

# Draft Environmental Assessment

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## Nooksack River – Vanderpol Levee Rehabilitation of Flood Control Works Whatcom County, Washington



July 2005



**US Army Corps  
of Engineers®**  
Seattle District

# **Nooksack River - Vanderpol Levee Rehabilitation of Flood Control Works**

## **Draft Environmental Assessment**

**July 2005**

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

### **Abstract:**

This Environmental Assessment (EA) evaluates the environmental effects of the proposed repairs to the Vanderpol levee system, located on the Nooksack River near Lynden, Washington. When intact, the levee system protects approximately 461 acres of agricultural land, residential properties, and associated public infrastructure, such as roads. The levee system consists of the main levee along river mile (RM) 12.5 to RM 14.5 and an associated tie-back levee that was built perpendicularly to the main levee. These levees were damaged during the 24-26 November 2004 flood event. The main levee sustained approximately 850 linear feet (LF) of overtopping scour damage on the landward slope of its downstream end, and the tie-back levee failed, resulting in an additional 250 LF of damage. In December 2004, the Whatcom County Public Works Department (WCPWD) requested assistance for repair under the authority of Public Law 84-99 [33 USC 701n; 33 CFR 203D]. The USACE evaluated the damage and is proposing to repair the landward side of the main levee and replace the associated tie-back levee.

The purpose of this project is to repair the levee system so that it can provide flood protection for agricultural, residential, and infrastructure properties. If no action were taken to repair the Vanderpol levee system, then the properties would be at risk for additional and possibly more severe damage during the upcoming flood season. The proposed project will not constitute a major federal action significantly affecting the quality of the human environment. In particular, no in-water work is proposed for this project.

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

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## ATTACHMENTS

**Attachment A** – Project Maps

**Attachment B** – Proposed Action Construction Drawings

**Attachment C** – Draft Finding of No Significant Impact (FONSI)

## **1.0 INTRODUCTION**

In November 2004, Whatcom County experienced severe flooding that damaged several of its levees along the Nooksack River. The Vanderpol levee system, near the town of Lynden, was one of the areas that sustained damaged. In December 2004, the Whatcom County Public Works Department (WCPWD) requested assistance for repair under the authority of Public Law (PL) 84-99 [33 USC 701n; 33 CFR 203D]. In response, the U.S. Army Corps of Engineers (USACE) is proposing to repair the two damaged sections of the levee system. Because the repair project involves the action of a federal agency, an Environmental Assessment (EA) is required in accordance with the National Environmental Policy Act of 1969 [Title 42 United States Code (USC), Chapter 55, Section 4321 et seq.]; Title 40 Code of Federal Regulations (CFR), Chapter V, Sections 1500-1508; and USACE Environmental Regulation (ER) 200-2-2. This draft EA discusses the background and need for the levee repair project, the proposed action and alternatives considered, the environmental effects of the project, and the agencies and persons consulted.

### **1.1 Location and Action Area**

The Vanderpol levee system is located in Township 40 North, Range 02 East, Section 36, along the left bank of the Nooksack River near the town of Lynden, in Whatcom County, Washington at river mile (RM) 12.5 to RM 14.5. The entire levee is approximately 10,000 feet long and protects 461 acres of agricultural land, residential properties, and associated public infrastructure such as roads. In its undamaged condition, it protects against the 15-year flood event.

The specific action area consists of 850 linear feet (LF) of main (i.e., river-abutting) levee and 250 LF of an associated tie-back levee that was built perpendicularly to the main levee. These sections sustained flood damage and are the focus of the repair. Attachment A provides a topographic map and aerial photo map of the specific action area.

### **1.2 Background**

The levee system was originally constructed by local parties to protect agricultural and residential interests, and is maintained by the WCPWD. Since the levee system was repaired in 1971, it must be at least 34 years old; however, the original date of construction is not known. The levee system has been subsequently repaired under the authority of PL84-99 in 1972, 1976, and 1984.

The present damage was sustained during 24-26 November 2004 when a 12-year flood event occurred. The 12-year recurrence interval was estimated based on analysis of data obtained from the nearby Ferndale stream gauge. As the river stage rose during the flood event, it began to impinge upon the tie-back levee (which was perpendicular to the flow) until overtopping and failure occurred. The flood water then scoured away the landward side of the main levee.

In December 2004, the WCPWD requested assistance for repair under the authority of PL84-99. The USACE evaluated the damage and is proposing to repair the landward side of the main levee and replace the associated tie-back levee.

### **1.3 Project Purpose and Need**

The purpose of this project is to repair the levee system so that it can provide flood protection for agricultural, residential, and infrastructure properties. If no action were taken to repair the Vanderpol levee system, then the properties would be at risk for additional and possibly more severe damage during the upcoming flood season.

### **1.4 Authority**

The Vanderpol levee rehabilitation is authorized by PL84-99. USACE rehabilitation and restoration work under this authority is limited to repair of flood control works damaged or destroyed by flood. Under PL84-99 the rehabilitated structure should be repaired to provide the same degree of protection as the original structure. This project has been given emergency status under PL 84-99 because the USACE has determined that if the levee were not repaired by the next flood event, then an imminent threat of loss of private and public property would exist.

## **2.0 PROPOSED ACTION AND ALTERNATIVES**

The following sections discuss the proposed action and alternatives that were considered for the repair work. For any action or alternative to be considered, it had to meet the following criteria: it had to be economically justifiable, it had to be environmentally acceptable, it had to minimize costs for both the sponsor and the Federal government, and it had to provide the same degree of protection as the previous structure.

The proposed action (i.e., the preferred alternative) consists of repairing the scour damage on the landward side of the main levee and replacing the tie-back levee. Alternatives to the proposed action that were considered (but rejected) included the No Action alternative, the Setback alternative, and the Non-structural alternative. Each of these is discussed separately below.

### **2.1 Proposed Action (Repair the Scour)**

The proposed action consists of repairing the damaged portions of the levees to their pre-flood conditions, following the original alignment and characteristics of the levees. Specifically, material that was scoured away from the landward side of the main levee (850 LF) will be replaced with imported granular fill, regraded to tie into the existing backslope, and then hydroseeded. The 250 LF of failed tie-back levee will be replaced with a granular fill core and spall blanket. The spall blanket will then be covered with field material and hydroseeded. Construction drawings for the proposed action are included in Attachment B.

Because the scour occurred on the landward side of the main levee and the tie-back levee is upland, **there will be no in-water work for this project.** In addition, there will be no removal of riparian vegetation in the project area. The only modification to vegetation will be the covering up of existing grasses found on the landward side of the main levee and along the tie-back levee as rehabilitation material is placed. Expected duration of construction is approximately 10 weeks, from late July to mid-October 2005.

Regarding access and staging areas, access to the site is available from West Wiser Lake Road, an existing public road. A permanent easement provided by the Public Sponsor (Whatcom County Public Works) grants ingress and egress from the public road to the levee. The stretch of

road between the public road and the levee is currently a dirt road, which will remain unmodified unless bulldozing is required to level the existing potholes. The levee top road also will be used to accomplish the repair work. No staging area is anticipated for the repair work.

The proposed action was selected because it best met the repair criteria: economically, it will provide the desired level of protection at the lowest cost; environmentally, it is acceptable for reasons discussed in Sections 3 and 4; financially, it will minimize sponsor and government costs because the structure will only be repaired (not improved or substantially modified); and structurally, it will provide the same degree of protection as the previous levee system.

