

The Port of Astoria



Presented to Lower Columbia Solutions Group 7/8/2011

- **The Location**
- **The Problem**
- **Possible Contributing Factors**
- **Solutions?**

The Location



PIERS 1, 2 & 3



Central Waterfront Activity

- Oregon's Blue- Water Port
- Deep Draft Capable Piers
- Cargo Handling
- Cruise Ships





Central Waterfront Activity

- Dredges
- Research Vessels
- Military Vessels



PORT OF ASTORIA

SHIP CALLS

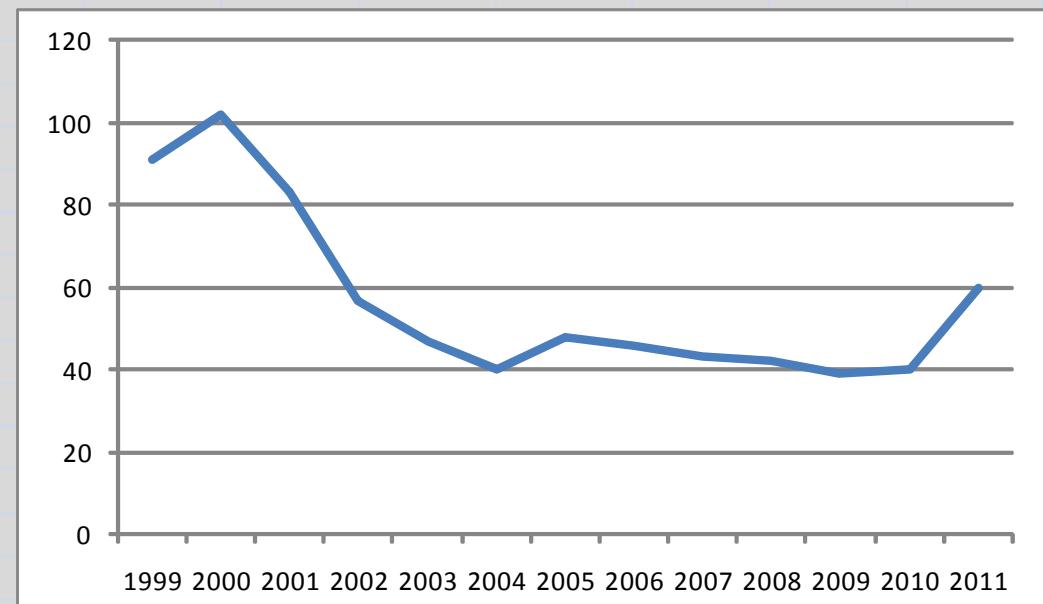
1999-2010

CALENDAR YEAR

TOTAL SHIP CALLS

1999	91
2000	102
2001	83
2002	57
2003	47
2004	40
2005	48
2006	46
2007	43
2008	42
2009	39
2010	40
2011	60 estimated

1989 52 (*LOG SHIPS ONLY*)
1990 42 (*LOG SHIPS ONLY*)
1991 24 (*LOG SHIPS ONLY*)





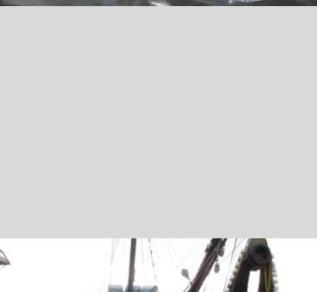
Central Waterfront Activity

- Warehousing
- Fishing Industry
- Marina
- Hotels
- Restaurants
- Tourism





Fishing Industry





Moorage





The Problem: Sedimentation

- “At least the Port is going to lower the moorage rates”

