

Acoustic & Turbidity Concerns Nearly Stop Maintenance Dredging at Everett Harbor, Washington

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US Army Corps of Engineers
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Six-mile long channel in Central Puget Sound

Navigation Project Features:

- **Deep-Draft approach channel -15' @mllw**
- **D/S Settling Basin -20'**
- **River channel -8'**
- **U/S Settling Basin -40'**



PORT OF EVERETT - LOCAL SPONSORSHIP

- Port must provide lands, easements and rights-of-way & permits for dredged material disposal.
- Port pays \$0.45/cy use fee to WDNR for Port Gardner open water site.
- Port owns and provides Jetty Island for beneficial use disposal site
- Port provides other suitable upland disposal sites for pipeline dredging.

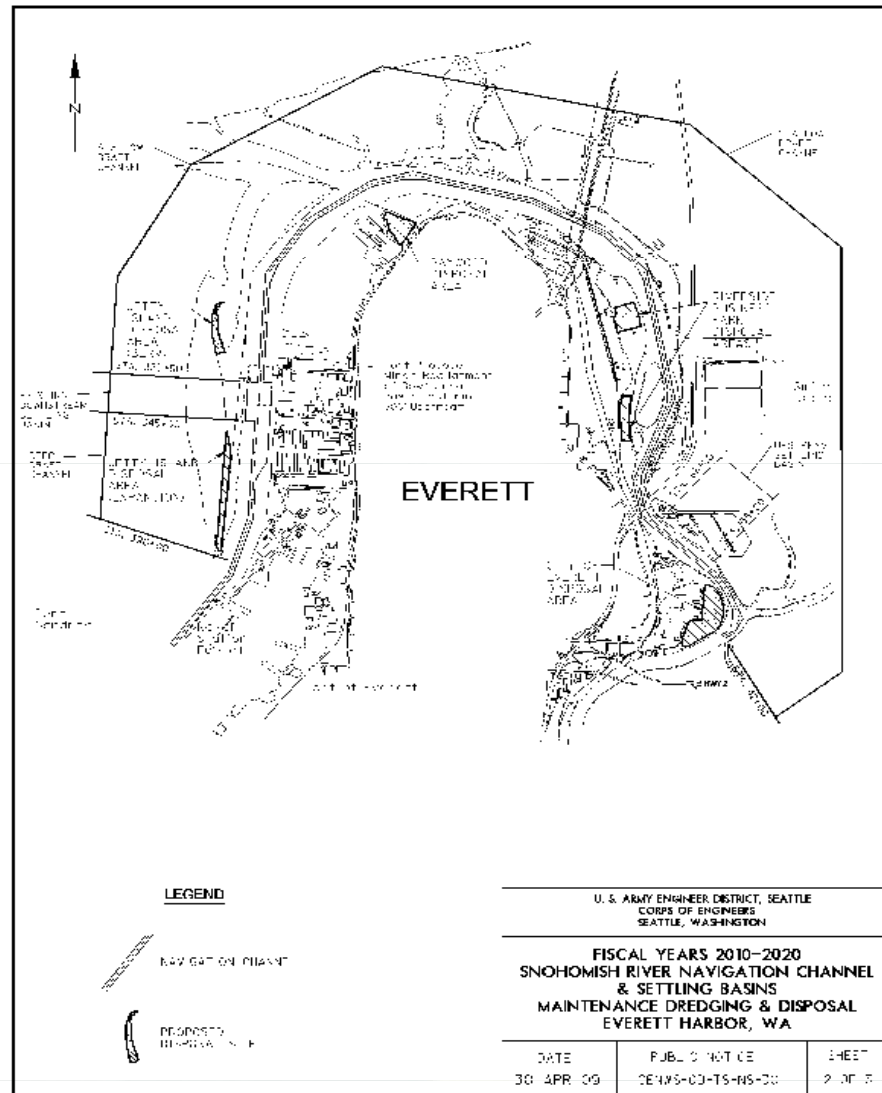




Photo courtesy Port of Everett

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Corps & Port Strategy

Corps ESA coordination of informal consultation-

- Corps BMP to promote turbidity compliance is contract provision to stop dredging during two hours of maximum ebb tide when the Snohomish River discharge is greater than 25,000 cubic feet per second.