## **2.2 No Action Alternative**

Under the No Action alternative, the Vanderpol levee system would be not be repaired. This alternative was rejected for several reasons. First, because the tie-back levee failed and can no longer provide a buffer, not repairing the levee system would leave the area susceptible to future damage from even a small flood event. Second, without an intact levee system, the immediate property owners would be at risk for additional and possibly more severe property damage. Third, the No Action alternative would not honor the request of the WCPWD for flood protection assistance under PL84-99. Finally, this alternative would not meet the requirement of PL84-99 that flood control structures be repaired to pre-flood conditions.

## **2.3 Setback Alternative**

Under the Setback alternative, a new levee system would be constructed behind the current levee system to match the pre-flood level of protection of the original levees (i.e. same levee height). This alternative was rejected because the costs were deemed significantly higher when compared to the costs for the proposed action. Additionally, since the most damaged portion of the levee (the tie-back) is over one hundred feet from the river channel, any new levee would be situated even farther from the river, providing questionable benefit.

## **2.4 Non-structural Alternative**

Under the Non-structural alternative, existing residential and agricultural property would be bought out and any necessary public infrastructure would be relocated to avoid any future damage. This alternative was rejected because the costs were deemed significantly higher when compared to the costs for the proposed action. In addition, this project would exceed the scope of PL84-99, which authorizes that levees should only be repaired to pre-flood conditions (i.e., not improved or redesigned).

## **3.0 EXISTING ENVIRONMENT**

The following sections discuss the current environmental status of the project area. Sections 4, 5, and 6 discuss the potential, adverse, and cumulative effects of the proposed action, respectively.

### **3.1 Hydrology, Soils and Topography**

The Nooksack River is a confined, single channel, low gradient system in the vicinity of the project area. The topography of the project site is essentially a flat river floodplain. The U.S Department of Agriculture's (USDA) soil survey for Whatcom County depicts the soil in the

specific project area as Mt. Vernon fine sandy loam that is deep, moderately well-drained and typically found on river terraces and flood plains [USDA, 2002; USDA 1992].

### **3.2 Water Quality**

Water quality in most of the Mainstem Nooksack River is considered excellent, based on levels of dissolved oxygen and pH, which are critical for fish survival [WCWR, 2003a]. However, two river segments downstream of Ferndale were listed by the Washington State Department of Ecology (Ecology) on its Clean Water Act (CWA) Section 303(d) list because of fecal coliform and fine sediment issues in prior years. The limits for allowable fecal coliform were exceeded between 1988-1990 and 1991-1996. The excess fine sediment issue was last noted in 1993 [Ecology, 1998]. However, the specific reach of the Mainstem Nooksack along the Vanderpol project area was not affected [Ecology, 2005].

An issue critical for fish survival is river temperature. Residential, agricultural, and industrial practices along the banks of the Nooksack have altered the natural riparian habitat and water flows. The loss of wetlands, lack of shade, and low summer flows have all contributed to warmer water temperatures, which degrade habitat quality [WCWR, 2003a].

### **3.3 Vegetation**

The project site is located in a coastal upland agricultural area. As determined from the site visit on 8 June 2005, the vegetation on the landward side of the levee (the project site) consists predominantly of common pasture grasses, vetch, velvet grass, tall fescue, and bedstraw.

### **3.4 Fish and Wildlife**

The Mainstem Nooksack River supports several species of salmon and trout, and provides spawning and rearing habitat for salmon. Salmon species include Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), and sockeye (*O. nerka*). Trout species include the Coastal-Puget Sound bull trout (*Salvelinus confluentus*), Dolly Varden (*Salvelinus malma*), steelhead (*Oncorhynchus mykiss*) and cutthroat trout (*Oncorhynchus clarki*) [WCWR, 2003a].

The agricultural area surrounding the project site along the Nooksack River is frequented by a variety of wildlife species. Mammals can include raccoon (*Procyon lotor*), Douglas squirrel (*Tamiasciurus douglasi*), little brown myotis (*Myotis lucifugus*), mink (*Carnivora mustelidae*) and Columbia black-tailed deer (*Odocoileus hemionus*). Bird species can include bald eagles (*Haliaeetus leucocephalus*), marbled murrelets (*Brachyramphus marmoratus marmoratus*), red-tailed hawk (*Buteo jamaicensis*), and chestnut-backed chickadee (*Parus rufescens*).

### **3.5 Threatened and Endangered Species**

Coordination with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) has determined that the following listed and threatened species (no endangered) could potentially be found in the project area:

- Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*)
- Coastal-Puget Sound bull trout (*Salvelinus confluentus*)
- Bald eagle (*Haliaeetus leucocephalus*)

- Marbled murrelet (*Brachyramphus marmoratus marmoratus*)

The Nooksack River supports the Puget Sound Evolutionarily Significant Unit (ESU) of Chinook salmon. Designation of the Nooksack River as critical habitat for the Chinook salmon is still under discussion [NOAA, 2004], but the Nooksack River has been designated by the Pacific Fishery Management Council as Essential Fish Habitat (EFH) for Chinook salmon [PFMC, 1999]. On June 25, 2004, approximately 187 miles of streams within the Nooksack River system were also proposed as critical habitat for the Coastal-Puget Sound bull trout [FR, 2004]. A review of the WDFW Priority Habitats and Species Database indicated that no proposed or designated critical habitat exists for the bald eagle in the project area [WDFW, 2004].

### **3.6 Native American, Cultural, and Historic Resources**

Swanton [Swanton, 1952, p.430] places the stretch of the river containing the project area within the traditional territory of the Nooksack Tribe, who belonged to the coastal division of the Salishan linguistic family. Ruby and Brown [Ruby and Brown, 1992, p.152-153] provide information that the name Nooksack was originally the name of one of the tribe's villages and is also a corruption of one of the tribe's bands. During the middle of the nineteenth century the tribe was settled in three main villages: one of the villages was located near present-day Deming, one near Goshen, and the third near Everson [Ruby and Brown, 1992, p.153]. Suttles provides information that most of the 20 or more Nooksack villages were located in the level valley below the confluence of the north and south forks of the river [Suttles, 1990, p.456].

The Library of Congress (2003) has several photographs of Indians taken near Lynden. One photograph is titled "Jim Yellakanim: Nooksack chief, ca. 1898" and the caption on the image is labeled "Jim, Chief of the Nooksacks." The notes attached to the photograph state that "Yellakanim homesteaded in the upper Nooksack Valley, just outside the town of Lynden, Washington." Another photograph from the same collection is labeled: "Group of Nooksack Indians near Lynden, Washington, circa 1900." The 1873 General Land Office map for T. 40 N., R. 2 E., W.M., does not show any homesteads, roads, or other evidence of settler claims or activity within the entire township.

### **3.7 Land Use**

Land use in the project area is primarily rural residential and agricultural. The land immediately south of the project area currently supports an extensive raspberry farm.

### **3.8 Recreation**

Because the project site is privately owned, recreational uses of the Nooksack River at the project site are expected to be limited. The private owners may engage in wildlife observation, photography, and fishing, but no public recreation is anticipated.

### **3.9 Air Quality and Noise**

Air quality in the vicinity of Lynden, Washington is currently monitored for ozone and particulate matter. As of mid-June (the most recently available data), the air quality was in compliance with federal and state ambient standards [Franzmann, 2005; Ecology, 2005a].

