Wetland Delineation Report for the Newberg Parallel Pipeline River Crossing Project in Yamhill and Marion Counties, Oregon

Prepared for

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1. INTRODUCTION

The City of Newberg's existing water supply pipeline, which connects the City's well field to the water treatment plant, currently crosses the Willamette River along a former ODOT highway bridge. Damage to the bridge or pipeline could result in a loss of water supply to the water treatment plant for days to weeks depending on the severity of damage. To reduce this risk, the City is installing a new water pipeline below the Willamette River using Horizontal Direction Drilling (HDD), a sub-surface trenchless technology construction method. The Parallel Pipeline River Crossing Project will provide a redundant pipeline crossing of the Willamette River (see Figure 1, Vicinity Map). Conventional open-cut trenching will be utilized to connect the endpoints of the directional drilled portion of the pipe to existing pipe networks on the south and north banks. Approximately 2,000 feet of 36-inch diameter pipe will connect to the wellfield network on the south bank and another 2,500 feet will provide connectivity to the water treatment plant on the north bank.

Using HDD, a 36-inch diameter HDPE pipe approximately 2000 feet in length will be installed between the well field in Marion County and the area downslope of the water treatment plant in Yamhill County. The north tie-in point is located on an upland slope above Hess Creek in Yamhill County at approximately 110 feet above mean sea level (MSL). An access road at the top of the hill will be extended downslope to the construction area. All ground disturbances will be in upland areas above the boundary of the Hess Creek wetland (see description of wetland in the following section). The tie-in point in the well field is on the south side of Willamette River, at elevation approximately 85 feet above MSL. This area would be accessed by an existing unpaved road. Construction activities will impact an area of up to 150 feet by 150 feet at the tie-in points, including the shaft, pipe layout, sediment pit, vehicle access, work area, and equipment layout area (see impact areas in Figure 2).

Construction activities will span an approximately four-week period. All impacts will be temporary, with the exception of two below grade valve vaults located on both the entry and exit sides in the center of each of the 150 feet by 150 feet impact areas. The vaults will be approximately 6 feet square and will extend 2 feet above the ground surface.

2. METHODS

The field investigation and wetland delineation was conducted on August 11, 2005 in accordance with 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (United States Army Corps of Engineers, Environmental Laboratory 1987). The delineation followed the Routine Onsite method, as described in the manual. At each sample point, vegetation was documented in a 5-foot radius plot for herbs and shrubs and a 30-foot radius plot for trees. Dominant plant species were identified using the 50/20 method. At each sample point, a pit was dug to approximately 16 inches. Soil texture and redoxomorphic features were evaluated at different soil horizons, and soil color was described using the Munsell Soil Color Charts (Munsell Color 1990). Hydrological features were described at each plot, including water marks, drainage patterns, and drift lines. Plot datasheets are attached in Appendix A.

The boundaries of the Hess Creek wetland were delineated using two transects (Figure 2). The first transect (YT1) consisted of four points beginning at the toe of the upland grassy slope (YT1-

1) and traversing through the emergent area of the wetland (YT1-2), though the scrub-shrub portion of the wetland (YT1-3), and terminating on the upland forested slope (YT1-4). A second transect (YT2) was installed northwest of the first transect where the upland/wetland boundary transitioned from grassy/emergent to forested/scrub-shrub. This upland forested (YT2-1)/wetland scrub-shrub (YT2-2) boundary was similar to the wetland upland boundary on the southwest end of transect YT1 (YT1-3 and YT1-4).

One sample point (MT1-1) was evaluated in the riparian area adjacent to the Willamette River in Marion County. This point, determined to be upland, was located on a shelf approximately 20 feet wide, 20 feet below the agricultural field, and approximately 20 feet above the surface of the Willamette River. Field surveys indicated that there are no adjacent wetlands along the Willamette River; therefore, the Ordinary High Water (OHW) mark delineates the boundary of waters of the state.

Sample points were mapped using a Trimble GEOXT GPS unit, with the exception of the Marion County point (MT-1). This point could not be mapped with the GPS unit because of inadequate satellite coverage under the tree canopy, and surveyors mapped the point at a later time. The location of this point on figures is approximate. Hess Creek wetland boundaries were determined and mapped using GPS by following vegetation/hydrology indicators that matched those in sample plots. GPS data was post-processed with sub-meter accuracy.

The OHW mark for the Willamette River was not mapped during field surveys; however, field observation indicated that this level occurs below the sample point on the riparian shelf adjacent to the City of Newberg well field. The highest water level within the calendar year preceding the survey occurred on December 12, 2004 and was approximately 5 feet below the sample point (as determined from the United States Geological Survey gage data for station 14197900, Willamette River at Newberg). Pipeline tie-in activities will be restricted to the agricultural field above the sample point and will not impact the riparian area or waters of the state.

3. SITE DESCRIPTION

The project is located in the Newberg 7.5 minute quadrangle, Section 29, Township 3S, Range 2W in Yamhill and Marion counties (see Figure 1).