State 401 Water Quality Certification-

- Corps dredge contractor must conduct daily turbidity monitoring at 300 ft point of compliance and report to Department of Ecology.

Collaboration with the Port-

- Port funds Pentec Environmental contract for acoustic & water quality monitoring during clamshell dredging.



FY 2010 O&M Dredging Coordination Milestones:

- Corps Public Notice #30 issued April 30, 2009
- ESA issues on Noise & Turbidity July-September 2009
(How do you prove no affect on fish migration?)
- Informal consultation at risk? September 10-11, 2009
(formal consultation would have delayed critical O&M)
- Suitability Determination ok'd for beneficial use or open
water disposal (Incl. Dioxin tests) October 3, 2009
- Revised BE w/(ANLAA call) October 5, 2009
- Public Notice FY09-10 Erratum October 16, 2009
- ESA Concurrence letters rec'd November 19&20, 2009
- State WQ Cert. #7241 rec'd December 3, 2009



Corps O&M D/S Basin & Channel 330,000 cubic yards

Port of Everett O&M @ Boat Launch 22,000 cubic yards



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O&M Dredging Contract # W912DW-C-10004

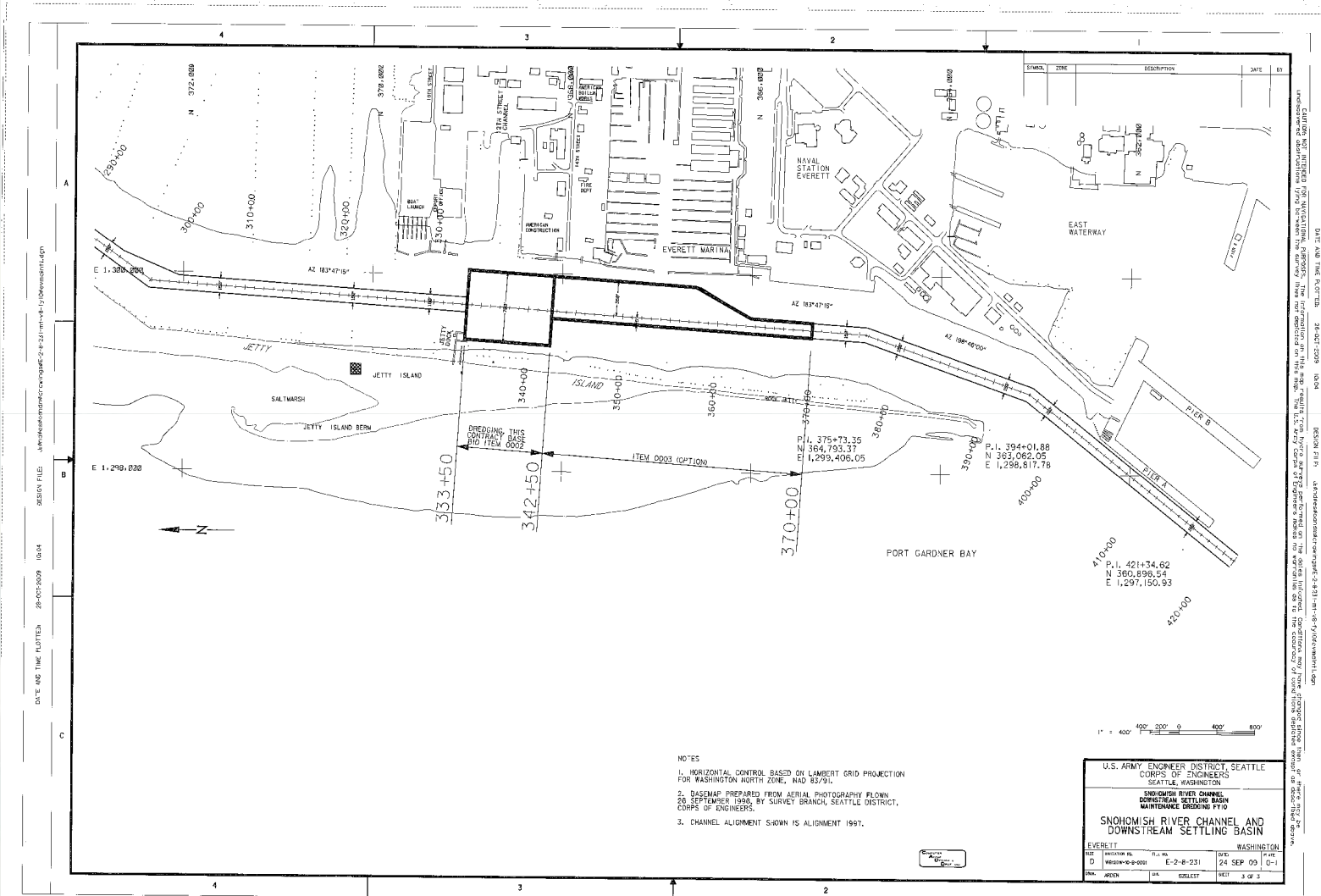
GENERAL CONSTRUCTION :