Since the project site is rural and agricultural, any noise in the area is expected to be limited to farm machinery and personal vehicles.

### **3.10 Transportation**

Trucks hauling material for this project will use public highways and secondary roads as needed to transport the construction materials. The number of trucks and the time between loads should allow the hauling to proceed with little or no impact on normal traffic flow during the window of construction. The access road between the public road and the levee is currently a dirt road, which will remain unmodified unless bulldozing is required to level the existing potholes.

### **3.11 Aesthetics**

Because the project area is set back on private property over half a mile from the public road, it is essentially hidden from public view. The repaired levee will look somewhat unnatural in the current landscape, but it will be hydroseeded to encourage growth of a vegetative cover. In general, the benefits to the property owner of having the levee are outweighed by the minor visual impact.

### **3.12 Socio-economic Concerns**

The project vicinity supports approximately 461 acres of raspberry farms, silage corn, and silage grass. The levee exists to protect these interests.

### **3.13 Hazardous and Solid Waste**

No known hazardous or solid waste is stored or evident in the immediate vicinity of the proposed project area.

## **4.0 ENVIRONMENTAL EFFECTS**

The following sections discuss the environmental effects of the proposed action and the No Action alternative. Although the “No Action” alternative is the cheapest alternative to implement and may be considered to have the least environmental impact, it has been carried through the alternatives analysis to show that it does not meet the purpose or need for the levee rehabilitation project.

### **4.1 Hydrology, Soils and Topography**

#### **Proposed Action**

Approximately 2300 tons of spall rock and granular fill will be added to the project site to repair the main and tie-back levees. The levees will affect the topography by becoming essentially small hills in the landscape, directing rainfall both toward and away from the river. Soils will be compacted in areas where heavy machinery will be operating, such as on the access road. Since the levees were in existence prior to this repair, no new effects on the hydrology, soils, or topography are expected as a result of the repair.

### **No Action Alternative**

The No Action alternative would not add spall rock or granular fill to the site or compact any soil; however, it would also not provide any flood protection as requested by WCPWD.

## **4.2 Water Quality**

### **Proposed Action**

No effects on water quality are expected, since no in-water work will take place.

### **No Action Alternative**

The No Action alternative would also have no effect on water quality.

## **4.3 Vegetation**

### **Proposed Action**

No riparian vegetation will be removed in the project area. The only modification to vegetation will be the covering up of existing grasses found on the landward side of the main levee and along the tie-back levee as rehabilitation material is placed. The repaired levee and disturbed areas will then be hydroseeded after construction to restore the vegetative cover.

### **No Action Alternative**

The No Action alternative would likely encourage the proliferation of common pasture grasses, vetch, velvet grass, tall fescue, and bedstraw, which are already present on site.

## **4.4 Fish and Wildlife**

### **Proposed Action**

The proposed action will generate some short-term construction noise, which may disturb wildlife that might be in the vicinity of the project. However, since no in-water work is planned and the construction will only last a few weeks, no long-term effects on fish or wildlife are anticipated.

### **No Action Alternative**

The No Action alternative is expected to have no effect on fish or wildlife.

## **4.5 Threatened and Endangered Species**

### **Proposed Action**

The proposed action is expected to have no effect on the listed species, because use of the project area by the listed species is expected to be minimal or not at all. Since no in-water work is planned, Chinook salmon and bull trout will not technically be using the project area. However, they may pass by the project area on their journey upstream to spawn in the fall [WCWR, 2003; WCWR, 2004]. A review of the Priority Habitats and Species Database maintained by the Washington Department of Fish and Wildlife (WDFW) indicated that three bald eagle nests are

located within a mile (roughly 4000 feet southwest) of the project site [WDFW, 2004]. Only one nest, however, was known to be used in 2003; the other two were noted as last used in 1987 and 1990 and are considered alternate nests for the same pair. All of the nests are out of the line of sight of the current project area. The nests are also expected to be free of chicks or breeding eagles since the project will be taking place outside of the nesting season. The marbled murrelet could transit the area going to nesting areas in the upper watershed or to feeding areas on Puget Sound, but is not expected to spend any significant amount of time in the project area.

Since no in-water work is planned, no riparian vegetation will be removed, and no critical habitat exists for bald eagle in the project area, the project is expected to have no effect on the listed species or proposed critical and essential fish habitat.

### **No Action Alternative**

The No Action alternative is expected to have no effect on threatened or endangered species.

## **4.6 Native America, Cultural, and Historic Resources**

### **Proposed Action**

There are no properties listed in the National Register of Historic Places (NRHP) or the Washington Office of Archaeology and Historic Preservation (OAHP) electronic Historic Sites Inventory Database within the project area. The 2005 pedestrian archeological survey encountered good ground surface visibility and no evidence of cultural resources was observed. The floodplain in this area is extremely dynamic, and historically the Nooksack River's channel has been constantly migrating back and forth across the floodplain. Due to these factors it is highly unlikely that cultural resources such as temporary Native American fishing camps, or fish weirs or traps would be preserved within the Area of Potential Effects (APE) for this project.

In the event of an inadvertent discovery of cultural resources, construction will cease in the area of the find and the protocol detailed in the Corps' Construction Management Plan will be followed. The Construction Management Plan will contain wording to the effect that activities will cease in that area, a Corps archaeologist will initially identify the findings and if appropriate, Dr. Robert Whitlam of the Washington State OAHP, the Nooksack Tribe, and the Lummi Nation will be contacted to arrange for evaluation and treatment of the material.

### **No Action Alternative**

In many cases levees protect cultural resources located adjacent to and inland of them from river erosion. There are no known cultural resources within or near the project that could be affected, should the levee not be repaired and consequently fail during the upcoming flood season.

## **4.7 Land Use**

### **Proposed Action**

The proposed action will provide flood protection for the agricultural, residential, and infrastructure properties in the project vicinity, allowing the properties to retain their current uses.

### **No Action Alternative**

Under the No Action alternative the levee would not be repaired, placing the properties at risk for additional damage during the next flooding season and possibly altering their suitability for agriculture or other purposes. The No Action alternative would also not honor the request of the WCPWD for flood protection.

### **4.8 Recreation**

#### **Proposed Action**

Because the project site is privately owned, recreational uses of the project site are expected to be limited to those of the private owner. The proposed action is expected to have no effect on recreation since no in-water work is planned, and no new modifications to the levee system will be implemented that could affect the ability of the landowner to engage in wildlife viewing, photography, or fishing.

#### **No Action Alternative**

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

### **4.9 Air Quality and Noise**

#### **Proposed Action**

During construction the air quality will be temporarily degraded due to emissions from heavy machinery that will be operating during fill placement and grading. These emissions are not expected to exceed EPA's de minimis threshold levels of 100 tons/year for carbon monoxide and 50 tons/year for ozone (40 CFR 93.153(b)). It is assumed that the project area will have attainment (i.e., will be in compliance with national primary or secondary ambient air quality standards) for all priority pollutants as well. Consequently, effects on air quality are expected to be insignificant, and for verification, real-time data can be checked at through the Northwest Clean Air Agency [NCAA, 2005].

Ambient noise levels will increase slightly while trucks and construction equipment are operating. However, these effects are expected to be temporary and localized, and occur only during daylight working hours. As a result, any noise-related effects are expected to be insignificant.

#### **No Action Alternative**

There would be no temporary reduction in air quality or increase in noise levels if the No Action alternative were chosen.

