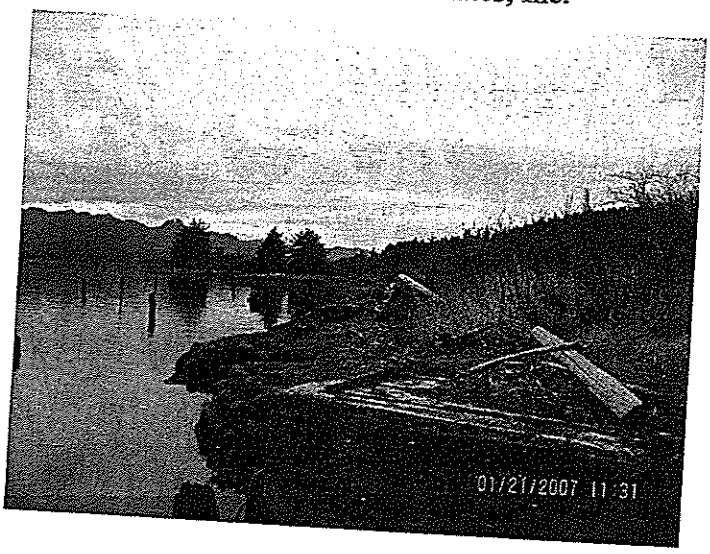
Nehalem River
Ordinary High Water
Delineation Report

For the
WHEELER WATERFRONT PROJECT
In Wheeler, Oregon

Prepared for
Kurahashi and Associates, Inc.



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1.0 PROJECT INFORMATION

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Location of Study Area:

Site Address:	Wheeler, Oregon.
County:	
Geographic Location:	Section 00 in Township , Range .
Legal Description:	Tax Map , Tax Lots .
Geographic Position:	Latitude: 45^0 40' 40" N
	Longitude: 123^0 52' 50" W

FEMA Flood Plain

100 Year Flood Plan Elevation: (13.02 feet NAVD 88, 10.00 NGVD)

1.1. Purpose

The purpose of this report is to define the "Ordinary High Water" (OHW) line of the Nehalem River on the West side of the Wheeler Waterfront Project and to define the limits of upland vegetation adjacent bay on the North side of the Wheeler Waterfront Project.

1.2. Study Area Description

The study area includes the Wheeler Waterfront Project property located on a topographic bench between Hwy. 101 and the left bank of the Nehalem River at the North end of Wheeler, Oregon. The study area is undeveloped private property. **FIGURE "A"**

