



US Army Corps
of Engineers
Seattle District



Joint Public Notice

Application for a Department of the Army Permit and a Washington Department of Ecology Water Quality Certification and/or Coastal Zone Management Consistency Concurrence

US Army Corps of Engineers

Regulatory Branch
Post Office Box 3755
Seattle, WA 98124-3755
Telephone: (206) 764-6695
ATTN: Ms. Erin Legge,
Project Manager

WA Department of Ecology

SEA Program
Post Office Box 47600
Olympia, WA 98504-7600
Telephone: (360) 407-6068
ATTN: SEA Program,
Federal Permit Coordinator

Public Notice Date: December 5, 2014

Expiration Date: January 4, 2015

Reference No.: NWS-2014-00183

**Name: Snohomish County
Department of Public Works**

Interested parties are hereby notified that the U.S. Army Corps of Engineers (Corps) and the Washington Department of Ecology (Ecology) have received an application to perform work in waters of the United States as described below and shown on the enclosed drawings dated February 2014.

The Corps will review the work in accordance with Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Ecology will review the work pursuant to Section 401 of the CWA, with applicable provisions of State water pollution control laws and the Coastal Zone Management Act.

APPLICANT: Mr. Mark Stamey
Snohomish County Public Works
3000 Rockefeller Avenue, Mail Stop 607
Everett, Washington 98201
Telephone: (425) 388-3488

LOCATION: In unnamed sloughs and ditches, and wetlands adjacent or abutting Union Slough, the east tidal channel, and the west tidal channel (sometimes referred to as Johnson Slough) on Smith Island near Everett, Snohomish County, Washington.

WORK: The proposed Smith Island Restoration Project would construct a dike at a new location and remove portions of an existing dike to create or enhance an estimated 400 acres of estuarine wetlands. Approximately 300 acres of freshwater wetlands and waters would be impacted permanently (converted, filled or excavated) and about 56 acres would be temporarily impacted during construction.

Additional project elements include the removal and installation of tide gates, construction of access roads, installation of a detention pond with a pump station, creation of a wetland berm over an existing buried pipeline and construction of a parking lot. Work will be accomplished using standard construction equipment such as excavators, dump trucks, and graders.

The first phase of the project would entail construction of the new dike, toe ditches, storage pond, and pump station. The second phase is associated with restoration activities such as filling ditches, digging starter channels, and the installation of large wood. During the third phase, accumulated sediment would be removed from the mouth of the

east tidal channel and the existing dike would be removed; tide gates would then be removed/re-located and channels would be connected to Union Slough. Additional project details are listed below.

Dike construction and access roads

A 5,600-foot section of dike would be constructed along the west tidal channel to an elevation of 15 feet NAVD88 with 3:1 slopes that would connect to the existing dike on Union Slough. The dike would connect with a 2,200-foot section of dike in the southern portion of the site constructed by the City of Everett.

A 30-foot-wide gravel road would parallel the new dike for maintenance access. The top of the dike would also contain a 15-foot-wide gravel road with 25-foot vehicle turnouts for maintenance access. Total fill for this work would permanently impact an estimated 19 acres of wetland.

Drainage features

Drainage patterns impacted by the project would be managed by the construction of a new 400-foot by 900-foot pond designed to collect excess water. Toe ditch water would be directed to the storage pond through a culvert under the dike toe access road. The storage pond would discharge to Union Slough either via a tide gate by gravity during low water in Union Slough or pumped discharge during prolonged periods of high water in Union Slough.

Creation of the pond would result in the loss of 9 acres of freshwater wetlands. The pond would include a 10-foot-diameter, 14-foot pump station housing three pumps, (one 300 gallons per minute (gpm) pump and two 1,645 gpm pumps), and a total pump station discharge capacity of 3,590 gpm (8 cfs). The pumps would operate based on water elevation, turning on at -0.6 feet NAVD88 and turning off at -2.1 feet NAVD88. Utilities for the pump station would be buried under the road next to the toe ditch and buried at least six feet below grade. Total fill and excavation for this work would permanently impact an estimated nine acres of wetland.

Restoration activities

Thousands of feet of drainage ditches, including the existing toe ditch, in the areas to be breached would be plugged with native material and starter tidal channels would be excavated. Starter channels would have 1:1 side slopes and would have bottom widths of 12 to 2 feet wide. At their connections with Union Slough, they would have 20 to 25 feet wide top widths and be 5 to 7 feet deep. About 7 large woody complexes (LWC) and two wood revetments are proposed for installation along the perimeter of the breached areas. LWC structures would be composed of salvaged tree trunks driven into the sediment so that at least one pile has a top elevation above 15 feet NAVD88 to provide bird habitat. Soils excavated from the pond will be spread water ward of the proposed dike to create topographic benches. This work would temporarily impact an estimated 33 acres of wetland (4.7 acres of ditch fill, 28 acres of topographic benches, and 1.2 acres of starter channel excavation). Following construction these areas should function as tidal estuarine wetlands.

Protection of pipeline

The new dike would cross a Puget Sound Energy natural gas pipeline at the west end of 12th Street NE where it is buried about +/- 7 feet below grade. Post-construction, approximately 3,500 linear feet of the pipeline would be located water ward of the new dike. To protect the pipeline, fill material will be used to construct a shallow berm over it. The fill prism would be set at an elevation that allows for daily tidal inundation and the establishment of wetland vegetation. The berm may include buried rock to prevent structural damage to the pipe. This work would temporarily impact an estimated seven acres of wetland. Following construction these areas should function as tidal estuarine wetlands.

Dike removal, tide gates

Excess sediment would be removed at the mouth of the east tidal channel before dike removal. Two 2,000- to 2,500-foot sections of the existing dike along Union Slough would then be removed; one at the northern end and one at the eastern boundary. The 36-inch tide gate that connects the east tidal channel to Union Slough and the 18-inch tide gate that drains the eastern portion of the site would be removed; both of these would be relocated to service the landward side of the new dike. This work would temporarily impact an estimated 10.7 acres of wetland (this is the approximate area of wetlands landward of the dike where fill would be placed and does not include the existing dike footprint). Following construction an estimated 16.6 acres should function as tidal estuarine wetland (includes area of dike breaches and the 10.7 acres of fill that would be placed landward of the dike). An estimated 2.2 acres (this is the approximate area of the remnant dike remaining at 10 feet or higher NAVD88) would remain above the Ordinary High Water Mark and function as wetland buffer following construction. Following removal of the dikes an estimated 330 acres of existing fresh water wetlands would be converted to tidal estuarine wetlands (including areas temporarily impacted by project construction activities).

Parking lot for access to adjacent public trail

The City of Everett's (City) dike-top trail network originates at nearby Langus Riverfront Park on the Snohomish River and winds around the southern portion of Smith Island. A new 140-foot by 40-foot parking lot is proposed on Snohomish County (County) property north of 12th Street NE to provide access to the trail on the City's section of the dike. The surface would be gravel except for one paved 20-foot by 28-foot parking space to meet requirements of the Americans with Disabilities Act. No other public access is proposed on the County's property. This work would permanently fill an estimated 0.3 acre of wetland.

PROJECT PURPOSE: The purpose of the Smith Island Restoration Project is to restore an estuarine tidal marsh ecosystem to enhance fish habitat for endangered Chinook salmon and other native fish species.

ADDITIONAL INFORMATION: The applicants propose to set aside approximately 75 acres of the restoration area for the compensatory wetland mitigation needs of other entities. These entities will remain the responsible party on their permits and for ensuring their respective mitigation requirements are fulfilled.

The wetland boundaries and/or location of the ordinary high water mark/ line of mean high water/ mean higher high water shown on the project drawings have not yet been verified by the Corps. If the Corps determines the boundaries of the wetland/waters are substantially inaccurate a new public notice may be published.

MITIGATION: On-site compensatory mitigation is proposed primarily through wetland rehabilitation by converting, creating or enhancing freshwater wetlands to estuarine wetland (across multiple properties). A final mitigation plan will be approved prior to permit issuance.

ENDANGERED SPECIES: The Endangered Species Act (ESA) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the ESA on all actions that may affect a species listed (or proposed for listing) under the ESA as threatened or endangered or any designated critical habitat.

Section 7 consultation was completed with the USFWS through use of the Corps' *2008 Fish Passage and Restoration Programmatic Consultation*. USFWS issued an electronic approval on August 18, 2014. Section 7 consultation with the NMFS is not required because the proposed project is consistent with the requirements of the NMFS' *Habitat Restoration Program, 4(d) Rule, Limit 8*.

ESSENTIAL FISH HABITAT: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). The proposed action would impact EFH in the project area. The Corps has determined that the proposed action will not adversely affect designated EFH for federally managed fisheries in Washington waters. No further EFH consultation is necessary.

CULTURAL RESOURCES: The Corps has reviewed the latest published version of the National Register of Historic Places, lists of properties determined eligible and other sources of information. Historic properties investigations have been conducted within the permit area. No historic properties determined eligible for or listed in the National Register of Historic Places were found to exist within the permit area. The Corps invites responses to this public notice from Native American Tribes or tribal governments; Federal, State, and local agencies; historical and archeological societies; and other parties likely to have knowledge of or concerns regarding historic properties and sites of religious and cultural significance at or near the project area. After receipt of comments from this public notice, the Corps will evaluate potential impacts and consult with the State Historic Preservation Officer and Native American Tribes in accordance with Section 106 of the National Historic Preservation Act, as appropriate.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

EVALUATION – CORPS: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

The Corps is soliciting comments from the public; Native American Nations or tribal governments; Federal, State, and local agencies and officials; and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for the work. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity.

Copies of this public notice which have been mailed or otherwise physically distributed feature project drawings in black and white. The electronic version features those drawings in color, which we think more accurately communicates the scope of project. To access the electronic version of this public notice, go to the Seattle District's web page at <http://www.nws.usace.army.mil/> and under the heading Open Public Comment Periods select Regulatory Public Notices. Recently-issued public notices are listed in chronological order of the date of issuance. Select and view the listing for this project.

The described discharge will be evaluated for compliance with guidelines promulgated by the Environmental Protection Agency under authority of Section 404(b)(1) of the CWA. These guidelines require an alternatives analysis for any proposed discharge of dredged or fill material into waters of the United States.

SOURCE OF FILL MATERIAL: Fill material will be imported from approved source and/or re-use of excavated material from the project site may be incorporated into the new dike.

EVALUATION – ECOLOGY: Ecology is soliciting comments from the public; Federal, Native American Nations or tribal governments, State, and local agencies and officials; and other interested parties in order to consider and evaluate the impacts of this activity. Ecology will be considering all comments to determine whether to certify or deny certification for the proposed project.

ADDITIONAL EVALUATION: This proposal is the subject of Shorelines Substantial Development Permit Number 13-107849 SM, being processed by Snohomish County Planning and Development Services.

COMMENT AND REVIEW PERIOD: Conventional mail or e-mail comments on this public notice will be accepted and made part of the record and will be considered in determining whether it would be in the public interest to authorize this proposal. In order to be accepted, e-mail comments must originate from the author's e-mail account and must include on the subject line of the e-mail message the permit applicant's name and reference number as shown below. Either conventional mail or e-mail comments must include the permit applicant's name and reference number, as shown below, and the commentator's name, address, and phone number. All comments whether conventional mail or e-mail must reach this office, no later than the expiration date of this public notice to ensure consideration.

CORPS COMMENTS: All e-mail comments should be sent to erin.l.legge@usace.army.mil. Conventional mail comments should be sent to: U.S. Army Corps of Engineers, Regulatory Branch, Attention: Ms. Erin Legge, P.O. Box 3755, Seattle, Washington 98124-3755. All comments received will become part of the administrative record and are subject to public release under the Freedom of Information Act including any personally identifiable information such as names, phone numbers, and addresses.

ECOLOGY COMMENTS: Any person desiring to present views on the project pertaining to a request for water quality certification under Section 401 of the CWA and/or Coastal Zone Management consistency concurrence, may do so by submitting written comments to the following address: Washington State Department of Ecology, Attention: Federal Permit Coordinator, Post Office Box 47600, Olympia, Washington 98504-7600, or e-mail to ecyrefedpermits@ecy.wa.gov.

To ensure proper consideration of all comments, responders must include the following name and reference number in the text of their comments: Snohomish County Department of Public Works; NWS-2014-00183

Encl: Figures (24)

SEC. 9,10,15&16; T.29N, R.5E, W.M.



PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LO: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

VICINITY MAP

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

SHEET 1 OF 24 DATE: FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183

LEGEND

LINETYPE	DESCRIPTION	SYMBOL	EXIST.	PROPOSED	DESCRIPTION
	EDGE OF PAVEMENT (EXISTING)			N/A	UTILITY POLE
	BUILDING LINE (EXISTING)			N/A	YARD LIGHT
	DITCH CENTERLINE (EXIST.)			N/A	POTHOLE
	FENCE (EXISTING)			N/A	MONUMENT IN CASE
	GRAVEL (EXIST.)			N/A	TRAVERSE POINT
	SILT FENCE			N/A	SECTION CORNER
	CONTOUR (MINOR-EXISTING)				
	CONTOUR (MAJOR-EXISTING)				
	PROPERTY LINE				
	CULVERT (PROPOSED)		N/A		GRANULAR BASE FILL
	SECTION LINES		N/A		RIPRAP EROSION PROTECTION
	STORM DRAINAGE (STR TO STR)		N/A		SUBGRADE/EARTH
	GAS LINE				
	OVERHEAD POWER LINE				
	BURIED POWER LINE				
	ORDINARY HIGH WATER LINE				
	FIBER OPTIC				
	PROJECT LIMITS				
	RIGHT-OF-WAY				
	JURISDICTIONAL BOUNDARY				
	QUARTER SECTION LINES				
	MITIGATION AREA				
	HIGH VISIBILITY FENCE				
	STORM SEWER (PROPOSED)				
	FISH SCREENS				

ABBREVIATIONS

APPROX. - APPROXIMATELY	N - NORTH
BTM. - BOTTOM	NE - NORTHEAST
CB - CATCH BASIN	NW - NORTHWEST
CONC - CONCRETE	OHW - ORDINARY HIGH WATER
CPP - CORRUGATED POLYETHYLENE PIPE	R - RADIUS
CMP - CORRUGATED METAL PIPE	R/W - RIGHT OF WAY
CULV - CULVERT	RT - RIGHT
B - BREACH	SL - SLOPE
DIAM - DIAMETER	SD - STORM DRAIN
E - EAST	SE - SOUTHEAST
ELEV - ELEVATION	SLN - SANITARY SEWER LINE
EX - EXISTING	STA - STATION
FM - FORCE MAIN	STR - STRUCTURE
GE - GROUND ELEVATION	SW - SOUTHWEST
HORIZ - HORIZONTAL	TOF - TOP OF FOOTING
HDPE - HIGH DENSITY POLYETHYLENE PIPE	TOF - TOP OF FOOTING
IE - INVERT ELEVATION	TYP - TYPICAL
LF - LINEAL FEET	VERT - VERTICAL
LT - LEFT	W - WEST
MAX - MAXIMUM	WM - WATER METER
MIC - MONUMENT IN CASE	Q - FLOW
MIN - MINIMUM	

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PUBLIC WORKS

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PROJECT

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SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

SHEET 2 OF 24 DATE: FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183

1 29050400300900
(PROPERTY ADDRESS UNKNOWN)
KISAN ENTERPRISES LLC
20607 SR 9 SE
SNOHOMISH, WA 98296

2 29050400400400
(PROPERTY ADDRESS UNKNOWN)
KISAN ENTERPRISES LLC
20607 SR 9 SE
SNOHOMISH, WA 98296

3 29050400400600
(PROPERTY ADDRESS UNKNOWN)
JOHN ROONEY
8704 115TH AVE NE
LAKE STEVENS, WA 98258

4 29050900201600
(PROPERTY ADDRESS UNKNOWN)
KISAN ENTERPRISES LLC
20607 SR 9 SE
SNOHOMISH, WA 98296

5 29050900201300
4303 12TH STREET NE
EVERETT, WA 98201
IFF HOLDING LLC
20607 STATE ROUTE 9 SE
SNOHOMISH, WA 98296

6 29050900100400
4303 12TH STREET NE
EVERETT, WA 98201
IFF HOLDING LLC
20607 STATE ROUTE 9 SE
SNOHOMISH, WA 98296

7 29050900100600
4303 12TH STREET NE
EVERETT, WA 98201
IFF HOLDING LLC
20607 STATE ROUTE 9 SE
SNOHOMISH, WA 98296

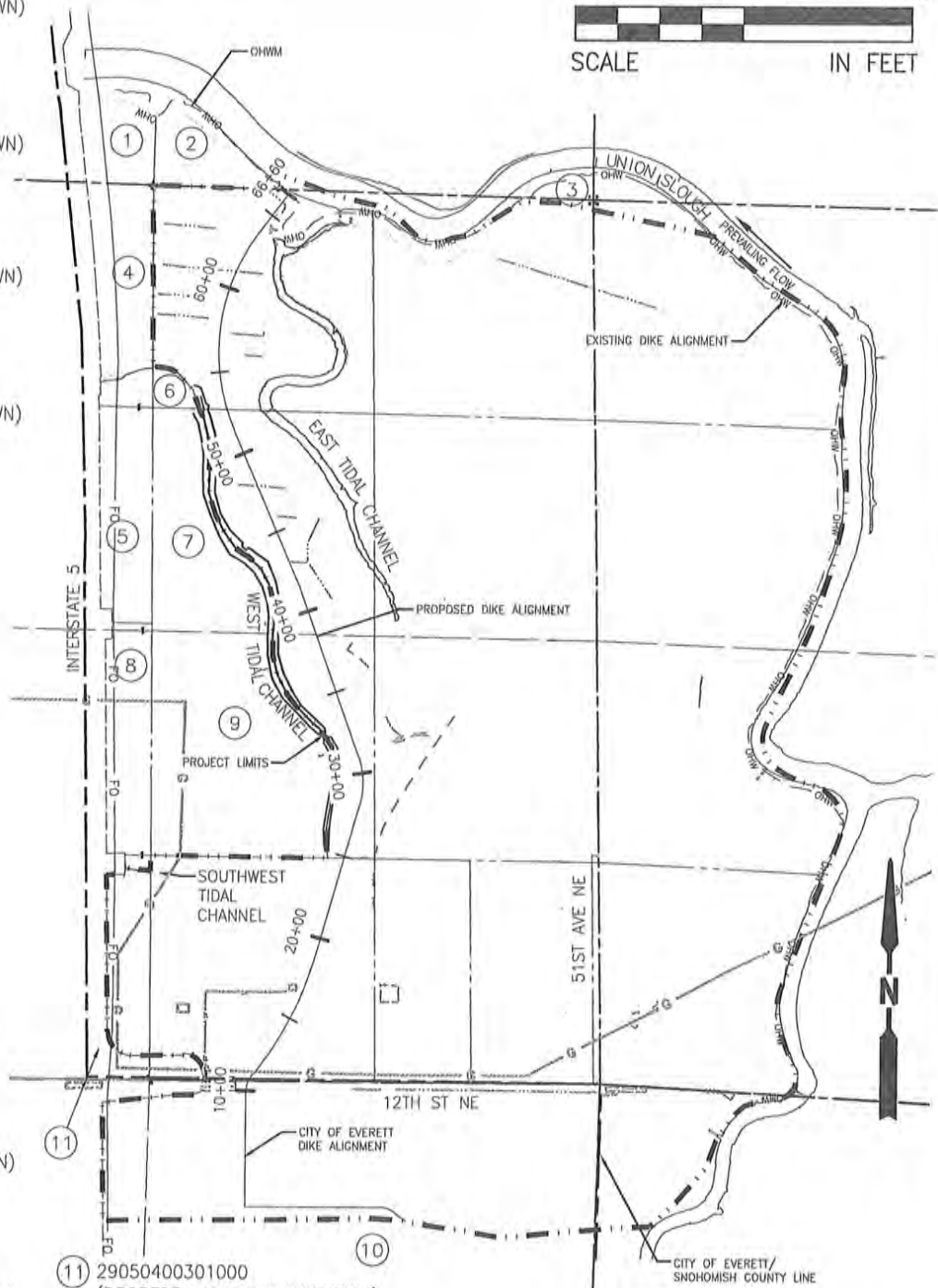
8 29050900201100
4303 12TH STREET NE
EVERETT, WA 98201
IFF HOLDING LLC
20607 STATE ROUTE 9 E
SNOHOMISH, WA 98296

9 29050900400400
(PROPERTY ADDRESS UNKNOWN)
IFF HOLDING LLC
20607 STATE ROUTE 9 E
SNOHOMISH, WA 98296

10 29051600100100
(PROPERTY ADDRESS UNKNOWN)
CITY OF EVERETT
3002 WETMORE AVENUE
EVERETT, WA 98201

11 29050400301000
(PROPERTY ADDRESS UNKNOWN)
WSDOT
310 MAPLE PARK AVENUE SE
P.O. BOX 47300
OLYMPIA, WA 98504-7300

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SCALE IN FEET



LEGEND

(X) PROPERTY NUMBER

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

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PUBLIC WORKS

ADJACENT PROPERTY
OWNERS

SMITH ISLAND
ESTUARY RESTORATION
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NEAR: CITY OF EVERETT

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SEC. 9, 10, 15 & 16 T. 29N, R. 5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

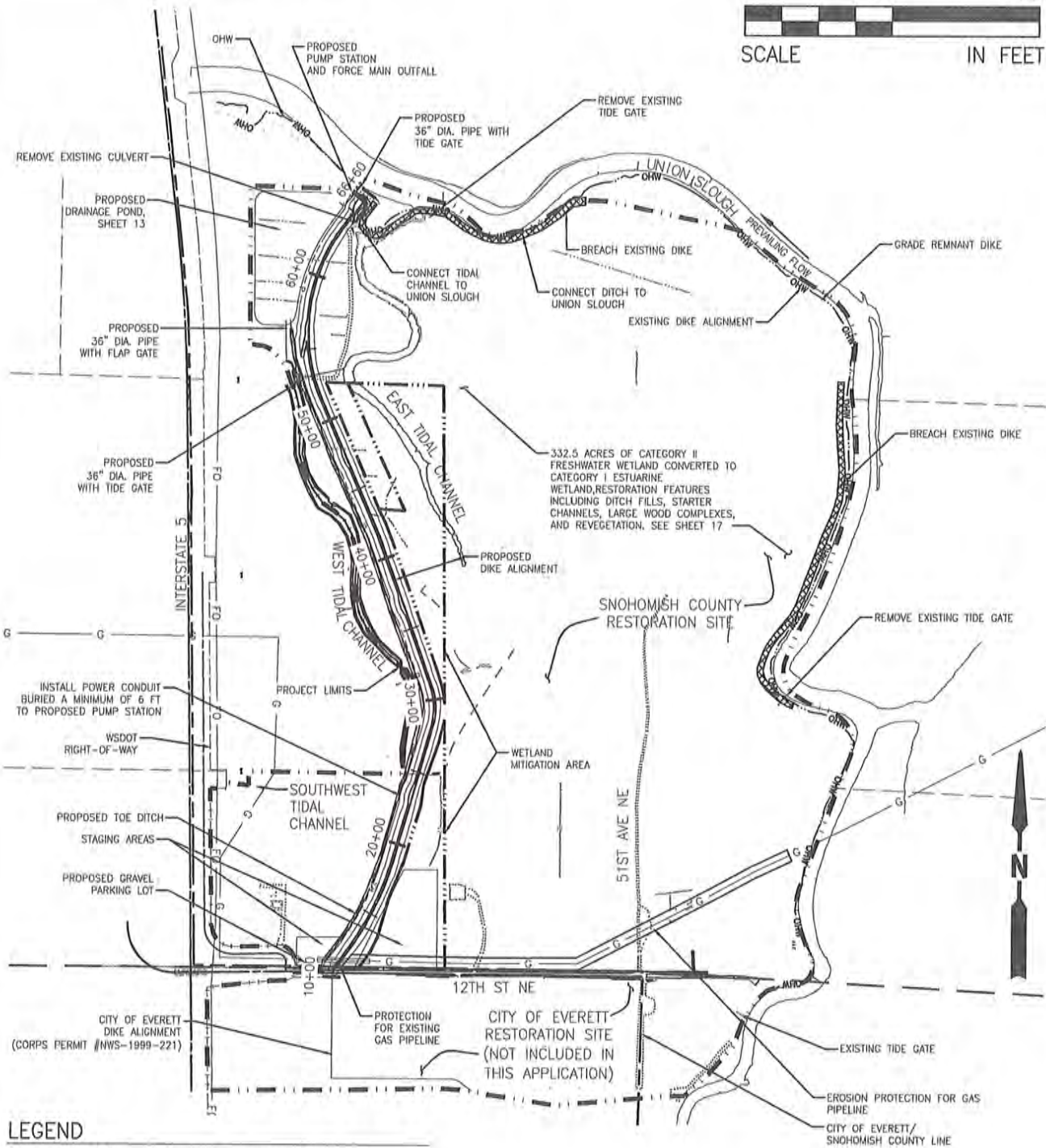
APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 3 OF 24 DATE: FEBRUARY 2014

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SCALE IN FEET



LEGEND

BREACH EXISTING DIKE

PURPOSE: ESTUARY RESTORATION

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OVERALL SITE PLAN

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

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COUNTY OF: SNOHOMISH

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APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 4 OF 24 DATE: FEBRUARY 2014

EXCAVATION QUANTITIES WITHIN WETLANDS

	VOLUME (CY)	AREA (AC)
DRAINAGE POND	96,100	8.3
SETBACK DIKE TOPSOIL STRIP AND UNSUITABLE SOIL REMOVAL	73,000	10.3
RIPRAP TRENCH AND DIKE TOE DITCH	16,300	2.9
RESTORATION AREA STARTER CHANNELS, LARGE WOOD COMPLEXES	29,700	3.7
OPTIONAL BURIED WINDROWS FOR EXISTING PIPELINE	12,300	2.6

FILL QUANTITIES WITHIN WETLANDS

	VOLUME (CY)	AREA (AC)
SETBACK DIKE INCLUDING TOPSOIL AND ARMORING	257,600	10.3
DITCH FILL	29,200	4.3
EROSION PROTECTION BERM FOR PIPELINE	32,300	9.1
ACCESS ROAD AT DIKE TOE AND AROUND POND	14,600	4.5
DIKE BREACHING AND REMNANT DIKE GRADING	52,600	16.3
TEMPORARY FILL FOR STAGING AREA	14,900	7.3

PROJECT PHASE LIMITS

PHASE 1



PROJECT ELEMENTS INCLUDED:

- ACCESS AND STAGING
- SETBACK DIKE CONSTRUCTION
- TOE DITCH, POND AND PUMP STATION CONSTRUCTION

PHASE 2



PROJECT ELEMENTS INCLUDED:

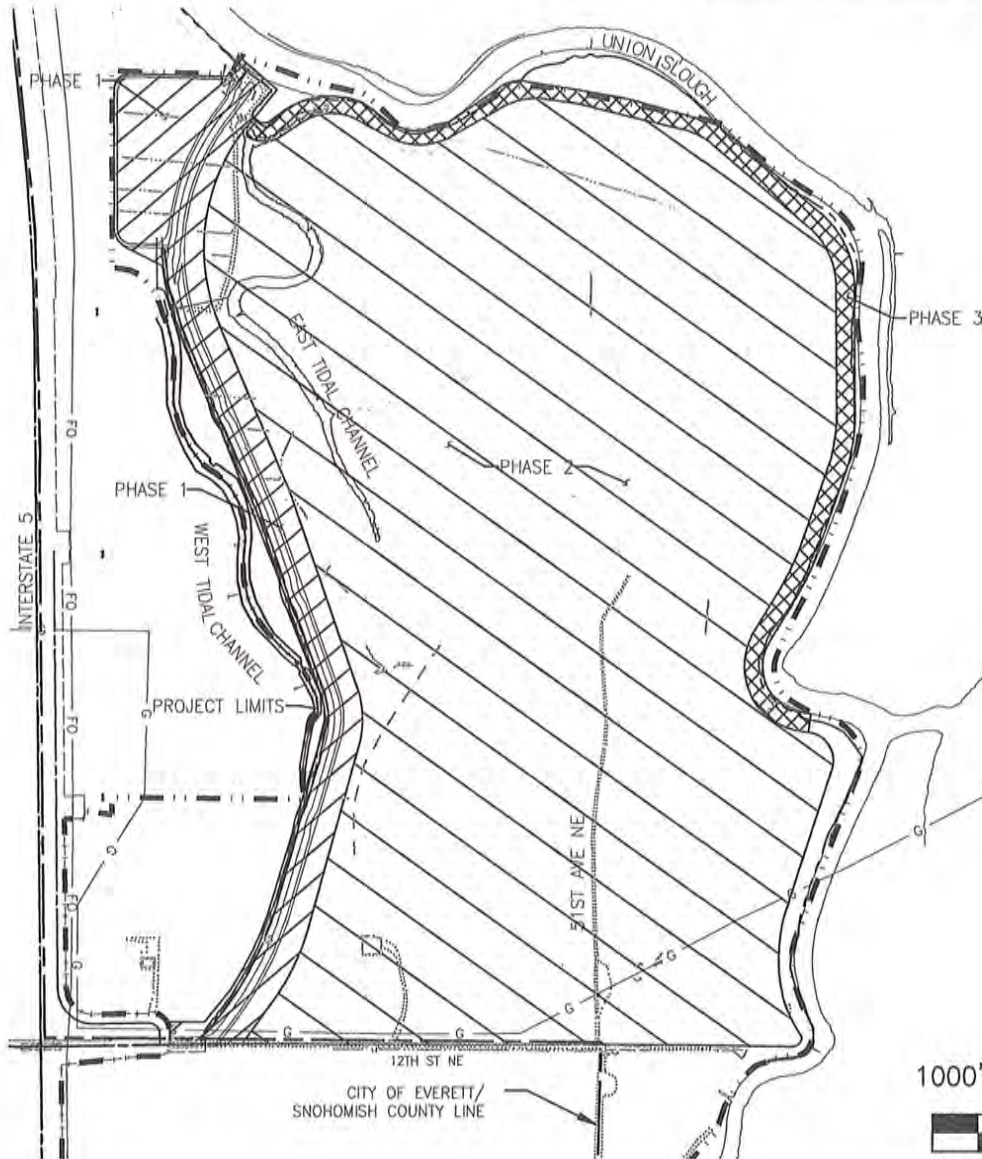
- DITCH FILL, AND SITE RESTORATION, MAY OCCUR CONCURRENTLY WITH PHASE 1.
- REMOVAL OF MATERIAL FROM EXISTING DIKE TO OCCUR AFTER CONSTRUCTION OF PROPOSED DIKE AND EXTENSION WITHIN THE CITY OF EVERETT

PHASE 3



PROJECT ELEMENTS INCLUDED:

- DIKE BREACHING, AND REMNANT DIKE GRADING
- BREACHING AND GRADING TO OCCUR AFTER CONSTRUCTION OF DIKE EXTENSION WITHIN THE CITY OF EVERETT



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CONSTRUCTION SEQUENCING

SMITH ISLAND
ESTUARY RESTORATION
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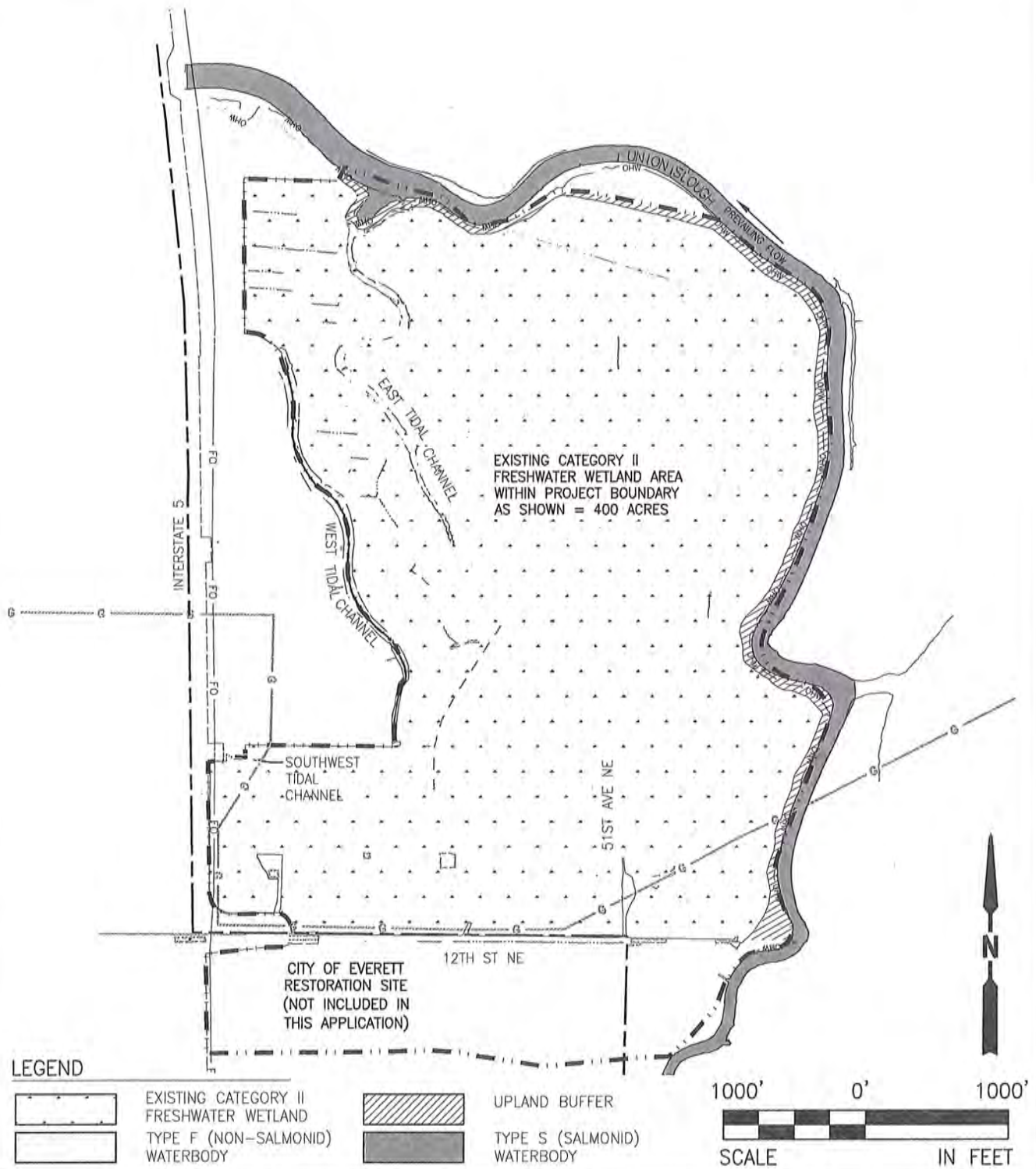
STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

SHEET 5 OF 24 DATE: FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183

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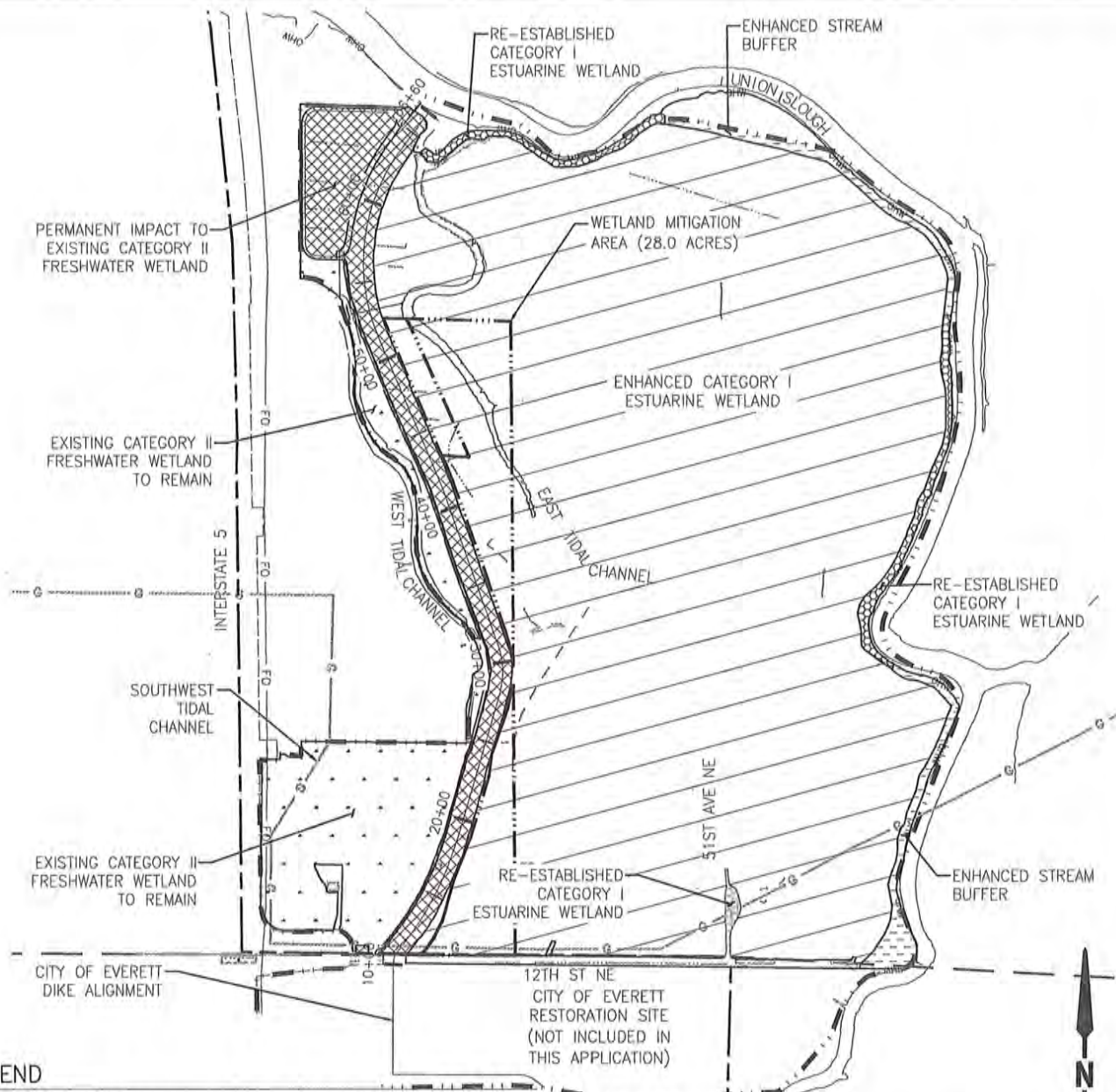
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EXISTING CRITICAL AREAS

SMITH ISLAND
ESTUARY RESTORATION
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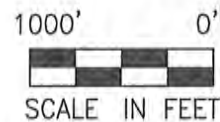


LEGEND

	PERMANENT IMPACT TO EXISTING CATEGORY II FRESHWATER WETLAND (27.6 ACRES)
	ENHANCED CATEGORY I ESTUARINE WETLAND (332.5 ACRES)
	RE-ESTABLISHED CATEGORY I ESTUARINE WETLAND (8.4 ACRES)
	ENHANCED STREAM BUFFER (7.0 ACRES)
	EXISTING CATEGORY II FRESHWATER WETLAND (39.3 ACRES)

TEMPORARY WETLAND IMPACTS

	AREA (AC)
DITCH FILL	4.3
CONSTRUCTION OF RESTORATION ELEMENTS AND FILL FROM DIKE BREACHING	20.0
PIPELINE EROSION PROTECTION BERM	9.10
ADDITIONAL AREA FOR TEMPORARY ACCESS	22.7

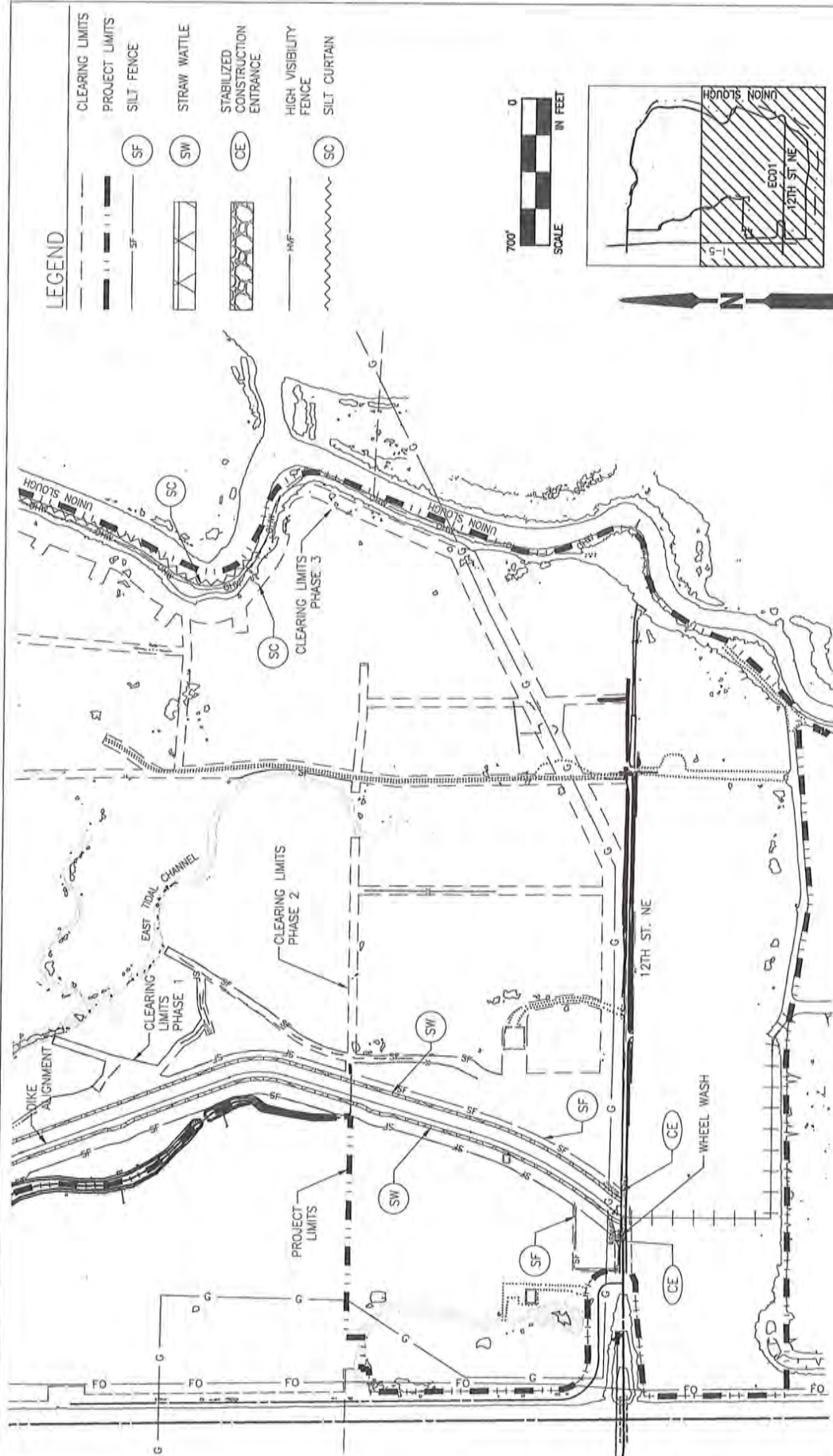


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 PUBLIC WORKS

**CRITICAL AREA IMPACT
 AND MITIGATION**
**SMITH ISLAND
 ESTUARY RESTORATION
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COUNTY OF: SNOHOMISH
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APPLICATION BY: SNOHOMISH COUNTY
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SHEET 7 OF 24 DATE: FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183