### **4.10 Transportation**

#### **Proposed Action**

Construction vehicles may cause a minor increase in local truck traffic as they haul material to the project site. However, such an increase would be temporary and localized, and therefore is expected to have negligible effects.

### **No Action Alternative**

The No Action alternative would not increase traffic on the local roads.

### **4.11 Aesthetics**

#### **Proposed Action**

The proposed action will repair the levee system as near to its original footprint as possible and hydroseed it to provide vegetative cover. Consequently, there should be no new or unsightly visual impacts caused by the repaired levee system.

#### **No Action Alternative**

The No Action alternative would leave the project area its damaged state, which is visually unappealing due to the results of the scouring and erosion. In addition, the open dirt areas may encourage the growth of unsightly, opportunistic weeds such as Japanese knotweed and Himalayan blackberry.

### **4.12 Socio-economic Concerns**

#### **Proposed Action**

Without the proposed repairs, the levee system in this area would only contain a 3-year flood event. With the proposed repairs, the levee system would contain a 15-year event with some certainty. In addition, repairing the levee system would help protect the annual benefits of approximately \$43,400 earned from raspberry, corn, and grass farming.

#### **No Action Alternative**

If the levee system were not repaired, the properties would be at risk for more frequent flooding, and the annual financial benefits could be jeopardized.

### **4.13 Hazardous and Solid Waste**

#### **Proposed Action**

No hazardous or solid waste is expected to be generated during the proposed repair work. Should any waste be generated, it will be removed from the site and disposed or recycled as appropriate. The USACE anticipates no effects with regard to hazardous and solid waste.

#### **No Action Alternative**

The No Action alternative would have no effect on hazardous or solid waste.

## **5.0 UNAVOIDABLE ADVERSE EFFECTS**

Unavoidable adverse effects of the proposed action include: 1) a temporary, localized increase in noise, which may disturb wildlife in the area; 2) a temporary, localized disruption of local traffic by construction vehicles; and 3) a temporary degradation of air quality due to emissions from construction vehicles and equipment.

## **6.0 CUMULATIVE IMPACTS**

Cumulative impacts are environmental impacts that may occur when the impacts of the proposed action are added to other past, present, and reasonably foreseeable future actions of any federal or non-federal entity. In other words, the goal is to predict what additional environmental impacts may occur when the impacts of this project are analyzed in combination with the actions of others. Cumulative impacts from local, short-term disturbances caused by the construction project (noise, emissions, traffic disruptions, etc.) are expected to be minor, temporary and insignificant. Cumulative impacts of future actions may be more substantial.

Because of frequent flooding in the area, the property adjacent to the Vanderpol levee system is expected to remain agricultural. However, a reasonably foreseeable future action that could occur is construction of a new levee east of the current levee system. The county and the private land owner at the site have indicated that they would like to build a levee that ties into the existing Vanderpol levee system. Since the Vanderpol levee has been in existence for decades and the new levee is only now being considered, it does not appear that the presence of the Vanderpol levee has been the catalyst for the new levee. However, if the new levee is built, that action could be considered a cumulative impact of having the existing levee. In any case, the impacts of that action would need to be evaluated per state and local regulations to ensure that it does not significantly degrade the environment [Ecology, 2002].

The USACE is also proposing four other levee rehabilitation projects on the Nooksack River. The total length of shoreline that is being returned to pre-flood conditions is approximately 1.0 mile in a 33.0 mile stretch of the Nooksack River. Approximately 23,000 tons of class III riprap will be added to the banks of the river to replace the riprap that was eroded during the flood event. Projects that require in-water work may affect water quality. To minimize the impacts to water quality, all projects requiring in-water work will be monitored for turbidity. Construction will halt temporarily if the water quality standards are exceeded. Riparian vegetation will need to be removed to repair the levees; however, all projects include the planting of native vegetation, which will minimize the impacts of removing riparian vegetation. Impacts to fish and wildlife, if any, will be temporary and will occur primarily during construction. The addition of willow plantings and other native shrubs may increase some fish habitat values.

The past action of building these levees has channelized and (intentionally) prevented the Nooksack River from being able to meander and flood as much as it presumably would if it were still in its natural condition. Such modification has likely altered the availability of sand and gravel habitat for fish, as well as altered the riparian cover. As is often the case, the need to protect human resources and property must be balanced with the need to protect environmental resources and habitat. The levee rehabilitation aims to maintain the level of protection for human property and resources that has been available to date, while incorporating habitat protection measures as feasible.

## **7.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

Resources that are committed irreversibly or irretrievably are those that cannot be recovered if the project is implemented. Resources that would be committed to this project include fossil fuels, construction-related materials, labor, and capital. However, no federal resources will be

irreversibly and irretrievably committed to the project until the EA is finalized and the Finding of No Significant Impact (FONSI) has been signed.

## **8.0 ENVIRONMENTAL COMPLIANCE**

The following sections discuss compliance of the proposed action with applicable laws, regulations, and policy. Table 1 at the end of the sections provides a summary of the compliance determinations.

### **8.1 National Environmental Policy Act (42 USC 4321 et seq.)**

This draft EA has been prepared in accordance with the National Environmental Policy Act of 1969, which requires federal agencies to discuss the potential environmental impacts of their projects and to solicit public comment. This EA discusses the need for the levee rehabilitation project, the proposed action and alternatives considered, the environmental effects of the project, and the agencies and persons consulted. Any comments or concerns received on the draft EA will be addressed in the final EA.

### **8.2 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 listed and proposed threatened or endangered species. NOAA and the USFWS were notified of the project location and action in early 2005, and informal ESA consultation was initiated. The USACE has determined a finding of “No Effect” for all potentially occurring threatened species in the project area. Because of this determination, NOAA (also representing the USFWS) does not require any separate ESA documentation, such as a Biological Evaluation or Biological Assessment, for the Vanderpol project. This EA will serve as the record for the results of the ESA analysis. However, the letter documenting the “No Effect” determination can be made available upon request.

### **8.3 Clean Water Act, as Amended (33 USC 1251 et seq.)**

The Vanderpol levee repair project is exempt from CWA Section 404/401 permitting requirements per 33 CFR 323.4 because there will be no in-water work:

*33 CFR Section 323.4 - Discharges not requiring permits: (a)(1)(ii)...If an activity takes place outside the waters of the United States, or if it does not involve a discharge, it does not need a section 404 permit, whether or not it is part of an established farming, silviculture, or ranching operation.*

Therefore, a Section 401 Water Quality Certification letter is not required from Ecology.

### **8.4 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 will not restrict navigation or access to navigable waters.

### **8.5 Coastal Zone Management Act (16 U.S.C. 1451-1465)**

The Coastal Zone Management Act (CZMA) of 1972, as amended, requires federal agencies to review their proposed activities that may affect any coastal use or resource. From the review the agencies develop Coastal Consistency Determinations, which indicate whether such activities will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of approved management programs (15 CFR 930.36(a)). In this case the approved management program is the Whatcom County Shoreline Management Program [WCPDSD, 1998]. Pursuant to Section 23.50.32 (b) of the Whatcom County Shoreline Management Program, the USACE believes this proposal is exempt from the enforceable policy requirement to obtain a shoreline substantial development permit because the proposed action will only restore the levee to a state comparable to its original condition prior to damage by the elements:

*23.50.32 Exemptions Listed: The following activities shall be considered exempt from the requirement to obtain a shoreline substantial development permit. A statement of exemption, as provided for in Section 23.50.33 of this Program shall be required only for those activities listed in Section 23.50.34 (b) and (c)...(b) Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition within a reasonable period after decay or partial destruction except where repair causes substantial adverse effects to the shoreline resource or environment. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including but not limited to its size, shape, configuration, location and external appearance and the replacement does not cause substantial adverse effects to shoreline resources or environment.*

Although the USACE believes it is exempt from the permit, it will complete and transmit a Coastal Consistency Determination to Ecology prior to the start of construction, pursuant to Section 307(c) of the CZMA.

