the flood event repair is vulnerable to piping, as evidenced by fines piping through the toe of the repair. Given the piping of the repair materials it is likely that failure could occur whenever the river is high enough to go over bank and pool next to the levee. This occurs at approximately the 2-year event. Thus the post flood (i.e. damaged) level of protection is assumed to be about 2 years. The Corps has also identified a large scour hole at the riverward base of levee that threatens the structural stability of the levee.

In November 2003, Whatcom County Public Works Department requested assistance under the PL84-99 Program in implementing a repair project at this location (Appendix A). The Corps determined that the levee was in need of permanent repair and repaired approximately an 800-foot section of the levee.

Figure 2: New access road. Photo taken facing west from the east end of the project.

Figure 3: Temporarily Repaired levee. Photo taken facing south while standing on the dogleg portion of the levee. The standing water shown in picture is a result of water that accumulated in an isolated scour hole during a flood event. It does not have a surface connection to the Nooksack River.

1.3 Project Purpose and Need

The purpose of this project is to provide protection to the community and infrastructure from flood damage. This section of the levee sustained significant damage by erosion during a flood event in October 2003, was temporarily repaired and is in need of permanent repair.

There is a high potential that during the upcoming flood season around October, the river would overflow the levee again, posing a major threat to community, if no action was taken to contain the floodwaters.

1.4 Authority

The Ritter Road Levee Repair is authorized by Public Law 84-99 (USCA 701n). Corps rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by flood. The rehabilitated structure is normally designed to provide the same degree of protection as the original structure. This project has been authorized as having *emergency* status as stated under the PL 84-99 regulations. The Corps determined that if the levee was not repaired by the next flood event, an *imminent threat* of loss of private and/or public property existed.

2. DESCRIPTION OF THE ALTERNATIVES

2.1 Preferred Alternative

The Corps permanently repaired the section of the levee that was repaired during the October 2003 flood event emergency. This was accomplished by repairing the weak points along the top of the levee with well graded material (a total of 1000 cubic yards of gravel/soil) and placing a 10 inch layer of clay on approximately 800 linear feet of the riverward face of the levee (a total of 500 cubic yards of clay). The levee face was dressed and finished with an 8-inch layer of topsoil (a total of 500 cubic yards of topsoil) and hydro seeded. In addition, a large scour hole located on the northwest end of the levee was filled in with approximately 3,000 cubic yards of well-graded material. Several alder and cottonwood trees larger than 4" diameter were removed during construction as the county had not completed this maintenance activity prior to construction. Prior to the repair the levee provided flood protection up to a 2-year event; the repaired levee will provide protection up to a 5-year event. The project was constructed in late August through mid September.

2.2 Non-Selected Alternatives

Several other alternative actions were considered before the recommended alternative was selected. These alternatives include:

- No Federal Action (the No-Action Alternative),
- The Non-Structural Alternative,
- The Setback Alternative

In order for any alternative to be acceptable for consideration it must meet certain objectives. The alternative must afford flood protection similar to the rest of the levee segment, it must be economically justified, it should be environmentally acceptable, and it should minimize costs for both the sponsor and the Federal government.

2.2.1 No Federal Action

The No-Action alternative would provide no federal action and leave the levee in its currently damaged condition with no further action to repair the levee damage. This alternative was quickly discarded because of the high potential of additional flood damages.

2.2.1.1 *Effects of No Federal Action*.

With no Corps assistance, the levee would likely have failed during the next flood event. Significant damage to commercial and residential structures, public utility infrastructure, and roads would have occurred.

2.2.2 Non-Structural Alternative

The Non-Structural alternative would buy out the existing residential and agricultural property and would also relocate any necessary public infrastructure. This alternative was discarded

because the costs were deemed too high compared to the costs for other alternatives. In addition, the PL84-99 Authority dictates that the levee will be repaired to it pre-flood condition.

2.2.3 Setback Alternative

The setback alternative would realign the levee behind the existing levee footprint. This alternative is unnecessary in this location, since the levee is already set back a considerable distance. This alternative would be more costly than the repair alternative, and would require additional real estate.

3. AFFECTED ENVIRONMENT

3.1 General

The Ritter Road levee site is located approximately 1,200 feet east of the terminus of Ritter Road, and approximately 700 feet south of the left bank of the Nooksack River in Whatcom County between Lynden and Ferndale, Washington. It lies in the floodplain of the Nooksack River in Township 40 North, Range 2 East, Section 34. Flooding from the levee breach covered portions of Township 40 North, Range 2 East, Sections 34 and 35, as well as portions of Township 39 North, Range 2 East, Sections 2 and 3. The area is rural and agricultural in nature with scattered single-family residences and associated farming structures.

In the Lynden area, the Nooksack River is a confined, single channel, moderate gradient system. This portion of the river serves as a transportation zone for all salmon species utilizing the upper watershed. Some spawning occurs within this reach, principally above Lynden, with a few Chinook (*Onchorynchus tshawytscha*), pink (*O. gorbuscha*), and chum (*O. keta*) using the increasing number of riffle areas (WDF, 1975). Juvenile salmonid rearing may also occur through the reach. In addition, bull trout forage, migrate, and over winter in the mainstem of the Nooksack. In general, the riparian zone adjacent to the levees in this reach of the river is sparsely vegetated. However, north of the project site, there is a half moon of riparian vegetation that is approximately 500 feet wide at its widest point and 1,100 feet long before reverting to a narrow band of vegetation along the river. Vegetation in this area consists of second growth deciduous forest comprised of red alder, black cottonwood (*Populus balsamifera*), big-leaf maple (*Acer macrophyllum*), and willow species (*Salix sp.*). The undergrowth is dominated by snowberry (*Symphoricarpos albus*), elderberry (*Sambucus racemosa*), salmonberry (*Rubus spectabilis*), and vine maple (*Acer circinatum*), with Himalayan blackberry (*R. discolor*) intermixed. The riparian vegetation serves as habitat for a variety of raptors, woodpeckers, passerines and water-oriented mammals.

As there is not a surface water connection between the levee repair area and the Nooksack or the agricultural ditch/stream, and the repair area is not within the ordinary high water mark (OHWM) of the Nooksack River. However, the action area extends one mile in all directions from the site due to the proposed use of heavy equipment during the project construction. Four bald eagle nests occur within one mile of the site, and three of the nests lie within a half-mile of the project within the project line of sight. To minimize potential disturbance to bald eagles, the USFWS in the Pacific States Bald Eagle Recovery Plan recommends a buffer of 2,600 ft (800 m) around unscreened nests or roosts and 1,300 ft (400 m) around screened nests or roosts during

the nesting or winter periods (USFWS 1986). Screened nests are those that are not within a direct line of sight of the proposed activity; having either vegetation or topographic features screening them from the activity. The draft management recommendations from the WDFW for bald eagle nests on non-federally owned lands recommend a buffer of 800 ft (244 m) around a bald eagle nest site during the breeding season and 400 ft (122 m) around roost stands during the winter (WDFW 1999). Since these guidelines are still in draft form, the more conservative guidelines from the Pacific States Bald Eagle Recovery Plan will be used for this analysis.