PURPOSE: ESTUARY RESTORATION

DATUM:NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N LON: 122°09'48.39"W

PROPERTY OWNERS:

SNOHOMISH COUNTY PUBLIC WORKS

U.S. Army Corps of Engineers Reference:

TEMPORARY EROSION AND
SEDIMENT CONTROL PLAN
(1 OF 2)

SMITH ISLAND

ESTUARY RESTORATION PROJECT

PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE
NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9, 10, 15 & 16 T. 29N, R. 5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY

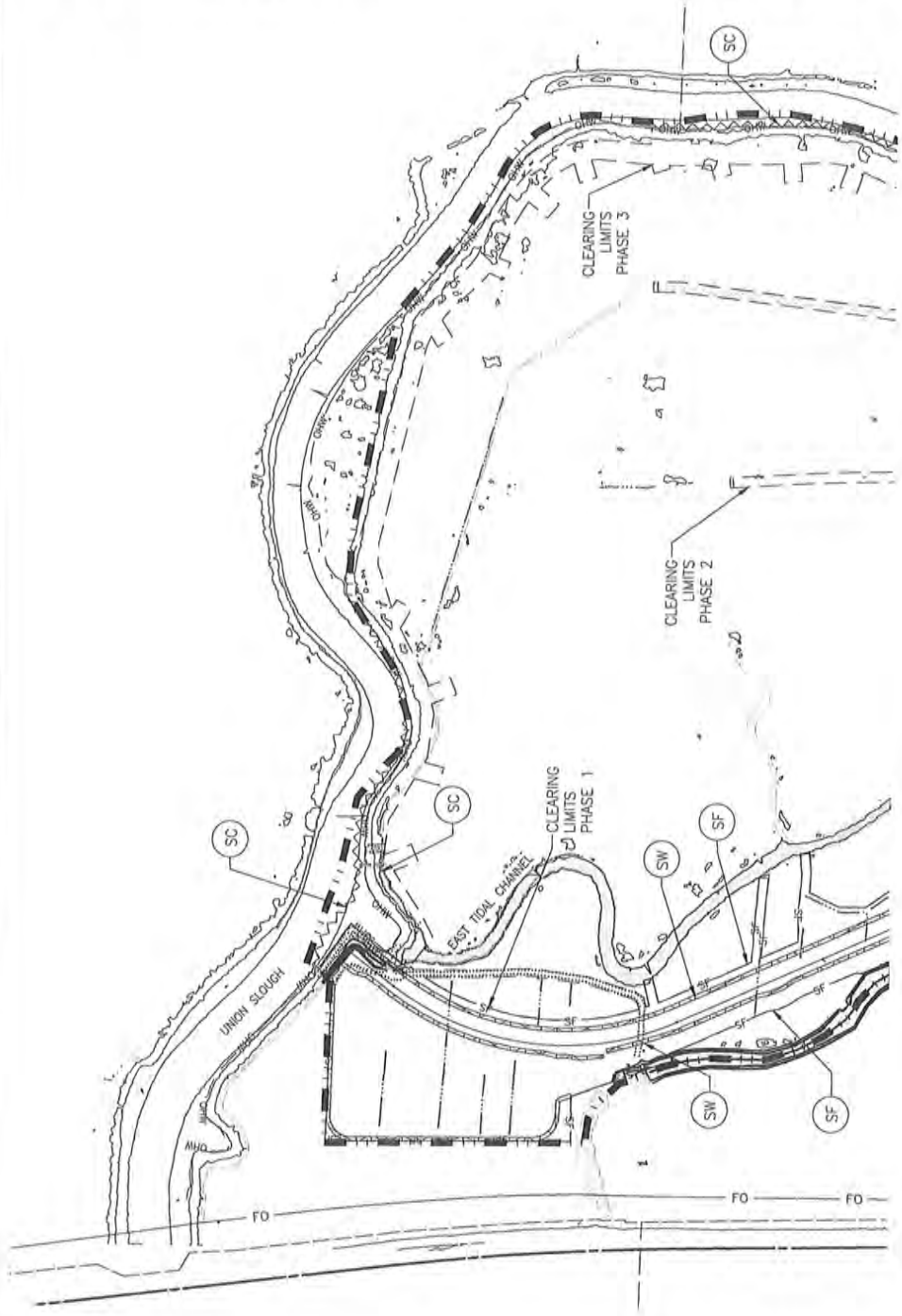
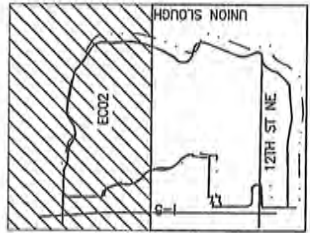
PUBLIC WORKS

SHEET 8 OF 24

DATE: FEBRUARY 2014

LEGEND

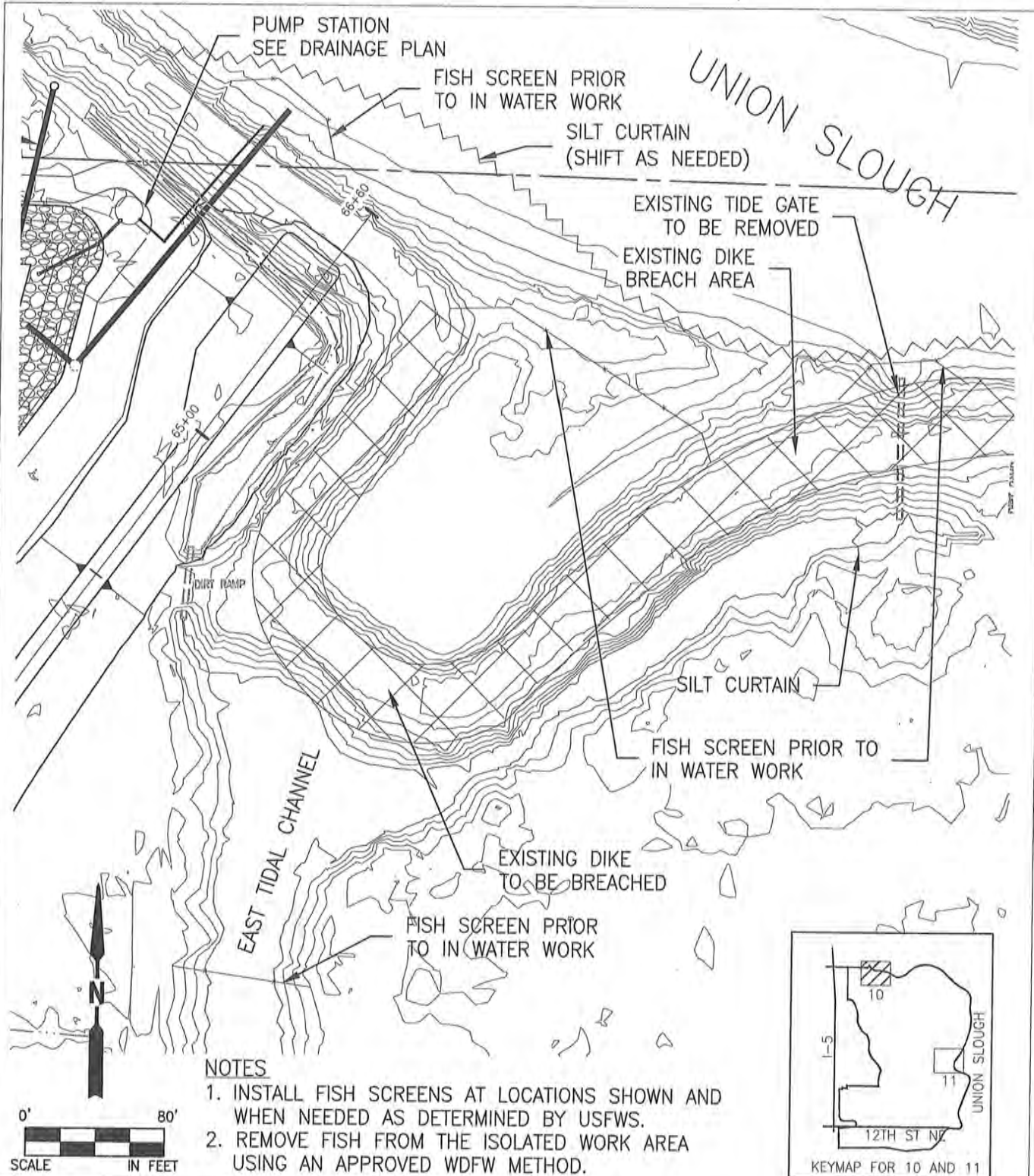
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|--|----------------------------------|
| | CLEARING LIMITS |
| | PROJECT LIMITS |
| | SILT FENCE |
| | SILT FENCE |
| | STRAW WATTLE |
| | STABILIZED CONSTRUCTION ENTRANCE |
| | HIGH VISIBILITY FENCE |
| | SILT CURTAIN |



PURPOSE: ESTUARY RESTORATION
DATUM: NAD83/91 AND NAVD 88
LAT: 48°00'54.18"N LONG: 122°09'48.39"W
PROPERTY OWNERS:
SNOHOMISH COUNTY PUBLIC WORKS

TEMPORARY EROSION AND
SEDIMENT CONTROL PLAN
(2 OF 2)
SMITH ISLAND
ESTUARY RESTORATION PROJECT
U.S. Army Corps of Engineers Reference: NWS-2014-00183

PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE
NEAR: CITY OF EVERETT
AT: 12TH ST NE
SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.
COUNTY OF: SNOHOMISH
STATE: WASHINGTON
APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS
SHEET 9 OF 24
DATE: FEBRUARY 2014



PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LO: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

FISH EXCLUSION PLAN
(1 OF 2)

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9, 10, 15 & 16 T. 29N, R. 5E, W.M.

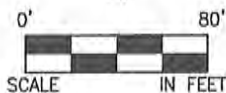
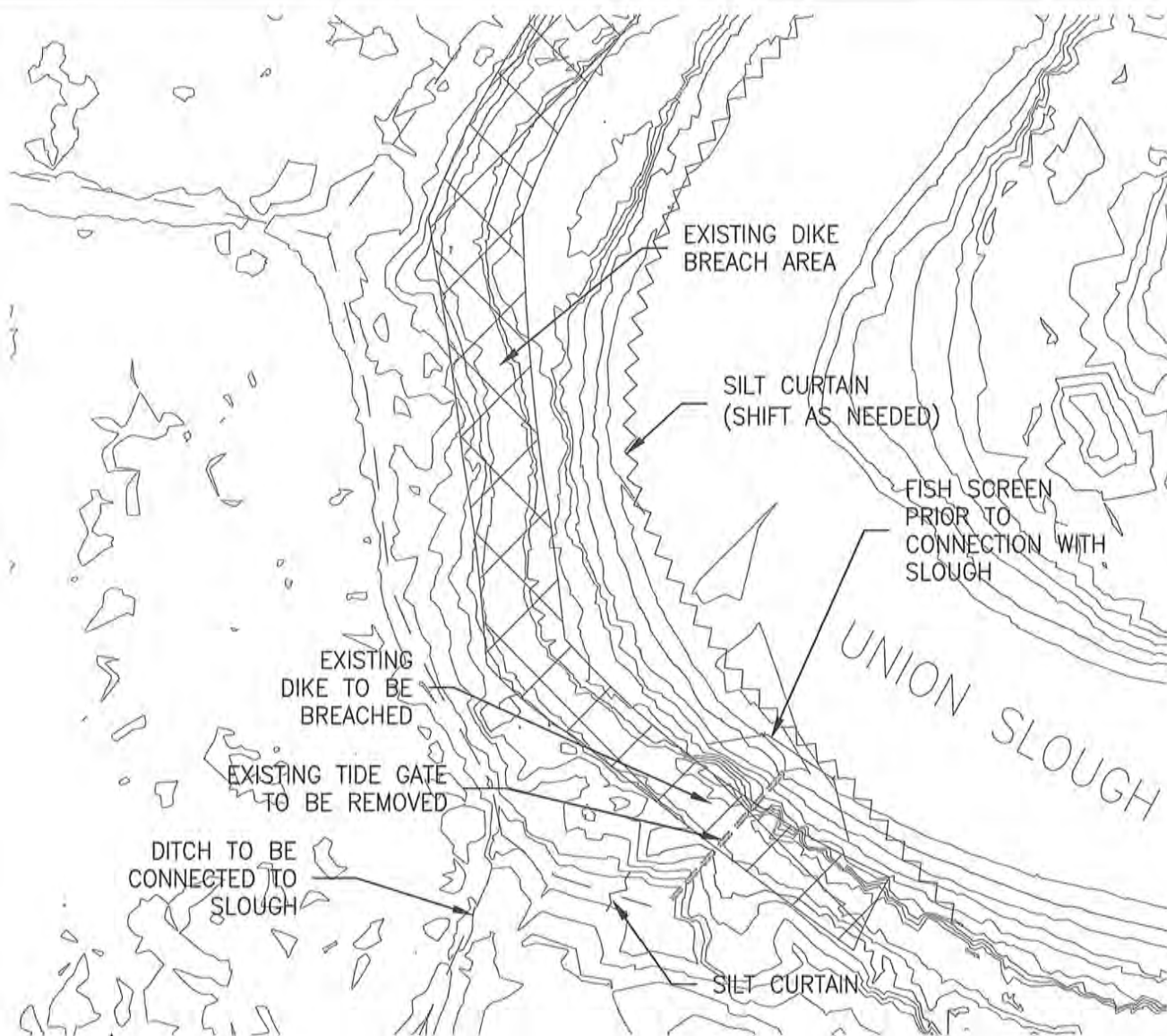
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

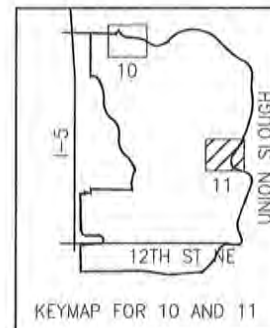
U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 10 OF 24 DATE: FEBRUARY 2014



NOTES

1. INSTALL FISH SCREENS AT LOCATIONS SHOWN AND WHEN NEEDED AS DETERMINED BY USFWS.
2. REMOVE FISH FROM THE ISOLATED WORK AREA USING AN APPROVED WDFW METHOD.