### **8.6 National Historic Preservation Act (16 USC 470 et seq.)**

The proposed project is a federal undertaking that could affect historic properties, and must, therefore, comply with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA). Section 106 requires federal agencies to identify and assess the effects of federally-assisted undertakings on historic properties and to consult with others to find acceptable ways to resolve adverse effects. Properties protected under Section 106 are sites, buildings, structures, or objects included on or eligible for listing on the National Register of Historic Places. Eligible properties must generally be at least 50 years old, possess integrity of physical characteristics, and meet at least one of four criteria for significance. Regulations implementing Section 106 (36 CFR Part 800) encourage maximum coordination with the

environmental review process required by the NEPA and with other statutes. The Washington State Archaeological Sites and Resources Act (RCW 27.53) may also apply.

The APE was defined as the project boundaries, including access roads and staging areas. Materials used in the repair will come from existing quarries and borrow areas. The OAH records search indicated that no properties listed in the National Register and no sites or structures listed in the state inventory are located within the APE. A professional pedestrian survey conducted by a USACE archaeologist did not produce any evidence of Native American prehistoric or historic-period activity within the APE. As required under Section 106 of the NHPA the USACE is coordinating with the Washington State Historic Preservation Officer (SHPO) and the Nooksack Tribe and Lummi Nation. The USACE has determined that no historic properties will be affected by the proposed project and is awaiting SHPO concurrence with its determination.

### **8.7 Treaty Rights**

In the mid-1850s 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 (W.D.Wash. 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 comprises 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 grounds violates this treaty right [*Northwest Sea Farms v. Wynn*, F. Supp. 931 F. Supp. 1515 at 1522 (W.D. Wash. 1996)]. In *U.S. v. Washington*, 759 F.2d 1353 (9<sup>th</sup> 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 (9<sup>th</sup> 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. The USACE believes that-

- the work will not interfere with access to usual and accustomed fishing grounds or with fishing activities or shellfish harvesting;
- the work will not cause the degradation of fish runs and habitat; and
- the work will not impair the Treaty tribes' ability to meet moderate living needs.

### **8.8 Clean Air Act As Amended (42 USC 7401 et seq.)**

The Clean Air Act requires states to develop State Implementation Plans (SIP), which document strategies 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 requires 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 reduction or other milestone in any area.

The USACE does not expect the proposed action to exceed EPA's *de minimis* threshold levels of 100 tons/year for carbon monoxide and 50 tons/year for ozone (40 CFR 93.153(b)). In addition, current air quality in Lynden, Washington can be found through the Northwest Clean Air Agency [NCAA, 2005].

### **8.9 Wild and Scenic Rivers Act (16 U.S.C. 1271-1287)**

The Wild and Scenic Rivers Act (PL90-542, as amended) identifies rivers of the Nation that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, or cultural value. The purpose of the Act is to preserve and protect these rivers in their free-flowing condition for the benefit and enjoyment of present and future generations. Several federal agencies oversee the management of wild and scenic rivers, and have created a list of such rivers. The Nooksack River is currently not listed [NPS, 2005].

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 that transcend local or regional importance. Although the Nooksack River is listed on the NRI, the particular reach where the project is located is not [NPS, 2004].

### **8.10 Migratory Bird Treaty Act and Migratory Bird Conservation Act (16 USC 701-715)**

The proposed project will be conducted in such a manner so that migratory birds are not harmed or harassed. The work will occur outside of the nesting season for most birds, and no riparian vegetation, including that which could be suitable for nesting, will be removed.

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

The Fish and Wildlife Coordination Act requires that wildlife conservation efforts receive equal consideration and coordination with other features of water resource development projects. This goal is accomplished through USACE funding of U.S. Fish and Wildlife Service habitat surveys. However, since the levee repair project is considered an emergency project, USACE policy is that PL84-99 emergency projects do not require FWCA coordination and therefore no funds would be transferred to support the surveys.

Even though the project is in compliance with this Act, the USACE has thoroughly coordinated this project with the USFWS and NOAA. NOAA (also representing the USFWS) has provided comments on project design. Given the relatively small scope of the project, fish and wildlife coordination issues are not expected, particularly since a "No Effect" determination has been made for threatened and endangered species (and preliminarily accepted by NOAA). Fish and wildlife coordination issues, if any, can be addressed during the EA public review comment period.

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

The Watershed Protection and Flood Prevention Act (PL83-566) is commonly known as the Small Watershed Program. The USDA Natural Resources Conservation Service administers this program. The program authorizes Federal assistance to local organizations for help with planning water and land conservation and development projects that minimize or prevent erosion, flooding, and sediment damage to rivers and streams. Since this project is not subject to the Small Watershed Program, this Act is not applicable.

### **8.13 Farmland Protection Policy Act (7 U.S.C. 4201, et seq.)**

The purpose of the Farmland Protection Policy Act (PL 97-98, Sec. 1539-1549) is to minimize the impact that Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Specifically, it requires identification of proposed actions that could affect any lands classified as prime and unique farmlands. Since the proposed project would not affect or convert such farmlands (i.e., the levee system has existed on the land for over 30 years), it is in compliance with this Act.

### **8.14 Resource Conservation and Recovery Act (42 USC 6901 et seq.)**

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to address the issue of how to safely manage and dispose of municipal and industrial waste; to regulate underground storage tanks that store petroleum or hazardous substances; to establish a system for managing solid (primarily nonhazardous) waste, including household waste; and to set forth the framework for EPA's comprehensive waste management program. No known hazardous or solid waste is stored or evident in the immediate vicinity of the proposed project area, and neither is expected to be generated during construction. If abandoned or buried hazardous waste or pesticides were discovered during construction, it would be managed in accordance with RCRA or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as applicable. Contractor hazardous materials and waste would be managed in accordance with RCRA requirements. The project is in compliance with this Act.

### **8.15 Executive Order 11988, Floodplain Management (24 May 1977)**

Executive Order (EO) 11988 requires federal agencies to avoid, to the extent possible, 1) the long-term and short-term adverse impacts associated with the occupancy of a floodplain, and 2) the direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, Section 1 of the EO states “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 also states, however, that the EO does not apply to assistance provided for emergency work essential to save lives or protect public property, health, and safety.

Since the proposed action is considered emergency work, EO 11988 does not apply. Even so, the proposed project would still be consistent with the EO because the repair work will help minimize the impacts of floods on human safety, health, and welfare, but will not change the occupancy of the floodplain.

### **8.16 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 proposed project does not involve siting of a facility that would discharge pollutants that could affect human or environmental health. Maintenance of this structure will not negatively affect property values in the area or stigmatize local residents in any way. Construction activities are also not expected to interfere with local Native American treaty rights, fishing, or fishery resources.