3.2 Hydrology, Soils and Topography

Topography of the project site is generally flat river floodplain, changing to a gently rolling landscape away from the river. The on-site soils are Mt. Vernon fine sandy loam, 0 to 2 percent slope (SCS, 1992), which is a very deep, moderately well drained soil found on river terraces and flood plains. Included in this unit are small areas of Briscot, Puyallup, Eliza, and Oridia soils; Shalcar soils in depressions, Riverwash, and Mt. Vernon Soils that have slopes greater than 2 percent. Of these soils, Briscot, Eliza, Oridia, Shalcar, and Riverwash soils are listed as hydric soils. Average precipitation is about 35 inches; average temperature is 50 degrees F. This soil usually has a seasonally high water table, and is at risk for flooding. Runoff from this soil is typically low, and there is no hazard of erosion (SCS, 1992).

The Nooksack River is the main hydrological feature of the area. However, there are several tributary streams within approximately 1 mile of the project site. These features include Fishtrap Creek, entering the right bank of the Nooksack approximately 2,400 feet to the northeast of the project site, an agricultural/ditch stream located approximately 1,300 feet south of the project site, and Cougar Creek located nearly a mile south of the project site.

3.4 Vegetation

The project site is located in an upland agricultural area. In general, vegetation near the project site is limited to a narrow band of riparian vegetation that occurs adjacent to the levees in this reach of the river. However, at the corner where the levees meet, there are four large, approximately 40 year old red alder (*Alnus rubra*) trees and a small stand of approximately 10 year old alder. Farther to the west along the levee are several conifers including Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*). A Douglas fir and a western red cedar were removed to build the road and to repair the levee during the flood event. North of the project site and adjacent to the river, there is a half moon of riparian vegetation that is approximately 500 feet wide at its widest point and 1,100 feet long before reverting to a narrow band of vegetation along the river. Vegetation in this area consists of second growth deciduous forest comprised of red alder, black cottonwood (*Populus balsamifera*), big-leaf maple (*Acer macrophyllum*), and willow species (*Salix sp.*). The undergrowth is dominated by snowberry (*Symphoricarpos albus*), elderberry (*Sambucus racemosa*), salmonberry (*Rubus spectabilis*), and vine maple (*Acer circinatum*), with Himalayan blackberry (*R. discolor*) intermixed (Figure 4). Currently in the immediate construction area the vast majority of levee is devoid of vegetation or vegetated with grass.

Figure 4: Riparian area located at northern end of the dogleg levee. Photo taken facing northeast into the forest.

3.5 Fish and Wildlife

The Nooksack River supports several species of salmon and trout. Trout species occasionally present include bull trout, Dolly Varden, steelhead and cutthroat trout. The salmon species are Chinook, coho (*O. kisutch*), chum, pink, and perhaps sockeye (*O. nerka*).

The agricultural area surrounding the project site along the Nooksack River is frequented by a variety of wildlife species. Mammals include, but are not limited to, raccoon (*Procyon lotor*), Douglas squirrel (*Tamiasciurus douglasi*), coyotes (*Canis latrans*), little brown myotis (*Myotis lucifugus*), mink (*Carnivora mustelidae)* and Columbia black-tailed deer (*Odocoileus hemionus*). Numerous bird species including bald eagles (*Haliaeetus leucocephalus*) also utilize the area.

The following species listed as threatened under the U.S. Endangered Species Act occur in the project area:

Puget Sound Chinook salmon
Bull trout (*Salvelinus confluentus)*
Bald Eagle (*Haliaeetus leucocephalus)*

Marbled murrelet (*Brachyramphus marmoratus marmoratus*) may also transit the area going to feeding areas in Puget Sound. It is anticipated that there will be no adverse effect to any threatened or endangered species.

3.5.1 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Four species listed as threatened may be found in the area of the project, and are listed in Table 1. The effects of the federal emergency action are analyzed within this EA.

Table 4-1. Endangered Species in the Project Vicinity

Scientific Name	Common Name	Status
Haliaeetus leucocephalus	Bald Eagle	Threatened
Oncorhynchus tshawytscha	Puget Sound Chinook Salmon	Threatened
Salvelinus confluentus	Bull Trout	Threatened
Brachyramphus marmoratus marmoratus	Marbled Murrelet	Threatened

Bald eagles are listed as threatened in Washington pursuant to the Endangered Species Act and can be found in coastal areas. There are three bald eagle nests within one half mile (~2,400 feet) of the project area. A fourth nest is located just over one mile (~5,800 ft) away from the site. Nesting, roosting, and perching territory extends along much of the Nooksack River, although the intense agricultural nature of this area restricts appropriate trees to a narrow band along the river with scattered trees over the surrounding landscape.

Marbled murrelet is listed as threatened and is found in coastal Old-growth forest areas of Washington. Marbled murrelets do not nest or feed in the project area. The project site lacks old-growth forest and does not contain suitable marbled murrelet habitat.

Bull trout and Dolly Varden have been found to co-exist in streams in this region. Because these two species are closely related and have similar biological characteristics, the WDFW manages bull trout and Dolly Varden in the Nooksack together as "native char." Bull trout and Dolly Varden are very difficult to distinguish based on physical features and share similar life history traits and habitat requirements. Both Dolly Varden and bull trout are designated as threatened species by the USFWS. Bull trout was designated on June 10, 1998, as threatened in the contiguous U.S.A. (lower 48 states), and specifically, the Coastal/Puget Sound Distinct Population segment was listed by the USFWS in November 1999. Dolly Varden were designated as threatened on January 9, 2001 due to their similarity of appearance to bull trout.

Anadromous and resident bull trout spawn in the upper Forks of the Nooksack River, and are known to frequent its lower reaches.

Puget Sound Chinook salmon, an anadromous fish run in the Nooksack River area, is listed as threatened under the ESA. Chinook salmon in the Nooksack Basin are considered part of the Puget Sound Chinook salmon Evolutional Significant Unit (ESU) that was listed as threatened in March 1999. Three Chinook stocks have been identified in the Nooksack River basin: the North Fork spring-run, the South Fork spring-run, and the Samish/Mainstem fall-run. The two spring-runs are distinct wild stocks of native origin while the Samish/Mainstem fall-run is a non-native introduced hatchery stock from the Green River.

Spring-run chinook generally enter the Nooksack River between late March and early August, migrate rapidly upstream to the forks and hold there until July through early August, and spawn generally from August through October (Williams et al. 1975). Fall-run chinook enter the river beginning in mid July and migrate upriver through end of September, migrate to the spawning grounds or hatchery of origin, and generally spawn from mid September through mid November (Williams et al. 1975). Juvenile salmonid smolts and fry chinook migrate downstream through the project reach from mid March through mid July (Williams et al. 1975). Available feeding and predator avoidance habitat in the lower river, during downstream migration to the estuary and marine environment, is usually associated with slow velocities along the shoreline or around woody debris and along shallow margin habitats of cobble and gravel bars. Given the general lack of rearing habitat and their migratory behavior, residence time of out-migrating chinook fry in the project reach is likely less than a few days.