3.1. Land Use

The Yamhill County tie-in point is currently owned by SP Newsprint Company. The tie-in point will be located on an upland slope supporting nonnative grasses and forbs. The pipeline will traverse beneath one rural residential property on the north side of the Willamette River, but no ground disturbing activities will occur in this area. The Marion County tie-in point is located in the well field owned by the City of Newberg. This area is currently under agricultural cultivation.

3.2. National Wetlands Inventory

The National Wetlands Inventory (NWI) wetland map for the Newberg quadrangle was consulted prior to the field survey (United States Department of Fish and Wildlife 1981). The NWI map (see Figure 3) does not identify any wetlands in the area of the well field in Marion

County. The Willamette River is mapped as Riverine, Lower Perennial, Open Water/Unknown Bottom, Intermittently Exposed/Permanent (R2OWZ), under the NWI Cowardin classification system (Cowardin et al. 1979). The tie-in point in Yamhill County above Hess Creek is not mapped as a wetland. Below the Yamhill county tie-in point, Hess Creek and the adjacent wetland are mapped as Palustrine, Emergent, Persistent/Open Water/Unknown Bottom, Saturated/Semipermanent/Seasonal (PEM1/OWY). Southwest of the tie-in point, the emergent Hess Creek wetland transitions into a wetland classified as Palustrine, Scrub-Shrub / Emergent, Persistent, Saturated/Semipermanent/Seasonal (PSS/EM1Y). To the west of Hess Creek and the Yamhill County tie-in point, several settling basins on the SP Newsprint Company property are mapped as Palustrine, Open Water/Unknown Bottom, Artificially Flooded, Intermittently Exposed/Permanent, Excavated (POWKZx).

3.3. Climate and Precipitation

Preliminary daily and monthly climate data were retrieved from the Aurora (Marion County) weather station (National Weather Service 2005). This is the closest National Weather Service (NWS) station to the site, approximately 15 miles away. Weather conditions were compared to the average climate data from the National Resources Conservation Services' Marion County WETS Station at the Salem Airport (National Resources Conservation Service 2005).

The high temperature on the day of the field survey, August 11, 2005, was 77 degrees Fahrenheit. No precipitation was recorded at the Aurora NWS weather station on the survey date or the two prior days. Trace levels of precipitation were recorded between August 1 and August 11, 2005. The total recorded precipitation at the Aurora NWS station for the month of July (preliminary data) was 0.55 inches. Average precipitation at the Salem airport for the month of July is 0.57 inches. The growing season at the Salem airport is estimated to have a 70 percent chance of 185 days, April 21 through October 23, exceeding 32 degrees Fahrenheit (National Resources Conservation Service 2005).

3.4. Description of Wetlands

Vegetation, soils, and hydrology of wetland and waters of the state in the vicinity of the project area are described below. Refer to wetland determination data forms in Appendix A and photos in Appendix B for more detailed information. The Yamhill County tie-in point will be located above Hess Creek and its adjacent wetland. The wetland adjacent to Hess Creek predominately supports emergent vegetation (reed canary grass) in the vicinity of the tie-in point with some scattered willows nearby. This wetland grades to a scrub-shrub dominated wetland southwest of the project area, terminating at Dog Ridge Road, south of an SP Newsprint Company settling pond. The Marion County tie-in point will be located in an upland cultivated agricultural field adjacent to the Willamette River. No wetlands were identified in the riparian area adjacent to the Willamette River, therefore the OHW mark delineates the boundary of jurisdictional waters.

3.4.1. Vegetation

Vegetation at the Yamhill County tie-in point (sample plot YT1-1) is a mix of nonnative grasses and weedy forbs including meadow fescue (*Festuca pratensis*, FACU+), colonial bentgrass (*Agrostis capillaris*, FAC), common velvetgrass (*Holcus lanatus*, FAC), English plantain (*Plantago lanceolata*, FAC), bull thistle (*Cirsium vulgare*, FACU), and spotted knapweed (*Centaurea maculosa*, NOL). Hess Creek wetland predominately supports reed canary grass

(*Phalaris arundinaceae*, FACW) in the area directly south of the tie-in point (YT1-2). Vegetation in Hess Creek wetland grades to scrub-shrub to the south and west (YT1-3 and YT2-2), supporting species including Oregon ash (*Fraxinus latifolia*, FACW), Piper willow (*Salix piperi*, FACW), tufted hairgrass (*Deschampsia caespitosa*, FACW), and reed canary grass (*Phalaris arundinaceae*, FACW). Upland slopes adjacent to Hess Creek wetland (YT1-4 and YT2-1) support similar species to those found in the wetland, with the addition of upland species, including Himalayan blackberry (*Rubus procerus*, FACU), bracken fern (*Pteridium aquilinum*, FACU), sword fern (*Polystichum munitum*, FACU), bigleaf maple (*Acer macrophyllum*, FACU), and elderberry (*Sambucus racemosa*, FACU).