Since no adverse health or environmental effects are anticipated to result from the project, the USACE has determined that no disproportional impacts to minority or low-income populations will occur. Therefore, the proposed project is in compliance with this EO.

### **8.17 Executive Order 11990, Protection of Wetlands, May 24, 1977**

Executive Order 11990 directs federal agencies to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The USACE did conduct a wetland reconnaissance on 8 June 2005 and concluded that no jurisdictional wetlands are present along the riverward toe, face, or top of the levee. Thus, no wetlands will be impacted as a result of this project. A non-wetland depression does occur north of the tie-back levee that captures flood flow and directs it back to the Nooksack River without any known connection or culvert. However, this depression is not affected by CWA or wetland regulations.

**Table 1. Compliance of Proposed Action with Applicable Laws, Regulations and Policies**

<b>Law, Regulation, or Policy</b>	<b>Summary</b>	<b>Compliance Determination of Proposed Action</b>
National Environmental Policy Act	Requires all federal agencies to consider the environmental effects of their actions and to seek to minimize negative impacts.	Compliant
Endangered Species Act	Requires federal agencies to protect listed species and consult with US Fish & Wildlife or NMFS regarding the proposed action.	Compliant
Clean Water Act	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.	Not applicable
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 applicable
Coastal Zone Management Act	Requires federal agencies to comply with state and local plans to protect and enhance coastal zones and shorelines.	Compliant
National Historic Preservation Act	Requires federal agencies to identify and protect historic properties.	Compliant
Treaty Rights	Ensures that Indian Treaty Rights to fishing resources are not infringed upon as a result of the project.	Compliant
Clean Air Act	Requires federal agencies to consult with state air pollution control agencies to assure that construction plans conform to local air quality standards.	Compliant
Wild and Scenic Rivers Act	Requires federal agencies to take national wild, scenic, and recreational river areas into consideration when planning for the use and development of water and related land resources.	Not applicable
Migratory Bird Treaty Act and Migratory Bird Conservation Act	Requires not harming or harassing migratory birds.	Compliant
Fish and Wildlife Coordination Act	Requires federal agencies to consult with the USFWS on any activity that could affect fish or wildlife.	Not applicable
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.	Not applicable
Farmland Protection Policy Act	Requires identification of proposed actions that would affect any lands classified as prime and unique farmlands.	Compliant
Resource Conservation and Recovery Act	Requires managing hazardous materials and waste in accordance with RCRA requirements.	Compliant
Executive Order 11988, Floodplain Management	Requires federal agencies to consider how their activities may encourage future development in floodplains.	Compliant

**Table 1 continued**

<b>Law, Regulation, or Policy</b>	<b>Summary</b>	<b>Compliance Determination of Proposed Action</b>
Executive Order 12898, Environmental Justice	Requires federal agencies to consider how their activities may adversely affect low-income or minority populations	Compliant
Executive Order 11990, Protection of Wetlands	Requires federal agencies to protect wetland habitats.	Compliant

## **9.0 COORDINATION**

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

- Washington Department of Ecology
- National Oceanic and Atmospheric Administration
- U.S. Fish and Wildlife Service
- Washington Department of Fish and Wildlife
- The Nooksack Tribe
- Washington State Office of Archaeology and Historic Preservation
- Whatcom County
- Washington Department of Emergency Management

Personnel from the USFWS, NOAA, Whatcom County Public Works, and the Nooksack tribe have visited the project site and provided input on the project.

## **10.0 CONCLUSION**

Based on the information presented above, this federal levee rehabilitation project will not significantly affect the quality of the human or natural environment, and therefore does not require preparation of an environmental impact statement. A draft Finding of No Significant Impact (FONSI) is included in Attachment C.

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# ATTACHMENT A – PROJECT MAPS