Coho salmon within the Puget Sound/Strait of Georgia ESU are presently classified as a "candidate" for ESA listing. Candidate species are species that may be proposed or are under review for possible listing as a threatened or endangered species in the future. In its ESA status review, the Biological Review Team stated that although many coho populations within this ESU are abundant and apparently stable, there are a number of factors (high harvest rates, habitat degradation, and hatchery production) that may lead to substantial risks to whatever native production remains. The Biological Review Team stated that if the population continues to decline, this ESU is likely to become endangered in the foreseeable future.

Coho salmon of the Nooksack are dominant Puget Sound contributors to U.S. and Canadian sport and commercial fisheries. Nooksack River coho salmon are harvested in pre-terminal fisheries, Bellingham Bay terminal fisheries, and Lummi, Nooksack tribal river net fisheries, and river sport fisheries. The fish have been managed as a hatchery management unit under the Puget Sound Management Plan for nearly 27 years. Run size each year is large enough to provide both a harvestable surplus and a sufficient hatchery escapement. Between 1989 and 1999 the estimated total number of Nooksack coho salmon returning to Puget Sound has ranged from 43,300 to 244,600 with escapement estimates ranging from 7,950 to 99,000.

Three naturally spawning stocks of coho salmon were tentatively identified by WDFW (1993) in the Samish/Nooksack Basin region. These are the Nooksack, Samish, and North Puget Sound Tributary stocks. Stock separation was primarily based on geographic distribution. Life history timing or morphological differences between the groups of fish do not exist or have not been observed. Within the Nooksack basin, it is uncertain whether a naturally spawning Nooksack coho population exists that is sufficiently distinct from the hatchery population to be considered a native stock. In the Nooksack River basin, natural escapement has been estimated to range from 500 to 5,500 since 1966. The highest escapement in this period (1987) corresponds to the second highest hatchery release to the system (6.2 million in 1985). Some biologists believe the native Nooksack coho stock is extinct, while others argue that there is high likelihood that a segment of the naturally spawning population retains sufficient genetic distinction to warrant its classification as a native stock. The NMFS has deferred any decisions on this ESU while additional information is gathered.

The Nooksack River coho stocks are typical of the Puget Sound/Strait of Georgia ESU with regard to their life history. Following emergence, the majority of stream-rearing juveniles spend eighteen months in fresh water before migrating downstream to saltwater as river flows increase

with annual spring snowmelt and runoff. Following eighteen months in salt water, adult coho return to the Nooksack River and migrate upstream from August through early January. Spawning occurs in the upper mainstem and the accessible portions of the Forks from mid-November through January.

3.6 Cultural Resources

There are no known cultural resources in the project area. The disturbed nature of the levee and bank material (imported fill, sediment deposited from the river, or dredged from the river) significantly reduces the chance of finding cultural resources. A cultural resources survey was conducted in the repair area and a cultural resource report was be prepared as part of the Section 106 of the National Historic Preservation Act compliance process. A letter from the State Historic Preservation Officer concurring with the Corps finding of No Historic Properties Affected dated 19 April 2004 was received. The construction contract would contain a stop work clause to notify the appropriate officials if evidence of cultural or human artifacts were unearthed

3.7 Water Quality

Warm water temperatures are a problem in the mainstem Nooksack River. Water temperatures in the Nooksack River near North Cedarville (RM 30.9) were in the "poor" category (warmer than 16 C) for 54% of the samples in 1996 and 1997 (data from USGS 2001). Conditions worsen downstream near Everson (RM 23.2) where 65% of the samples are warmer than 16 degrees Celsius and the peak temperature was 19.0 degrees Celsius. Near the mouth (RM 3.4), 60% of the samples were warmer than 16 C in July and August of 1996 and 1997 (data from USGS 2001). The entire length of the mainstem Nooksack River has a severely degraded riparian, which contributes to water quality exceedances. Shade levels were remarkably poor with no mainstem reaches achieving more than 40% of target shade levels, and most reaches had percent canopy cover in the 0 to 20% range (Coe 2001). Other causes include the surrounding agriculture, residential, and urban land use and the increased sedimentation from upstream sources. All of these water quality problems pose serious impacts to salmonids and result in a "poor" water quality rating for the mainstem Nooksack River

3.8 Air Quality and Noise

Air quality in the Nooksack Basin is generally good. However, urban areas experience moderately degraded air quality during certain times of the year. Motor vehicles are the largest source of air pollutants in Whatcom County, although wood-burning stoves also contribute. Particulates, sulfur dioxide, ozone, and carbon monoxide are the pollutants of concern. High concentrations of these pollutants generally occur during the dry, late summer months when minimal wind conditions persist for long periods of time or during mid-winter thermal inversions.

Carbon monoxide, a product of incomplete combustion, is generated by automobiles and other fuel burning activities (e.g. residential heating with wood). The highest ambient concentrations of carbon monoxide tend to occur in localized areas such as major roadways and intersections during periods of low temperatures, light winds, and stable atmospheric conditions. Ozone is a highly reactive form of oxygen created by sunlight-activated chemical reactions of nitrogen oxides and volatile organic compounds. Unlike high carbon monoxide concentrations which tend to occur close to emission sources, ozone problems tend to be regional since ozone

precursors can be transported far from their sources. Ozone precursors are primarily generated by motor vehicle engines.

This rural area is typically quiet. Typical existing noise consists of those generated by farm machinery, trucks, automobiles, and other internal combustion engines.

3.9 Utilities and Public Services

The levee protects 715 acres of agricultural land, residential properties, and associated public infrastructure, such as roads.

3.10 Land Use

Land use in the project area is primarily rural residential and agricultural. There are scattered homes and farms in the surrounding area.

3.11 Recreation

Recreational use of the project site is limited to activities allowed by the farm owner, which may include hunting and access via the levee to the river for fishing. Recreational uses of the nearby Nooksack River at the project site are seasonal and moderate. They include, but are not limited to, sightseeing, wildlife observation, photography, fishing, and boating.

3.12 Hazardous, Toxic, and Radioactive Waste

There are no known sites at the project locations that have any hazardous, toxic, or radioactive waste, nor will the project introduce new hazardous, toxic, or radioactive waste to the area.

3.13 Aesthetics

Along the Nooksack River, the landscape elements of landform, vegetation, water, color, and related factors have been impaired by the levees and agricultural use of adjacent land. Scenery and visual attractions are limited to the river corridor over this reach of the river.

4. EFFECTS OF THE ALTERNATIVES

4.1 General

4.1.1 Proposed Alternative

There were short-term impacts from construction of the replacement levee, which required approximately 3 weeks to complete. The primary impact was a temporary increase in noise due to construction equipment. The proposed project did not require in water work, as this levee is setback a distance of approximately 700 feet from the Nooksack River in the proposed repair area.

4.1.2 No-Action Alternative

The No-Action alternative would not have created any noise and it would not have provided the desired flood protection.

