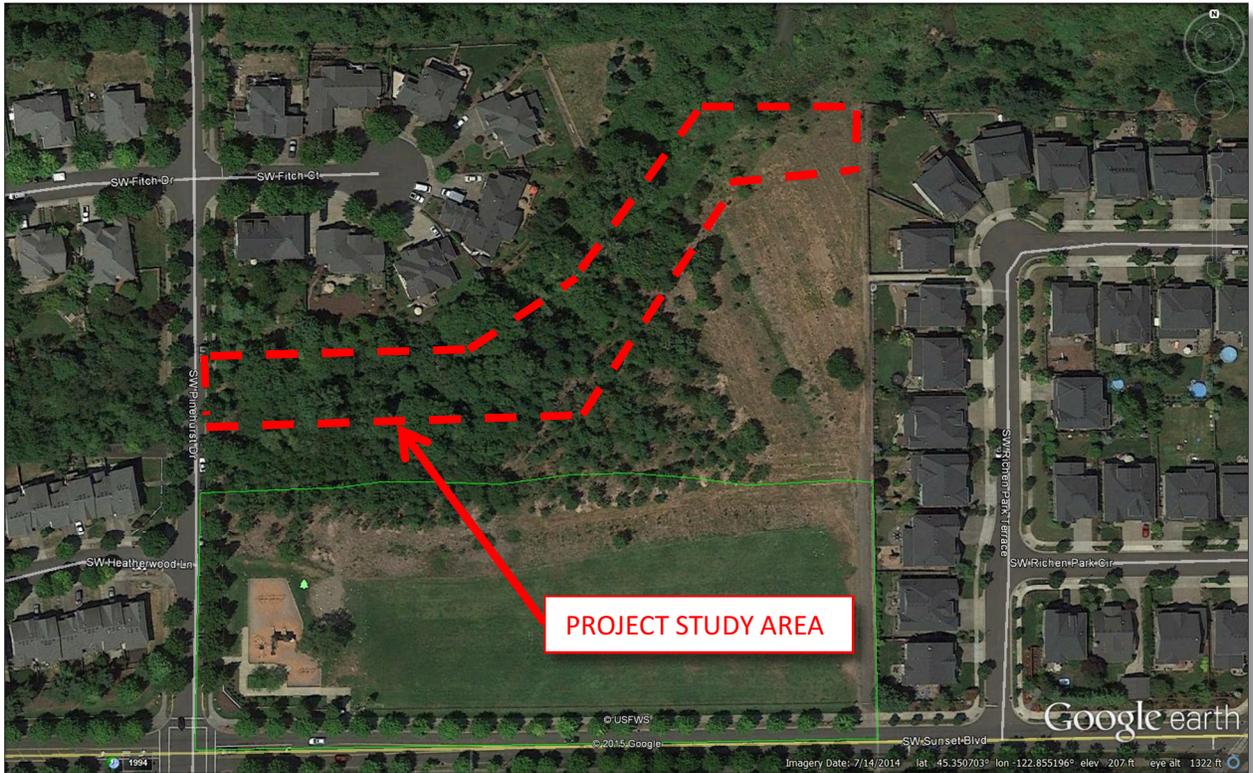


WOODHAVEN PARK, PHASE 2 Natural Resource Assessment Report



Prepared For:
Bob Galati, PE
City of Sherwood

Project Manager:
Stefanie Slyman, AICP

Prepared By:
Scott W Banker

March 16, 2015



205 SE Spokane Street, Suite 200
Portland, OR 97202
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INTRODUCTION

Harper Houf Peterson Righellis Inc. was contracted by the City of Sherwood to conduct a preliminary wetlands determination and natural resource assessment for the proposed Woodhaven Park, Phase 2 project. The site is located in the northeast quadrant of the intersection of SW Sunset Blvd. and SW Pinehurst Dr. in Section 31, T2S, R1W, W. M., Sherwood, Oregon. The project entails adding elements to the park per the Master Plan approved in 2001, within Tax Lot's (TL) 1800 and 1900. Improvements may include additional parking, play structure, and potential trail system located outside of the vegetated corridor. Refer to Natural Resource Assessment & Wetland Determination Map Figure 7, Appendix A.

Site Description

The Study Area (SA) boundary is bounded to the west by SW Pinehurst Drive, to the north by an unnamed tributary (Creek) to Cedar Creek, to the east by residential development, and to the south by open-space associated with Woodhaven Park. The site, TL's 1800 and 1900, is utilized as open-space and the location of proposed improvement. Various vegetated corridor maintenance activities have been recently conducted. There is a City of Sherwood water quality swale located in the northeast portion of the site that shows up beginning with a 7/23/2000 Google Earth aerial photograph.

METHODOLOGY

The primary guidance for this report is *CWS (R & O 07-20) Design and Construction Standards*, (August 2008 update). Two levels of investigation were performed to determine WQSA's, i.e. jurisdictional wetlands / waters. An internet background investigation of soils, national and local wetland inventories, and regional sensitive areas was conducted. The second method was a site investigation conducted on February 14 and March 9, 2015.

Background Investigation

Offsite determination methods included review of NRCS hydric soils mapping and soil features; US Fish and Wildlife Service (FWS) National Wetland Inventory (NWI); Oregon Department of State Lands (DSL) Sherwood Local Wetland Inventory (LWI); Google Earth aerial photographs, and USGS NHD hydrographic mapping. The DSL was contacted to perform a records search for prior wetland determination in the tax lot. No records were returned for prior Wetland Determinations for the project study area. A preliminary Wetlands Determination and Natural Resource Assessment for Woodhaven Park was prepared by Pacific Habitat Services, Inc. dated October 28th, 2004. Refer to Appendix F. Clean Water Services (CWS) was contacted to perform a records search for prior Service Provider Letter (SPL) in the tax lot. SPL #4948 was identified for a vegetated corridor mitigation project for the City of Sherwood on this TL. Refer to Appendix G.

Site Investigation

Site investigation were conducted on February 14 and March 9, 2015 to perform a preliminary Jurisdictional Determination and Natural Resource Assessment in accordance with the *Clean Water Services (R & O 07-20), Design and Construction Standards*. HHPR conducted a Jurisdictional Determination as outlined in the Regional Supplement to the Corps of Engineers

Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2.0, dated May 2010).

The vegetated corridor has extensive native species and canopy cover in Plant Communities A and B. Plant Community C lacks canopy cover and cover with native species. The width and conditions of the vegetated corridor were determined in accordance with Chapter 3; refer to Tables 2 and 3. The preliminary Jurisdictional Determination is included as Appendix E.

EXISTING CONDITIONS

Landscape Position

The SA is located in the Willamette Ecological Province on a terrace of the Tualatin River on a tributary of Cedar Creek. The landform in general drains to the north toward the tributary, which flows west to east toward Cedar Creek. The upland area outside of the vegetated corridor has been filled from SW sunset drive to the north for play areas.

Topography

The SA ranges in elevation from 230 at the intersection of SW Pinehurst Drive and SW Sunset Blvd. M.S.L. to 185 M.S.L. in the northeast quadrant of the site. Within the SA the topography slopes in a west to east direction along the creek. The SA ranges in elevation from 199 (west) to 185 (east) along Wetland A and the creek. The vegetated corridor ranges in elevation from 202.5 (west) to 189.7 (east) in the upland.

Land Use

The site is zoned LDR – PUD for which parks are an allowed use. A portion of the SA is in a tract that is vegetated and is dominated by Wetland A and the creek. The park tract is developed as a park and natural area.

Development Activity

The proposed project involves the potential addition of parking near SW Sunset Blvd., the addition of an upland trail and active play park amenities. No impacts are planned for the water quality sensitive areas or the vegetated corridor. Refer to Natural Resource Assessment & Wetland Determination Map Figure 7, Appendix A.

Water Quality Sensitive Areas

WQSA's within the SA were delineated by HHPR Inc. on February 14 and March 9, 2015 and are listed below in Table 1. Refer to Natural Resource Assessment & Wetland Determination Map Figure 7, Appendix A, DRAFT Jurisdictional Determination Report, Appendix E, and Appendix F. Prior DRAFT Jurisdictional Determination Report & Natural Resource Assessment. The water quality sensitive area boundary consists of wetlands bordering the creek. The first terrace of the creek is predominantly wetland with hydric soils saturated at the time of the site visit. The delineation boundary is based upon soil test pits and the slope break intersection with the rather level terrace through most of the site. The bottom of the road prism along SW Pinehurst Drive defines the boundary in this section of the SA. Approximately 13 sf of Wetland A lies within TL 1900, Tract NN and 715 lin. ft. of creek parallels the SA within TL 2000, Tract C. TL 2000 is an offsite tract not associated with the Woodhaven Park on TL's 1800 and 1900.

Table 1 - Wetland / Waters Summary

Wetland / Water	Cowardin Classification	HGM Classification	Area (sf) within Study Area
Wetland A	PFO PEM	Riverine Impounding Flats	13
Water A	R3US	Riverine Flow-Through	715 Lin. Ft.

VEGETATED CORRIDOR ASSESSMENT

Vegetated Corridor Width

Calculations for Slope Transects A thru D are represented in Table 2. The creek appears to be perennial based upon defined bed and bank characteristics and adjacent terrace landforms. According to Table 3-1; the buffer width is 50 feet for perennial streams other than the Tualatin River with slopes less than 25%.