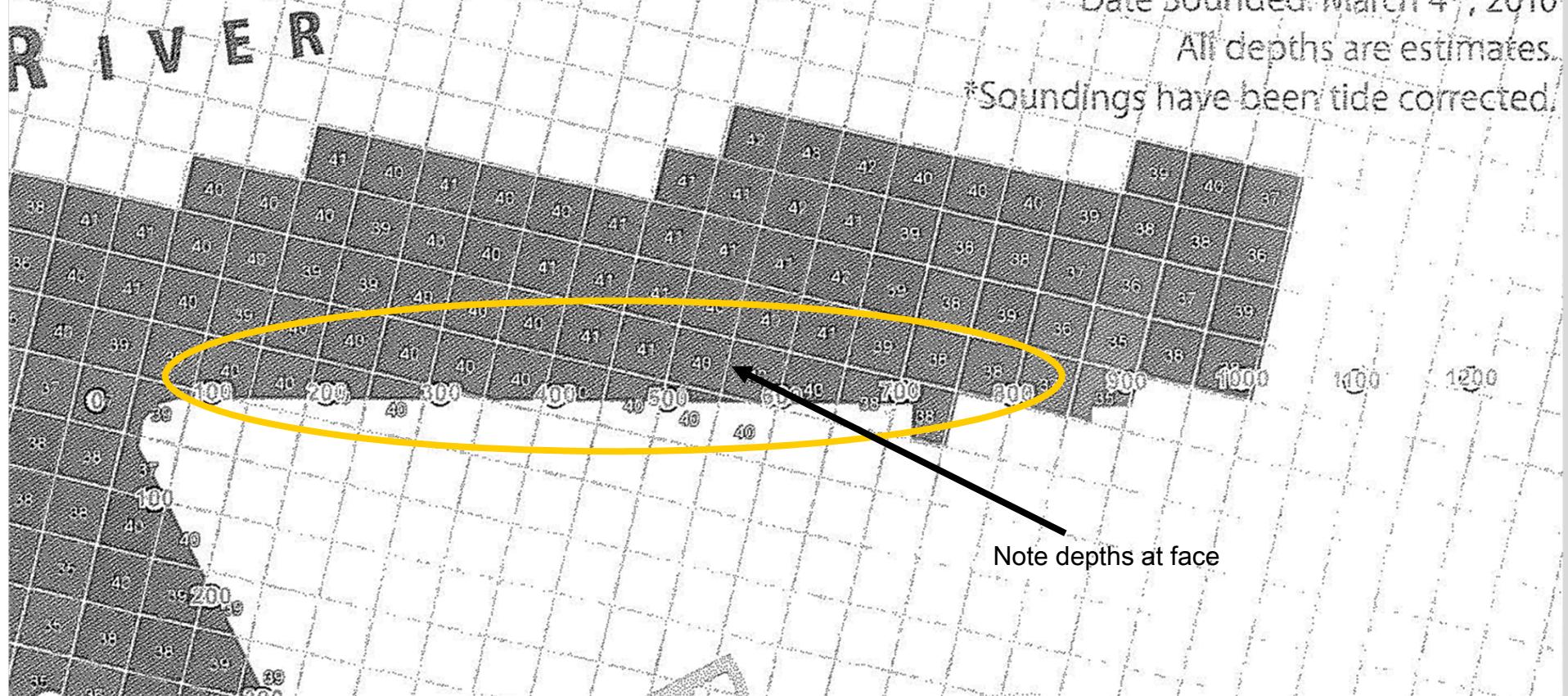


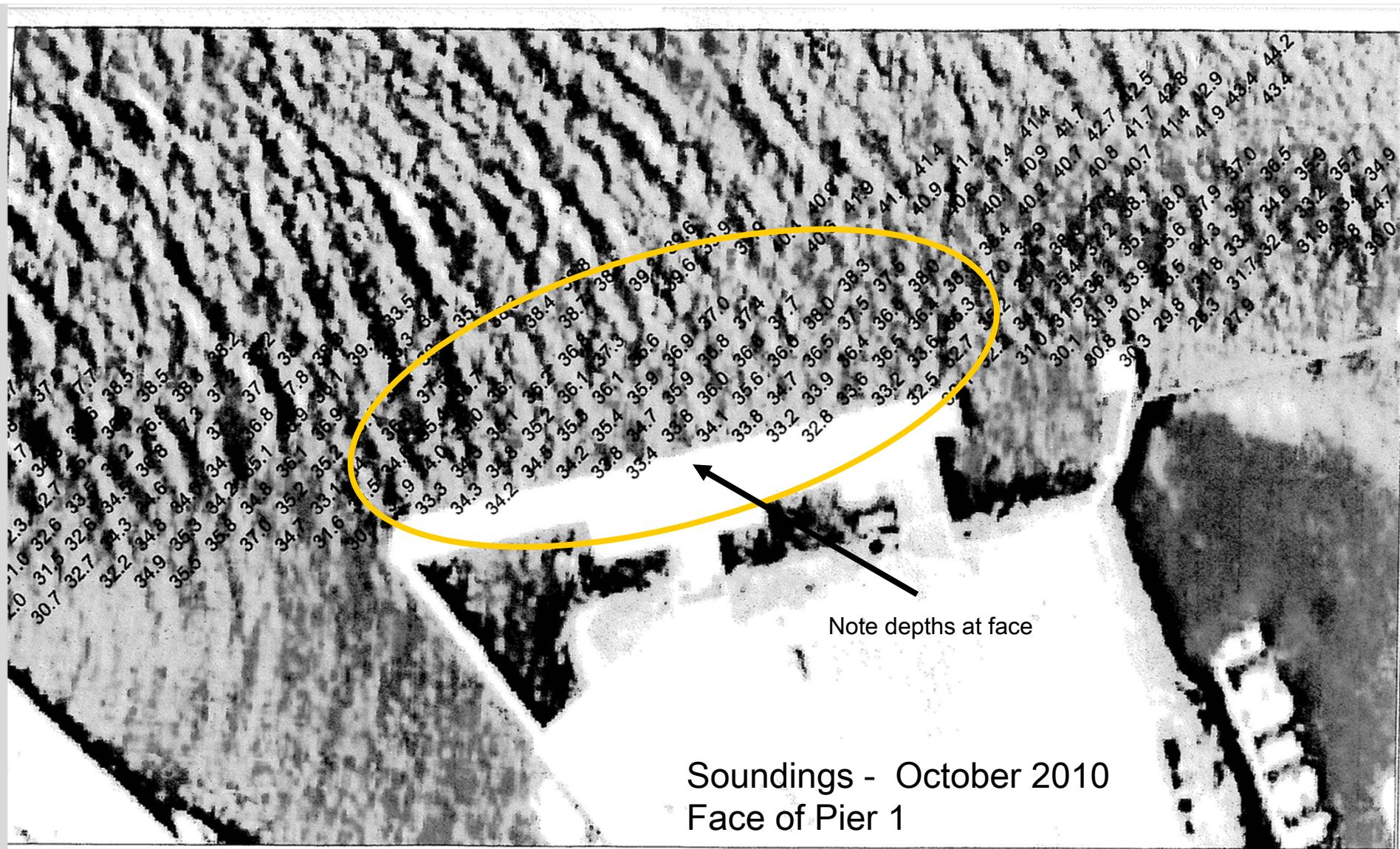
Soundings - March 2010 Face of Pier 1

Date Sounded: March 4th, 2010

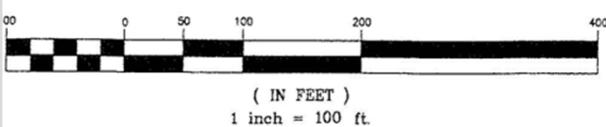
All depths are estimates.

*Soundings have been tide corrected.





GRAPHIC SCALE



Port of Astoria Pier 1 Astoria, OR

Survey date: October 19, 2010
Vertical Datum: MLLW
Surveyor not liable for depths



Soundings - March 2011 Face of Pier 1 (Post-Dredge)