4.2 Hydrology, Soils and Topography

4.2.1 Proposed Alternative

Construction activities associated with the proposed project resulted in the placement of a 10-inch layer of clay along an 800-foot section of the levee. Approximately 500 cubic yards of clay was required to accomplish this. Approximately 3,000 cubic yards of well graded material was used to fill in a scour hole, and another 1,000 cubic yards of well graded material was used to fill in the narrow areas along the top of the levee to provide a uniform level of structural stability along the entire levee. An 8-inch layer of topsoil was placed over the clay layer to facilitate vegetation growth (a total of ~500 cubic yards). In addition, soils were compacted in areas where heavy machinery operated such as the access road.

4.2.2 No-Action Alternative

The No-Action alternative would not improve the structural stability of the levee and it would not provide the desired flood protection.

4.3 Vegetation

4.3.1 Proposed Alternative

Prior to construction the vast majority of levee in the immediate construction area was devoid of vegetation or vegetated with grass. The only vegetation that the Corps removed from the riverward slope of the 800 foot reach includes several red alders and cottonwood trees with approximately 10-15 inch diameter girth at the base that are located at the northern tip of the dogleg.

The repaired levee and disturbed areas were hydro-seeded after construction. Overall project effects to vegetation were insignificant as very little vegetation existed prior to construction. In addition, our replanting efforts (hydro-seeding) increased vegetation in the project area.

4.3.2 No-Action Alternative

The No-Action alternative would have resulted in a portion of the levee being temporarily devoid of vegetation however several alders and cottonwoods would remain.

4.4 Fish and Wildlife

4.4.1 Proposed Alternative

No effects to fish and wildlife were observed.

4.4.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

4.5 Threatened and Endangered Species

4.5.1 Proposed Alternative

Bald Eagle

The project impacts were not a concern to nesting behavior due to construction timing. WDFW eagle experts have indicated that the young in this nest have typically fledged by the middle of July. The noise that was generated by a bulldozer or dump truck did not exceed those generated by farming equipment such as tractors or harvesters. No construction activity restrictions are identified in the ESA documentation due to known bald eagle ground feeding or perch areas being within close proximity to the project area. The ESA document addressed the expected effect of the project on bald eagles.

Marbled murrelet

The project did not occur during marbled murrelet nesting season and would not have a detrimental effect on the species. The ESA document addressed the expected effect of the project on marbled murrelet.

Bull trout and Dolly Varden

The project site is a levee setback approximately 700 feet away from the river. This levee rehabilitation did not have any effect on these species.

Puget Sound Chinook salmon

The project site is a levee setback approximately 700 feet away from the river. This levee rehabilitation did not have any effect on these species.

Coho salmon

The project site is a levee setback approximately 700 feet away from the river. This levee rehabilitation did not have any effect on these species.

4.5.2 No-Action

No effects anticipated as a result of the No-Action alternative.

4.6 Cultural Resources

4.6.1 Proposed Alternative

A cultural resources survey was conducted in the repair area and a cultural resource report was prepared as part of the Section 106 of the National Historic Preservation Act compliance process. A letter from the State Historic Preservation Officer concurring with the Corps finding of No Historic Properties Affected dated 19 April 2004 was received. The construction contract contained a stop work clause to notify the appropriate officials if evidence of cultural or human artifacts were unearthed.

4.6.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

4.7 Water Quality

4.7.1 Proposed Alternative

Construction activities did not influence water quality of the Nooksack or the agricultural ditch/stream. No repair activities occurred within the ordinary high water mark of either waterbody, nor did fill occur in waters of the United States (i.e. no wetlands will be filled or impacted). During construction, best management practices for equipment operation and storage and use of hazardous materials were employed. Therefore, no leakage or spills of hazardous materials occurred.

According to the Code of Federal Regulations, Title 33, Section 323.4 (a) (2) levee repair is an activity not prohibited by or otherwise subject to regulation under Section 404 of the Clean Water Act. Therefore, a section 401 Water Quality Certification was not required.

4.7.2 No-Action Alternative

It is likely that if the project was not constructed the levee would fail during the upcoming flood season, resulting in an increase in turbidity in the Nooksack River.

4.8 Air Quality and Noise

4.8.1 Proposed Alternative

Air quality meet the standards as set forth by the Washington Department of Ecology and were not permanently affected by the construction of the project. Noise was intermittent at the site and varied depending on the frequency of trucks arriving with the material and construction of the identified features. Noise disruption factors were considered for their effect on threatened and endangered species in the ESA document.

During construction, there was a temporary and localized reduction in air quality due to emissions from heavy machinery operating during fill placement, and grading. These emissions did not exceed EPA's de minimis threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan. Therefore, impacts were not significant.

Ambient noise levels increased slightly while construction equipment was operating. However, these effects were temporary and localized, and occurred only during daylight working hours. As a result, impacts were insignificant.

4.8.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

4.9 Utilities and Public Services

4.9.1 Proposed Alternative

Failure to repair the levee could have a serious impact on local commercial and private citizens through increased flood damage to homes, agricultural operations, roads, and other commercial and residential infrastructure. Construction vehicles associated with the project had a minimal

disruption due to increased truck traffic merging, turning and traveling together with local traffic. This disruption was temporary and highly localized, and therefore impacts were insignificant.

4.9.2 No-Action Alternative

The No-Action alternative would not result in an increase in traffic on the local roads, and it would not result in providing the desired flood protection to public infrastructure.

4.10 Land Use

4.10.1 Proposed Alternative

The project did not cause any unique effects or impacts to land use.

4.10.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

4.11 Recreation

4.11.1 Proposed Alternative

Effects to recreation values because of the levee repair were insignificant. After the project construction, all recreational uses are still possible such as hunting, ATV use, and site seeing. Recreational resource and value uses did not change as a result of the project.

4.11.2 No-Action Alternative

No effects occurred as a result of the No-Action alternative.

4.12 Hazardous, Toxic, and Radioactive Waste

4.12.1 Proposed Alternative

There are no sites at the project location that have any hazardous, toxic, or radioactive waste; therefore, the Corps did not have any effect.

4.12.2 No-Action Alternative

No effects anticipated as a result of the No-Action alternative.

4.13 Aesthetics

4.13.1 Proposed Alternative

Restoration of the constructed features of the project did not significantly affect the aesthetics of the site or the river.

4.13.2 No-Action Proposed Alternative Aesthetics

No effects anticipated as a result of the No-Action alternative

5. UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse effects associated with this project included:

(1) A temporary and localized disruption of local traffic by construction vehicles.

6. COORDINATION

The following agencies and entities have been involved with the environmental coordination of this project:

- Washington Department of Ecology (Ecology)
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)
- Washington Department of Fish and Wildlife (WDFW)
- The Nooksack Tribe
- The Lummi Tribe
- Washington State Office of Archaeology and Historic Preservation
- Whatcom County
- Washington Department of Emergency Management

The U.S. Fish and Wildlife Service (USFWS), Whatcom County Public Works and a biologist representing the Nooksack tribe have visited the site. Due to the location of the project no potential adverse effects to the environment were identified.

7. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this evaluation. Future federal actions would require additional NEPA and ESA evaluation at the time of their development.

There were no significant cumulative effects that were identified from implementation of this project. Because of frequent flooding in the area, the adjacent property is expected to remain agricultural, and no development is anticipated in the vicinity of the project. There are no known plans to raise the levees to provide an increased level of flood protection. The levees will continue to be maintained at their current level. The Corps knows of no other actions that are reasonably certain to occur within the action area.

Cumulative impacts from local, short-term disturbances caused by the construction project (noise, emissions, etc.) were minor and insignificant.

8. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irreversible and irretrievable commitment of resources is the use of materials, resources, or land during implementation of an alternative that makes these resources unavailable for other uses, given known technology and reasonable economics.

Industrial resources required during implementation of the selected alternative included fossil fuels, construction-related materials, as well as labor and capital. The majority of the levee and the alignment of the access road occupy land that was not in use. The levee repairs returned most of the land back to its pre-flood agricultural land use.

9. ENVIRONMENTAL COMPLIANCE

9.1 National Environmental Policy Act (NEPA) (42 USC 4321 et seq.)

In accordance with the National Environmental Policy Act, federal projects are required to declare potential environmental impacts and solicit public comment. The purpose of this document is to solicit public comment and fulfill the Corps of Engineers documentation requirements under the National Environmental Policy Act.

9.2 Endangered Species Act of 1973, as Amended (16 USC 1531-1544)

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. Prior to construction, ESA documentation was prepared for the project. A finding of No Effect was determined for all potentially occurring threatened or endangered species. The National Marine Fisheries Service (NMFS) and USFWS were notified of the project location and action. The ESA document is contained in Appendix C.

9.3 Clean Water Act, as Amended (33 USC 1251 et seq.)

According to the Code of Federal Regulations, Title 33, Section 323.4 (a) (2) levee repair is an activity not prohibited by or otherwise subject to regulation under Section 404 of the Clean Water Act. Therefore, a section 401 Water Quality Certification is not required.

9.4 Rivers and Harbors Act (33 U.S.C. 403)

The Rivers and Harbors Act of 1899 prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waters of the United States in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army. Under Section 10 of the Rivers and Harbors Act, a navigable waterway is defined as those waters that are subject to the ebb and flow of the tide shoreward to the mean high water mark. This act is not applicable to the proposed project because the levee repair does not restrict navigation or access to navigable waters.

9.5 Coastal Zone Management Act (16 U.S.C. 1451-1465)

The Coastal Zone Management Act of 1972 as amended (15 CFR 923) requires Federal agencies to carry out their activities in a manner, which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program.

The proposed action will simply restore the Federal erosion control project to a state comparable to its original condition before damage by the elements occurred. Work will not extend beyond the footprint of the original project, and will not cause substantial adverse effects to shore resources or the environment. Pursuant to Section 23.50.32 (b) of the Whatcom County Shoreline Management Program, the Corps believes this proposal is exempt from substantial development permit requirements, making it consistent to the maximum extent practicable with

the Whatcom County Shoreline Management Program. The Corps received a letter from the Department of Ecology agreeing with the Corps determination on September 16, 2004.

9.6 National Historic Preservation Act) (16 USC 470 et seq., 110)

Section 106 of the National Historic Preservation Act (36 CFR PART 800) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. As required under Section 106 of the NHPA, the Corps has coordinated with the Washington State Office of Archeology and Historic Preservation (OAHP), the Nooksack Tribe, and other interested parties.

There are no known cultural resources in the project area. The disturbed nature of the levee and bank material (imported fill, sediment deposited from the river, or dredged from the river) significantly reduces the chance of finding cultural resources. A cultural resources survey was conducted in the repair area and a cultural resource report was prepared as part of the Section 106 of the National Historic Preservation Act compliance process. A letter from the State Historic Preservation Officer dated 19 April 2004 concurring with the Corps finding of No Historic Properties Affected was received.

9.7 Clean Air Act As Amended (42 USC 7401, et seq.)

The Clean Air Act requires states to develop plans, called State Implementation Plans (SIP), for eliminating or reducing the severity and number of violations of National Ambient Air Quality Standards (NAAQS) while achieving expeditious attainment of the NAAQS. The act also required Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is defined as an action that will not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The U.S. Army Corps of Engineers has determined that emissions associated with this project did not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone).

9.8 Wild and Scenic Rivers Act (16 U.S.C. 1271-1287)

The Wild and Scenic Rivers Act (P.L. 90-542, as amended) selected rivers of the Nation, which, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values. The purpose of the Act is to preserve these rivers in their free-flowing condition, and be protected for the benefit and enjoyment of present and future generations.

An inventory, the National Wild and Scenic Rivers System, was established in December 1, 1992 and is published by the Department of the Interior and the Department of Agriculture, Forest Service and can be found at web site http://www.nps.gov/rivers/wildriverslist.html#wa. The Nooksack River is not one of the selected rivers.

The Nationwide Rivers Inventory (NRI) is another listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values judged to be of more than local or regional significance. This inventory is found at (http://www.ncrc.nps.gov/programs/rtca/nri/STATES/wa2.html). The Nooksack River is listed in the NRI, but not the particular reach where the project is located.

9.9 Migratory Bird Treaty Act and Migratory Bird Conservation Act (16 USC 701-715)

The proposed project would be conducted in such a manner that migratory birds would not be harmed or harassed. The proposed work would be outside the nesting season for most birds. Riparian vegetation suitable for nesting would be avoided, where possible. Any shrub removal would be limited to after July 1 to reduce impacts to nesting birds. Where nesting vegetation is removed, adequate riparian vegetation for nesting sites exists upstream and downstream from the project site. Increased vegetative planting would mitigate for riparian vegetation that is removed.

9.10 Fish and Wildlife Coordination Act, as Amended (16 USC 661 et seq.)

While the proposed project is a Federal water resources development project, private funds were originally used to construct the levee. Since the project is not a Civil Works activity, the Corps' Seattle District policy is that emergency PL84-99 projects do not require FWCA coordination. Given the size and scope of the project, fish and wildlife coordination issues were not expected, which would have resulted in a "No Action" determination by USFWS. Fish and wildlife coordination information and issues, if any, can be provided during the EA public review comment period. The project is in compliance with this act.

9.11 Federal Water Project Recreation Act, as Amended (16 USCA 4612 et seq.)

The Federal Water Project Recreation Act (P.L. 89-72), as amended, requires that full consideration be given to opportunities for fish and wildlife enhancement in investigating and planning Federal water resources projects. The proposed project is consistent with this act.

9.12 Watershed Protection and Flood Prevention Act, as Amended (16 U.S.C. 1001 et seq.)

The Watershed Protection and Flood Prevention Act (Public Law 83-566) is commonly known as the Small Watershed Program. USDA-Natural Resources Conservation Service (NRCS) administers this program. The program authorizes Federal assistance to local organizations for planning and carrying out projects in watershed areas for conservation and use of land and water and flood prevention. This project is not a product of the Small Watershed Program and therefore this act is not applicable to this project.