Table 2 - Vegetated Corridor Transects

Transect	Beg. Elev.	End Elev.	Distance (ft.)	Slope (%)
TR-A	195.3	202.5	50	14
TR-B	191.4	199	50	15
TR-C	188.4	198.4	50	20
TR-D	184.9	189.7	50	10

Vegetated Corridor Plant Communities

The vegetated corridor is made up of three distinct plant communities, A, B, and C. Communities A and B exhibit significant aerial cover of native species and tree canopy. The tree canopy and native species cover is dominated with *Pseudotsuga menziesii* and *Pinus ponderosa* in the uplands and *Alnus rubra* and *Fraxinus latifolia* occurring along the creek. Community C is dominated with *Festuca arundinacea*. Native species such as *Crataegus douglasii* occur in limited number and are young plants with small aerial coverage. Ongoing maintenance activities have occurred throughout the vegetated corridor. Invasive species such as *Crataegus monogyna*, *Ilex* sp., *Rubus* sp. and *Prunus* sp. have been removed. The ground plane in the vegetated corridor was comprised of bare ground or mosses, due to the maintenance activities. Native shrubs have been planted in various densities in the vegetated corridor. These species were not identified due to small size.

Table 3 – Existing Vegetated Corridor Summary

WQSA	Buffer Condition	Total Area (SF)	Impacted Area(SF)	Mitigated Area (SF)
Wet. A	Community A - Good	7,898	0	0
Wet. A	Community B - Good	7,393	0	0

Wet. A	Community C - Degraded	8,910	0	0
	Total Area	24,201	0	0

Refer to Appendix A – Figure 7 –Natural Resource Assessment and Jurisdictional Determination Map, Appendix B – Vegetated Corridor Condition Assessment Forms, Appendix C – Site Photographs and Table 3 above.

PROPOSED VEGETATED CORRIDOR ENHANCEMENT

There are no impacts proposed to Wetland A. There are no impacts proposed to the 50 feet wide vegetated corridor. There are 8,910 square feet of degraded vegetated corridor, Community C, adjacent to Wetland A. The following plant species and quantities are proposed for the enhancement and mitigation of the degraded vegetated corridor.

Table 4 - Proposed Vegetated Corridor Enhancement

Vegetated Corridor - Degraded Condition				
Trees	8910	SF	0.01	89
Shrubs	8910	SF	0.05	446
Plant Material				
Trees:	Acer circinatum Vine Maple	No. 2		18
	Acer macrophyllum Big-leaf Maple	No. 2		22
	Crataegus douglasii Douglas Hawthorn	No. 2		22
	Pinus ponderosa Ponderosa Pine	No. 2		9
	Pseudotsuga menziesii Douglas Fir	No. 2		18
		TOTAL:		89
Shrubs:	Cornus sericea Red-ozier Dogwood	No. 2		58
	Physocarpus capitatus Pacific Ninebark	No. 1		58
	Lonicera involucrata Twinberry	No. 1		58
	Oemleria cerasiformis Indian Plum	No. 2		43
	Polystichum munitum Sword Fern	No. 2		68
	Ribes sanguineum Red-flowering Currant	No. 1		43
	Rosa nutkana Nootka Rose	No. 1		52
	Symphoricarpos albus Snowberry	No. 1		84
		TOTAL:		464
Seed:	Bromus carinatus California Brome		32.68 lbs. PLS / Acre	
	Elymus glaucus Blue Wildrye		13.07 lbs. PLS / Acre	
	Festuca rubra var. 'Rubra' Red Fescue		13.07 lbs. PLS / Acre	
	Lupinus rivularis Streambank Lupine		6.54 lbs. PLS / Acre	