KEYMAP FOR 10 AND 11

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LON: 122°09'48.39"W

PROPERTY OWNERS:
 SNOHOMISH COUNTY
 PUBLIC WORKS

FISH EXCLUSION PLAN
 (2 OF 2)

**SMITH ISLAND
 ESTUARY RESTORATION
 PROJECT**

PROPOSED: ESTUARY RESTORATION/
 SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
 PUBLIC WORKS

SHEET 11 OF 24 **DATE:** FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183

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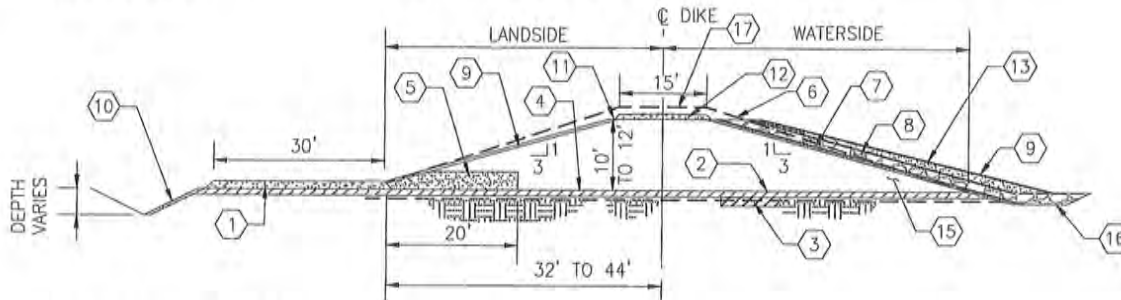
- | | |
|---|--|
| (1) PERMANENT ACCESS ROAD | (10) TOE DITCH WITH FILTER MATERIAL ON DIKE SIDE |
| (2) STRIP BELOW DIKE PRISM (APPROX. 10 INCHES) | (11) DIKE FILL FINAL GRADE (TOP OF DIKE AT ELEVATION 15.0') |
| (3) SUBSURFACE REPAIR AT LOCATIONS IDENTIFIED BY ENGINEER | (12) TOP OF DIKE ROAD SURFACING |
| (4) BASAL REINFORCEMENT GEOSYNTHETIC | (13) TOP SOIL SEEDED WITH SALT-TOLERANT GRASSES |
| (5) HORIZONTAL DRAINAGE LAYER | (14) NOT USED |
| (6) PRE-SETTLEMENT DIKE FILL | (15) DIKE CORE FILL MATERIAL (SEE NOTE) |
| (7) RIPRAP BEDDING/FILTER MATERIAL | (16) RIPRAP TOE |
| (8) RIPRAP EROSION PROTECTION (3' THICK) | (17) SURCHARGE DIKE CORE FILL MATERIAL AT DIKE CENTERLINE TO ELEV. 18.0 FT |
| (9) TOPSOIL (0.5'-1.0' THICK) | |

NOTE:

DIKE CORE FILL MATERIAL GRADATION REQUIREMENTS

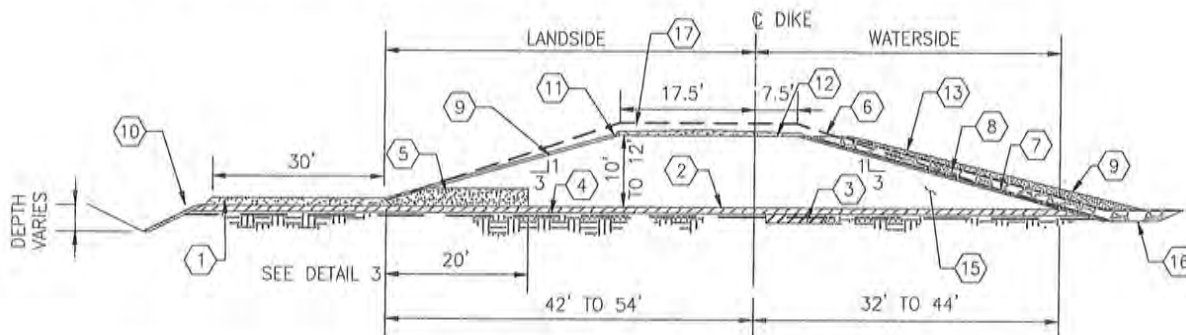
SIEVE SIZE	% PASSING (BY DRY WEIGHT)
4 INCH	100
3 INCH	95 TO 100
3/4 INCH	85 TO 100
US NO. 4	70 TO 100
US NO. 200	MIN 30

MAXIMUM PARTICLE SIZE IN CONTACT WITH REINFORCEMENT GEOSYNTHETIC SHOULD BE 1-1/4 INCH OR LESS.



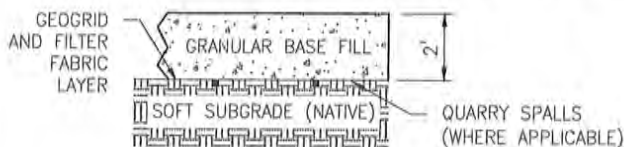
TYPICAL DIKE SECTION DETAIL

N.T.S.



TYPICAL DIKE SECTION DETAIL AT VEHICLE TURNOUT

N.T.S.



PERMANENT ACCESS ROAD DETAIL

N.T.S.

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LON: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

TYPICAL DIKE SECTIONS

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

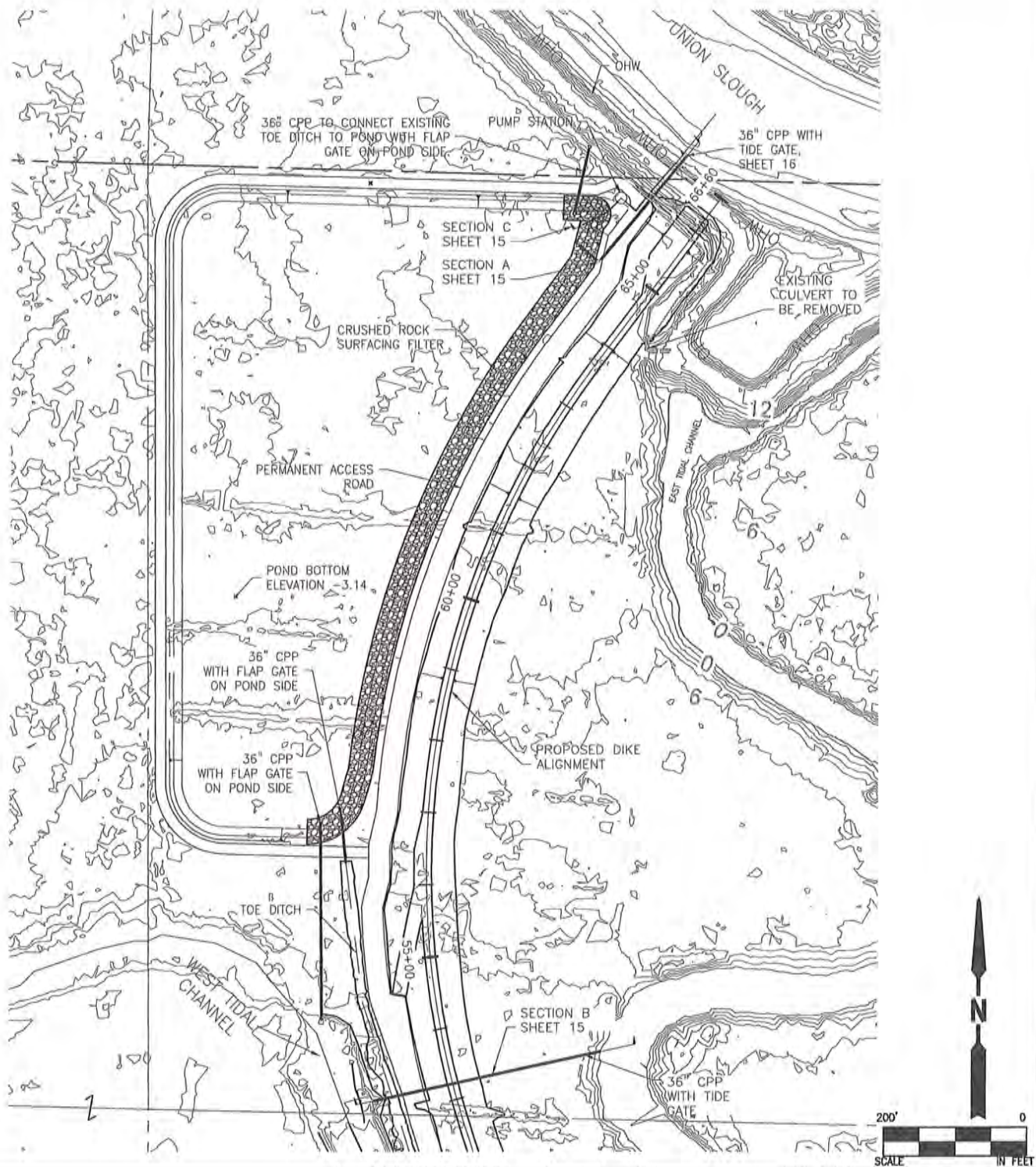
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 12 OF 24 DATE: FEBRUARY 2014

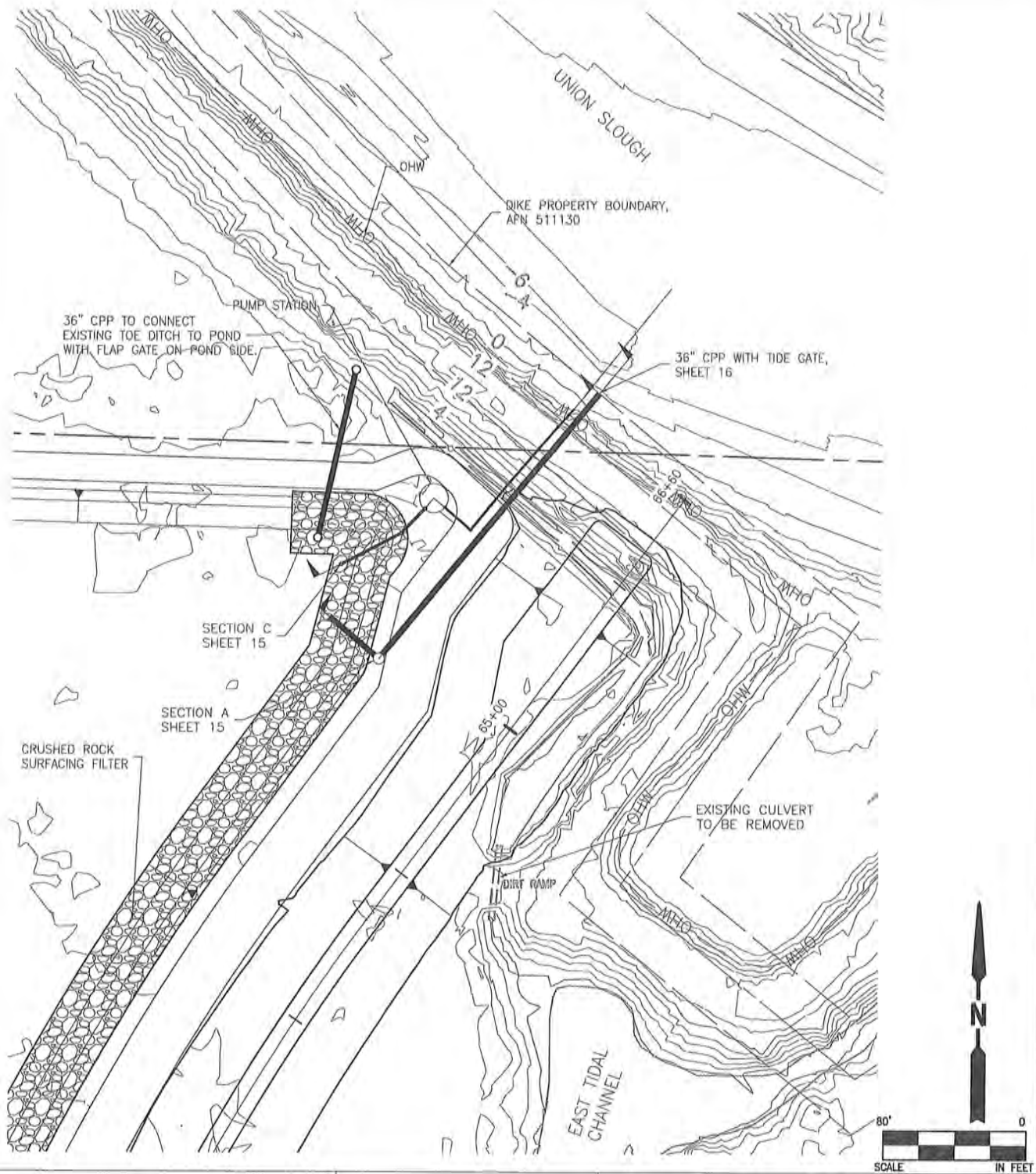


PURPOSE: ESTUARY RESTORATION
 DATUM: NAD83/91 AND NAVD 88
 LAT: 48°00'54.18"N
 LON: 122°09'48.39"W
 PROPERTY OWNERS:
 SNOHOMISH COUNTY
 PUBLIC WORKS