The well field tie-in point in Marion County is located in an irrigated field planted in beans, adjacent to a fallow grass seed field. The agricultural fields are separated from the Willamette River by a riparian corridor of black cottonwood (*Populus balsamifera*, FAC), Oregon ash (*Fraxinus latifolia*, FACW), beaked hazel (*Corylus cornuta*, FACU), common snowberry (*Symphoricarpos albus*, FACU), oceanspray (*Holodiscus discolor*, NOL), clustered wild rose (*Rosa pisocarpa*, FACU), and reed canary grass (*Phalaris arundinaceae*, FACW).

3.4.2. Soils

Soils at the tie-in point on the slope above the Hess Creek wetland (YT1-1) are mapped as hydric Wapato silty clay loam bordering non-hydric Amity silt loam. Soils in this plot appear to contain fill material, as evidenced by the extent of compaction, lack of distinct soil horizons, and even distribution of few mottles throughout the entire sample depth. Soils in and adjacent to Hess Creek are mapped as hydric Wapato silty clay loam. Sample points in the wetland (YT1-2, YT1-3, YT2-2) generally matched the soil survey description of this Wapato silty clay loam in color and texture, although some variations in matrix color were observed (United States Department of Agriculture, Soil Conservation Service 1974). Soils in wetland plots exhibited significant redoxomorphic features. Soils in upland plots adjacent to Hess Creek (YT1-4 and YT2-1) were similar to those in wetland plots in matrix color and texture, but they lacked, or contained significantly fewer, redoxomorphic features. These upland plots were mapped as hydric Wapato silty clay loam, but were very near the border of Terrace escarpment map units (see Figure 4).

Soils at the tie-in point in the vicinity of the well field are mapped as non-hydric Cloquato silt loam (United States Department of Agriculture, Soil Conservation Service 1972). Soils at this sample point (MT1-1) matched the soil survey description in color, but were very sandy. Soils at this plot were very dry, loose, and well drained, and did not support significant amounts of organic materials or other hydric indicators.

3.4.3. Hydrology

Hess Creek is a 5.6-mile long tributary of Spring Brook. The project area is located approximately 1.2 miles above the confluence of Hess Creek and Spring Brook. Spring Brook flows into the Willamette River approximately 1.3 miles below its confluence with Hess Creek at Willamette River Mile 53. Hess Creek flows from north to south above the Yamhill County tie-in point. Hess Creek is routed under Wynooski Road through box culverts beginning west of the Water Treatment Plant and terminating approximately 1300 feet downslope in a small pond approximately 100 feet east of the tie-in point. Hess Creek continues to flow to the east from this point in a defined channel. The abandoned pre-culverted channel of Hess Creek continues in a

southwesterly direction from the pond for approximately 135 feet before turning to the northwest. The current and abandoned channels of Hess Creek occupy areas of flat, low topography supporting emergent vegetation (reed canary grass). The abandoned channel becomes less defined as it continues to the northwest toward Dog Ridge Road where the wetland grades to scrub-shrub. The Hess Creek wetland occupies this low, flat valley, which runs northwest to southeast. Wetland characteristics diminish as the topography rises on the slopes to the northeast and southwest.

The tie-in point in the well field is located in a level agricultural field, with well-drained soils and no evidence of ponding. The riparian area between the Willamette River and the agricultural field occupies a steep sided slope, interrupted about midway down between the field and the Willamette River OHW by a narrow (approximately 25 feet wide) terrace of sandy, well-drained soils.

4. RESULTS AND CONCLUSIONS

This report describes wetlands found in the vicinity of the Newberg parallel pipeline river crossing project. The Yamhill County pipeline tie-in point will be located above Hess Creek and its adjacent wetland. The wetland adjacent to Hess Creek predominately supports emergent vegetation (reed canary grass) in the vicinity of the tie-in point. This wetland grades to a scrubshrub dominated wetland southwest of the project area, terminating immediately to the south of Dog Ridge Road, which traverses the southern boundary of an SP Newsprint settling pond. All ground disturbing activities associated with the tie-in point will be confined to an upland slope adjacent to the wetland and will be a minimum of 25 feet away from the wetland boundary.

The tie-in point for the pipeline in the Newberg well field in Marion County occurs in a cultivated agricultural field adjacent to the Willamette River. All activities will be confined to the agricultural fields and will not enter the riparian buffer of the Willamette River. No wetlands were identified adjacent to the Willamette River, therefore the OHW mark delineates the boundary of jurisdictional waters.

All activities associated with the Newberg Parallel Pipeline River Crossing Project will avoid impacts to wetlands and other jurisdictional waters of the state.