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Appendix A. Figures

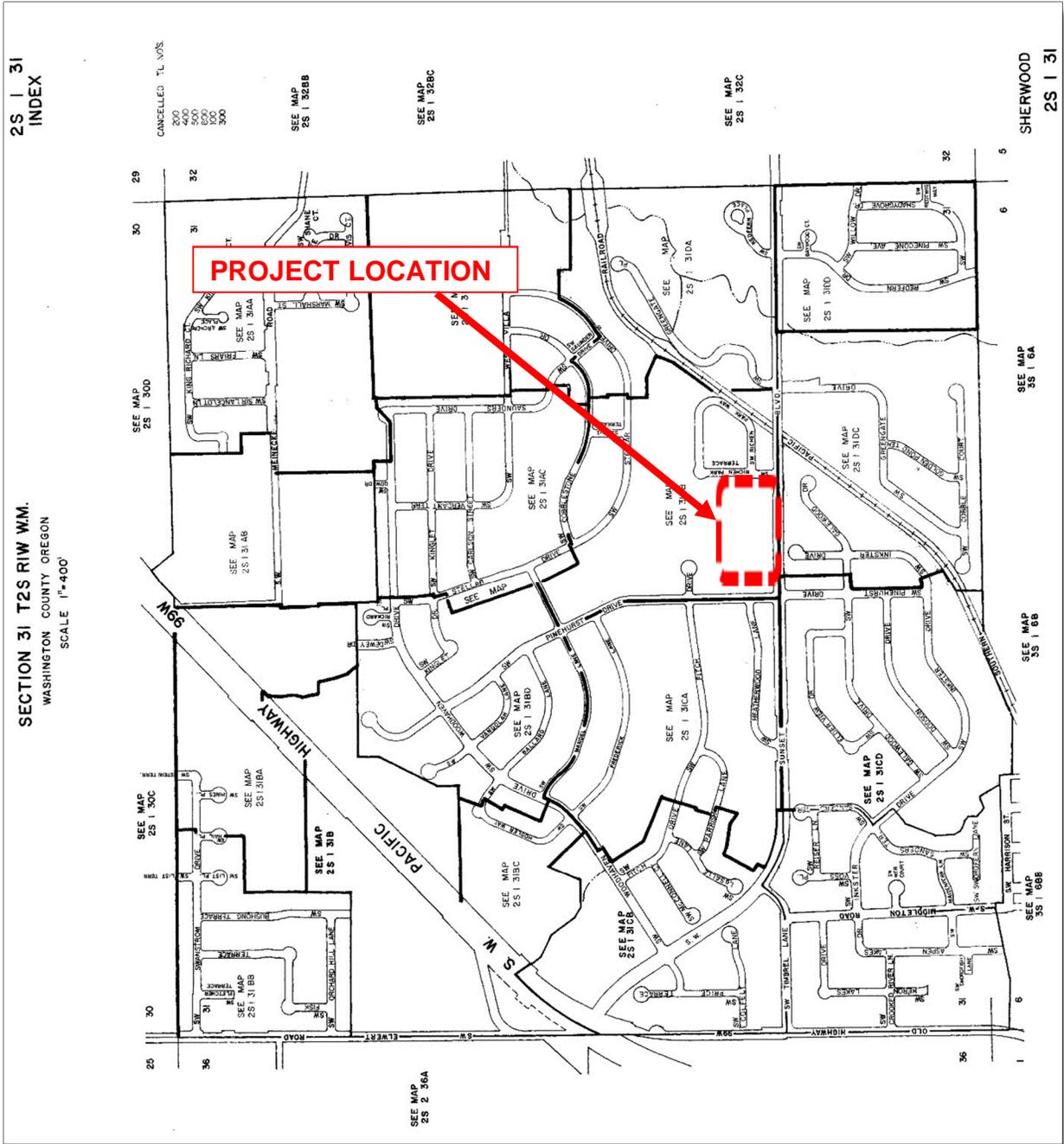


Figure 2 – Tax Map

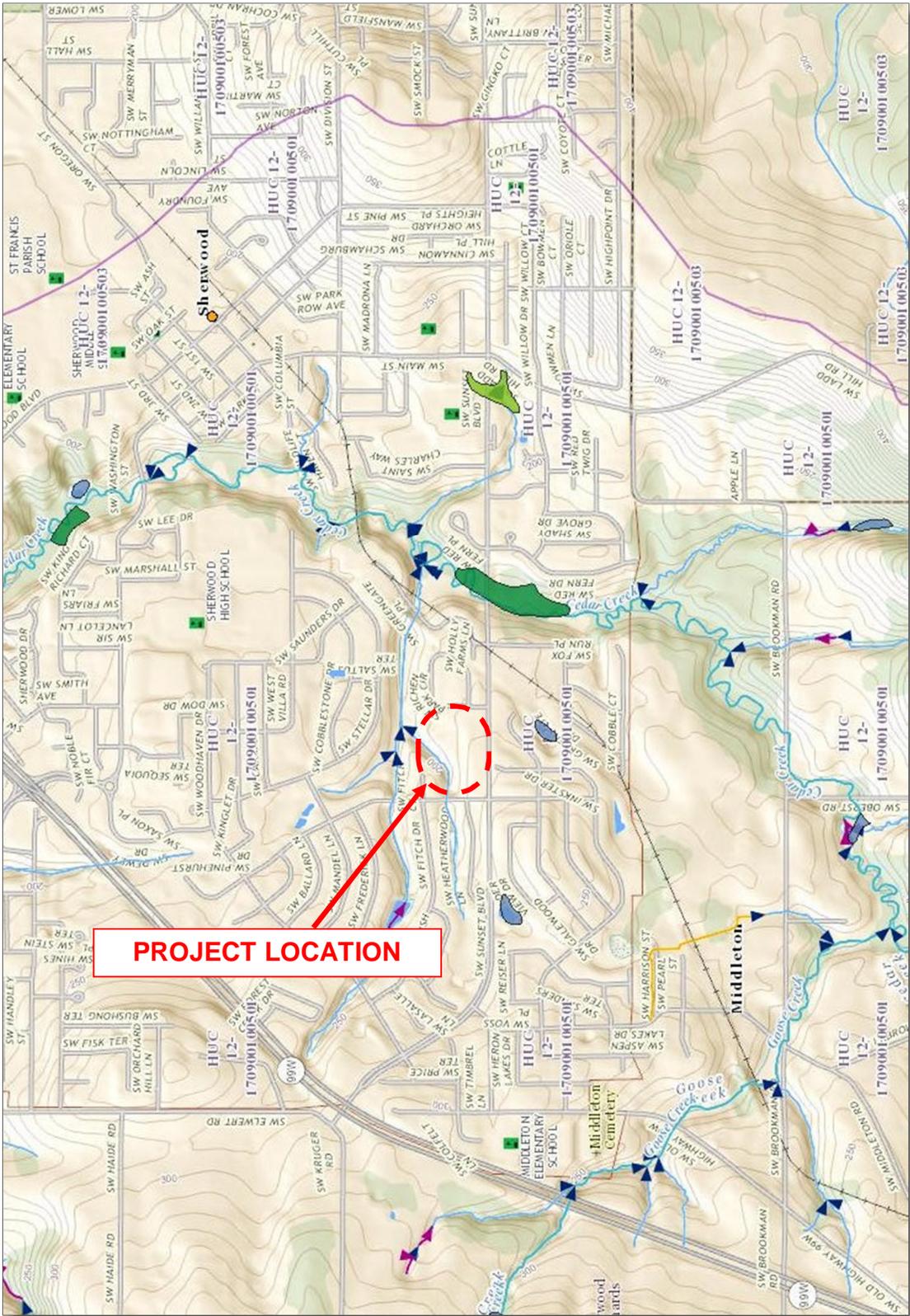


Figure 3 – USGS National Wetland Inventory & NHD Map

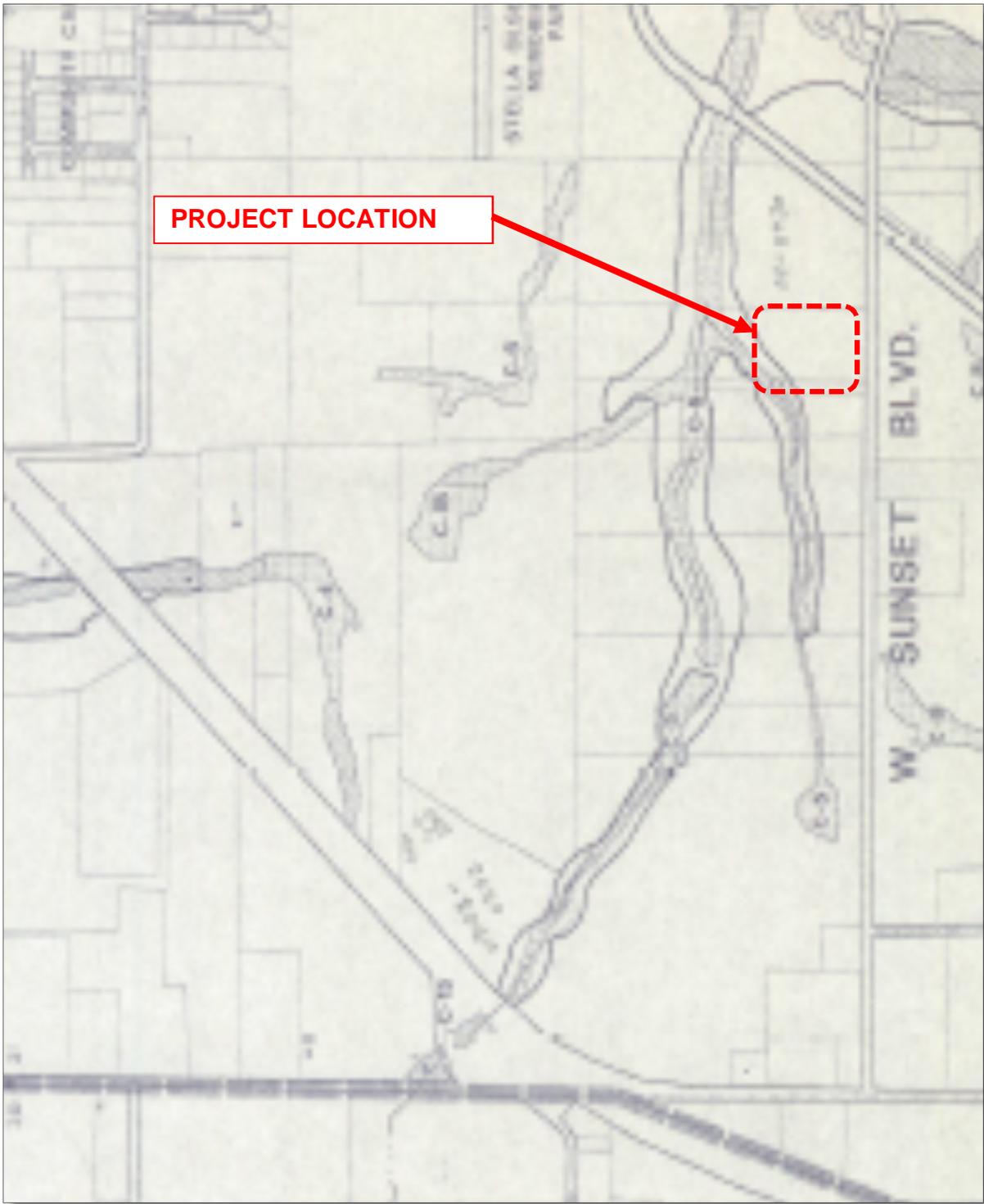


Figure 4 – Local Wetland Inventory

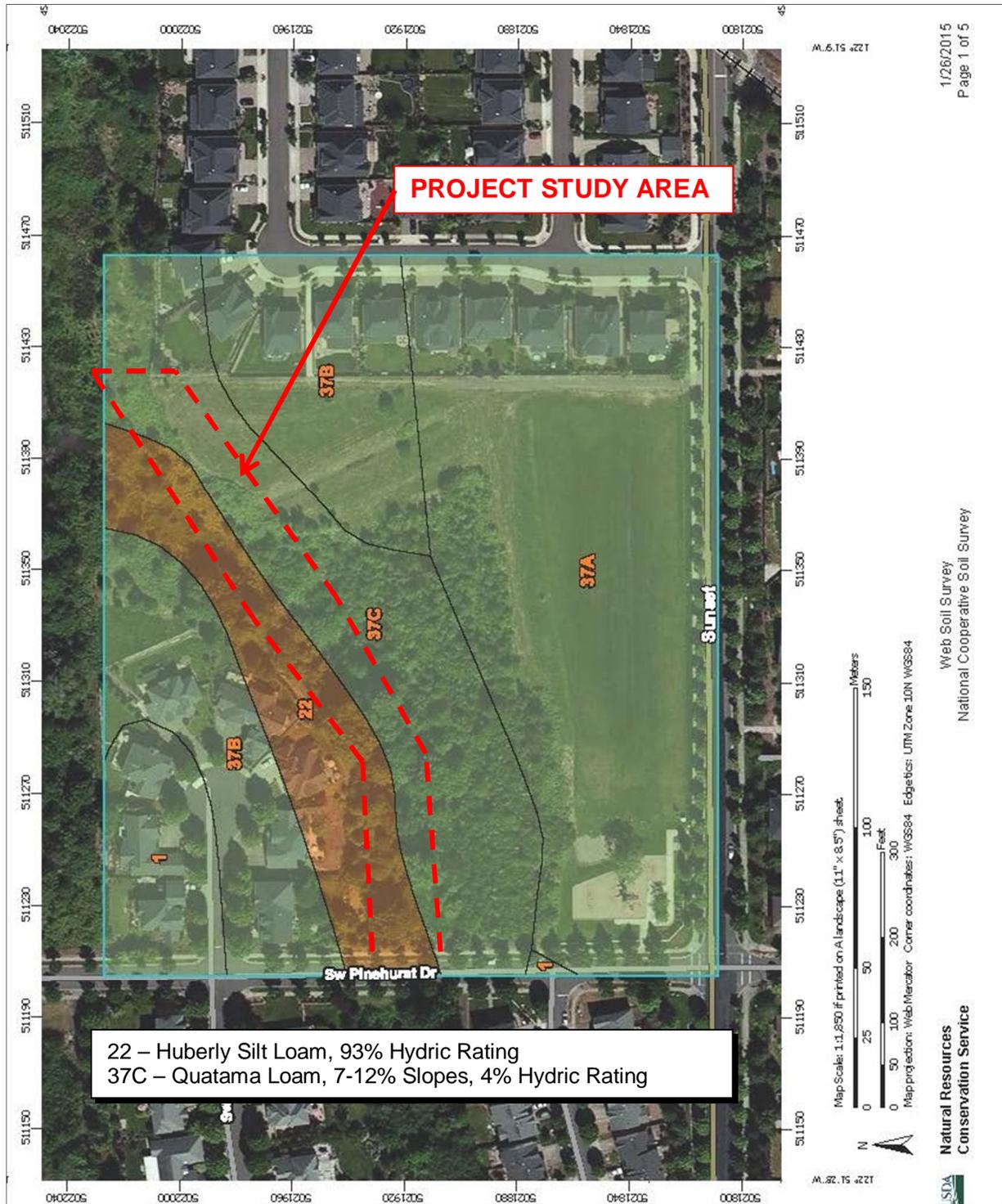


Figure 5 – Hydric Soils Map

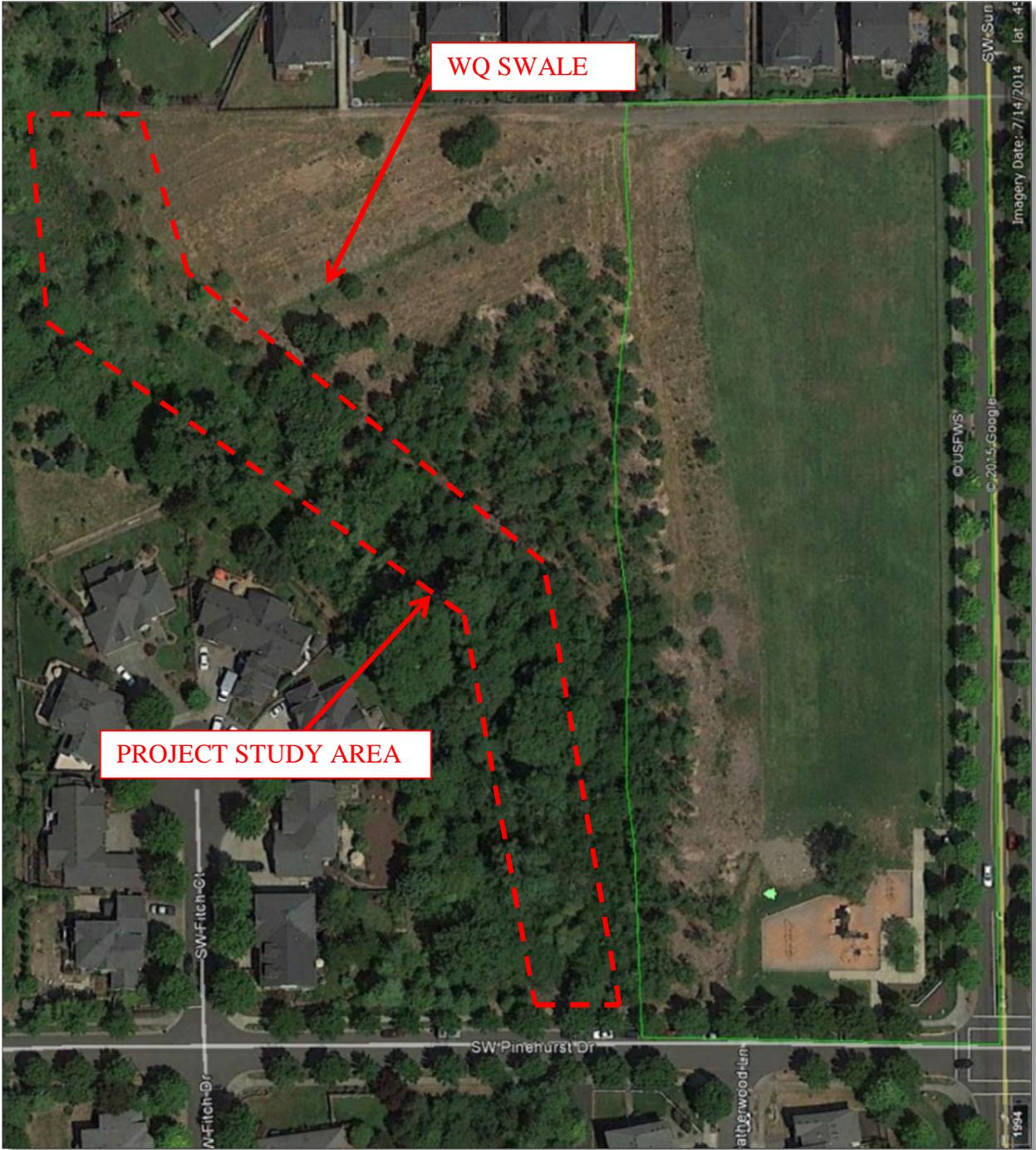
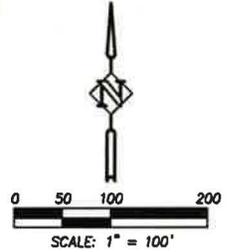


Figure 6 – Existing Conditions



- LEGEND**
-  WETLAND
 -  OFF SITE - VEGETATED CORRIDOR
 -  GOOD CONDITION - VEGETATED CORRIDOR