Port of Astoria

Port Docks Maintenance Dredging Project

Time/Date: 10:00 - 12:00a.m. 29 March 2011

Depths adjusted for MLLW = 0 Tide

EBB

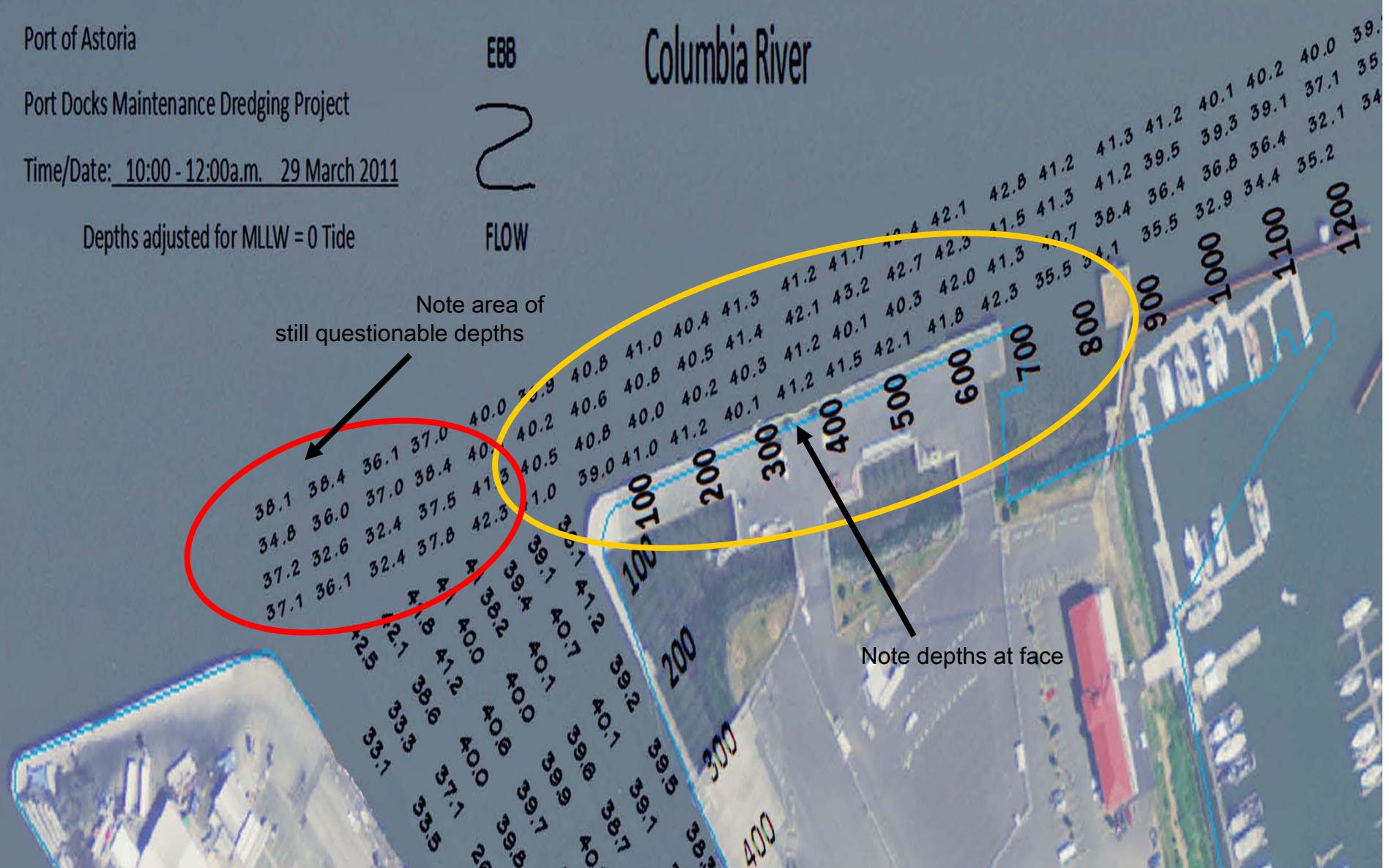
Columbia River

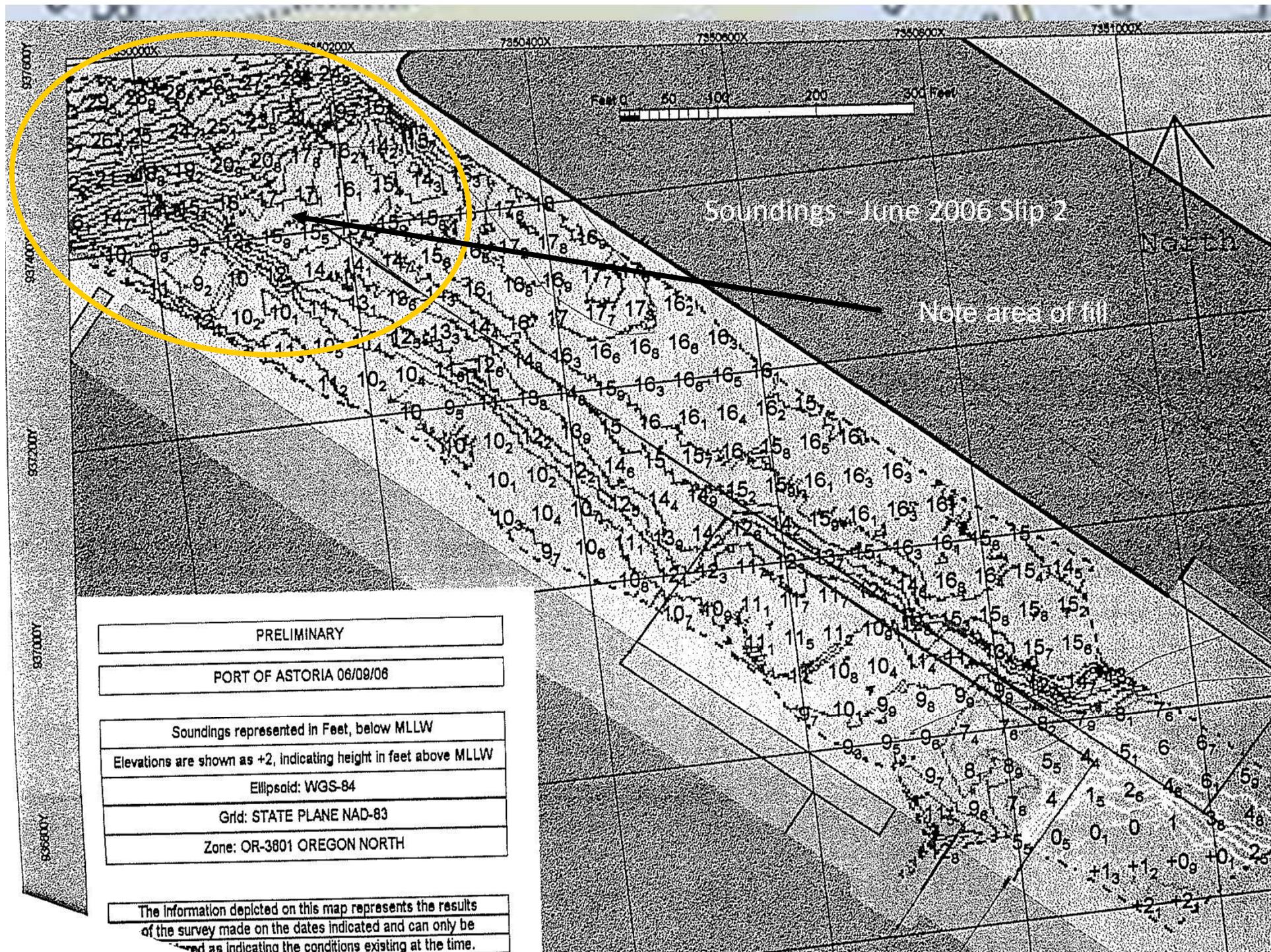
FLOW

Note area of