This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

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FIGURES

- Figure 1. Vicinty Map
- Figure 2. Wetland Boundaries and Project Impact Areas
- Figure 3. National Wetlands Inventory Map
- Figure 4. National Resource Conservation Service Soil Maps

APPENDIX A

WETLAND DETERMINATION DATA FORMS

DIVISION OF STATE LANDS - WETLAND DETERMINATION DATA FORM

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SOL WAS VERY DRY, No STREAKING, LIMITED ORGANIC MATERIAL ydric Soil Indicators: Histosol Histic Epipedon Sulfidic Godor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") riteria Met? YES NO **Abund./size/contrast/color/location (matrix **Becorded Data Available: No Recorded Data Available: No Recorded Data Available: No Recorded Data Available: Inundated Saturated in upper 12 inches Water Marks Drift Lines **Drift Lines **Concretions/Nodules (w/in 3"; > 2mm) Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) A abund./size/contrast/color/location (matrix **Abund./size/contrast/color/location (matrix **A Aerial Photos Stream gauge Other Oxidized Root Channels (upper 12") Water Stained Leaves Water Marks Drift Lines FAC-Neutral Test	Structure
SOL WAS VERY DRY, No STREAKING, LIMITED ORGANIC MATERIAL Variety Soil Indicators:	
SOIL WAS VERY DRY, NO STREAKING, LIMITED ORGANIC MATERIAL Variety Soil Indicators:	
ydric Soil Indicators: Histosol	D NO PEDS
ydric Soil Indicators: Histosol	VERY LOOS
ydric Soil Indicators: Histosol	101 1 202
ydric Soil Indicators: Histosol	
ydric Soil Indicators: Histosol	
Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") riteria Met? YES NO Recorded Data Pecorded Data No Recorded Data Available: No Recorded Data Available: Inundated Secondary Hydrology Indicators: Inundated Saturated in upper 12 inches Water Marks Drift Lines Corded results (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Corganic streaking (in Sandy Soils) Corganic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profication) Other: * abund./size/contrast/color/location (matrix) * Aerial Photos Stream gauge Other Oxidized Root Channels (upper 12") Water-stained Leaves Local Soil Survey Data FAC-Neutral Test	
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ecorded Data Recorded Data Available: No Recorded Data Available: No Recorded Data Available ield Data Depth of inundation: Inundated Saturated in upper 12 inches Water Marks Drift Lines Water Marks Drift Lines Aerial Photos Stream gauge Other Oching Saturation: MONE Depth to Saturation: Merial Photos Stream gauge Other Ocher Ocher Ocher Ocher Marial Photos Stream gauge Other Ocher	
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No Recorded Data Available Secondary Hydrology Indicators: Secondary Hydrology Indicators (2 or more requiration)	
Depth of inundation: NONE - Depth to Saturation: 716" Depth to free water: 716" Secondary Hydrology Indicators (2 or more required or more of the control of the co	
rimary Hydrology Indicators: Inundated	-1111
Inundated Oxidized Root Channels (upper 12") Saturated in upper 12 inches Water-stained Leaves Water Marks Local Soil Survey Data Drift Lines FAC-Neutral Test	<u> </u>
Inundated Oxidized Root Channels (upper 12") Saturated in upper 12 inches Water-stained Leaves Water Marks Local Soil Survey Data Drift Lines FAC-Neutral Test	ed) ·
Saturated in upper 12 inches Water-stained Leaves Water Marks Local Soil Survey Data Drift Lines FAC-Neutral Test	/ •
Drift Lines FAC-Neutral Test	
Sediment Deposits Other:	
Drainage Patterns	
riteria Met? YES NO X	
riteria Met? YES NOX	.========
DETERMINATION	
THE AND	
ETLAND? YES NO Comments:	

DIVISION OF STATE LANDS - WETLAND DETERMINATION DATA FORM County: YAMHU Project/Contact: Date: X Explain: SUPE APPEARS TO CONTAIN PILL MATERIAL been significantly disturbed? Has Veg. Soil X Hydrology Explain: FILL VEGETATION Dominant Species Status Dominant Species Status % Cover Tree Stratum Herb Stratum 0% Total Cover: 2. Sapling/Shrub Stratum 070 10 Percent of Dominant Species that are OBL, FACW, FAC (not FAC-): Other Notable Species: Criteria Met? YES WARATO SICL/ SOILS Map Unit Name: AMITY SILT LOAM Taxonomy: FLVVAQUENTIC: ENDOAGOUS/ARGIAQUETERL On I ARGIABOUS Criteria Met? YES PUORLY DRAINGD SOMEWHAT POORLY DRAINED Drainage Class: On Hydric Soils List? Y X (WAPATO) Horizon Depth Redox Concentrations Redox Depletions Texture Structure 0-16" 10YR3|3 FEW, PROMINENT 5YR 5/8 SUBMULAR BLOCKY THIS AREA IS MAPPED AS WAPATO SICL BUT IS VERY NEAR THE BOUNDARY OF AMITY SIL. SOIL APPEARS TO BE FILL - DENSER THAN ADJACENT SOILS, MOTTLES ARE FEW AND APPEAR EVENLY DISTRIBUTED THROUGH LAYER, SOIL IS VERY DENSE, DRY, YERY LITTLE ORGANIC MATTER. Hydric Soil Indicators: Concretions/Nodules (w/in 3"; > 2mm) Histosol Histic Epipedon High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Listed on Hydric Soils List (and soil profile matches) Redox. features (w/in 10") * abund./size/contrast/color/location (matrix or pores/peds) HYDROLOGY Recorded Data Available: X Aerial Photos ____ Stream gauge Other No Recorded Data Available d Data Depth of inundation: NONE: Depth to Saturation: 7/6" Depth to free water: Secondary Hydrology Indicators (2 or more required): Oxidized Root Channels (upper 12") Water-stained Leaves Local Soil Survey Data Primary Hydrology Indicators: Inundated Saturated in upper 12 inches Water Marks Drift Lines FAC-Neutral Test Sediment Deposits Other: Drainage Patterns Criteria Met? YES NO DETERMINATION Comments: THE PLOT IS NEAR THE BOTTOM OF A CONVEX SLOPE SUPPORTING UPLAND VEGETATION. HISTORIC APRIAL PHOTOS SHOW THIS POINT TO BE JUST ABOVE INUNDATION LEVEL OF HESS CREEK DURING 1996 FLOOD.