 -  DEGRADED CONDITION - VEGETATED CORRIDOR
 -  VEGETATED CORRIDOR BUFFER - 50'
 -  WETLAND BOUNDARY
 -  STUDY AREA
 -  WETLAND NUMBERED FLAG
 -  TEST PIT
 -  PHOTOGRAPHY POINT

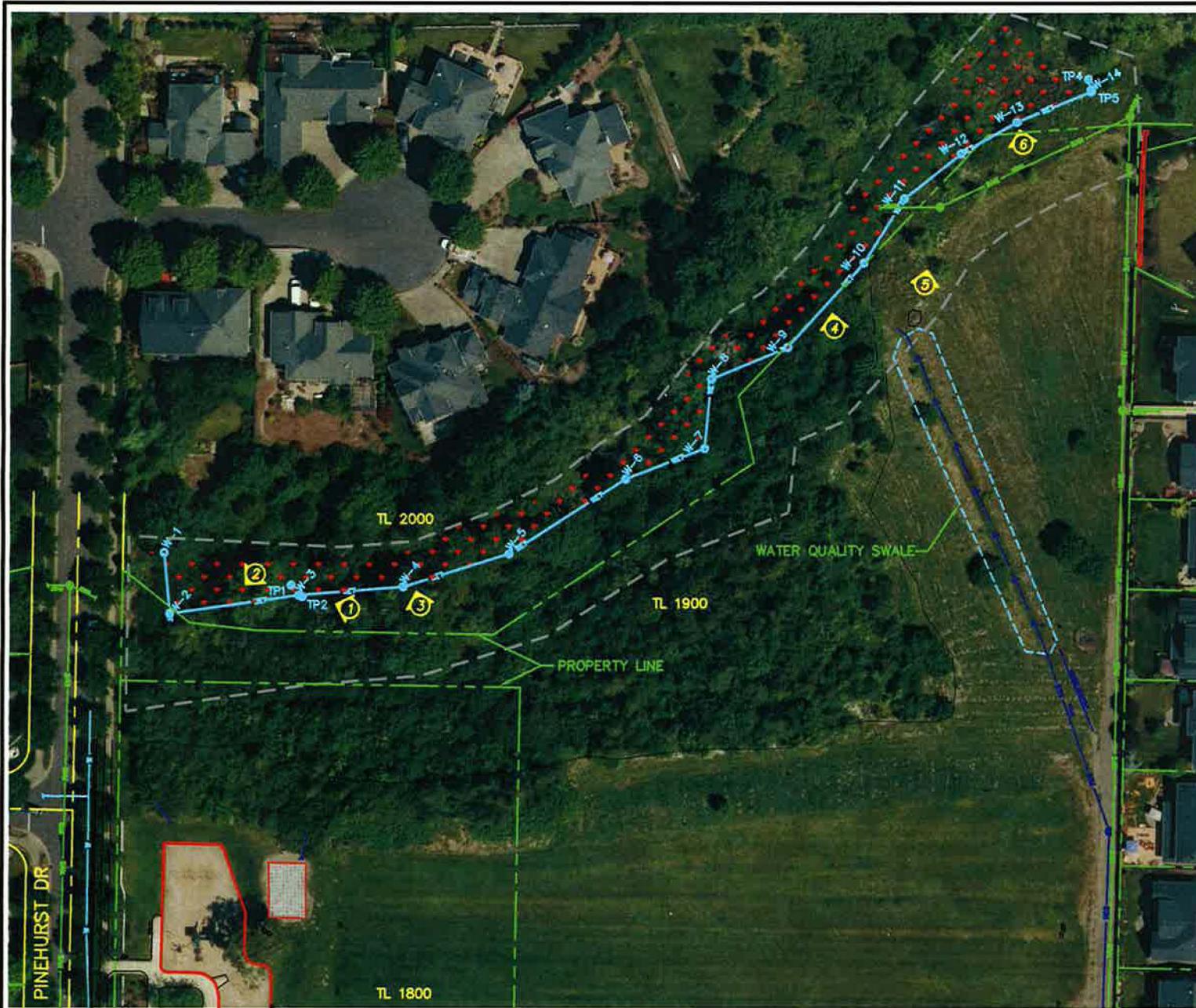


SHEET NO			DESIGNED:	SB
			DRAWN:	TF
Fig. 7			CHECKED:	SS
			DATE:	MARCH 18, 2015
JOB NO	DATE	NO.	DESCRIPTION	
SHR-13			R E V I S I O N S	

DESIGNED:	SB
DRAWN:	TF
CHECKED:	SS
DATE:	MARCH 18, 2015

HHPR Harper Houf Peterson Righellis Inc.
 ENGINEERS • PLANNERS
 LANDSCAPE ARCHITECTS • SURVEYORS
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 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