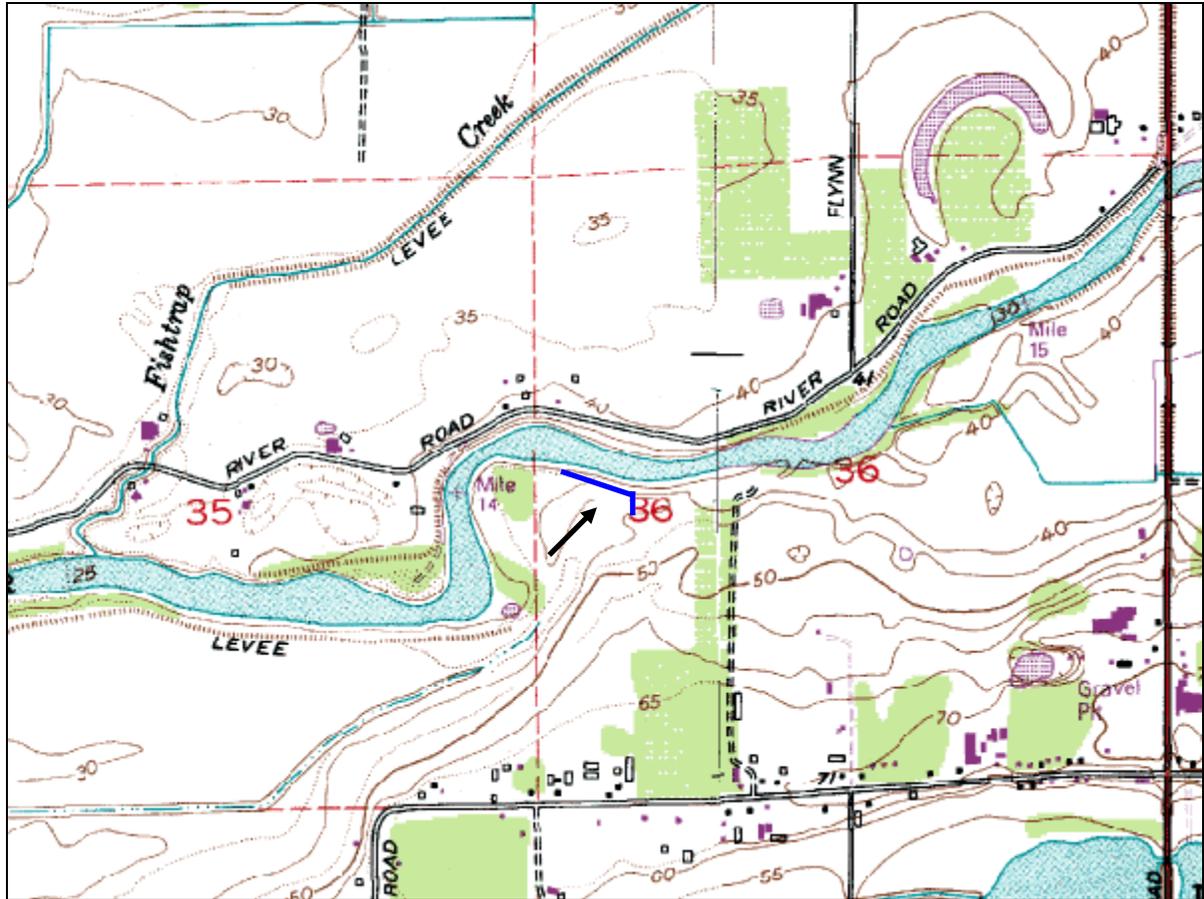
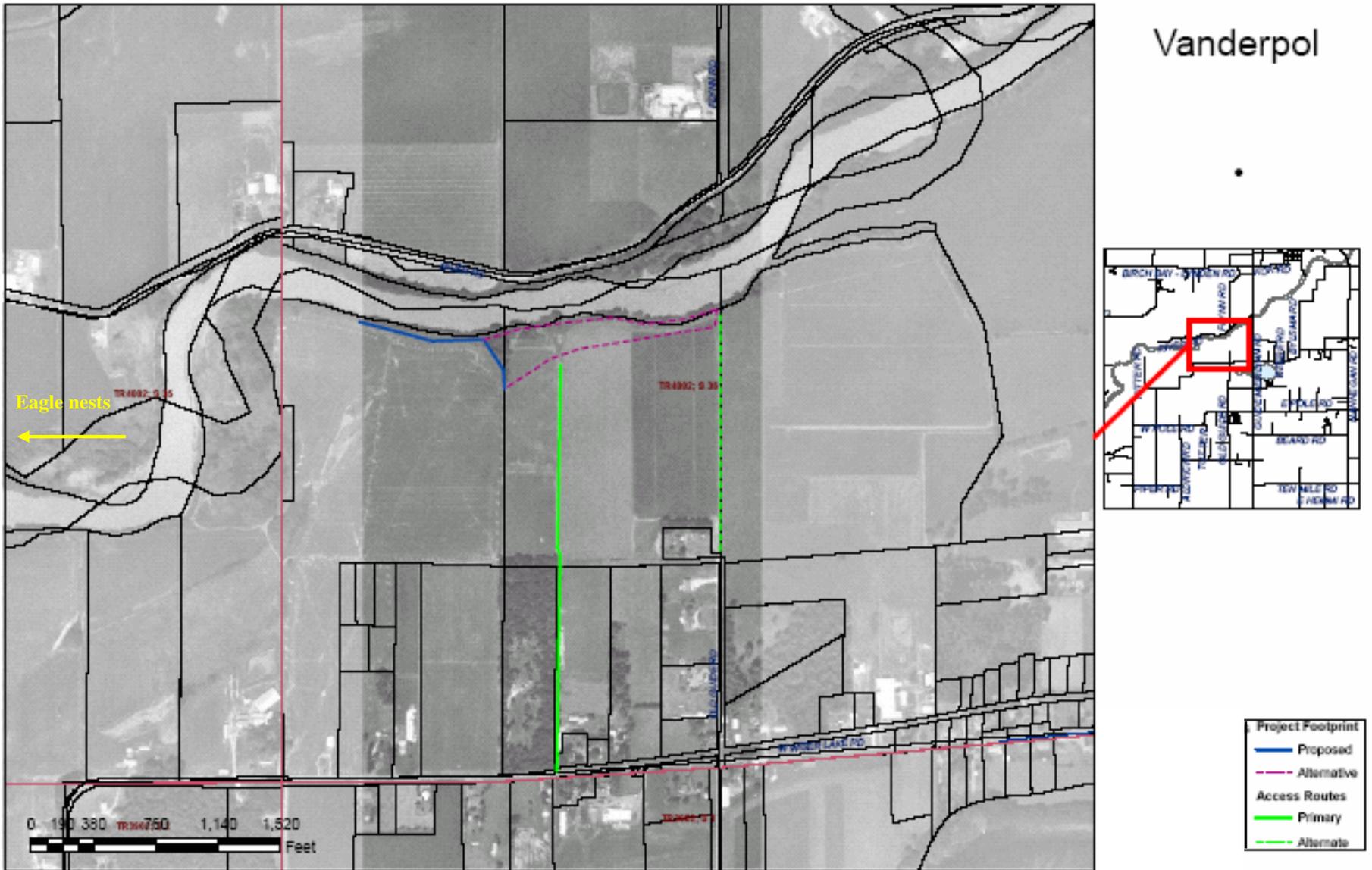


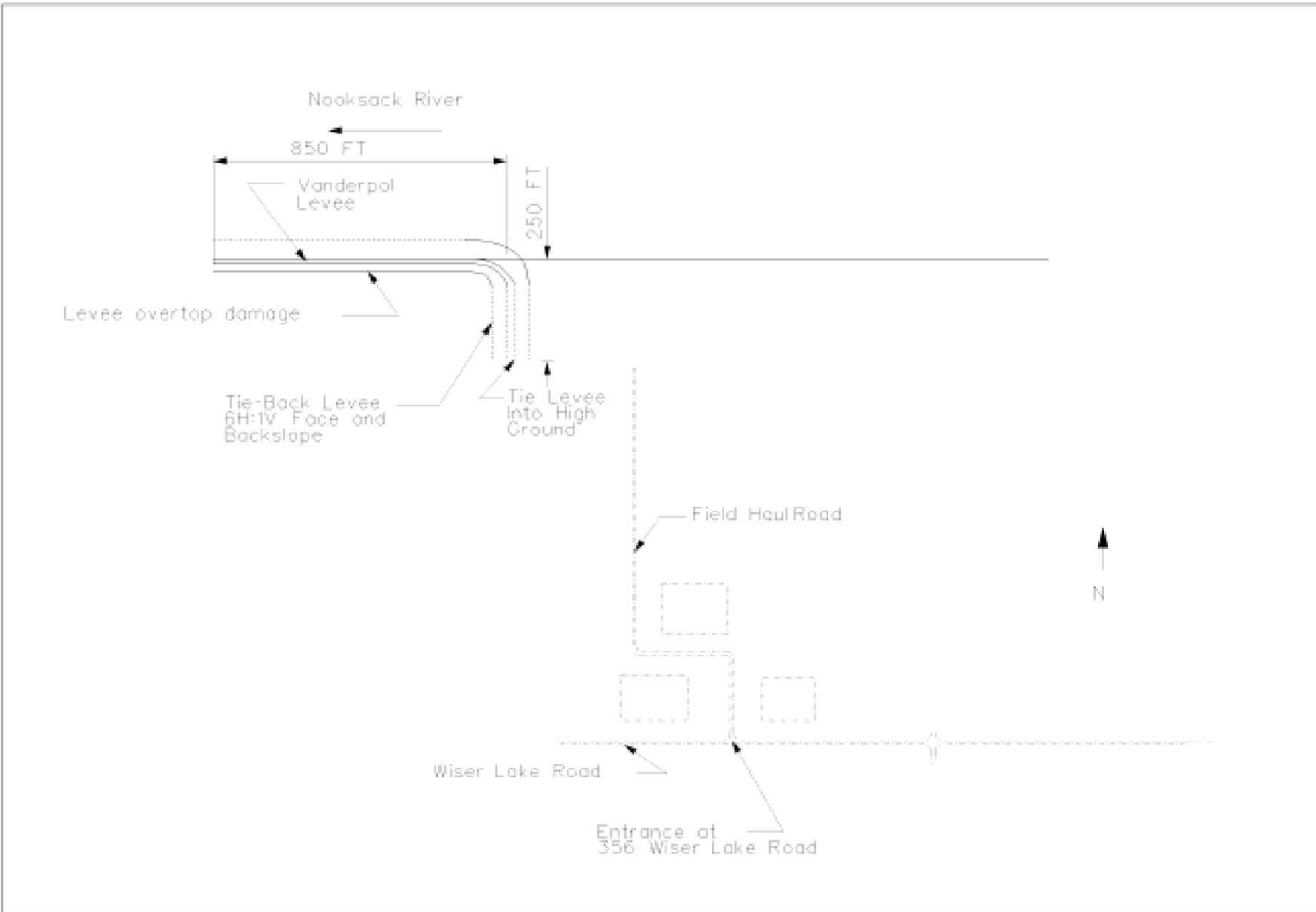
Figure A1. Topographic Map of Project Area [Topozone, 2005]