- | | |
|--------------------------------|-------------------|
| •Bid Opening | December 10, 2009 |
| •Reprogramming of funds | December 18, 2010 |
| •Notice of award | December 22, 2009 |
| •Pre-construction & Safety Mtg | December 23, 2009 |
| •Notice to Proceed | December 28, 2009 |
| •Clamshell Dredging starts | January 4, 2010 |
| •Dredging 330,000 cy completed | February 12, 2010 |

Note: Concurrent Port of Everett funded Acoustic & Water Quality Monitoring of Corps & Port dredging by Pentec Environmental



FY10 Clamshell Dredging Footprint W912DW-10-C-0004



Base
Option

D/S Settling Basin
Deep draft channel

250,000 cy
90,000 cy



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DREDGING STARTED ON 4 JANUARY, COMPLETED 12 FEBRUARY 2010



150-
160dB

For 15 cy
bucket
cycle

CLAMSHELL DREDGING 24HRS PER DAY 6 DAYS /WEEK



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LOCALIZED TURBIDITY PLUME:

100 NTU observed within 10-30 meters; however, met WQC @ 300 ft POC



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Topping off barge load w/empty barge ready



152-
163dB

bucket-
strike
empty
scow



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Daily Water Quality (Turbidity) Monitoring by General Construction w/ Periodic Corps Observations



State Water Quality Certification

Turbidity Criteria:

Not greater than 10 NTU above ambient at point of compliance (POC) measured 300 ft downstream of dredge. (The one-day max turbidity for ambient <50 NTU & 1.2 X for ambient > 50 NTU)



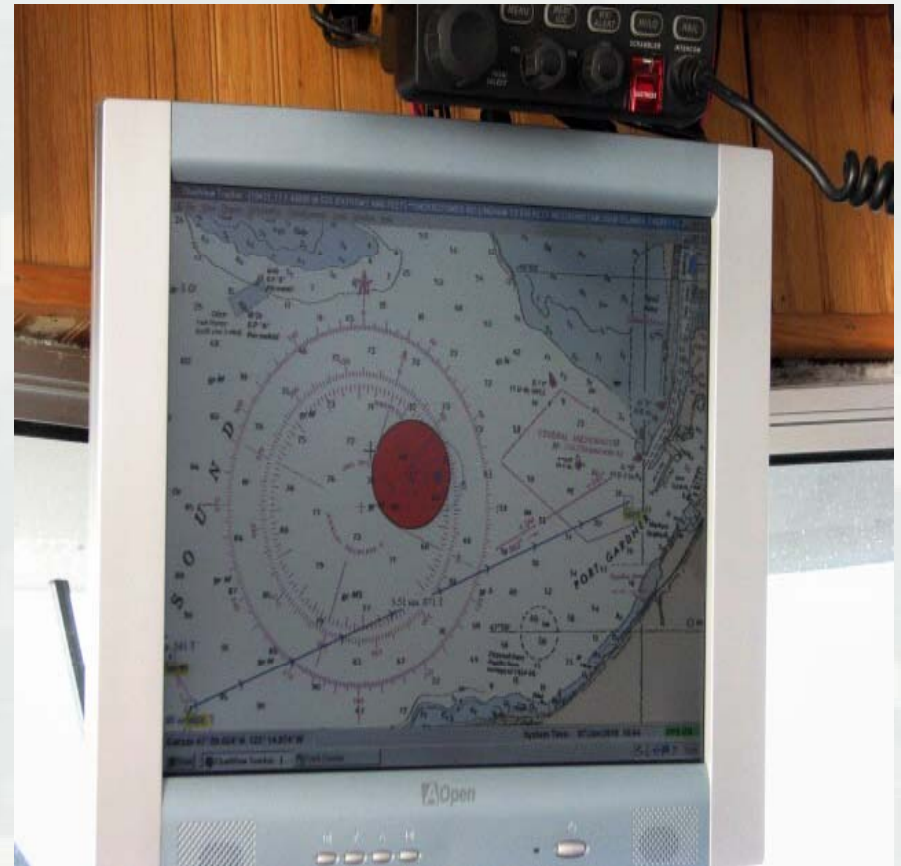
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Dunlap tug taking loaded barge to Port Gardner site