still questionable depths

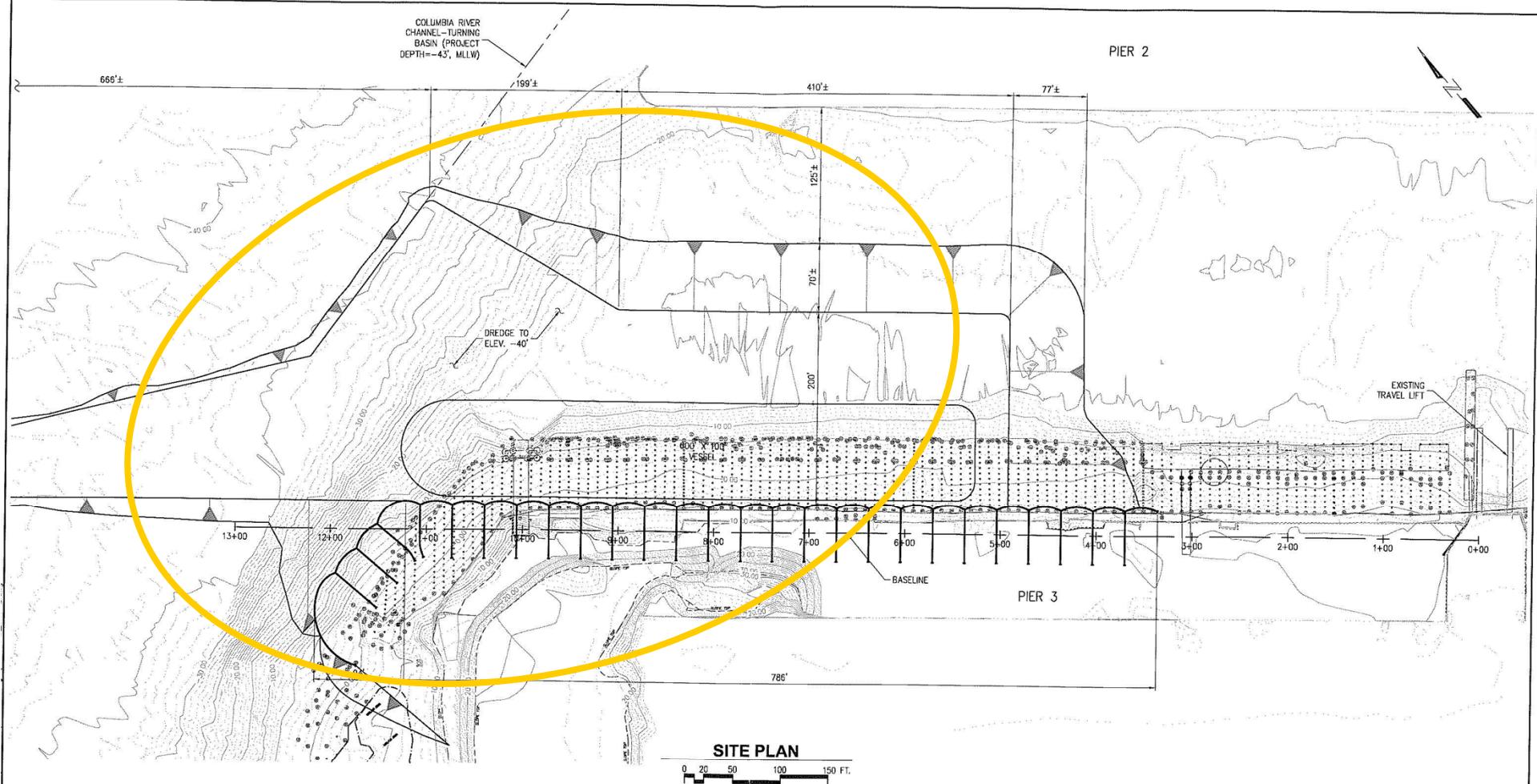
38.1 38.4
34.8 36.0 36.1 37.0
37.2 32.6 32.4 37.5 41.3
37.1 36.1 32.4 37.8 42.3