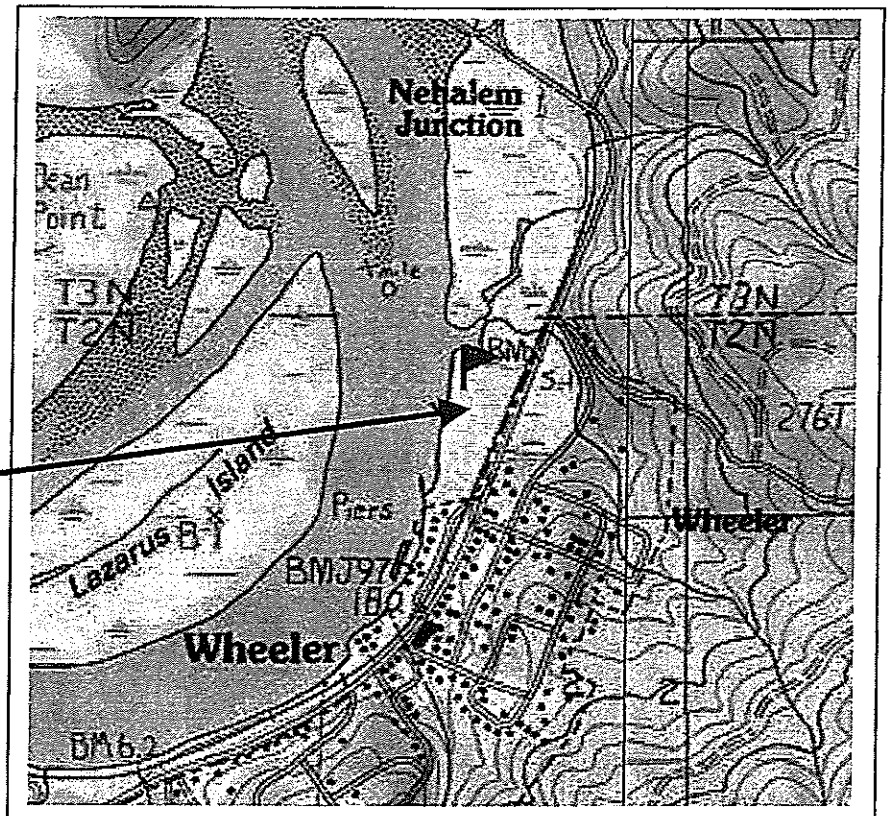

FIGURE "A"

2.0 DEFINITIONS AND INDICATORS

2.1. Regulatory Jurisdiction

Water resources are regulated in the State of Oregon by the Oregon Department of State Lands (DSL) under the "Removal-Fill Law" (ORS 196.800-196.990) and by the U.S. Army Corps of Engineers (COE) through section 404 of the Clean Water Act.

2.2. Ordinary High Water Definitions

2.2.1. State of Oregon

"Ordinary High Water Line" (OHWL) means the line on the bank or shore to which the high water ordinarily rises annually in season (ORS 274.005). The OHWL excludes exceptionally high water levels caused by large flood events (e.g. 100 year events). OHWL is indicated in the field by the following physical characteristics:

(a) Clear, natural line impressed on the shore;
(b) Change in vegetation (riparian (e.g. willows) to upland (e.g. oak, fir) dominated);
(c) Textural change of depositional sediment or changes in the character of the soil (e.g. from sand, sand and cobble, cobble and gravel to upland soils);
(d) Elevation below which no fine debris (needles, leaves, cones, seeds) occurs;
(e) Presence of litter and debris, water-stained leaves, water lines on tree trunks; and/or
(f) Other appropriate means that consider the characteristics of the surrounding areas.

2.2.2. Federal

Ordinary high water is defined a 33 CFR, Section 328.3 - Definitions as follows:

The term **"ordinary high water mark"** means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

2.3. Ordinary High Water Indicators

Based on the above definitions, there are four physical characteristic indicators of Ordinary High Water. These include:

2.3.1. Topographic Features.

A clear, natural line impressed on the bank, shelving,

2.3.2. Sediment Deposition

Change of depositional sediment or changes in the character of the soil (e.g. from sand, sand and cobble, cobble and gravel to upland soils)

2.3.3. Vegetation

Change in dominant vegetation type from riparian to upland, or

2.3.4. Debris

The presence of litter and debris or water stain lines.

3.0 METHODOLOGY

3.1. Off-Site Research

Prior to doing field work, information was reviewed to discover where potential waters of the state may exist on the study area. This review included the U.S.G.S. topographic map and aerial photography. **FIGURE "B"**