DRAINAGE PLAN
 SMITH ISLAND
 ESTUARY RESTORATION
 PROJECT

PROPOSED: ESTUARY RESTORATION/
 SETBACK DIKE
 NEAR: CITY OF EVERETT
 AT: 12TH ST NE
 SEC. 9, 10, 15 & 16 T. 29N, R. 5E, W.M.
 COUNTY OF: SNOHOMISH
 STATE: WASHINGTON
 APPLICATION BY: SNOHOMISH COUNTY
 PUBLIC WORKS
 SHEET 13 OF 24 DATE: FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183

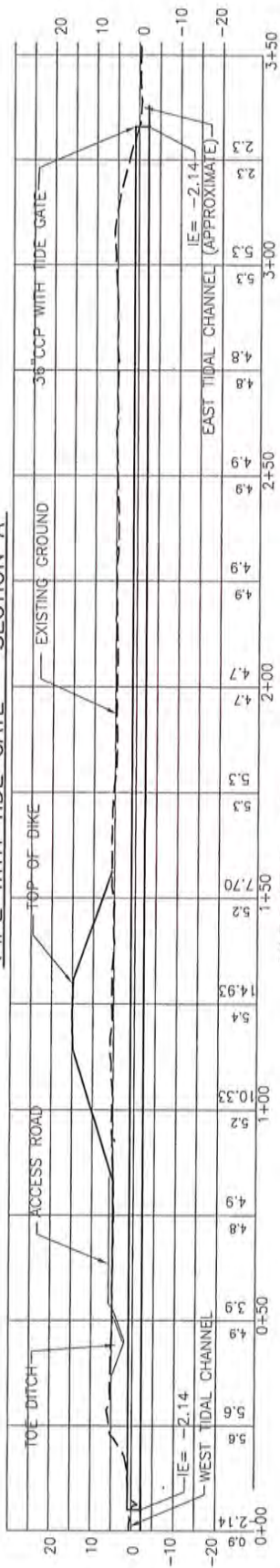
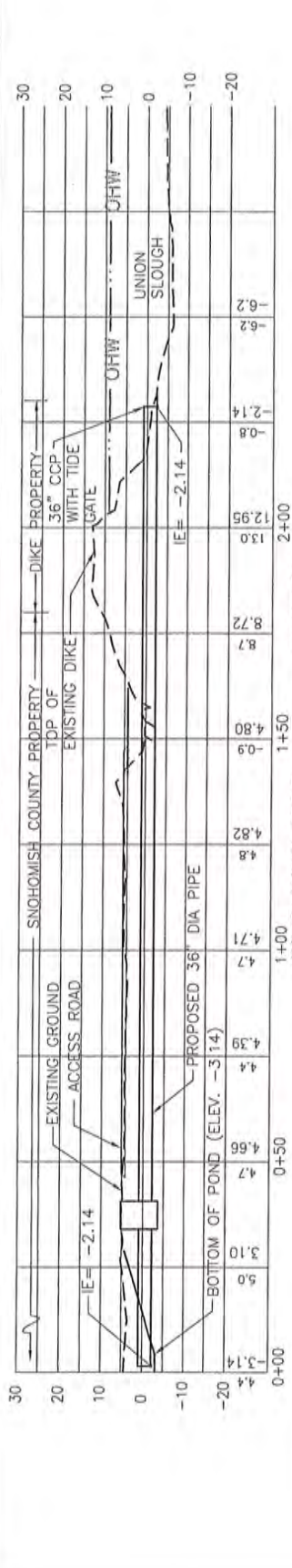


PURPOSE: ESTUARY RESTORATION
 DATUM: NAD83/91 AND NAVD 88
 LAT: 48°00'54.18"N
 LON: 122°09'48.39"W
 PROPERTY OWNERS:
 SNOHOMISH COUNTY
 PUBLIC WORKS

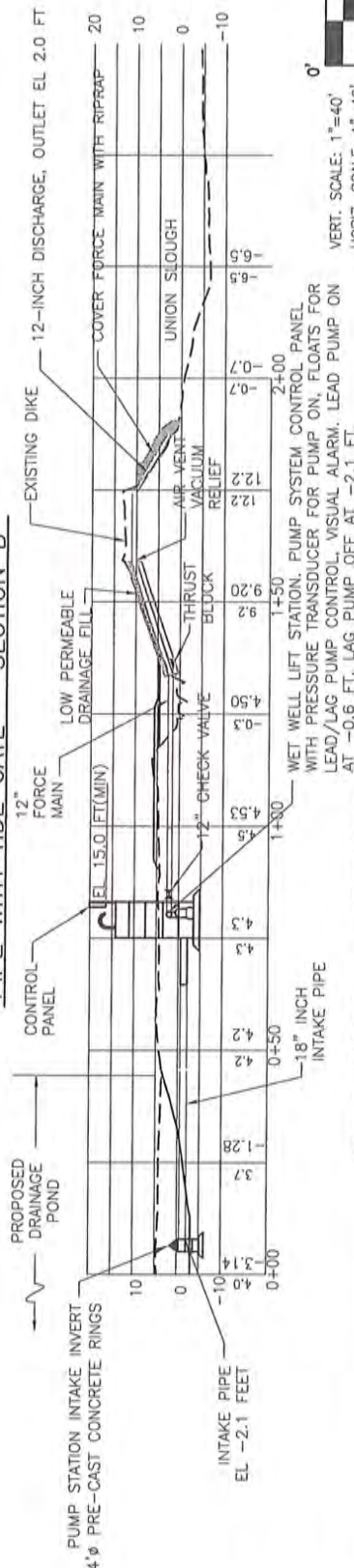
DRAINAGE PLAN
 SMITH ISLAND
 ESTUARY RESTORATION
 PROJECT

PROPOSED: ESTUARY RESTORATION/
 SETBACK DIKE
 NEAR: CITY OF EVERETT
 AT: 12TH ST NE
 SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.
 COUNTY OF: SNOHOMISH
 STATE: WASHINGTON
 APPLICATION BY: SNOHOMISH COUNTY
 PUBLIC WORKS
 SHEET 14 OF 24 DATE: FEBRUARY 2014

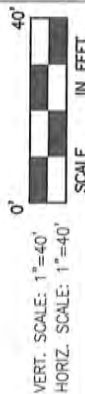
U.S. Army Corps of Engineers Reference: NWS-2014-00183



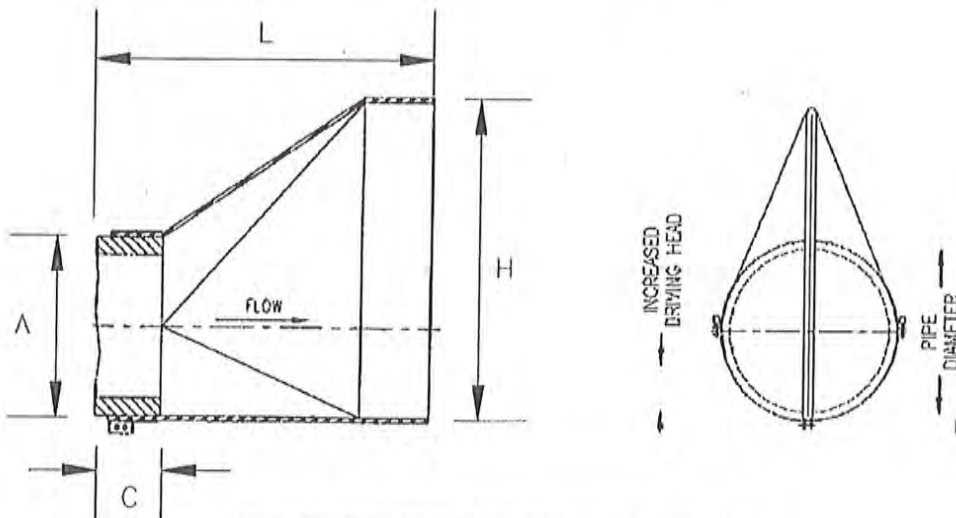
PIPE WITH TIDE GATE - SECTION B



PUMP STATION - SECTION C



<p>PURPOSE: ESTUARY RESTORATION</p> <p>DATUM: NAD83/91 AND NAVD 88</p> <p>LAT: 48°00'54.18"N LON: 122°09'48.39"W</p> <p>PROPERTY OWNERS:</p> <p>SNOHOMISH COUNTY PUBLIC WORKS</p>	<p>PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE</p> <p>NEAR: CITY OF EVERETT</p> <p>AT: 12TH ST NE</p> <p>SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.</p> <p>COUNTY OF: SNOHOMISH</p> <p>STATE: WASHINGTON</p> <p>APPLICATION BY: SNOHOMISH COUNTY PUBLIC WORKS</p>	<p>DRAINAGE SECTIONS</p> <p>SMITH ISLAND</p> <p>ESTUARY RESTORATION PROJECT</p> <p>U.S. Army Corps of Engineers Reference: NWS-2014-00183</p>
<p>SHEET 15 OF 24</p> <p>DATE: FEBRUARY 2014</p>		



A(IN)	L(IN)	H(IN)	C(IN)
42	68	73	10



The Tideflex® Check Valve opens with positive pressure.



Reverse pressure seals the Curved Bill of the Tideflex® Check Valve to prevent backflow.

TIDE GATE DETAIL

DETAILS FROM RED VALVE COMPANY, INC. AND TIDEFLEX TECHNOLOGIES

MATERIALS OF CONSTRUCTION: NEOPRENE, HYPALON, BUNA-N, EPDM, VITON
MOUNTING BANDS: 304 OR 316 STAINLESS STEEL

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LONG: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

TIDE GATE DETAIL

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

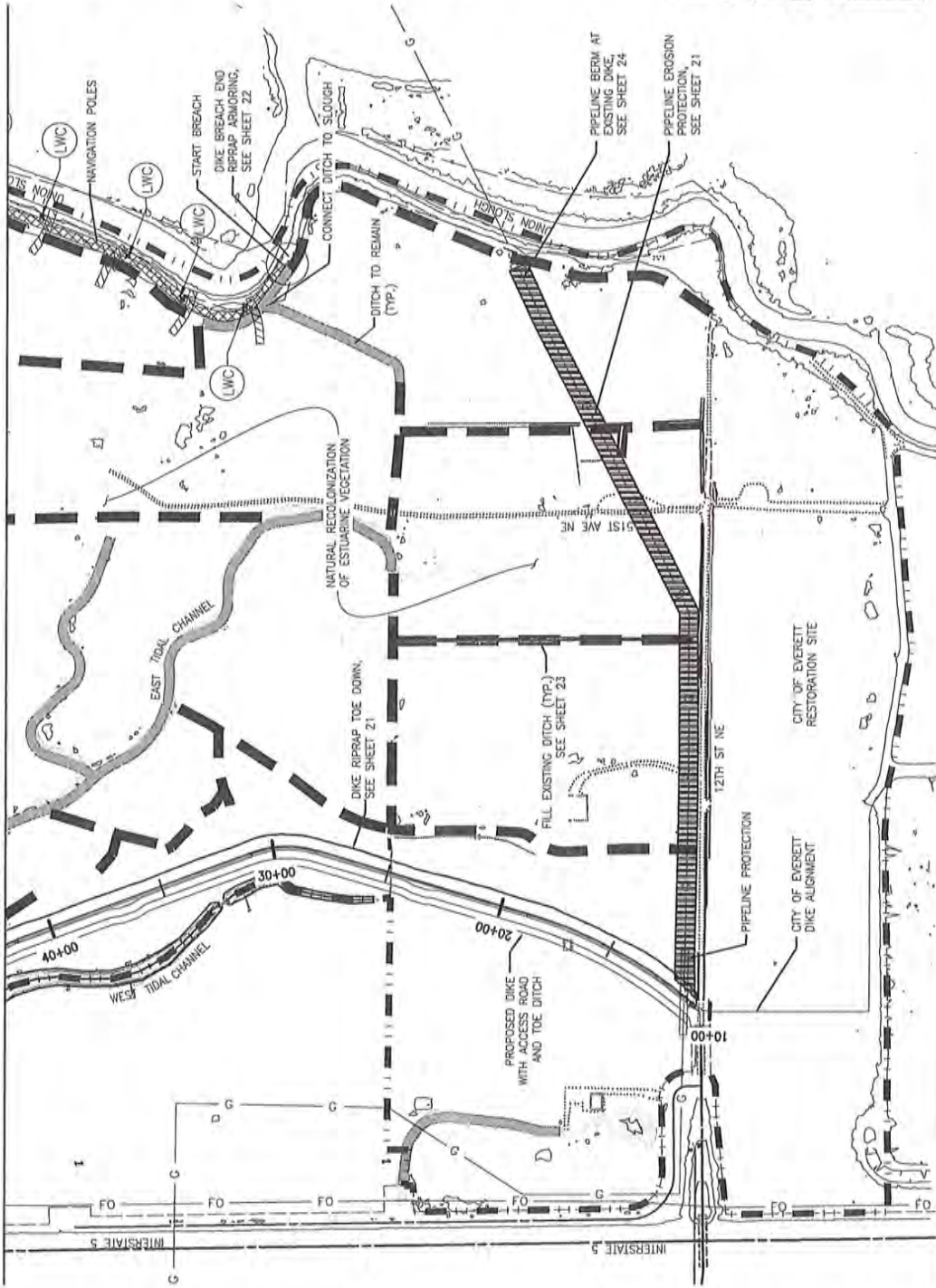
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

SHEET 16 OF 24 DATE: FEBRUARY 2014

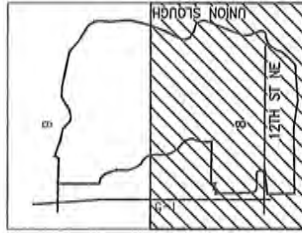
MATCHLINE SEE SHEET 9



LEGEND

- PROJECT LIMITS
- DITCH FILL
- EXISTING CHANNEL OR DITCH TO REMAIN
- STARTER CHANNEL, SHEET 20
- LARGE WOOD COMPLEX, SHEET 19
- PIPELINE EROSION PROTECTION
- DIKE BREACH AREA, SHEET 19

NOTE: NUMBER AND LOCATIONS SHOWN FOR STARTER CHANNELS AND LARGE WOOD COMPLEXES ARE APPROXIMATE. THE NUMBER OF STARTER CHANNELS AND LARGE WOOD COMPLEXES WILL RANGE FROM APPROXIMATELY 10 - 25.