DIVISION OF STATE LANDS - WETLAND DETERMINATION DATA FORM

Plant community: REGO CANALY GRASC Plot # 471-2
Plot location: Soltheast of Intersection of Docles RD+Wynoski St. Just N. OF HESS CREEK
County: YAMHUL Project/Contact: DARAUEL PREUNE RIVEL CROSSING PROJECT LAWAY DEWEST DEED. by: Plant Community: RESP CANALY CRASS Plot location: SoltHEAST OF INTERSECTION OF DOCLEG RD WYYNOOSKI ST., JUST N. OF HESS CREEK Recent Weather: CLGAR, DRY, WARM Do normal environ. conditions exist? Y N Explain: Has Veg. Soil Hydrology been significantly disturbed? NO
Has Veg Soil Hydrology been significantly disturbed? NO
Explain:
VEGETATION
Tree Stratum Total Cover: 57.
1. FRANINUS CATIFOLIA FACW 5 PHALARIS ARUNDINACEA FACW 100
3. <u>1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1</u>
Sapling/Shrub Stratum 5. Total Cover: 6.
1 7
3
5
Percent of Dominant Species that are OBL, FACW, FAC (not FAC-): 1007.
Other Notable Species:
Criteria Met? YBS X NO
SOLLS
Map Unit Name: WAPATO SILT CLAY LOAM Drainage Class: POORLY DRAINGO TAXONOMY: FLUVAOURING ENDOAGUALLS ON Hydric Soils List? Y X N
Depth Horizon Matrix Redox Concentrations Redox Depletions Texture Structure Color
O L " INVESTO COM DISTINCT
0-6" 104R3/3 COMMON PROMINENT 104R4/6 — SICL SUBANGULAR BLOCK + GOMMON PROMINENT 104R518
+ BLACK MASSES
6-16" 10483/3 COMMON, PROMINENT SYRY/6 MATRIX SYRS/2 SICL SUBANGULAR BLOC
APPROXIMATELY 4" OF LITTER THATCH ABOVE SOIL.
HistosolConcretions/Nodules (w/in 3", > 2mm)
Histic Epipedon High organic content in surface (in Sandy Soils) Sulfidic Odor Organic streaking (in Sandy Soils)
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches)
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other:
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other:
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES X NO * abund./size/contrast/color/location (matrix or pores/peds) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds) HYDROLOGY
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES Recorded Data Recorded Data Recorded Data Recorded Data Available: High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) A abund./Soils HYDROLOGY A Aerial Photos Stream gauge Other
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES X NO
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES X NO * abund./size/contrast/color/location (matrix or pores/peds) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds) HYDROLOGY Recorded Data No Recorded Data Available: No Recorded Data Available: No Recorded Data Available
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES NO * abund./size/contrast/color/location (matrix or pores/peds) **HYDROLOGY Recorded Data No Recorded Data Available: No Recorded Data Available: Depth of inundation: NONE Depth to Saturation: **Primary Hydrology Indicators: **Secondary Hydrology Indicators (2 or more required):** **High organic content in surface (in Sandy Soils) Organic pan (in Sandy Soils) **Authorized pan (in Sandy Soils) Organic pan (in Sandy Soils) **Authorized pan (in Sandy Soils) Organic pan (in Sandy Soils) Orga
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES NO * abund./size/contrast/color/location (matrix or pores/peds) **HYDROLOGY Recorded Data Recorded Data Recorded Data Available: No Recorded Data Available: No Recorded Data Available: Soils List (and soil profile matches) * Abund./size/contrast/color/location (matrix or pores/peds) **HYDROLOGY **Aperial Photos Stream gauge Other **Primary Hydrology Indicators: Inundated Saturated in upper 12 inches **Secondary Hydrology Indicators (2 or more required): Mater-stained Leaves **Water-stained Leaves
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES NO * abund./size/contrast/color/location (matrix or pores/peds) HYDROLOGY Recorded Data No Recorded Data Available: No Recorded Data Available: Depth of inundation: NONE Depth to Saturation: NONE Depth to free water: No Saturated in upper 12 inches Saturated in upper 12 inches Saturated Saturated
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES NO * abund./size/contrast/color/location (matrix or pores/peds) **HYDROLOGY Recorded Data No Recorded Data Available: No Recorded Data Available: Depth of inundation: Primary Hydrology Indicators: Inundated Saturated in upper 12 inches Water Marks High organic content in surface (in Sandy Soils) Organic part (in Sandy Soils) **Nandy Soils Organic part (in Sandy Soils) **Listed on Hydric Soils List (and soil profile matches) Other: **Abund./size/contrast/color/location (matrix or pores/peds) **Aperial Photos Stream gauge Other **Other: **Depth to free water: 7/6" **Secondary Hydrology Indicators (2 or more required): **Xoridized Root Channels (upper 12") Water-stained Leaves Local Soil Survey Data
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES Recorded Data Recorded Data Available: No Recorded Data Available Depth of inundation: Inundated Saturated in upper 12 inches Water Marks Drift Lines Sectiment Deposits Drainage Patterns High organic content in surface (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other: **Abund./size/contrast/color/location (matrix or pores/peds) **Aerial Photos Stream gauge Other **Aerial Photos Stream gauge Other **Oxidized Root Channels (upper 12") Saturated in upper 12 inches Sectiment Deposits Drainage Patterns **Criteria Met? YES **No High organic content in surface (in Sandy Soils) Organic pan (in Sandy Soils) **A bund./size/contrast/color/location (matrix or pores/peds) **A abund./size/contrast/color/location (matrix or pores/peds)
High organic content in surface (in Sandy Soils) Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES X NO
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES NO ** Abund./size/contrast/color/location (matrix or pores/peds) Recorded Data No Recorded Data Available: No Recorded Data Available Depth of inundation: NoNE** Depth to Saturation: 716 ** Depth to free water: 776 ** Primary Hydrology Indicators: Inundated Saturated in upper 12 inches X Drift Lines X Drift Lines X Drainage Patterns Criteria Met? YES NO DETERMINATION High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) A Listed on Hydric Soils List (and soil profile matches) Organic pan (in Sandy Soils) Norganic streaking (in Sandy Soils) Organic pan (in Sandy Soils) A Listed on Hydric Soils List (and soil profile matches) ** Abund./size/contrast/color/location (matrix or pores/peds)
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES X NO
Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES NO ** Abund./size/contrast/color/location (matrix or pores/peds) Recorded Data No Recorded Data Available: No Recorded Data Available Depth of inundation: NoNE** Depth to Saturation: 716 ** Depth to free water: 776 ** Primary Hydrology Indicators: Inundated Saturated in upper 12 inches X Drift Lines X Drift Lines X Drainage Patterns Criteria Met? YES NO DETERMINATION High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) A Listed on Hydric Soils List (and soil profile matches) Organic pan (in Sandy Soils) Norganic streaking (in Sandy Soils) Organic pan (in Sandy Soils) A Listed on Hydric Soils List (and soil profile matches) ** Abund./size/contrast/color/location (matrix or pores/peds)

