

**WILLAMETTE RIVER CLACKAMAS CO., OR;
WILLAMETTE FALLS LOCKS; PRELIMINARY ASSESSMENT -
SEDIMENT QUALITY OF 1996 FLOOD DEPOSITS**

10 MAY 96

Background: Willamette Falls Locks was totally inundated during the FEB '96 flood on the Willamette. Approximately 6 ft of sediment was deposited in the downstream lock entrance, along the west side of the channel. The deposit consists of silty sand and slopewash from the adjacent slope. The sediments sampled are unstratified and include woody debris, unspecified rubbish, bits of plastics, cloth and fibrous material. Sediment to be analyzed was collected from material excavated from three areas with an approximately 6 CY clamshell bucket. The sampled mass had a medium-strength sewage (organic) odor and was medium to dark gray in color. Samples were sent to NPD Laboratory for sediment quality testing, including physical and chemical tests. Chemical analysis was conducted by ARDL, Inc., Mt. Vernon, IL.

Summary of Test Results: Complete results of tests conducted on materials to be dredged are on file at the Corps of Engineers, Portland District.

Physical testing revealed the material to be non-plastic silty sand (USCS/ ASTM D 2487 classifies as SM (ML)). The sample is between 72 and 75 percent sand and the fine fraction is between 25 and 28 percent silts and clays. The fine fraction is composed of 91 percent silt, 9 percent clay. Pollutant adsorption takes place on clay particles, but since the clays make up only about 2.2 percent of the sediment samples, the potential for clay adsorption of pollutants is low.

Chemical analysis was conducted for metals, PAH, pesticides and PCB, total organic carbon, acid volatile sulfides, phenol, and glycol according to EPA protocols. The Chemical Quality Assurance Report (CQAR) was done by NPD Laboratory and is on file at the Corps of Engineers, Portland District. Three chemicals were found to be above screening limits for in-water disposal, but reported values are based on low resolution data displays and represent the operator's estimate of the precise value. Consequently, these three values are estimates of concentration levels of these substances in the sediment column. The reported values and the screening limits for the three substances are as follows :

	levels	
Benzoic Acid - 628.0 ug/kg	- Screening Limit (SL) 216.0 ug/kg	new 1998 SL = 650 ug/l
Pentachlorophenol - 337.0 ug/kg	- SL 100.0 ug/kg	" " = 400 ug/l
Silver - 1.6 mg/kg	- SL 1.2 ug/kg	" " = 6.1 ug/l

→ All levels are below current screening levels in the Evaluation Framework = DMEF-

Discussion: These sediment quality tests are the first performed at Willamette Falls Locks. Without previous tests with which to compare these results it is unclear whether substances detected and found above screening levels represent a condition peculiar to the sediments derived from flooding or some other, more persistent, condition. Samples were taken at the three locations shown on the attached drawing. The clamshell bucket extracted roughly two cubic

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3/24/99

meters of material which was split to expose a central bulk sample approximately 2 meters long. Each of the three composite jar samples was collected to represent full thickness of the material to be removed from within the dredging prism. The three jar samples were composited by the laboratory prior to being tested.

Substances above screening limits were relatively close to the minimum detection levels for the testing methods used, which suggests further testing, at lower detection levels that give clearer and more precise readings are likely to yield values near, or even below screening limits, that is, values that are known rather than estimated.