KEYMAP FOR 8 AND 9

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N LON: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

RESTORATION PLAN
(1 OF 2)

SMITH ISLAND
ESTUARY RESTORATION PROJECT

PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE
NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

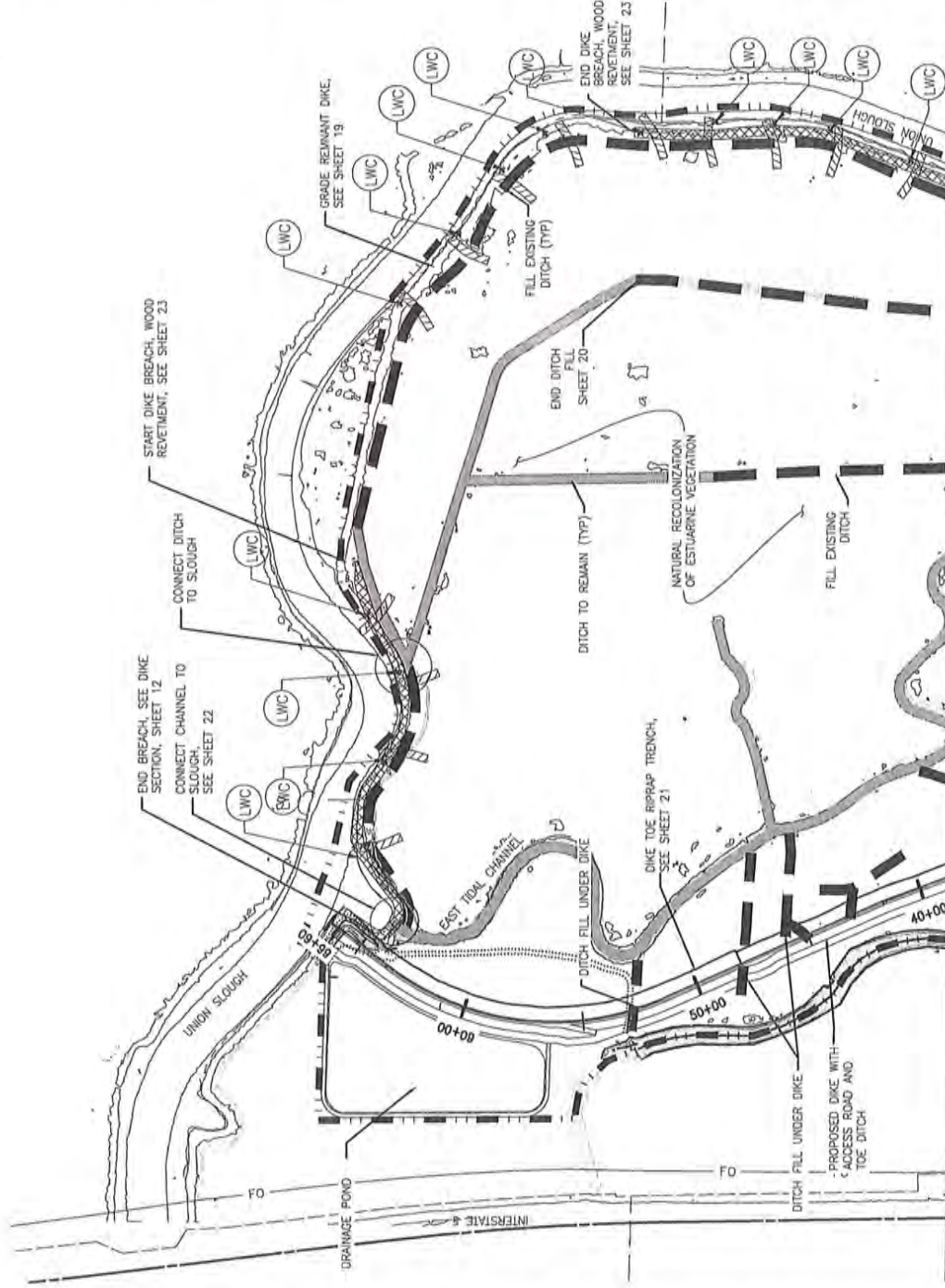
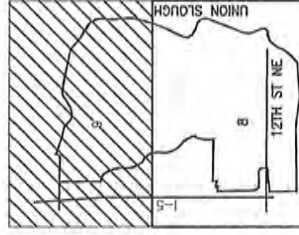
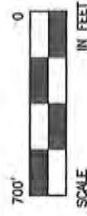
SHEET 17 OF 24

DATE: FEBRUARY 2014

LEGEND

- PROJECT LIMITS
- DITCH FILL
- EXISTING CHANNEL, OR DITCH TO REMAIN
- STARTER CHANNEL, SHEET 20
- LARGE WOOD COMPLEX, SHEET 19
- PIPELINE EROSION PROTECTION
- DIKE BREACH AREA, SHEET 19

NOTE: NUMBER AND LOCATIONS SHOWN FOR STARTER CHANNELS AND LARGE WOOD COMPLEXES ARE APPROXIMATE. THE NUMBER OF STARTER CHANNELS AND LARGE WOOD COMPLEXES WILL RANGE FROM APPROXIMATELY 10 - 25.



PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N LON: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

RESTORATION PLAN
(2 OF 2)

SMITH ISLAND
ESTUARY RESTORATION PROJECT

PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE
NEAR: CITY OF EVERETT
AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

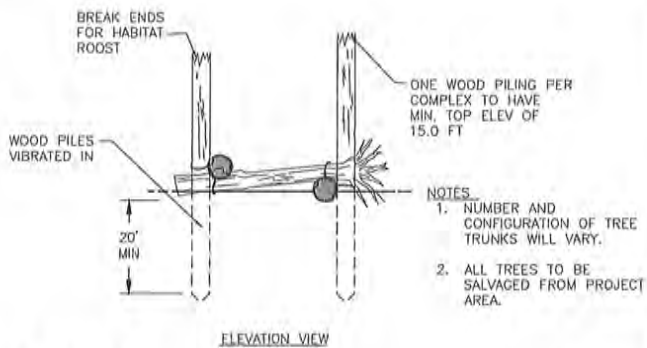
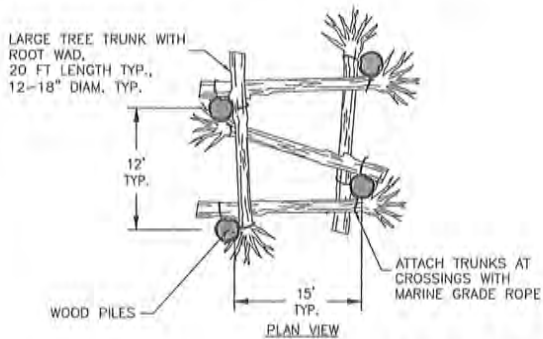
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

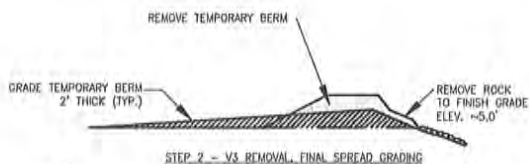
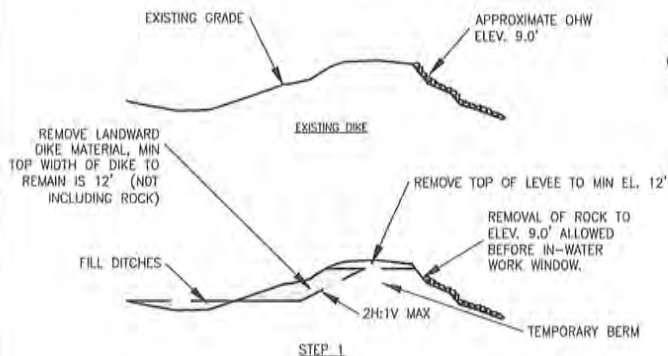
SHEET 18 OF 24

DATE: FEBRUARY 2014



LARGE WOOD COMPLEX DETAIL

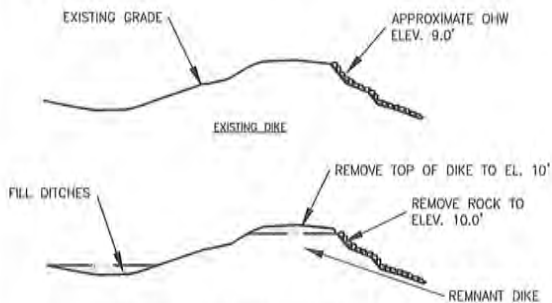
NOT TO SCALE



NOTE: ROCK MAY BE REMOVED BELOW ELEV 5.0 WHERE ROCK HAS BEEN PLACED DURING PREVIOUS REPAIRS.

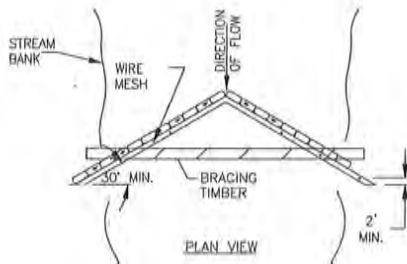
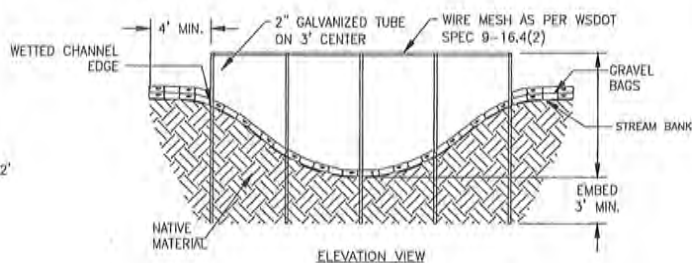
TYPICAL DIKE BREACH DETAIL

NOT TO SCALE



TYPICAL REMNANT DIKE DETAIL

NOT TO SCALE



CONSTRUCTION SEQUENCE

1. INSTALL 2" GALVANIZED TUBES ON 3' CENTERS.
2. SECURE WIRE MESH TO 2" GALVANIZED TUBES WITH WIRE FASTENER.
3. SECURE 1/4" MAX. FISH NYLON NET TO UPSTREAM SIDE OF WIRE MESH WITH WIRE FASTENER.
4. SECURE NYLON FISH NET TO STREAM BOTTOM WITH GRAVEL BAGS.
5. EXTEND GRAVEL BAGS 4' MIN. INTO STREAM BANKS.
6. ADD BRACING TIMBER AS NEEDED TO SUPPORT THE SCREEN.
7. REMOVAL OF DEBRIS FROM THE UPSTREAM SIDE OF THE FENCE IS NECESSARY ON REGULAR BASIS OTHERWISE THE SCREEN WILL BECOME CLOGGED AND WATER MAY TOPPLE OR BREACH THE SCREEN.
8. AFTER FISH REMOVAL, ADD SILT FENCE FILTER FABRIC AS SEDIMENT CONTROL.

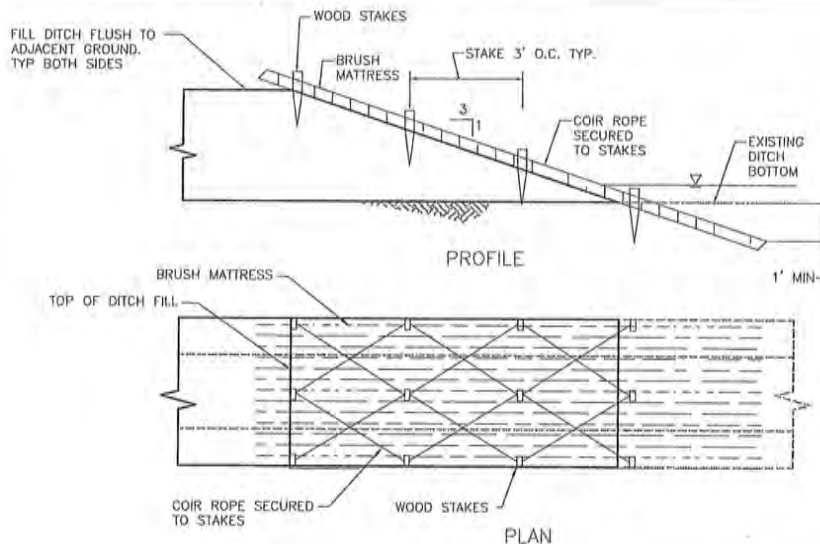
FISH SCREEN DETAIL

PURPOSE: ESTUARY RESTORATION
 DATUM: NAD83/91 AND NAVD 88
 LAT: 48°00'54.18"N
 LON: 122°09'48.39"W
 PROPERTY OWNERS:
 SNOHOMISH COUNTY
 PUBLIC WORKS

RESTORATION AND
 GRADING DETAILS
 SMITH ISLAND
 ESTUARY RESTORATION
 PROJECT

PROPOSED: ESTUARY RESTORATION/
 SETBACK DIKE
 NEAR: CITY OF EVERETT
 AT: 12TH ST NE
 SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.
 COUNTY OF: SNOHOMISH
 STATE: WASHINGTON
 APPLICATION BY: SNOHOMISH COUNTY
 PUBLIC WORKS
 SHEET 19 OF 24 DATE: FEBRUARY 2014

U.S. Army Corps of Engineers Reference: NWS-2014-00183

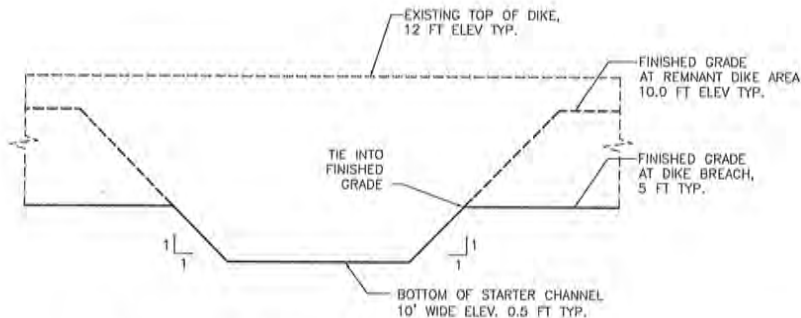


END DITCH FILL DETAIL

NOT TO SCALE

NOTES

1. BRUSH MATTRESS SHALL BE CONSTRUCTED WITH BRANCHES 1/2 TO 1 INCH IN DIAMETER.
2. BRANCHES SHALL BE OVERLAPPED SO THAT THE BRUSH MATTRESS HAS A MINIMUM THICKNESS OF 6 INCHES.
3. LOOSE SOIL SHALL BE WASHED INTO THE BRUSH MATTRESS, SO THAT HALF OF THE DEPTH IS COVERED WITH SOIL.