Note depths at face





Soundings - 2011 Slip 2



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REVISIONS

REV	DATE	DESCRIPTION

DRAFT CONCEPT

ASTORIA - PIER 3 MATERIAL HANDLING BULKHEAD

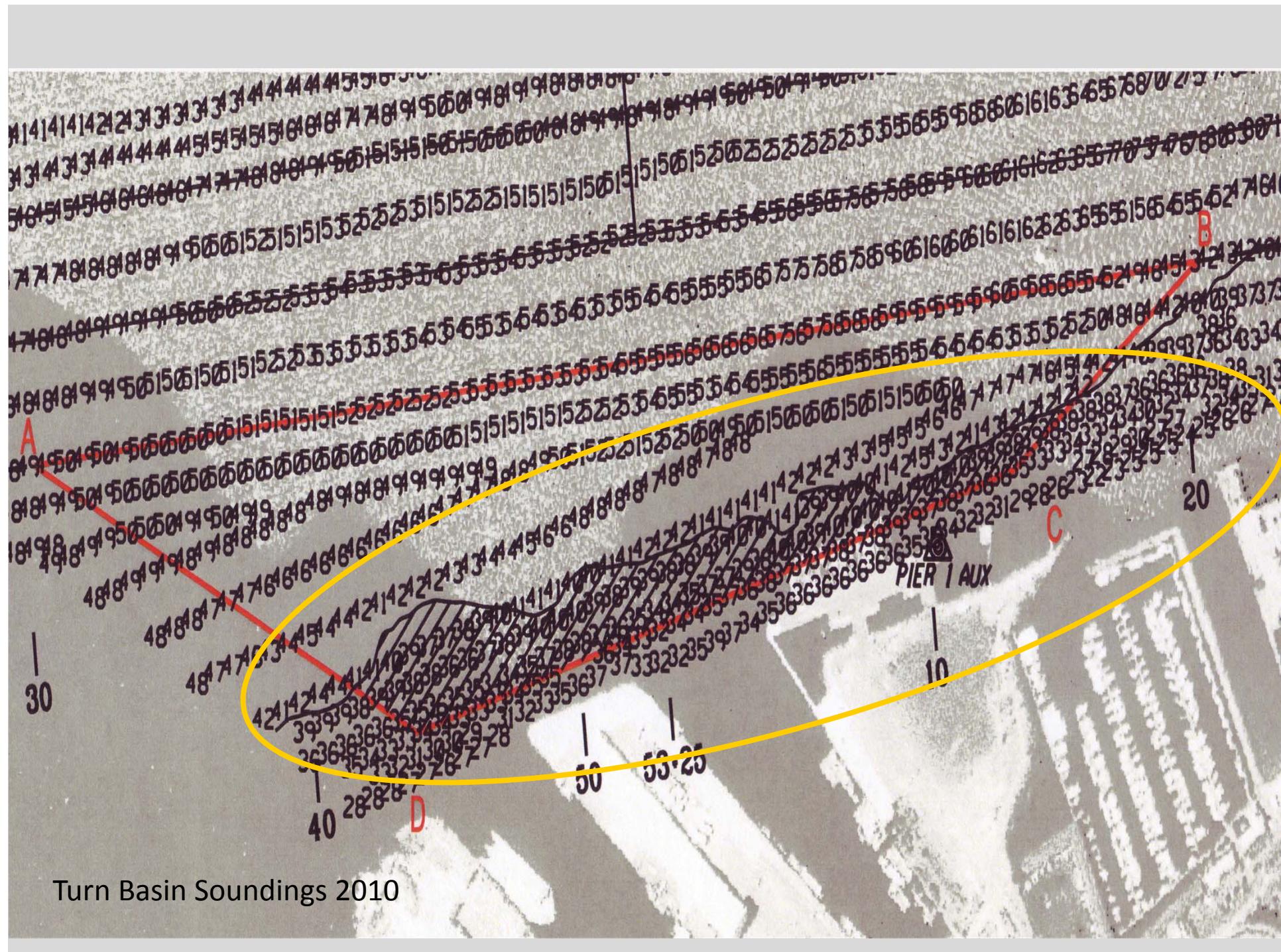
OPTION 2 PHASE I SITE PLAN

DESIGNED BY:	PROJECT NO.:	114049.01	sheet no.:
DRAWN BY:	DATE:	JUNE 2011	NOTED
CHECKED BY:	SCALE:		

2 OF 4

Impact on Turn Basin Area

- Cross Hatched area less than 40 ‘
- Cost to Corps of Engineers
- Hazard to navigation in vicinity of Piers



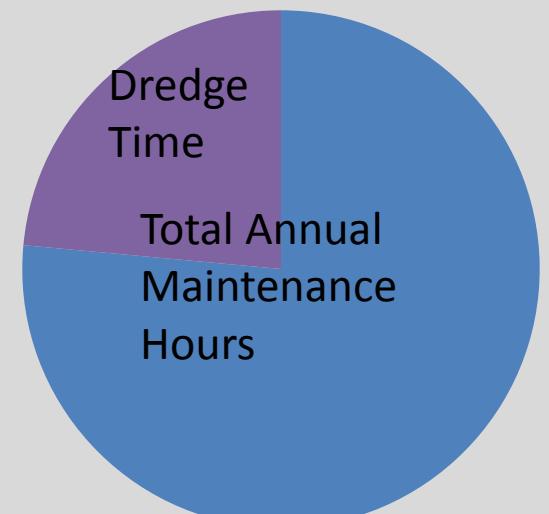
Turn Basin Soundings 2010

Port of Astoria Dredging Costs

- Average labor per year –
last three years = \$128,345.00
- Parts & Supplies –
average per year = \$19,245.00
- Fuel / Oil –
average per year = \$44,255.00
- Repairs / Maintenance
average per year = \$65,982.00
- **TOTAL** average per year = **\$257,825.00**
Direct Costs Only

Maintenance Impact

- 2007 through 2011 Port has Maintenance crew of 7 to 8 personnel
- During dredge season two crews of three each run two shifts – 5 days per week
- Approximately 30 % of Maintenance man hours per year spent on dredging
- Maintenance deferred



Other Adverse Impacts

- Increased dredging necessary for Turn Basin
- Potential grounding of loaded cargo vessel
- Double handling of silt as Port dredges then Corps of Engineers dredges
- Cost to Corps of Engineers



Possible Contributing Factors

- Krone Report
- Dredging Upstream
- Hydrology
- Pier Design
- Young's Bay
- Other

Investigation of Causes of Shoaling in Slips One and Two, Port of Astoria

By R. B. Krone

1971

INVESTIGATION OF CAUSES OF SHOALING IN SLIPS ONE AND TWO, PORT OF ASTORIA

INVESTIGATION OF CAUSES OF SHOALING

The purpose of this investigation is to determine the causes of the port shoaling in Slips One and Two and the recommendations for continuation of the dredging and harbor maintenance procedures to date. Report #20 based on information obtained during a visit to the slips on February 23, including a review of dredging records and by the survey of the dredge areas and examination of the available materials, an analysis of samples of sand material, an analysis of the Port facilities as shown by measurement on a hydraulic model of the Astoria River currents funded by the Corps of Engineers, Bureau of Reclamation, and an analysis of current transportation processes obtained from intensive studies of sand movement in a number of countries. The following sections describe the sediment samples, the general sediment transportation patterns, apparent sediment accumulation in the port area, and recommendations.