NATURAL RESOURCE ASSESSMENT
WOODHAVEN PARK, PHASE 2
 SHERWOOD, OREGON



- LEGEND**
- WETLAND
 - WETLAND BOUNDARY
 - STUDY AREA
 - WETLAND NUMBERED FLAG
 - TEST PIT
 - PHOTOGRAPHY POINT

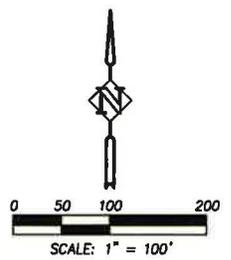


Fig. 8	SHEET NO		DESIGNED: SB	
			DRAWN: TF	
		CHECKED: SS		REVISIONS
		DATE: MARCH 18, 2015		
JOB NO	DATE	NO	DESCRIPTION	
SHR-13				

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JURISDICTIONAL DETERMINATION MAP
WOODHAVEN PARK, PHASE 2
SHERWOOD, OREGON

Appendix B. Vegetated Corridor Assessment Forms

CLEAN WATER SERVICES VEGETATED CORRIDOR CONDITION ASSESSMENT

Client/Applicant: City of Sherwood **Site :** Woodhaven Park, Phase 2 **Plot:** TR-A

T 2S **R** 1W **S** 31 **City:** Sherwood **County:** Washington **State:** OR

Plot Location: Sampling upslope of W-4 Flag

Project # SHR-13 **Field Investigator:** Scott Banker **Date:** 2/14/15 & 3/9/15

Describe any recent disturbance to vegetation: Invasive species (Rubus sp., Ilex, et. al.) were recently removed from the Vegetated Corridor leaving bare ground in areas of work.

Dominant Plant Species (Estimates of plant cover are absolute by species, and may total more than 100%)

	Species	% Cover	Native	Noxious
1.	Alnus rubra	70	Y	
2.	Oemleria cerasiformis	16	Y	
3.	Pinus ponderosa	20	Y	
4.	Mosses	30		
5.	Bare ground	20		
6.				
7.				
8.				

Invasive Plant Species

	Species	% Cover
1.		
2.		
3.		
4.		
5.		

Percent Tree Canopy Cover:	90
Percent Native Species Cover:	106
Percent Invasive Species:	0
Percent Noxious Species:	0
Vegetated Corridor Condition:	Good

Comments:

CLEAN WATER SERVICES VEGETATED CORRIDOR CONDITION ASSESSMENT

Client/Applicant: City of Sherwood **Site :** Woodhaven Park, Phase 2 **Plot:** TR-B

T 2S **R** 1W **S** 31 **City:** Sherwood **County:** Washington **State:** OR

Plot Location: Sampling upslope of W-5 Flag

Project # SHR-13 **Field Investigator:** Scott Banker **Date:** 2/14/15 & 3/9/15

Describe any recent disturbance to vegetation: Invasive species (Rubus sp., Ilex, et. al.) were recently removed from the Vegetated Corridor leaving bare ground in areas of work.

Dominant Plant Species (Estimates of plant cover are absolute by species, and may total more than 100%)

	Species	% Cover	Native	Noxious
1.	Alnus rubra	60	Y	
2.	Oemleria cerasiformis	20	Y	
3.	Sambucus racemosa	40	Y	
4.	Bare ground	25		
5.	Galium aparine	<5		
6.				
7.				
8.				

Invasive Plant Species

	Species	% Cover
1.		
2.		
3.		
4.		
5.		

Percent Tree Canopy Cover:	60
Percent Native Species Cover:	120
Percent Invasive Species:	0
Percent Noxious Species:	0
Vegetated Corridor Condition:	Good

Comments:

CLEAN WATER SERVICES VEGETATED CORRIDOR CONDITION ASSESSMENT

Client/Applicant: City of Sherwood **Site :** Woodhaven Park, Phase 2 **Plot:** TR-C

T 2S **R** 1W **S** 31 **City:** Sherwood **County:** Washington **State:** OR

Plot Location: Sampling upslope of W-7 Flag

Project # SHR-13 **Field Investigator:** Scott Banker **Date:** 2/14/15 & 3/9/15

Describe any recent disturbance to vegetation: Invasive species (Rubus sp., Ilex, et. al.) were recently removed from the Vegetated Corridor leaving bare ground in areas of work.

Dominant Plant Species (Estimates of plant cover are absolute by species, and may total more than 100%)

	Species	% Cover	Native	Noxious
1.	Alnus rubra	50	Y	
2.	Fraxinus latifolia	16	Y	
3.	Abies grandis	16	Y	
4.	Bare ground	25		
5.	Moss	15		
6.				
7.				
8.				

Invasive Plant Species

	Species	% Cover
1.		
2.		
3.		
4.		
5.		

Percent Tree Canopy Cover:	82
Percent Native Species Cover:	71
Percent Invasive Species:	0
Percent Noxious Species:	0
Vegetated Corridor Condition:	Good

Comments:

CLEAN WATER SERVICES VEGETATED CORRIDOR CONDITION ASSESSMENT

Client/Applicant: City of Sherwood **Site :** Woodhaven Park, Phase 2 **Plot:** TR-D

T 2S **R** 1W **S** 31 **City:** Sherwood **County:** Washington **State:** OR

Plot Location: Sampling upslope of W-14 Flag

Project # SHR-13 **Field Investigator:** Scott Banker **Date:** 2/14/15 & 3/9/15

Describe any recent disturbance to vegetation: A portion of this area was recently planted with native species, which are not mature enough to provide significant aerial coverage.

Dominant Plant Species (Estimates of plant cover are absolute by species, and may total more than 100%)

	Species	% Cover	Native	Noxious
1.	Festuca arundinacea			
2.	Crataegus douglasii	<5	Y	
3.				
4.				
5.				
6.				
7.				
8.				

Invasive Plant Species

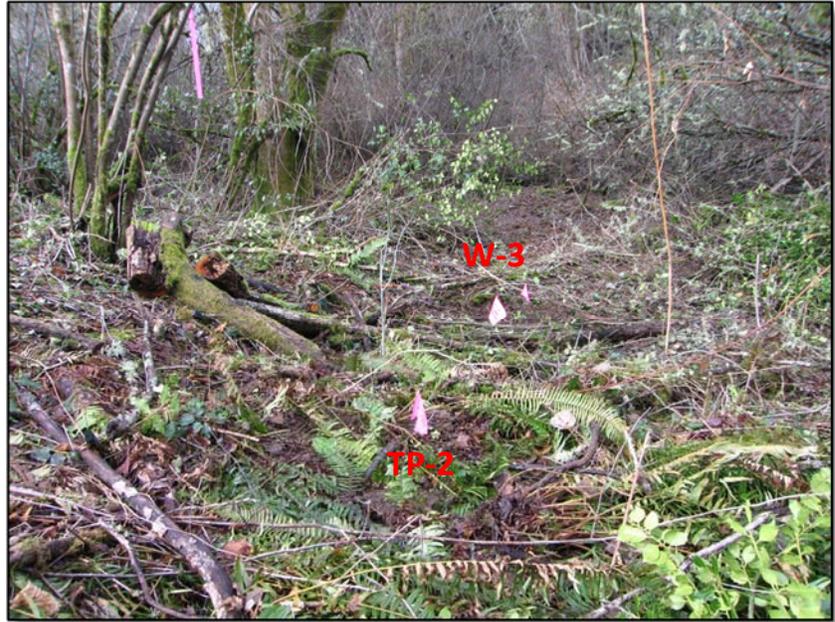
	Species	% Cover
1.		
2.		
3.		
4.		
5.		

Percent Tree Canopy Cover:	<5
Percent Native Species Cover:	<5
Percent Invasive Species:	0
Percent Noxious Species:	0
Vegetated Corridor Condition:	Degrade

Comments: The area upslope of this transect have been planted with native species. It is east, northeast of Plant Communities A & B, which have a predominant *Alnus Rubra*, *Pseudotsuga menziesii* and *Pinus ponderosa* canopy. This community is dominated by herbaceous/grass species due to immature age and size of planted species.

Appendix C. Site Photographs

Photograph 1 – View of W-3 and TP-2 Flags in the western edge of the SA. Note the cleared understory and ground plane from invasive species removal efforts.



Photograph 2 - View of Wetland A flag W-4 Near TR-A. Note the cleared understory and ground plane from invasive species removal efforts.



Photograph 3 – View
of Wetland A
upslope from W-10
in the vegetated
corridor.



Photograph 4 - View of flag W-14 in Wetland A near TR-D.
Typha marsh a result of beaver activity slightly downstream in
the creek.