9.13 Farmland Protection Policy Act (7 U.S.C. 4201, et seq.)

The Farmland Protection Policy Act (Public Law 97-98, Sec. 1539-1549) requires identification of proposed actions that would affect any lands classified as prime and unique farmlands. The proposed project would not affect farmland classified as prime and unique. Repairing the levee would be consistent with this act.

9.14 Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)

RCRA was enacted in 1976 to address the issue of how to safely manage and dispose of municipal and industrial waste, regulate underground storage tanks (USTs) that store petroleum or hazardous substances, establish a system for managing solid (primarily nonhazardous) waste, including household waste, and set forth the framework for EPA's comprehensive waste management program. No abandoned waste has been observed during project site visits. If abandoned or buried hazardous waste or pesticides were discovered during construction, it would be managed in accordance with RCRA or CERCLA requirements, as applicable. Contractor hazardous materials and waste would be managed in accordance with RCRA requirements. The project is in compliance with this act.

9.15 Executive Order 11988, Floodplain Management (24 May 1977)

Executive Order 11988 requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy of the floodplain, and to avoid direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains.”

Section 8 of E.O. 11988 notes that the order does not apply to assistance provided for emergency work essential to save lives or protect public property, health, and safety. The project has not constructed a change that would affect occupancy of the floodplain. By repairing the levee breach, the project would be consistent with the act in reducing the risk of flood and minimize the impact of floods on human safety, health, and welfare, while not changing floodplain occupancy conditions.

9.16 Executive Order 12898, Environmental Justice

Executive Order 12898 directs every federal agency to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. The project does not involve siting a facility that will discharge pollutants or contaminants, so no human health effects would occur. Therefore the project is in compliance with this act.

9.17 Executive Order 11990, Protection of Wetlands, May 24, 1977

The purpose of this project is to restore/enhance aquatic and riparian habitat. No wetlands would be impacted by this project.

9.18 Treaty Rights

In the mid-1850's, the United States entered into treaties with a number of Native American tribes in Washington. These treaties guaranteed the signatory tribes the right to "take fish at usual and accustomed grounds and stations . . . in common with all citizens of the territory" [*U.S. v. Washington*, 384 F.Supp. 312 at 332 (WDWA 1974)]. In *U.S. v. Washington*, 384 F.Supp. 312 at 343 - 344, the court also found that the Treaty tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right

comprehends certain subsidiary rights, such as access to their "usual and accustomed" fishing grounds. More than *de minimis* impacts to access to usual and accustomed fishing area violates this treaty right [*Northwest Sea Farms v. Wynn*, F.Supp. 931 F.Supp. 1515 at 1522 (WDWA 1996)]. In *U.S. v. Washington*, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The Ninth Circuit has held that this right also encompasses the right to take shellfish [*U.S. v. Washington*, 135 F.3d 618 (9th Cir 1998)]. Native Americans do harvest salmonids from the Nooksack River system.

The proposed project has been analyzed with respect to its effects on the treaty rights described above. We anticipate that:

(1) The work did not interfere with access to usual and accustomed fishing grounds or with fishing activities or shellfish harvesting;

(2) The work did not cause the degradation of fish runs and habitat; and

(3) The work did not impair the Treaty tribes' ability to meet moderate living needs

Table 9.1. Summary of Consistency of Project With Applicable Laws, Regulations and Policies[1]

LAWS AND REGULATIONS RELATING TO THE PROPOSED ALTERNATIVES	REQUIREMENT SUMMARIZED	CONSISTENCY OF PREFERRED ALTERNATIVE
National Environmental Policy Act (NEPA)	Requires all federal agencies to consider the environmental effects of their actions and to seek to minimize negative impacts.	Consistent
Clean Air Act	Requires federal agencies to consult with state air pollution control agencies to assure that construction plans conform with local air quality standards	Consistent
Clean Water Act (CWA)	Requires federal agencies to protect waters of the United States. Disallows the placement of dredged or fill material into waters (and excavation) unless it can be demonstrated there are no reasonable alternatives. Requires federal agencies to comply with state water quality standards.	Covered by 33 CFR 323.4 (a) 2
Rivers and Harbors Act	Prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waters of the U.S. in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army.	Not in Section 10 jurisdiction
Fish and Wildlife Coordination Act	Requires federal agencies to consult with the US Fish & Wildlife Service on any activity that could affect fish or wildlife.	Not Applicable
Endangered Species Act	Requires federal agencies to protect listed species and consult with US Fish & Wildlife or NMFS regarding the proposed action.	Consistent
National Historic Preservation Act	Requires federal agencies to identify and protect historic properties.	Completed
Wild and Scenic Rivers Act	Requires that "In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas."	Consistent
Executive Order 11988, Floodplain Management	Requires federal agencies to consider how their activities may encourage future development in floodplains.	Consistent

Migratory Bird Treaty Act and Migratory Bird Conservation Act	Requires not harming or harassing migratory birds.	Consistent
Federal Water Project Recreation Act, as Amended	Requires full consideration for fish and wildlife enhancement opportunities when planning Federal water resources projects.	Consistent
Watershed Protection and Flood Prevention Act, as Amended	Authorizes Federal assistance for implementing projects in watershed areas and use of land and water and flood prevention.	Consistent
Farmland Protection Policy Act	Requires identification of proposed actions that would affect any lands classified as prime and unique farmlands.	Consistent
Resource Conservation and Recovery Act (RCRA)	Requires managing hazardous materials and waste in accordance with RCRA requirements.	Consistent
Executive Order 11990, Protection of Wetlands	Requires federal agencies to protect wetland habitats.	Consistent
Coastal Zone Management Act (CZMA)	Requires federal agencies to comply with state and local plans to protect and enhance coastal zones and shorelines.	Consistent to the maximum extent practicable
Washington Hydraulic Code	Requires proponents of developments, etc. to protect state waters, wetlands and fish life.	Not Applicable
Whatcom County Flood Hazard Reduction Plan	Requires implementing projects that would result in innovative, comprehensive and permanent solutions to flooding problems using environmentally sensitive techniques.	Not Applicable
Treaty Rights	Require that the project has been analyzed with respect to its effects on the treaty rights.	Consistent

10. CONCLUSION

Based on the above analysis, the levee rehabilitation project was not a major Federal action significantly affecting the quality of the human environment, and therefore did not require preparation of an environmental impact statement.