DIVISION OF STATE LANDS - WETLAND DETERMINATION DATA FORM

as Veg Soil Hydrology	Date: 91105 File # C. JONES BY GRASS DEF DOT RIDGE RD T WYJOOSKI ST, S. OF HESS CRECK N Explain: _ been significantly disturbed? NO	
Explain:		
	VEGETATION	
Oominant Species Status % Cove		
ree Stratum	Herb Stratum Total Cover: 1007.	
otal Cover: 5076 FRANCIS LANFOLA FACE	40 Total Cover: 100%	9
SALIX PIPERI FACN	20 2. CAREX SP.	
1	4	
apling/Shrub Stratum otal Cover: 507	6.	
otal Cover: SOTO EMAXINUS LATIFOLIA PACW OUBLE PROCESSION PACW SALIX POERI	30 7. 30 8.	
SALIX PIDERI PACW	9.	
•		
ercent of Dominant Species that are OBL, FA	ACW, FAC (not FAC-): 837	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ther Notable Species:		
riteria Met? YES X NO		
	SOILS	===,
ap Unit Name: WAPATO Sil.	SOILS Drainage Class: POORLY DRAINED On Hydric Soils List? Y X N	·
exonomy: FLUVARUGUTIC EUDOAROUAL	On Hydric Soils List? Y N	-
epth Horizon Matrix Redox Conce	entrations Redox Depletions Texture Structure	
Color	entractions Redox Deptetions Texture Structure	
		