STARTER CHANNEL DETAIL

NOT TO SCALE

NOTE: NUMBER OF STARTER CHANNELS MAY RANGE FROM 10-25 AND CHANNEL LENGTH MAY VARY FROM 100 FT TO 250 FT.

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LON: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

RESTORATION AND
GRADING DETAILS

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

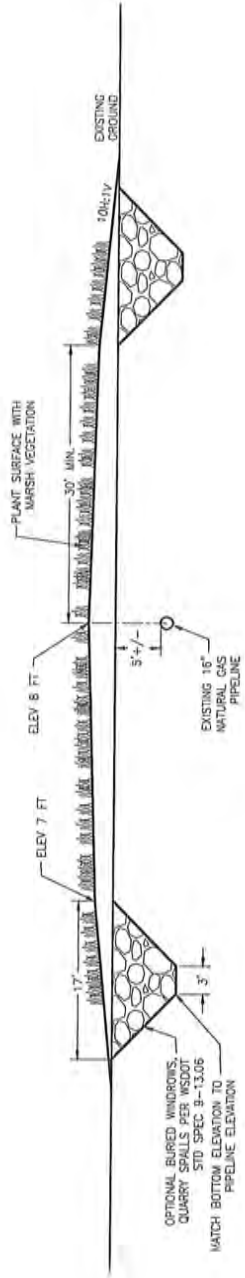
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

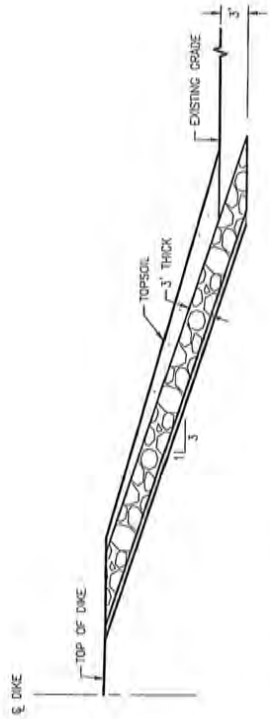
U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 20 OF 24 DATE: FEBRUARY 2014



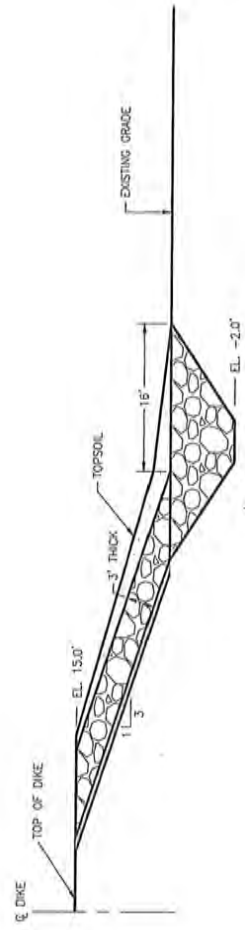
PIPELINE EROSION PROTECTION DETAIL

NOT TO SCALE



DIKE RIPRAP TOE DOWN DETAIL

NOT TO SCALE



DIKE TOE RIPRAP TRENCH DETAIL

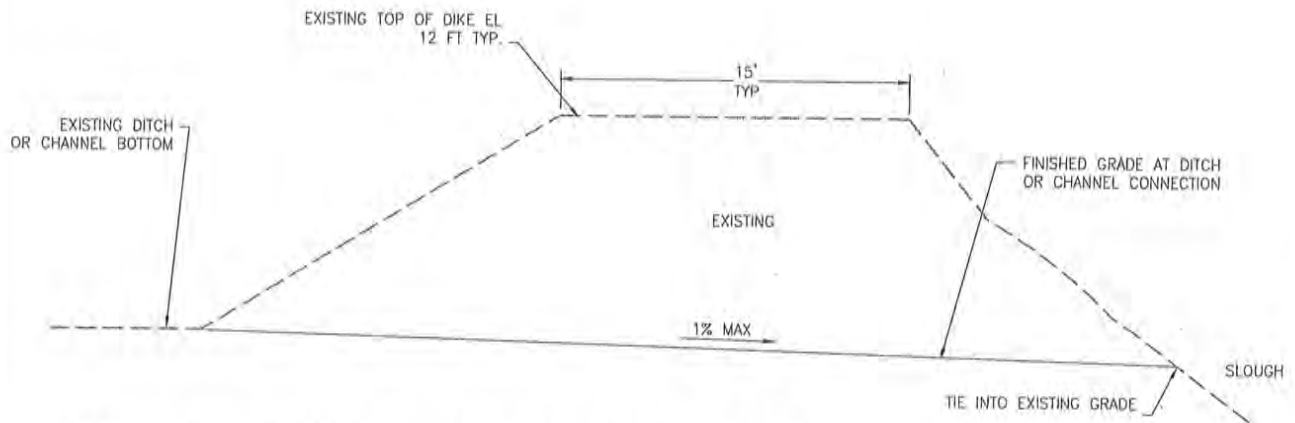
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PURPOSE: ESTUARY RESTORATION
 DATUM: NAD83/91 AND NAVD 88
 LAT: 48°00'54.18"N LON: 122°09'48.39"W
 PROPERTY OWNERS:
 SNOHOMISH COUNTY PUBLIC WORKS
 U.S. Army Corps of Engineers Reference: NWS-2014-00183

RESTORATION AND
 GRADING DETAILS
 SMITH ISLAND
 ESTUARY RESTORATION PROJECT

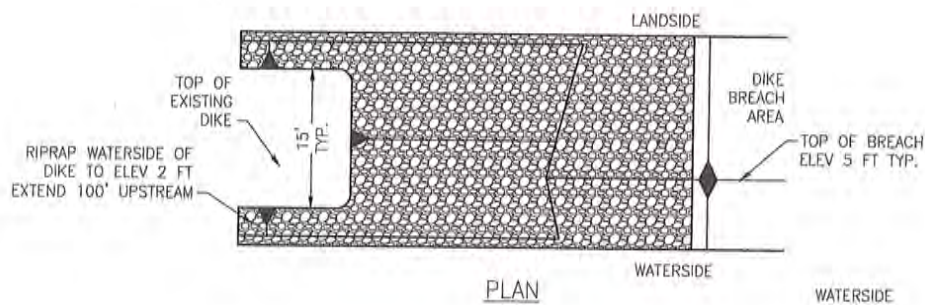
PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE
 NEAR: CITY OF EVERETT
 AT: 12TH ST NE
 SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.
 COUNTY OF: SNOHOMISH
 STATE: WASHINGTON
 APPLICATION BY: SNOHOMISH COUNTY
 PUBLIC WORKS

SHEET 21 OF 24
 DATE: FEBRUARY 2014

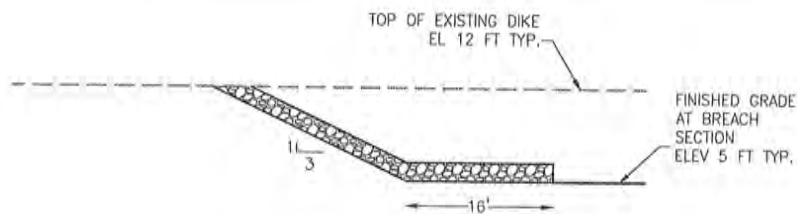


DITCH OR CHANNEL CONNECTION DETAIL

NOT TO SCALE



PLAN



SECTION

DIKE BREACH RIPRAP ARMOR DETAIL

NOT TO SCALE

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LONG: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

RESTORATION AND
GRADING DETAILS

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9, 10, 15 & 16 T. 29N, R. 5E, W.M.

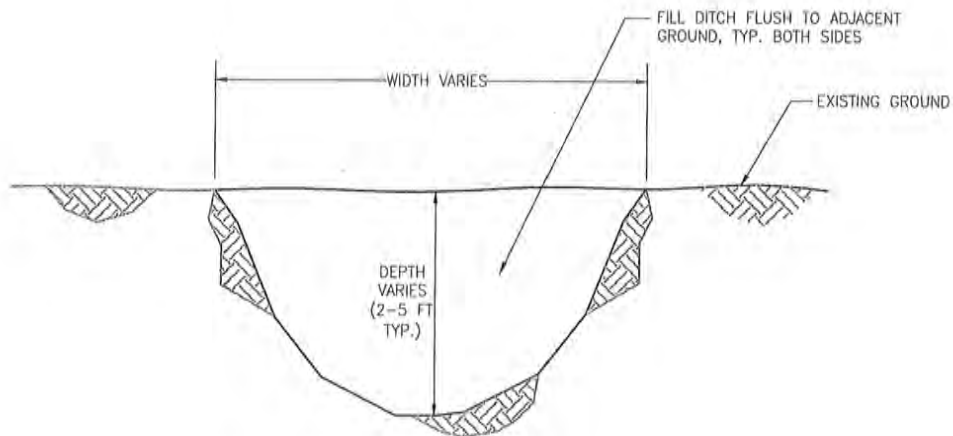
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

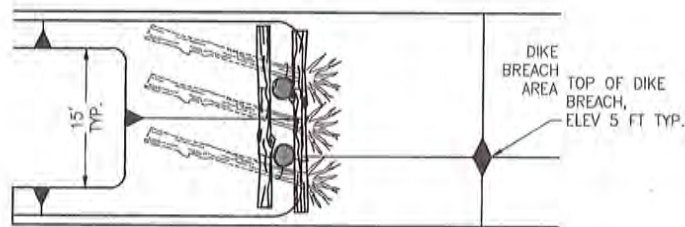
U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 22 OF 24 DATE: FEBRUARY 2014

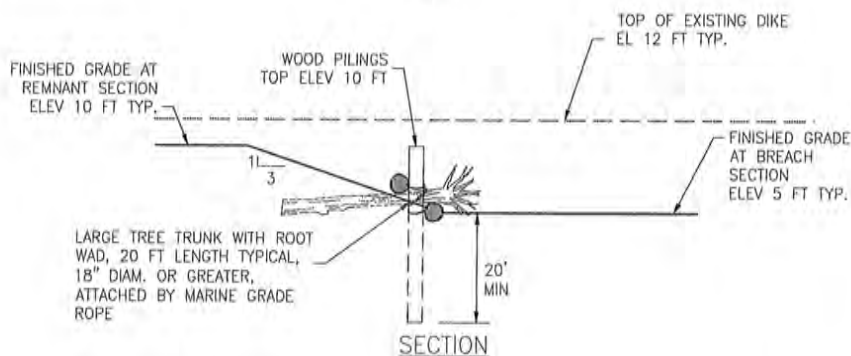


DITCH FILL DETAIL

NOT TO SCALE



PLAN



SECTION

END DIKE BREACH, WOOD REVETMENT DETAIL

NOT TO SCALE

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N

LON: 122°09'48.39"W

PROPERTY OWNERS:
SNOHOMISH COUNTY
PUBLIC WORKS

RESTORATION AND
GRADING DETAILS

SMITH ISLAND
ESTUARY RESTORATION
PROJECT

PROPOSED: ESTUARY RESTORATION/
SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

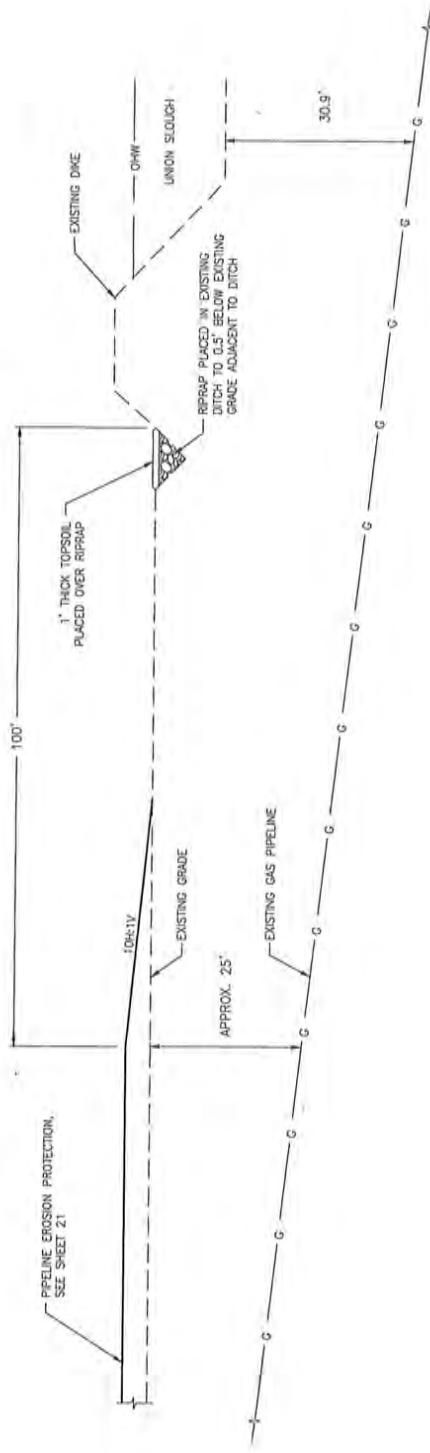
COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY
PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

SHEET 23 OF 24 DATE: FEBRUARY 2014



PIPELINE BERM AT EXISTING DIKE DETAIL

NOT TO SCALE

PURPOSE: ESTUARY RESTORATION

DATUM: NAD83/91 AND NAVD 88

LAT: 48°00'54.18"N LON: 122°09'48.39"W

PROPERTY OWNERS:

SNOHOMISH COUNTY PUBLIC WORKS

U.S. Army Corps of Engineers Reference: NWS-2014-00183

RESTORATION AND
GRADING DETAILS

SMITH ISLAND

ESTUARY RESTORATION PROJECT

PROPOSED: ESTUARY RESTORATION/ SETBACK DIKE

NEAR: CITY OF EVERETT

AT: 12TH ST NE

SEC. 9,10,15 & 16 T. 29N, R.5E, W.M.

COUNTY OF: SNOHOMISH

STATE: WASHINGTON

APPLICATION BY: SNOHOMISH COUNTY

PUBLIC WORKS

SHEET 24 OF 24

DATE: FEBRUARY 2014