Appendix D. Site Certification Forms



Clean Water Services File Number

[Empty box for File Number]

Sensitive Areas Certification Form

<p>1. Property Information (example 1S234AB01400) Tax lot ID(s): <u>2s 1 31 DB, TL 1800 & 1900</u></p> <hr/> <p>Site Address: <u>NW quadrant of SW Sunset Blvd and SW</u> City, State, Zip: <u>Sherwood, OR 97</u> Nearest Cross Street: <u>SW Pinehurst Drive</u></p>	<p>2. Owner Information Name: <u>Bob Galati</u> Company: <u>City of Sherwood</u> Address: <u>22560 SW Pine Street</u> City, State, Zip: <u>Sherwood, OR 97140</u> Phone/Fax: <u>503-925-2309</u> E-Mail: <u>GalatiB@SherwoodOregon.gov</u></p>
--	---

<p>3. Development Activity (check <i>all</i> that apply)</p> <p><input type="checkbox"/> Addition to Single Family Residence (rooms, deck, garage) <input type="checkbox"/> Lot Line Adjustment <input type="checkbox"/> Minor Land Partition <input type="checkbox"/> Residential Condominium <input type="checkbox"/> Commercial Condominium <input type="checkbox"/> Residential Subdivision <input type="checkbox"/> Commercial Subdivision <input type="checkbox"/> Single Lot Commercial <input type="checkbox"/> Multi Lot Commercial Other <u>Phase 2 park improvements</u></p>	<p>4. Applicant Information Name: <u>Scott Banker</u> Company: <u>Harper Houf Peterson Righellis Inc</u> Address: <u>205 SE Spokane St., Suite 200</u> City, State, Zip: <u>Portland, OR 97202</u> Phone/Fax: <u>503-231-1131</u> E-Mail: <u>ScottB@hhpr.com</u></p>
---	---

<p>5. Check any of the following that apply to this project.</p> <p><input type="checkbox"/> Adds less than 500 square feet of impervious surface. <input type="checkbox"/> Does not encroach closer to the Sensitive Area than existing development on the property. <input checked="" type="checkbox"/> Is not located on a slope greater than 25%.</p>	<p>6. Applicant Information Name: <u>Same as #4</u> Company: _____ Address: _____ City, State, Zip: _____ Phone/Fax: _____ E-Mail: _____</p>
--	---

7. Will the project involve any off-site work? Yes No Unknown (check appropriate box)

If yes, location and description of off-site work _____

8. Additional comments or information that may be needed to understand your project. _____

Sensitive Areas Certification Form *(continued)***9. An on-site, water quality sensitive area reconnaissance was completed on:**

Date	By	Title	Company
3/9/15	Scott Banker	Restoration Specialist	Harper Houf Peterson Righellis Inc

10. Existence of Water Quality Sensitive Areas *(check all appropriate boxes)*

As defined in the Districts Design and Construction Standards:

- A. Water-quality-sensitive areas do do not exist on the tax lot.
- B. Water-quality-sensitive areas do do not exist within 200' on adjacent properties, or unable to evaluate adjacent property.
- C. Vegetated corridors do (24,201 SF) do not exist on the tax lot.
- D. Vegetated corridors do do not exist within 200' on adjacent properties, or unable to evaluate adjacent property.
- E. Impacts to sensitive areas and/or vegetated corridors will occur On-site Off-site None proposed at this time.
- F. If impacts, mitigation is On-site Off-site Other Not Applicable

11. Simplified Site Assessment containing the following information: *(check only items submitted).*

Please refer to Design and Construction Standards 07-20 section 3.02.2 for application requirements.

- Complete Certification Form (2 pages)
- Written description of the site and proposed activity.
- Site plan of the entire property.
- Photographs of the site labeled and keyed to the site plan.

12. Standard Site Assessment containing the following information: *(check only items submitted).*

Please refer to Design and Construction Standards 07-20 section 3.02.2 for application requirements.

- Complete Certification Form (2 pages)
- Written description per Design and Construction Standards 07-20 section 3.13.3 b. 1
- Wetland Data sheets
- Vegetated Corridor Data sheets
- Existing Site Condition Figures
- Proposed Development Figures

By signing this form the Owner, or Owner's authorized agent or representative, acknowledges and agrees that employees of Clean Water Services have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related to the project site.

I certify that I am familiar with the information contained in this document, and to the best of my knowledge and belief, this information is true, complete, and accurate.

Applicant:

Scott W Banker

Restoration Specialist

Print/Type Name

Print/Type Title

Signature

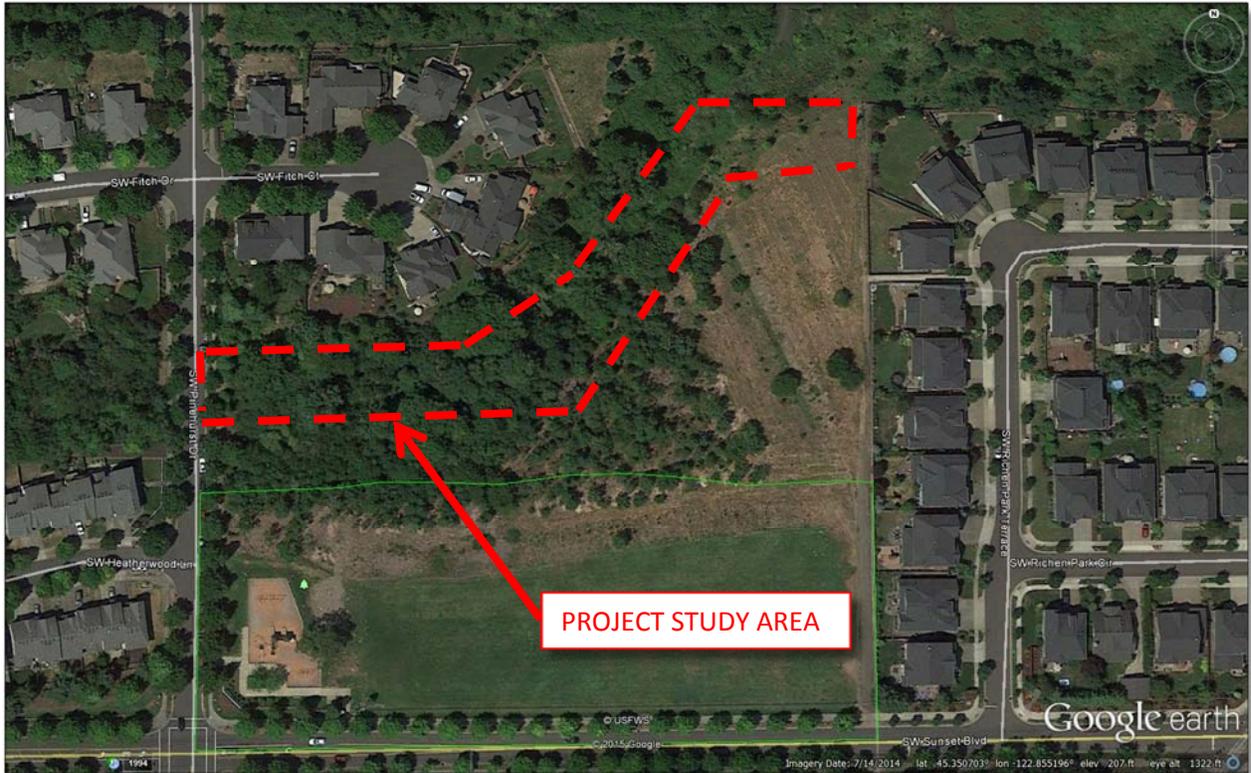
March 18, 2015

Date

Appendix E. DRAFT Jurisdictional Determination Report

WOODHAVEN PARK, PHASE 2

Preliminary Jurisdictional Determination Report



Prepared For:
Bob Galati, PE
City of Sherwood

Project Manager:
Stefanie Slyman, AICP

Prepared By:
Scott W Banker

March 18, 2015



205 SE Spokane Street, Suite 200
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This wetland report is being submitted for review conducted in accordance with Oregon Administrative Rules (OAR) 141-090 implemented by the Oregon Department of State Lands.

Wetland Determination Summary

Project Name:	Woodhaven Park, Sherwood, OR
Project Number:	SHR-13
Owner:	City of Sherwood
Client:	Bob Galati, PE, City of Sherwood
Site Location:	Northeast quadrant of the intersection of SW Sunset Blvd. and SW Pinehurst Drive, Sherwood, Oregon.
Tax Map:	2S 1 31, Sherwood
T/R/S:	T2S, R1W, S ¼ Section 31DB
Manual:	U.S. Army Corps of Engineers. 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual Version 2.0: Western Mountains, Valleys and Coast Region.
Date of Site Visit(s):	February 14, 2015
Project Staff:	Scott Banker

Harper Houf Peterson Righellis Inc. has been contracted by the City of Sherwood to perform a Preliminary Jurisdictional Determination (JD) for the City of Sherwood site located in the northeast quadrant of the intersection of SW Sunset Blvd. and SW Pinehurst Drive, Sherwood, Oregon, in Section 31DB, Township 2 South, Range 1 West, Willamette Meridian, in Washington County. DSL was contacted for a prior Wetland Determination records search and no records were returned for the project tax lot. A Preliminary JD was conducted by Pacific Habitat Services (PHS) in October of 2004 as a precursor to a Natural Resource Assessment for the City of Sherwood for the project site. The project entails adding elements to the park per the Master Plan approved in 2001. Improvements may include a restroom facility, additional parking, play structure, and potential trail system and pedestrian bridge over the water quality swale. No impacts to jurisdictional wetlands / waters are proposed.

A Site Description, Landscape Setting

0AR141-090-0035 (7) (a)

The Study Area (SA) boundary is bounded to the west by SW Pinehurst Drive, to the north by an unnamed tributary (Creek) to Cedar Creek, to the east by residential development, and to the south by a wooded area, open-space and a water quality swale associated with Woodhaven Park. The site is utilized as open-space. Various vegetated corridor maintenance activities have been conducted recently. There is a City of Sherwood water quality swale located in the northeast portion of the site. Please refer to Figure 1 – Location Map, and Figures 2 thru 6 of Appendix A.