11. REFERENCES

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13. APPENDICES

***Appendix A*: Request for Corps Assistance**

WHATCOM COUNTY
PUBLIC WORKS DEPARTMENT
JEFFREY M. MONSEN, P.E.
Director

River and Flood Division

322 N. Commercial Street, Suite 120
Bellingham, WA 98225
Phone: (360) 676-6876, (360) 398-1310
Fax: (360) 738-2468

November 14, 2003

Doug Weber
US Army Corps of Engineers
P.O. Box C-3755
4735 E. Marginal Way S.
Seattle, WA 98124-2255

Re: Levee Repair Work in Whatcom County

Dear Mr. Weber:

During the recent flooding in Whatcom County on October 17th – 21st, 2003, multiple levee breaches occurred along the Nooksack River and its tributaries. They include the following:

- The "Ritter Road Levee" - an approximately 150-foot section of this levee located on the left bank of the Nooksack River near Ferndale was damaged.
- The "Sande-Williams Levee" – an approximately 100-foot section of this levee located on the right bank of the Nooksack River near Deming was damaged.
- The "Right Bank Bertrand Creek Levee" – an approximately 100-foot section of this levee located on right bank of Bertrand Creek near Ferndale failed.
- The "Left Bank Bertrand Creek Levee" - two damaged sections, both approximately 25-feet in width, occurred on the left bank of Bertrand Creek near Ferndale.
- The "Hawley Levee" – an approximately 1,000-foot section of this levee located on the left bank of the Nooksack River near Lynden was damaged.

We are officially requesting assistance under the PL84-99 Program in implementing repair projects at these locations. The County will act as the local sponsor and provide all necessary lands, rights-of-way, and easements for these projects.

If you have any questions or need any additional information please don't hesitate to contact me at (360) 676-6876.

Sincerely,

James E. Lee, P.E.
River & Flood Engineer

I:\FLOOD\112 - General Flood Works (Projects)\R & M Proj\2003\Correspondence\ACOE PL84-99 assistance letter.doc

***Appendix B*: ESA Consultation Document**

NOOKSACK RIVER RITTER ROAD LEVEE

Rehabilitation of Flood Control Works
Whatcom County, Washington
ESA Consultation Document
July 2004

1.0 Introduction

This document evaluates the environmental effects of the proposed repair and reconstruction of the Ritter Road levee, located on the Nooksack River Whatcom County between Lynden and Ferndale, Washington. The Ritter Road repair site is located approximately 1,200 feet east of the terminus of Ritter Road, and approximately 700 feet south of the left bank of the Nooksack River. The levee protects agricultural lands, residences, and public infrastructure. The U.S. Army Corps of Engineers, Seattle District, is proposing the following project under the authority of Public Law 84-99 (33 USCA 701n). The proposed project consists of placing a 10 inch layer of clay on the riverward slope of an 800 foot section of the levee.

The Nooksack River rose above the zero damage flood stage in October 2003 resulting in severe erosion to approximately 80 linear feet of the levee in this area. On 23 October 2003, the Seattle District U.S. Army Corps of Engineers responded to a request for emergency assistance from Whatcom County Washington to repair an 80-foot breach in a flood control levee between Lynden and Ferndale, Washington. The County and Corps fought the flood by placing 8” minus rock into the scour hole and finally repaired the breach. The Corps constructed a 1,190-foot road to access the breached levee, and repaired approximately 260 feet of the existing levee. In total, 996.54 tons of 8” minus rock was used for the road and turnout areas, and 8,406.3 tons of pit run material was used to repair the breach and to finish the road and turnout. The repair resulted in a porous levee that is vulnerable to failure, and it is estimated to provide protection for a 2-yr flood event. In November 2003, Whatcom County Public Works Department requested assistance under the PL84-99 Program in implementing a repair project at this location. The Corps has determined that the levee is in need of permanent repair and is proposing to repair approximately 800 feet of the levee. This will be accomplished by repairing the weak points along the top of the levee with well graded material (a total of 1000 cubic yards of gravel/soil) and placing a 10 inch layer of clay on approximately 800 linear feet of the riverward face of the levee (a total of 500 cubic yards of clay). The levee face will be dressed and finished with an 8-inch layer of topsoil (a total of 500 cubic yards of topsoil) and hydro seeded. In addition, a large scour hole located on the northwest end of the levee will be filled in with approximately 3,000 cubic yards of well- graded material. Several alder and cottonwood trees larger than 4” diameter will be removed during construction if the county has not completed this maintenance activity prior to construction. Project construction is scheduled for late August through mid September. Approximately 70% of levee including the back, top, and riverward slope is vegetated with grass or volunteer crop species, and 25% is devoid of any vegetation. The northwest end of the levee (approximately 5.0 % of the total length) is vegetated with several cottonwood and alder trees that will be removed.

The Ritter Road repair site is located approximately 1,200 feet east of the terminus of Ritter Road, and approximately 700 feet south of the left bank of the Nooksack River in Whatcom

County between Lynden and Ferndale, Washington at Range 2 East, Township 40 North, Section 34.

The potential impacts to species listed under the Endangered Species Act (ESA) and candidate species as a result of the Nooksack River Sande-Williams Levee Repair project are addressed in this ESA document. There are three species listed by the U.S. Fish and Wildlife Service (USFWS) under the ESA as threatened; bull trout (*Salvelinus confluentus*), bald eagles (*Haliaeetus leucocephalus*), and marbled murrelet (*Brachyramphus marmoratus*). The National Marine Fisheries Service (NMFS) identified one species under ESA listed as threatened; Puget Sound chinook salmon (*Oncorhynchus twtshawytscha*), and one candidate species; Puget Sound / Georgia Strait ESU of coho salmon (*Oncorhynchus kisutch*) as utilizing the proposed project location.

2.0 Effects of the Proposed Action and Effects Determinations

2.1 Chinook Salmon

The proposed project will have **no affect** to Chinook salmon or designated critical habitat for this species. The project site is a levee setback approximately 700 feet away from the river.

2.2 Bull Trout

The proposed project will have **no affect** to bull trout. The project site is a levee setback approximately 700 feet away from the river.

2.3 Bald Eagles

The project impacts are not a concern to nesting behavior due to construction timing. WDFW eagle experts have indicated that the young in this nest have typically fledged by the middle of July. The noise that will be generated by a bulldozer or dump truck will not exceed those generated by farming equipment such as tractors or harvesters. No construction activity restrictions have been identified due to known bald eagle ground feeding or perch areas being within close proximity to the project area. Since construction activities will not occur during the nesting season, it will not affect nesting habitat or behaviors. Prey (salmonid) production will not be affected due to construction activities. The proposed project will have **no affect** to bald eagles.