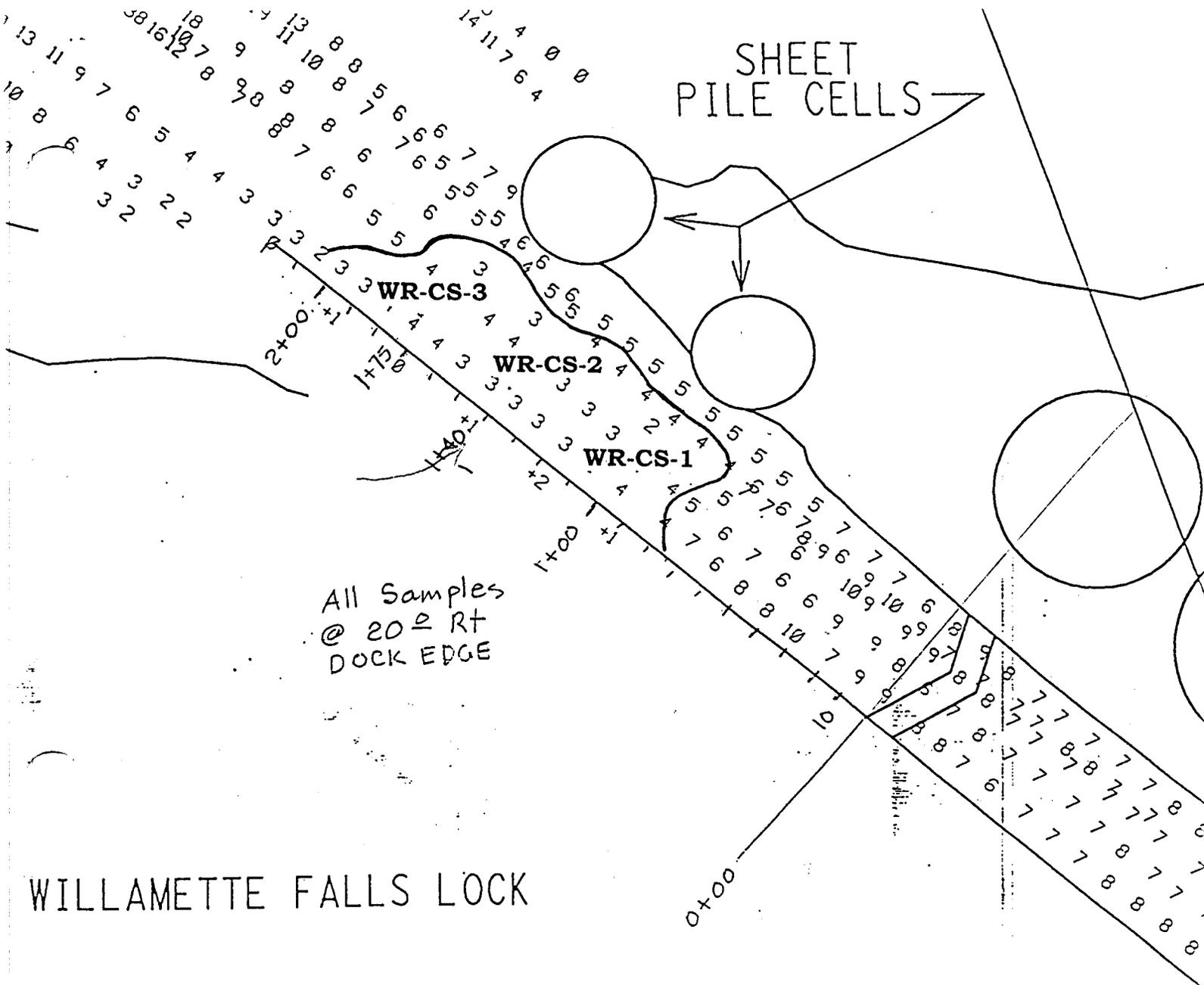
With regard to the three substances above the screening limits, the levels of Benzoic Acid and Silver are of minor concern, but the presence of pentachlorophenol indicates that further chemical or biological testing would be needed if unconfined in-water disposal were the only management option.

Also, the material in the dredging prism is not clean sand, but contains fragments of plastics, fiber, fabric and woody debris that includes floatable (?) large fragments, (30cm diam. X 1.25 m long) or possibly larger, the existence of which could adversely affect the placement operation at an in-water disposal site.

Recommendation: Because this material appears, from limited testing, to be only marginally suitable for unconfined in-water disposal and because it contains solid debris that could possibly drift during in- water placement; confined in-water or upland placement of the material is recommended.

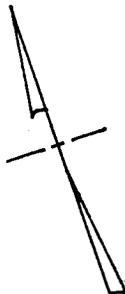
Encl - Loc. Dwg

SHEET
PILE CELLS



All Samples
@ 20' RT
DOCK EDGE

WILLAMETTE FALLS LOCK



WILLAMETTE RIVER ABOVE PORTLAND
AND YAMHILL RIVER, OREGON
WILLAMETTE RIVER
DOWNSTREAM LOCK APPROACH
2 APRIL 1996

SCALE IN FEET
50 100 150 200

U.S. ARMY ENGINEER DISTRICT, PORTLAND
OPERATIONS DIVISION

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SURVEYED: HCN PLOTTED: HCN CHECKED: FLK

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