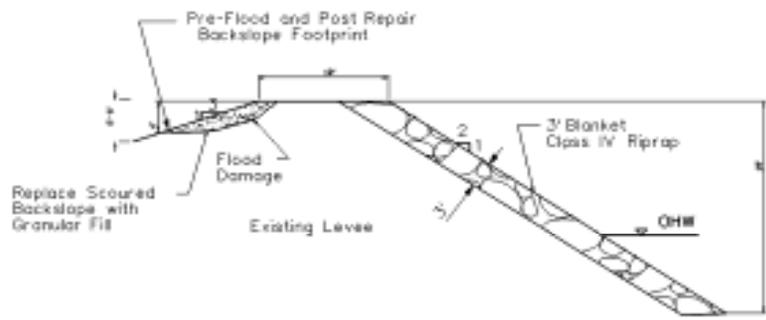
Vanderpol

Figure A2. Aerial Photo Map of Project Area

**ATTACHMENT B – PROPOSED ACTION CONSTRUCTION DRAWINGS**

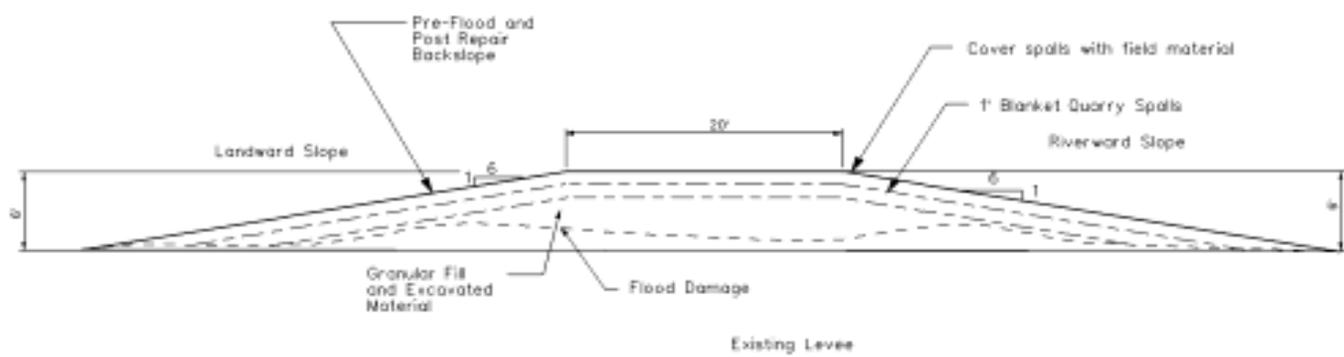


Project: Vanderpol Levee	Dwn: Desjardin	Date: Feb 05
Subject: Typical Cross Section	Chkd: Kaiser	Sheet: 1 of 2



VANDERPOL LEVEE  
Downstream Cross Section

NOTES:  
On the Tie-Back Portion of the repair, tie into existing high ground as noted.



VANDERPOL LEVEE  
Tie-Back Typical Cross Section

<b>Project:</b> Vanderpol Levee	<b>Dwn:</b> Desjardin	<b>Date:</b> Feb 05
<b>Subject:</b> Typical Cross Section	<b>Chkd:</b> Kaiser	<b>Sheet:</b> 2 of 2

**ATTACHMENT C – DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**REHABILITATION OF FLOOD CONTROL WORKS  
VANDERPOL LEVEE  
WHATCOM COUNTY, WASHINGTON  
DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**1. Background.** The Seattle District, U.S. Army Corps of Engineers (USACE) is proposing to repair and reconstruct the Vanderpol levee system, located on the Nooksack River near Lynden, Washington between July and October 2005. The levee system consists of a main levee along river mile (RM) 12.5 to RM 14.5 and an associated tie-back levee that was built perpendicularly to the main levee. These levees were damaged during the 24-26 November 2004 flood event. The main levee sustained approximately 850 linear feet (LF) of overtopping scour damage on the landward slope of its downstream end, and the tie-back levee failed, resulting in an additional 250 LF of damage. The levee system protects agricultural property and associated public infrastructure. The USACE is proposing the following project under the authority of Public Law (PL) 84-99 [33 USCA 701n].

In December of 2004, the Whatcom County Public Works Department requested assistance under the PL84-99 Program in implementing a repair project at this location. The USACE evaluated the damage and is proposing to repair the landward side of the main levee and replace the associated tie-back levee.

**2. Purpose and Need.** The purpose of this project is to repair the levee system so that it can provide flood protection for agricultural, residential, and infrastructure properties. If no action were taken to repair the Vanderpol levee system, then the properties would be at risk for additional and possibly more severe damage during the upcoming flood season.

**3. Proposed Action.** The proposed action consists of repairing the damaged portions of the levees to their pre-flood conditions, following the original alignment and characteristics of the levees. Specifically, material that was scoured away from the landward side of the main levee (850 LF) will be replaced with imported granular fill, regraded to tie into the existing backslope, and then hydroseeded. The 250 LF of failed tie-back levee will be replaced with a granular fill core and spall blanket. The spall blanket will then be covered with field material and hydroseeded.

Because the scour occurred on the landward side of the main levee and the tie-back levee is upland, **there will be no in-water work for this project.** In addition, there will be no removal of riparian vegetation in the project area. The only modification to vegetation will be the covering up of existing grasses found on the landward side of the main levee and along the tie-back levee as rehabilitation material is placed. Expected duration of construction is approximately 10 weeks, from late July to mid-October 2005.

Regarding access and staging areas, access to the site is available from West Wiser Lake Road, an existing public road. A permanent easement provided by the Public Sponsor (Whatcom County Public Works) grants ingress and egress from the public road to the levee. The stretch of road between the public road and the levee is currently a dirt road, which will remain unmodified unless bulldozing is required to level the existing potholes. The levee top road also will be used to accomplish the repair work. No staging area is anticipated for the repair work.

**4. Summary of Impacts.** Since no in-water work is planned and no riparian vegetation will be removed for this project, the project is expected to have no effect on water quality or fish habitat. The primary impacts of this action will be a temporary, localized increase in noise, which may disturb possible wildlife in the area; a temporary, localized disruption of local traffic by construction vehicles; and a temporary, minor degradation of air quality due to emissions from construction vehicles and equipment.

The draft environmental assessment above provides a more comprehensive evaluation of the proposed levee rehabilitation project and its effects on the existing environment. No significant adverse impacts to fish and wildlife habitat, air quality, noise, aesthetics, historical resources, cultural resources, or the social or economic environment are anticipated as a result of this project.

**5. Finding.** For the reasons described above, I have determined that the levee rehabilitation project will not result in significant adverse environmental impacts. The project will not constitute a major federal action with significant impacts on the environment; therefore, it does not require an environmental impact statement.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Debra M. Lewis  
Colonel, Corps of Engineers  
District Engineer

BENNETT/PM-PL-ER

ZIMINSKE/PM-PL-ER

KOMOROSKE/OD-EM

THOMASON/PM-PL

NELSON/OC

BEVENS/PM/

LEFLER/DDE

LEWIS/DE/s/

PM-PL-ER FILE