B Site Alterations Current and Past Land Use

0AR141-090-0035 (7) (c)

Prior to development as a park an open space, the site appeared to be an orchard. The site is a park and open space with a majority of the site cleared of vegetation. A CWS approved water quality swale exists in the northeastern portion of the site. The riparian vegetation is a vegetated corridor for the park per Clean Water Services (CWS) jurisdiction. It was cleared of invasive species and replanted sometime after October of 2004. A recent maintenance activity to clear invasive species was conducted. The canopy of the majority of the vegetated corridor consists of *Pseudotsuga menziesii*, *Pinus ponderosa*, *Alnus rubra* and *Fraxinus latifolia*. Fill for the park occurs outside of the vegetated corridor near SW Sunset Blvd.

B.1 Soils

Soils within the SA are mapped as (22) Huberly silt loam (93% hydric on terraces and floodplains) and (37C) Quatama silt loam, 7 – 12% slopes (4% hydric-with Huberly inclusions on terraces). It does not appear that soils along the unnamed tributary of Cedar Creek (Creek), adjacent wetlands and riparian corridor have been altered outside of the SW Pinehurst Drive road prism. The road prism is the western border of the SA.

B.2 Hydrology

The site hydrology does not appear to have been modified since the construction of the SW Pinehurst Drive culvert and road prism. The Creek is slightly incised but appears to have an active floodplain based upon channel bed and bank characteristics. Beaver activity occurs both upstream of the SA and downstream and has likely been occurring regularly since development of the road infrastructure in this part of Sherwood. Based on past experience with a project one tributary to the north, many of these culverts would not meet current culvert designs for streams with resident fisheries. Seepage was observed near the road prism.

B.3 Vegetation

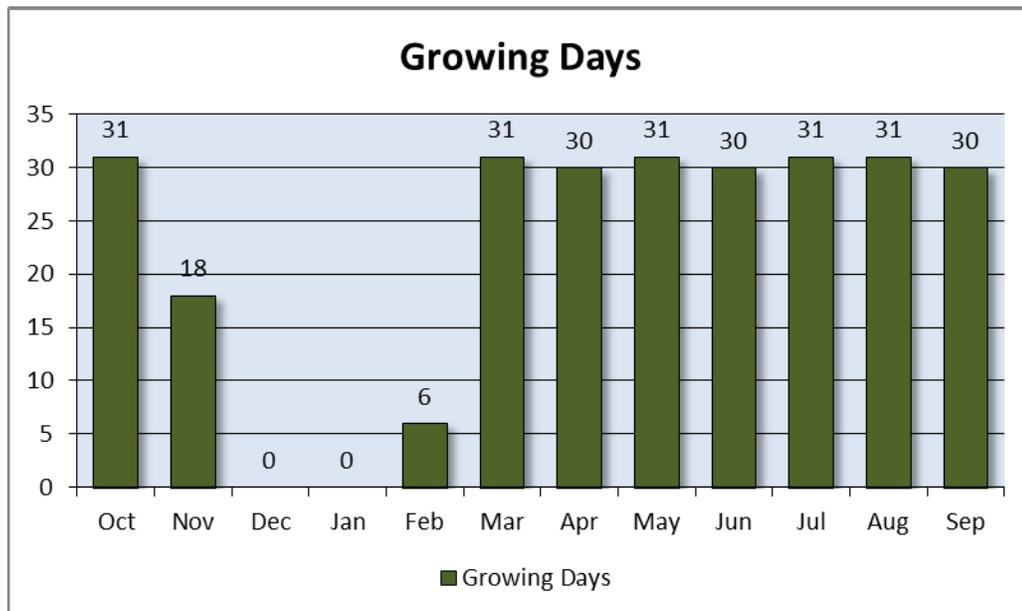
The vegetation in the SA upland of the vegetated corridor is comprised primarily of herbaceous species and forbs. The riparian corridor is comprised of *Pseudotsuga menziesii*, *Pinus ponderosa*, *Alnus rubra* and *Fraxinus latifolia*. Little ground cover or shrub species exist due to invasive species removal efforts. Native shrubs have been recently planted in the riparian corridor. Vegetation in the northeast corner of the site is dominated by *Typhus latifolia*, in large part due to beaver activity. Refer to data sheets in Appendix B and Tables 9 and 10.

C Precipitation Data and Analysis

C.1 Climate and Growing Season

The SA receives the majority of its precipitation (22.95 inches / 60%) as rainfall during the months of November thru March. Total average precipitation (rainfall) is 38.53 inches. Average daily high temperature is 63.0°F, average daily low temperature is 42.4°F, and average annual temperature is 52.7°F. According to WETS Station Hillsboro OR3908 data, the growing season is 269 days, based upon a 50% probability of 28°F. Based on the WETS data, the growing season runs from February 23rd thru November 18th. Anecdotal information and observations suggests that due to the warm winter, herbaceous and woody plants are actively growing.

Table 1 Growing Days



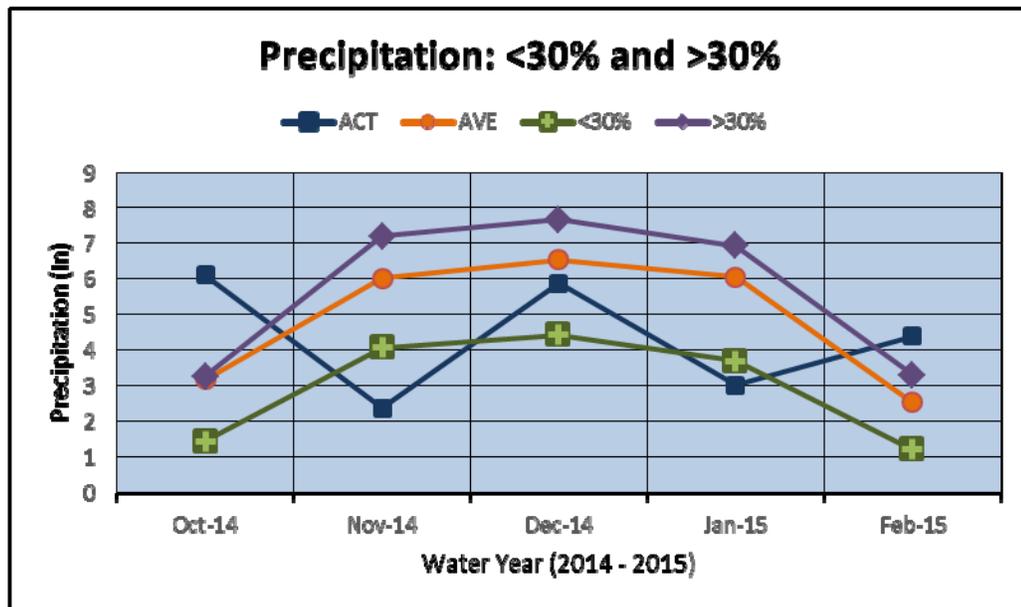
Source: NRCS WETS data for Hillsboro, OR 3908, 50% probability for 28°F.

C.2 Precipitation and NRCS WETS table Summary

OAR 141-090-0035(7) (i)

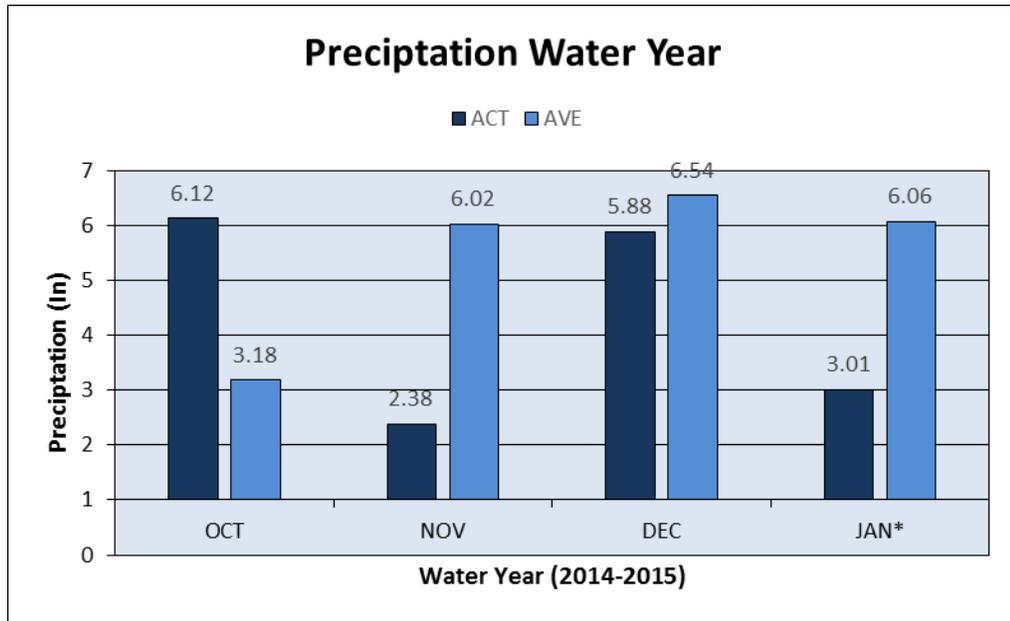
Hillsboro National Weather Service (NWS), Western Regional Climate Center (WRCC) and WETS stations were utilized to assess precipitation to utilize the same station for comparison of all three sources. WETS station for Hillsboro reflects an average annual rainfall of 38.53 inches. Average monthly precipitation data is from the Hillsboro WETS Station OR3908. Average daily precipitation is from WRCC Sta. #353908 Hillsboro. The actual precipitation data is from the, Hillsboro NWS station. The actual precipitation for the water year is 21.79 inches with the average being 24.34 inches thru February 14th, or 89.5% of average. Normal precipitation with a “30% chance less than” is 14.88, while “30% chance more than” is 28.38 inches, therefore actual precipitation falls within “normal” conditions thru February 14, 2015. Table 2 summarizes the precipitation, <30% and >30% of water year 2014-15 thru February 14th. Table 3 summarizes the water year thru the end of January, and Table 4 summarizes precipitation two weeks prior to the site visit.