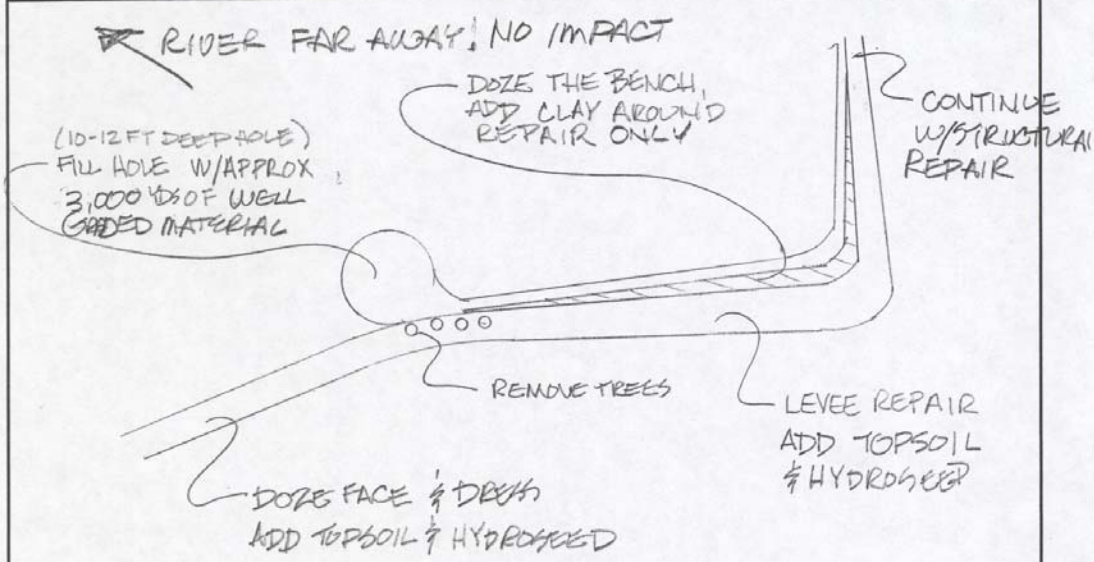
2.4 Marbled Murrelet

Marbled murrelets do not nest or feed in the project area. The project site lacks old-growth forest and does not contain suitable marbled murrelet habitat. The project would not occur during marbled murrelet nesting season and would not have a detrimental effect on the species. The proposed will have **no affect** to the marbled murrelet.

***Appendix C*: Proposed Project Drawing**

ENGINEERING DESIGN SHEET OFFICE SYMBOL:

PROJECT	COMPUTED BY	DATE:
NOOKSACK		SHEET: OF:
SUBJECT	CHECKED BY	PART:
RITTER ROAD REHAB		



DIKE DISTRICT AGREED TO BRUSH LEVEE BEFORE WE START REPAIR
MALCOLM JOHNSON IS LANDOWNER. MET W/BUZZ - DD COMMISSIONER

MOB/DEMOB EQUIP

1	200 SERIES EXCAVATOR	40 hrs reg, 10 hrs OT
1	D8 or D4, 80 hp Dozer	40 hrs reg, 10 hrs OT
1	SOLO TRUCK	40 hrs reg, 10 hrs OT

4000 YDS WELL GRADED MAT'L
500 YDS 3/4" MINUS (ACCESS ROAD)
500 YDS TOPSOIL
HYDROSEED 10,000 SF
500 YDS CLAY MAT'L FOR FACE

***Appendix D*: Finding of No Significant Impact**

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT. CORPS OF ENGINEERS
P. O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

CENWS-PM-PL-ER

REHABILITATION OF FLOOD CONTROL WORKS, RITTER ROAD LEVEE WHATCOM COUNTY, WASHINGTON

FINDING OF NO SIGNIFICANT IMPACT

1. Background. The U.S. Army Corps of Engineers, Seattle District (Corps) repaired and reconstructed the Ritter Road levee, located on the Nooksack River between Lynden and Ferndale, Washington in August-September 2004. This levee is located approximately 1,200 feet east of the terminus of Ritter Road, and approximately 700 feet south of the left bank of the Nooksack River. The levee protects agricultural lands, residences, and public infrastructure. The Corps constructed the following project under the authority of Public Law 84-99 (33 USCA 701n).

The Nooksack River rose above the zero damage flood stage in October 2003 resulting in severe erosion to approximately 80 linear feet of the levee in this area. On 23 October 2003, the Corps responded to a request for emergency assistance from Whatcom County, Washington to repair an 80-foot breach in a flood control levee between Lynden and Ferndale, Washington. Whatcom county and the Corps fought the flood by placing 8" minus rock into the scour hole, repairing the breach. The Corps constructed a 1,190-foot road to access the breached levee, and repaired approximately 260 feet of the existing levee. In total, 996 tons of 8" minus rock was used for the road and turnout areas, and 8,406 tons of pit run material was used to repair the breach and to finish the road and turnout. The repair resulted in a porous levee that was vulnerable to failure, and was estimated to provide protection for only a 2-yr flood event. In November 2003, Whatcom County Public Works Department requested assistance under the PL 84-99 Program in implementing a repair project at this location. The Corps determined that the levee was in need of permanent repair and repaired approximately 800 feet of the levee in late August through mid September, 2004.

2. Purpose and Need. The purpose of this project was to provide protection to the community and infrastructure from flood damage. This section of the levee sustained significant damage by erosion during a flood event in October 2003, was temporarily repaired and was in need of permanent repair.

There was a high potential that during the upcoming flood season, the river would overflow the levee again, further damaging the repaired levee, posing a major threat to the community.

3. Action. The project was accomplished by repairing the weak points along the top of the levee with well graded material (a total of 1000 cubic yards of gravel/soil) and placing a 10 inch layer of clay on approximately 800 linear feet of the riverward face of the levee (a total of 500 cubic

yards of clay). The levee face was dressed and finished with an 8-inch layer of topsoil (a total of 500 cubic yards of topsoil) and hydro-seeded. In addition, a large scour hole located on the northwest end of the levee was filled in with approximately 3,000 cubic yards of gravel.

4. Summary of Environmental Impacts. Pursuant to the National Environmental Policy Act, an Environmental Assessment (EA) has been prepared for this work. This document describes the environmental consequences of the work, which are briefly summarized below.

The Corps coordinated with State and Federal resource agencies to assure careful consideration of fish and wildlife resources. No adverse impacts to threatened or endangered species were anticipated or observed. Impacts of construction activities on salmonids were reduced and/or avoided as the project was located approximately 700 feet from the Nooksack River. To further avoid impacts to fish the project was constructed in the in-water work window of June 15-September 30.

Unavoidable adverse impacts were generally localized in nature, short in duration, and minor in scope. None of these adverse impacts were significant either individually or cumulatively.

The primary impact was a temporary increase in noise due to construction equipment. Ambient noise levels increased slightly while construction equipment was operating. However, these effects were temporary and localized, and occurred only during daylight working hours. As a result, impacts were insignificant. The project did not require in water work, as this levee is set back a distance of approximately 700 feet from the Nooksack River. Overall project effects to vegetation were insignificant, as very little vegetation existed prior to construction. A cultural resources survey was conducted in the repair area and a cultural resource report was prepared as part of the Section 106 of the National Historic Preservation Act compliance process. A letter from the State Historic Preservation Officer concurring with the Corps finding of No Historic Properties Affected dated 19 April 2004 was received. Construction activities did not influence water quality of the Nooksack River. No repair activities occurred within the ordinary high water mark of the Nooksack River, nor did fill occur in waters of the United States. The project did not cause any unique effects or impacts to land use.

5. Finding. Based on the analysis described above and provided in more detail in the EA, this project was not a major Federal action significantly affecting the quality of the human or natural environment, and therefore did not require preparation of an environmental impact statement.

21 Oct 04
Date

Debra M. Lewis
Colonel, Corps of Engineers
District Engineer