0-4 7.54R3/2	- SI CL SUBANGU	
0-4 7.54R3/2	- SI CL SUBANGU	
0-4 7.54R3/2 4-16 104R3/2 MAN	SI CL SUBANGU NY, PROMINENT 7.5YR5 8 — SICL SUBANGULA	
0-4 7.548.3/2 4-16 1048.3/2 MAN	- SI CL SUBANGU	
0-4 7.548.3/2 4-16 1048.3/2 MAN	SI CL SUBANGU NY, PROMINENT 7.5YR5 8 — SICL SUBANGULA	
0-4 7.54R3/2 +-16 104R3/2 MAN + BH	SI CL SUBANGU NY, PROMINENT 7.5YR5 8 — SICL SUBANGULA	
7.5483 2 +-16 10483 2 MAN + BLA **Aric Soil Indicators: Histosol	Si CL SUBANGU NY, PROMINENT 7.5YR5 8 — Si CL SUBANGULA AKK MASSES Concretions/Nodules (w/in 3"; > 2mm)	
7.5YR3/2 1-16 10YR 3/2 MAN	SICL SUBANGU Y, PROMINENT 7.5YRS 8 — SiCL SUBANGULA ACK MASSES — Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils)	
7.5YR3/2	Si CL SUBANGU N, PROMINENT 7.5YRS 8 — Si CL SUBANGULA ACK MASSES Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Organic streaking (in Sandy Soils)	
7.5YR3/2 +-16 10YR 3/2 MAN	SICL SUBANGU Y, PROMINENT 7.5YRS 8 — SiCL SUBANGULA ACK MASSES — Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils)	
dric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10")	Si CL SUBANGU X, PROMINENT 7.5YRS 8 — Si CL SUBANGULA XXX MASSES Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) X Listed on Hydric Soils List (and soil profile matches) Other:	<u>R</u> Bu
dric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10")	Si CL SUBANGU X, PROMINENT 7.5YRS 8 — Si CL SUBANGULA X MAKES Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) X Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds	<u>R</u> BLO
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rdric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") riteria Met? YES X No Recorded Data Recorded Data Available:	Si CL SUBANGU X, PROMINENT 7.5YRS 8 — Si CL SUBANGULA X MAKES Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) X Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds	R BLO
dric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Hiteria Met? YES X No Coorded Data Recorded Data Available: No Recorded Data Available	Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Z Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds HYDROLOGY X Aerial Photos Stream gauge Other	<u>R</u> Bu
7.5YR3/2 H-16 10YR 3/2 MAN + BL dric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") citeria Met? YES X No ecorded Data Recorded Data Available: No Recorded Data Available	Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds	R BLO
dric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed X Redox. features (w/in 10") Histic Met? YES X NO Recorded Data Recorded Data Available: No Recorded Data Available Pepth of inundation: NONE Depth Cimary Hydrology Indicators:	Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds HYDROLOGY X Aerial Photos Stream gauge Other th to Saturation: 716" Depth to free water: 716" Secondary Hydrology Indicators (2 or more required):	<u>R</u> BLO
rdric Soil Indicators: Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") riteria Met? YES X No Recorded Data Recorded Data Available: No Recorded Data Available Depth of inundation: NONE Depth Remark Hydrology Indicators: Inundated	Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) X Listed on Hydric Soils List (and soil profile matches) Other: * abund./size/contrast/color/location (matrix or pores/peds HYDROLOGY X Aerial Photos Stream gauge Other Ch to Saturation: 716" Depth to free water: >16" Secondary Hydrology Indicators (2 or more required): Oxidized Root Channels (upper 12")	R BLO
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County: YAMHUL. Date: \$ 1105 File # Project/Contact: WALLEL PRELIME RIVER CRISSING PROJECTIVE PLANESC. Det. by: C. JONES Plant Community: ORGAN ASH HUMAN HAN BLAEBERY RED CAMMY GRASS Plot # YTI-UPlot location: SUNTEMPS PLANESCHOOL OF DOUGHOUSE BY WYLKOSKIST, S.OF WAS CREEK, AT BOTTOM OF SLOPE Recent Weather: CLEAR, WARM, CR.Y Do normal environ. conditions exist? Y X N _ Explain: Has Veg. ____ Soil ___ Hydrology ____ been significantly disturbed? NO DIVISION OF STATE LANDS - WETLAND DETERMINATION DATA FORM Explain: VEGETATION Dominant Species Dominant Species % Cover Status Status % Cover Total Cover: 2070 Herb Stratum Total Cover: 1007, FACW 20 Sapling/Shrub Stratum Total Cover: Son 1. RUCUS PROCEUS 2. PIERDIUM ADMILIAM 3. POUSTICHUM MUNITUM 4. SALLY PIERE 6. 7. 10 50% Percent of Dominant Species that are OBL, FACW, FAC (not FAC-): _ Other Notable Species: __ Criteria Met? YES SOILS Map Unit Name: WAPATO SICL TAXONOMY: FLUVADUENTIC ENDOAMOUS POORLY DRAINED Drainage Class: _ On Hydric Soils List? Y Depth Horizon Redox Concentrations Redox Depletions Texture Color Sich 104R33 SUBANGULAR BLOCKY 0-6 10 YR3 3 COMMON PROMINEUT 7.5 YR5 9 SILL SUBAUGULAR BLOCKY THIS AREA IS MAPPED AS WAPATO SICL BUT IS VERY NEAR THE TERRACE ESCARPMENT MAP NUIT. Hydric Soil Indicators: Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Histosol Histic Epipedon Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Sulfidic Odor Reducing Conditions (tests positive) Gleved Redox. features (w/in 10") Criteria Met? YES * abund./size/contrast/color/location (matrix or pores/peds) ------HYDROLOGY Recorded Data Available: No Recorded Data Available X Aerial Photos ___ Stream gauge _ _ Other Field Data Depth of inundation: Depth to Saturation: 7/6" __ Depth to free water: _ Secondary Hydrology Indicators (2 or more required): Oxidized Root Channels (upper 12") Water-stained Leaves Primary Hydrology Indicators: Inundated Saturated in upper 12 inches Water Marks Local Soil Survey Data Drift Lines FAC-Neutral Test Sediment Deposits Drainage Patterns Other: Criteria Met? YES NO DETERMINATION NO _ Comments: WETLAND? YES