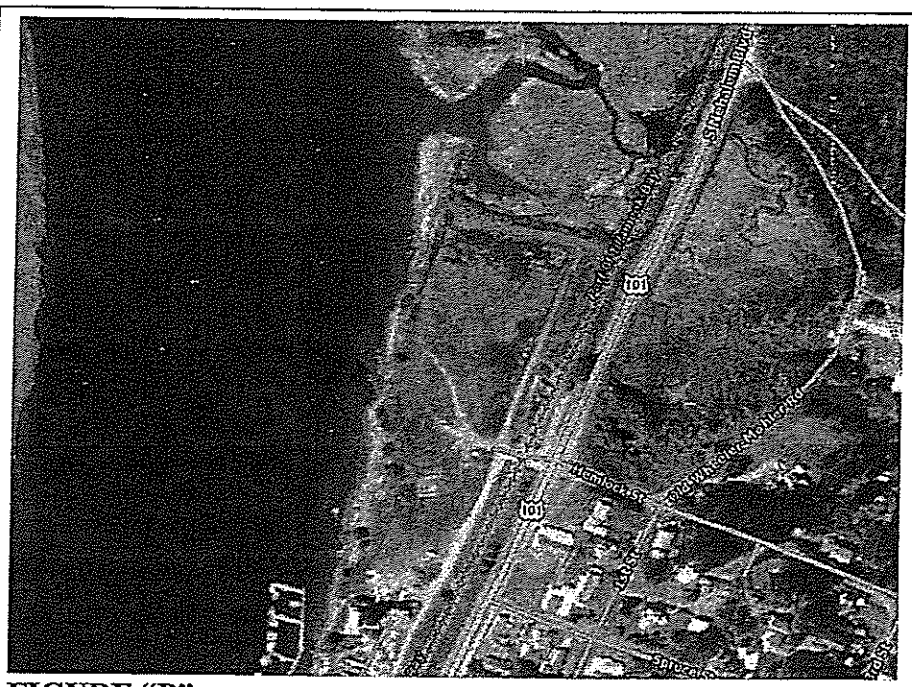

FIGURE "B"

3.2. Assessment.

Harris Stream Services performed the field investigation on March 21, 2007. The Ordinary High Water (OHW) line delineation was done using the following protocol.

- Perform a general visual observation of the river banks on the site, across the river, upstream and downstream to identify OHW physical characteristics in the general area.
- Perform a detailed investigation by following the undulations along the project river bank to identify points with OHW physical characteristics. These indicators were used to set fourteen (14) OHW points on the project t site.
- Photos were taken of each OHW point.
- Kurahashi and Associates (KAA) surveyed the OHW points, bank topography, and the river water surface elevation during an OHW (bankfull) event on January 3, 2007.
- KAA produced a preliminary AutoCAD delineation map of the survey and sent it to HSS for analysis.

Photos of selected OHW points are included in **APPENDIX "B"**.

3.3. Analysis.

The most reliable field indicators of OHW are clear natural topographic breaks in the river bank to a flat flood prone area (bankfull shelf) and deposition of sand on the bankfull shelf. The bankfull shelf indicator was prominent at the North end of the project site at point number 1, 2, and 3. It was also slightly present at OHW point # 7. The bankfull shelf was absent or not obvious at all other OHW points.

There was also a line of debris deposits at the same elevation as the bank shelf that was evident along the entire river bank on the project site. The debris deposits followed the water surface elevation surveyed during OHW runoff event on January 3, 2007. The debris line was therefore used as a guide for locating OHW points.

3.4. Findings.

HSS produced an OHW line on the delineation map by using bankfull shelf indicators, the topographic contour equal to the bankfull shelf elevation, the surveyed water edge line from the January 3rd runoff event, and observations in the field.

The OHW line is shown on the "Ordinary High Water Delineation Map" is included in Appendix "A".

4.0 BIBLIOGRAPHY

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Hitchcock, C. Leo, A. Cronquist. 1973. *Flora of the Pacific Northwest.* University of Washington Press. Seattle, WA.