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Loaded barge



Awaiting approval from USCG



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GPS fix for DNR Dump Log



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Water Quality Monitoring Dates:
(Bold dates included Acoustic)

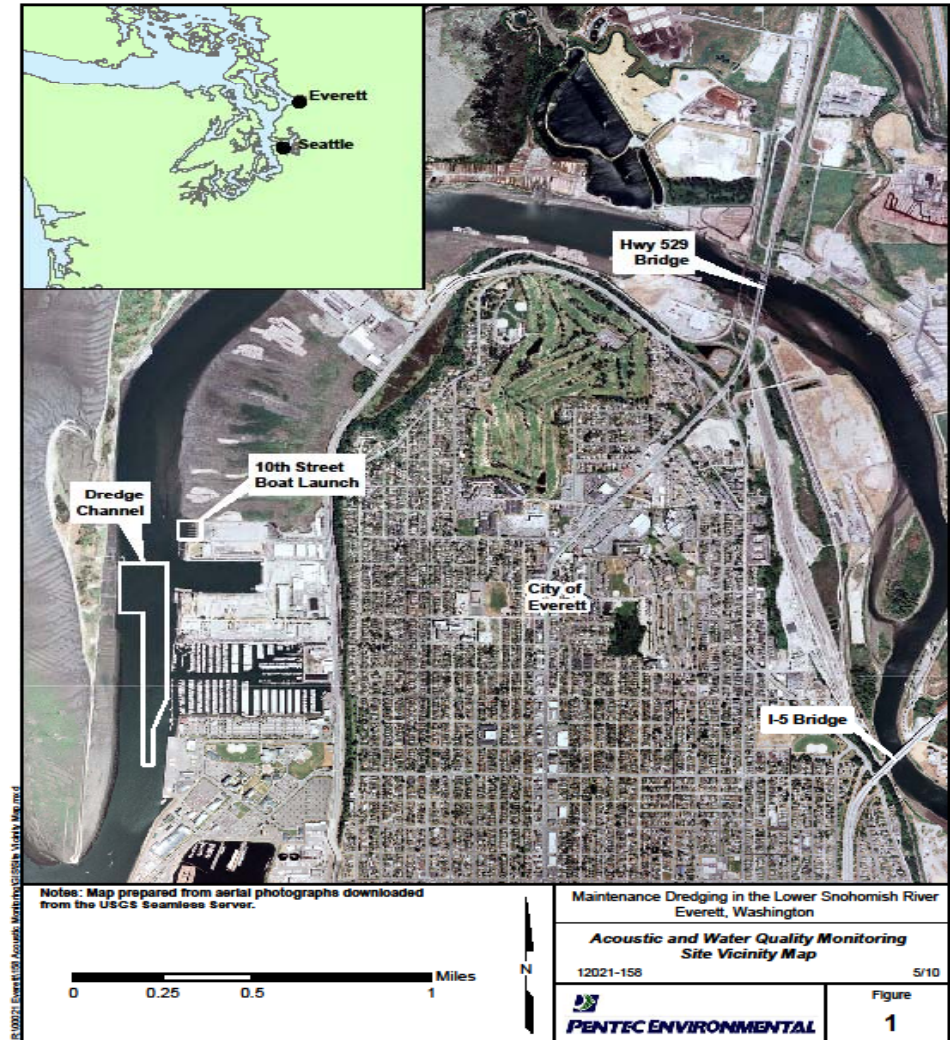
JANUARY 13, 2010 NAV CH

JANUARY 21, 2010 NAV CH

FEBRUARY 4, 2010 NAV CH

FEBRUARY 8, 2010 Boat Launch

FEBRUARY 13, 2010 Boat Launch



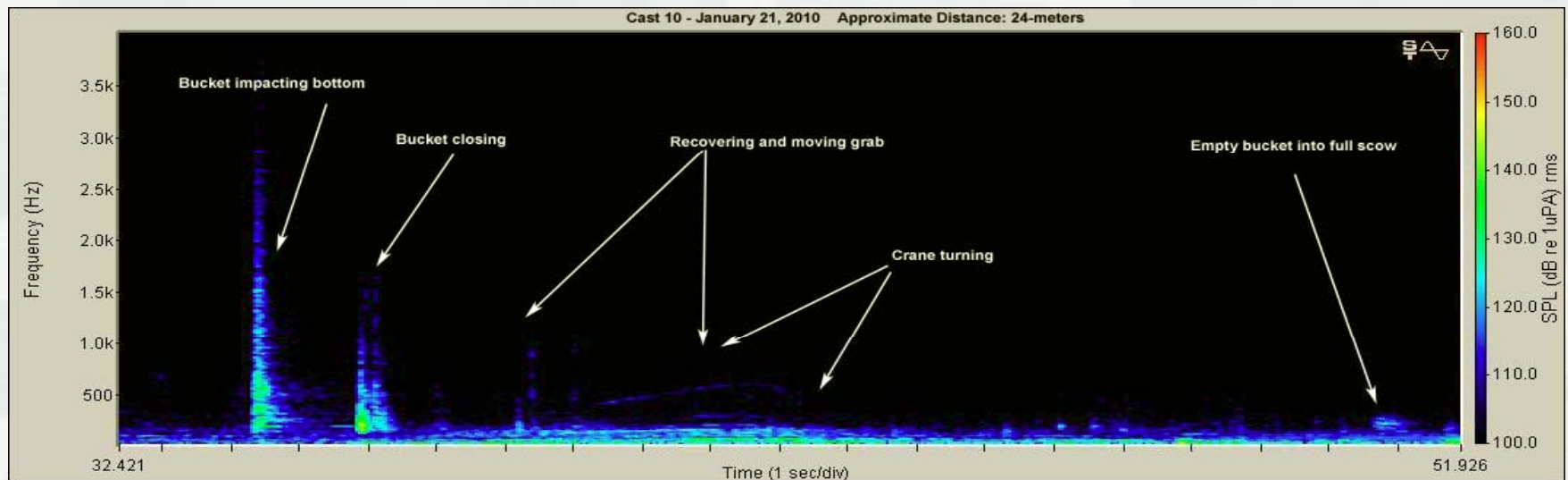
***Acoustic & Water Quality Monitoring, Hart
Crowser (Pentec Environmental)***



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Acoustic levels for 15 cubic yard dredging bucket cycle

Snohomish River Channel & D/S Settling Basin (soft sediments)



***Acoustic & Water Quality Monitoring, Hart
Crowser (Pentec Environmental)***



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Acoustic & Water Quality observations:

- Daily turbidity monitoring by General Construction Company, with periodic Corps observations confirmed compliance with State 401 WQC. Pentec Environmental (Observed D/S marine range <1-37 NTU while U/S Snohomish River mean was 28 NTU; however, slight temporary 1 NTU exceedance on February 4, 2010)
- Acoustic monitoring by Pentec Environmental - Clamshell maintenance dredging levels were well below an interim criteria of 206 dB. (Highest dredging level observed was 168 dB associated with tug moving dump barge compared to ambient level of 170 dB measured in channel below bridge caissons for traffic on 529 bridge)
- Additional Corps monitoring is proposed this winter in conjunction with federal pipeline dredging on the Snohomish channel and Upstream Settling Basin.

Reference: Starkes, J., Houghton, J., Smith, K., and Jensen, B. 2010. Maintenance Dredging in the Lower Snohomish River, Acoustic and Water Quality Monitoring Everett, Washington, Prepared for Port of Everett, May 4, 2010, 12021-158, Prepared by Pentec Environmental and Evans Hamilton, Inc. Edmonds, WA.



Questions?



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