DIVISION OF STATE LANDS - WETLAND DETERMINATION DATA FORM County: YAMHILL Project/Contact: PARAUC PIRCINE RIVEA (ROXING PROJECT ICITY OF NEWBORD Det. by: (Ton Plant Community: ORGON ASH) HIMLAYAN BUCKBERY TOFTO HARBARS Plot # YT2-I Plot location: Southeast of Intersection of Dos Rives (Province of No. of Hessell Recent Weather: CLEAR, WARM, DRY Do normal environ. conditions exist? Y X N Explain: Has Veg. Soil Hydrology been significantly disturbed? NO. JONES VEGETATION Dominant Species Status % Cover Dominant Species Status % Cover Tree Stratum Herb Stratum Tree Stratum Total Cover: 75 76 1. FRAXINUS LAMPOUR 2. ACCR. MARRIPHYLLIM 80% A CESPITOSA #1. DESCHAMPSIA Sapling/Shrub Stratum Total Cover: 1. RUBUS 2. POLYSTIC 6. 7. 10 5070 Percent of Dominant Species that are OBL, FACW, FAC (not FAC-): Other Notable Species: Criteria Met? SOILS Map Unit Name: WAPATO SiCL TAXONOMY: FLUVACUEUTC ENDOADUCUS Drainage Class: POORLY DRAINED On Hydric Soils List? Y _ Depth Horizon Redox Concentrations Redox Depletions Texture Structure Color 10YR 3/2 SUBANGULAR BLOCKY VERY COMPACT, DRY SOIL; DIFFICULT TO DIG. THIS AREA IS MAPPED AS WAPATO SICL, BUT IS NEAR THE TERRACE ESCARRMENT MAP UNIT Concretions/Nodules (w/in 3"; > 2mm) High organic content in surface (in Sandy Soils) Organic streaking (in Sandy Soils) Organic pan (in Sandy Soils) Listed on Hydric Soils List (and soil profile matches) Histosol Histic Epipedon Sulfidic Odor Reducing Conditions (tests positive) Gleyed Redox. features (w/in 10") Criteria Met? YES * abund./size/contrast/color/location (matrix or pores/peds) HYDROLOGY Recorded Data Recorded Data Available: No Recorded Data Available _ Aerial Photos ____ Stream gauge __ _ Other Field Data Depth of inundation: NONE Depth to Saturation: >14' Depth to free water: >14 Secondary Hydrology Indicators (2 or more required): Oxidized Root Channels (upper 12") Water-stained Leaves Local Soil Survey Data Primary Hydrology Indicators: Inundated Saturated in upper 12 inches Water Marks Drift Lines FAC-Neutral Test Sediment Deposits Other: Drainage Patterns Criteria Met? YES NO DETERMINATION NO X WETLAND? YES Comments:

Dominant Species		Date: 8 06 File # ROS NO PROPERTY PLANS File # ROS NO PROPERTY PLANS PROPERTY PLA
Tree Stratum Secretary Sec	Explain:	
Triteria Mat? YES NO SOILS Drainage Class: PORLY PRAINED ARXONOMY: PLUYACOUNTY CAMOROUGLS On Hydric Soils List? Y Structure Occasing streaking (in Sandy Soils) Organic pan (in Sandy Soils) Soils Organic streaking (in Sandy Soils) Organic		VEGETATION Dominant Species Status & Cover Herb Stratum Total: Cover: 75 70 4.1 Deschanosia Cespitosa Facul 40 12. Festura praticula Facul 20 3. Tolling Chanosis Facul 20 3. Tolling Chanosis Facul 5 5. Soland Chanosis Facul 5 6. Soland Chanosis Facul 5 9. 9.
ap Unit Name: JARATO SICL SOILS Drainage Class: PORLY PRAINED according to the property of the	Percent of Dominant Species that are OBL, FACW, ther Notable Species:	V, FAC (not FAC-): 607
Color Color Concretions/Nodules (w/in 3"; > 2mm) FEGU PROMINENT 2.5 YR 6 S	ap Unit Name: WAPATO SICL axonomy: FLUVAOUENTIC ENDOAQUOLLS	SOILS Drainage Class: POORLY PRAINED On Hydric Soils List? Y N
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