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APPENDIX A

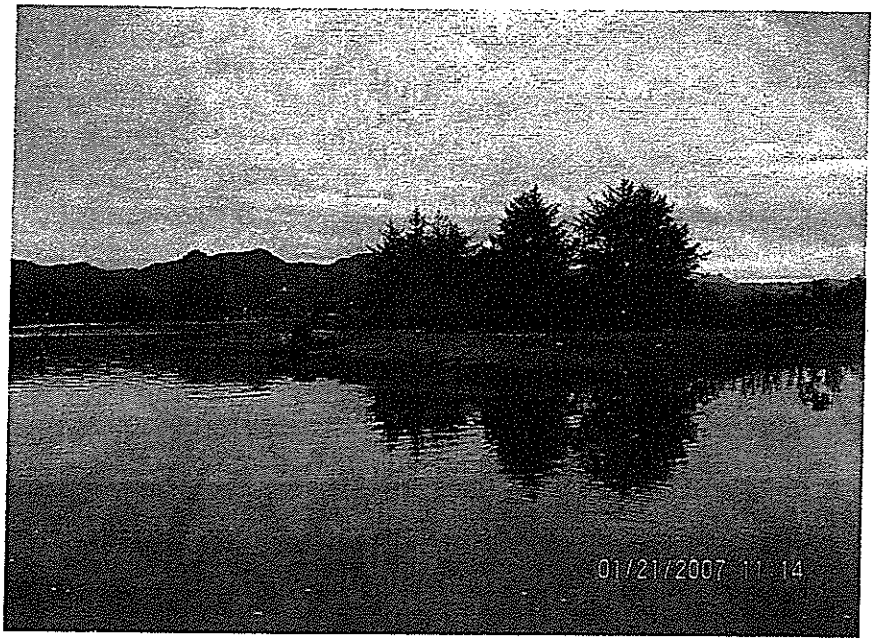
MAPS

APPENDIX B

PHOTOGRAPHS OF STUDY AREA

PHOTOS OF ORDINARY HIGH WATER
WHEELER WATERFRONT PROJECT

Photo from OHW P#01

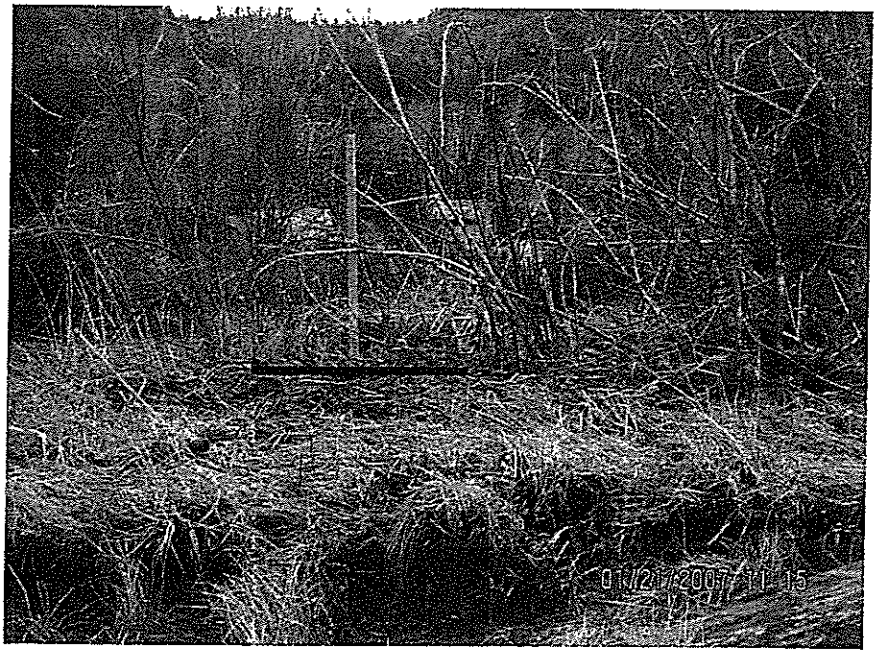


Upstream across bay inlet

Shows

- Clear topographic shelf at OHW
- Break to Upland Vegetation
- Same elevation as project site

Photo of OHW, P#01



- Clear topographic shelf at OHW
- Deposition of sand at OHW
- Break of Upland Vegetation
- Debris line at OHW

PHOTOS OF ORDINARY HIGH WATER
WHEELER WATERFRONT PROJECT

Photo of OHW P#02

- Clear topographic shelf at OHW
- Break of Upland Vegetation
- Debris line at OHW

Photo of OHW P#03

- Clear topographic shelf at OHW
- Break of Upland Vegetation
- Debris line at OHW

PHOTOS OF ORDINARY HIGH WATER
WHEELER WATERFRONT PROJECT

Photo of OHW P#04

- Break of Upland Vegetation

Photo of OHW P#07

- Small topographic shelf at OHW

PHOTOS OF ORDINARY HIGH WATER
WHEELER WATERFRONT PROJECT

Photo of OHW P#11

- Debris line at OHW

Photo of OHW P#12

PHOTOS OF ORDINARY HIGH WATER
WHEELER WATERFRONT PROJECT

Photo of OHW P#13

- Break of Upland Vegetation

Photo of OHW P#14

- Debris line at OHW