The Sediment Samples

Four samples were obtained in the slips and at Beach Five in the locations shown in Figure 1. The mineral particle size distributions of these samples are presented by size fractions as follows. The wet samples were treated with 10% hydrogen peroxide and acetone, to oxidize the organic matter, then were dispersed with sodium metaphosphate for the hydrometer analysis. The samples were not dried prior to dispersal to avoid difficultly dispersible particle agglomeration that forms on drying. The total weight of the minerals was determined after the hydrometer analysis, and an aliquot sample retained.

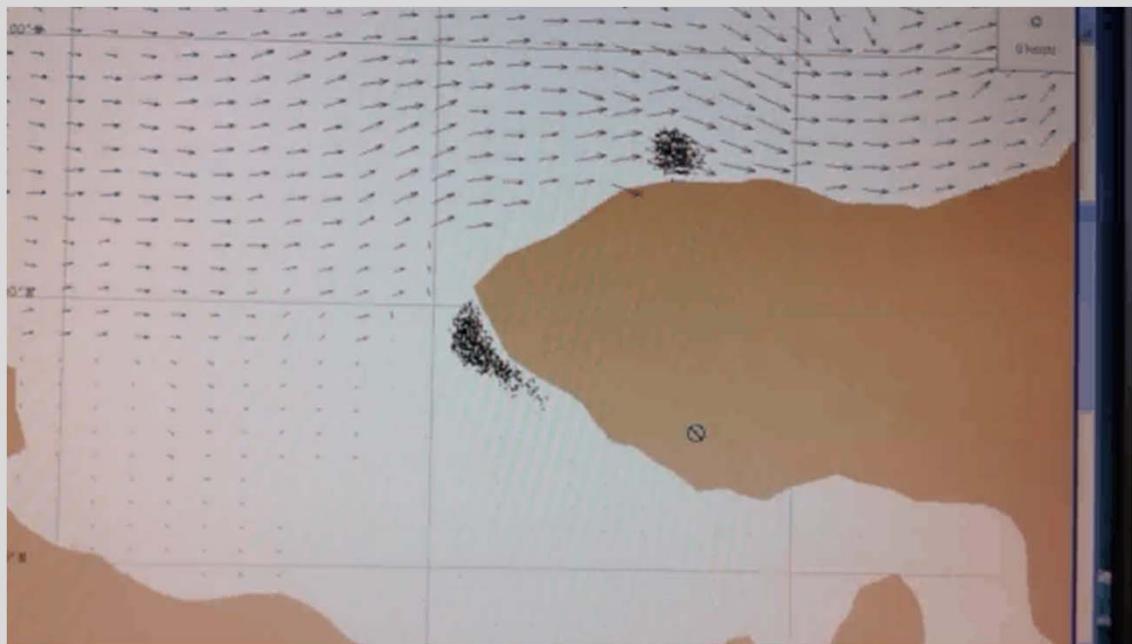
Data from particle size distribution analyses of these samples are presented in Figures 2 through 4. The size distribution plots for stations

Davis, California

May 22, 1971

- Fine sediment as land erosion particles carried by the Columbia, Young's, & Lewis and Clark Rivers
- Onshore breezes generate disturbance which suspend materials
- Suspended sediment can move downstream from the Bay during the ebb then upstream with bottom currents to the slips during the flood

N.O.A.A. GNOME Simulation



- The shape of the 18 ft. contour in Slip Two supports the conclusion that most of the shoal deposits from water entering the slip during flood flows
- A barrier to flow...at the end of Pier Three is needed
- The proposed turning basin...should be dredged to be as deep or deeper than the slips



Solutions ?

- Continue minimum maintenance dredging
- Corps of Engineers dredging Turn Basin
- Wing Dams
- Other ?

Recommendations

- Study / Examination of benefits of Wing Dam installation to reduce infill of Port of Astoria Pier areas
- Financial assistance and support for Port request for Corps of Engineer funding
- Support 2013 request for Turn Basin dredge funding

Benefits of Solutions

- Reduced Dredging Costs to Port and Corps of Engineers
- Employment for Clatsop County and Oregon