Table 2 Summary of Precipitation, <30%, >30%



Note: Actual precipitation amounts from NWS, Hillsboro Station. Average, <30%, and >30% precipitation rates from Hillsboro WETS Station OR 3908, 2014-15.

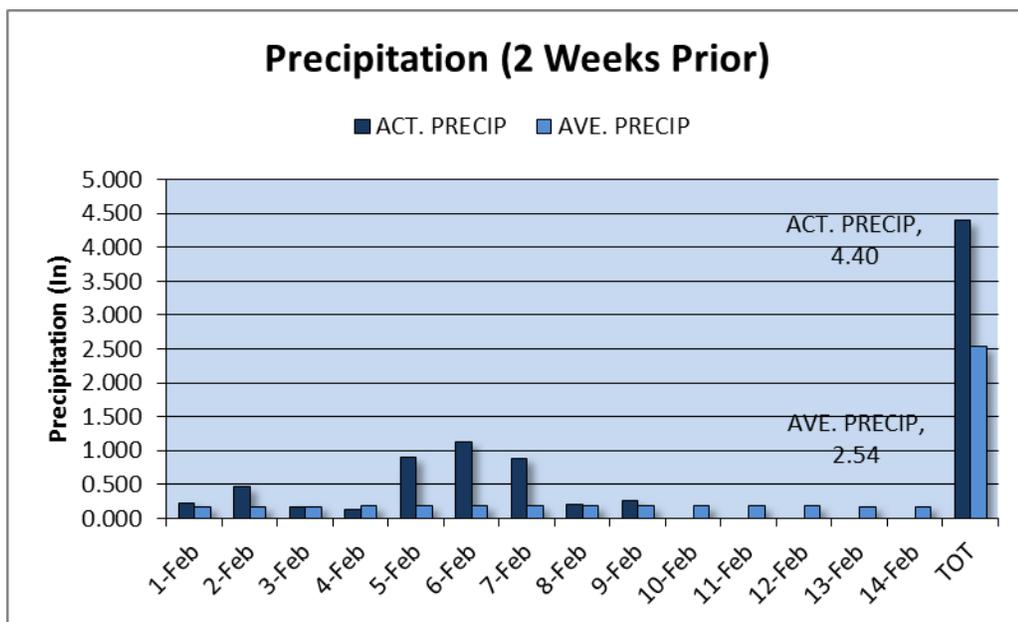
Table 3 Summary of Normal and Recorded Precipitation Water Year



Note: Actual precipitation amounts from National Weather Service, Hillsboro Station. Average, precipitation rates from Hillsboro WETS Station OR 3908, 2014-15. *

Table

4 Summary of Precipitation Two Weeks Prior



Note: Actual precipitation amounts from National Weather Service, Hillsboro Station. Average precipitation rates from Hillsboro WRCC Station 356334, 1981-2010.

C.3 Wetland Hydrology and Analysis

The site was visited on February 14, 2015, late winter. The water year precipitation from October 2014 thru February 14, 2015 is 21.79 inches, approximately 90% of average and falling within “normal” conditions. The

actual precipitation two weeks prior to the site visit is 4.40 inches; the average is 2.54 inches, or 173%. Soil saturation and ground water within 12” of the surface was observed in test pits. The Creek appears to be perennial based on bed and banks characteristics, is only slightly incised, and likely has a regularly active floodplain. Beaver activity upstream and downstream of the SA likely heavily influences hydrology. Refer to Tables 2, 3 and 4 precipitation data, Appendix B – Wetland Data Forms and Appendix G – Climatic Data.

D Field Methods OAR141-090-0030, OAR141-090-0035 (7) (d-e), (g-h), (16) (a-b), (f), (d) or (g), (17), & (19-20)

- Field methods were conducted in accordance with U.S. Army Corps of Engineers, 2010, Regional Supplement to the Corps of Engineers Wetland Delineation Manual Version 2.0: Western Mountains, Valleys and Coast Region, and the DSL Report Checklist.
- Sampling was based on the Preliminary Jurisdictional Determination by Pacific Habitat Services and the slope break of the flood terrace.
- There were four soil tests pits conducted to confirm the results of the prior study. Refer to Appendix B – Wetland Data Forms, and Figure 8 - Wetland Determination Map. Prior to the site visit, the SA was researched via the internet and the following information was assessed: NRCS Web Soils mapper for hydric soils, depth to water table, and drainage class, DSL Local Wetland Inventory for Sherwood, USFWS National Wetland Inventory, USGS Map Viewer topographic map, NHD hydrological map, and Google Earth aerial photographs. The soils would be considered to meet “Normal Conditions” based upon review of aerial photographs dating back to 1994. Vegetation in the upland appeared to be an orchard, possibly filberts in the 1994 photograph. In a 2000 photograph there appears to be almost none of the orchard left. The riparian corridor appears to be unchanged in the photographs except for expected growth over that time frame. Potential beaver activity influence of hydrology appears in a 2008 Google Earth aerial photograph.
- The unnamed tributary of Cedar Creek is the northern boundary of the SA. Wetlands occur adjacent to the Creek. They are partially fed by seasonal seeps at the toe of slope.

D.1 Soils

Soil test pits were excavated between 16 inches (TP-1) and 18 inches (TP-2 thru TP-4). Soil colors were identified with the 2010 version of the Munsell Soil Color Charts and generally matched the mapped soil colors and characteristics. Two sets of paired plots were conducted to confirm the findings of the prior Preliminary Wetland Determination by PHS. TP-1 and TP-3 exhibited

saturated soil and/or water table within 12” of the surface. TP-2 did not exhibit either saturated soil or water table within 12” of the surface. TP-4 exhibited saturated soil and water table, but at greater than (14” and 16”) 12” of the surface. Refer to Appendix B – Wetland Data Forms.

D.2 Hydrology

Hydrology was assessed by observable geomorphic forms such as slope breaks and terraces, observations of seepage, change in vegetation saturated soil and/or water table within 12 inches of the surface in test pits.

D.3 Vegetation

Vegetation was observed along 25 feet long transects at TP locations. Species along the creek did not appear to have been disturbed. Efforts to remove invasive species removed most of the shrub layer and the ground surface was bare or partially covered with mosses. Native shrubs have been recently planted but were not measured due to their small size and aerial cover. Refer to Tables 9 and 10 for dominant Wetland and Upland plant species and Appendix B – Wetland Data Forms.

E Description of All Wetlands & Other Non-Wetland Waters

OAR141-090-0035 (2), (7) (b), & (17)

Wetland A appears to be continuous along the creek channel and generally contains a different plant community than the upland area above the slope break south of the channel terrace. Wetland A is likely jurisdictional to DSL per OAR 141-085-515 (4). Wetland A is likely jurisdictional to the US ACE per 33 CFR Section 328.3 (7). It is adjacent to a US or State Waters.

E.1 Wetlands

- Wetland A was not mapped on the USFWS National Wetland Inventory, but a blue-line stream was shown. Wetland A was mapped on the Sherwood Local Wetland Inventory (LWI).
- Wetland A is mapped as Huberly silt loam, which is hydric on terraces.
- Wetland A extends offsite according to the LWI and visual observation from the SA confirms that. No properties were accessed outside of the SA.
- The LWI maps wetlands and creeks extending offsite.
- Wetland A is 20,710 sf / 0.48 acres within TL 2000. Approximately 13 sf fall within TL 1900

- Wetland A has a HGM classification of Riverine Impounding/Flats.
- Wetland A contains primarily POF with PEM classifications.
- Wetland A is adjacent to the creek channel on its terrace. The wetland flags were set near the toe of the grade break.

Table 5 Wetlands Delineated within Project SA

Wetland	Dominant Cowardin Class	Area Within SA Sf/ac	Sample Plot(s) (names)	Corps Category (1-7) and Basis	Basis for Potential DSL Jurisdiction	HGM Classification	Location (MP)
A	Palustrine emergent and Palustrine Forested, PEM / PFO	13 sf	TP-1 and TP-3	CFR 328.3 (7)	OAR 141-085-0015 (2)(d)	Riverine Impounding Flats	NA

E.2 Waters

- Waters A is an unnamed tributary of Cedar Creek flowing west to east thru the SA, from a culvert beneath SW Pinehurst Drive.
- It has defined bed and banks and a floodplain bench, indicative of a perennial stream.

Table 2 Waters within Project SA

Water	Cowardin Classification	HGM Classification	Area / Length (sf / lf) adjacent SA
Water A	R3US	Riverine Flow-Through	715 Lin. Ft.

F Deviation from NWI or LWI

OAR141-090-0035 (16) (e) The USFWS NWI wetland mapper data did not exhibit any wetland types for the SA. It did exhibit a blue-line stream. The City of Sherwood LWI exhibits wetlands and stream channels in and outside of the SA.

G Mapping Method

OAR141-090-0035 (7) (f), (11), (12), (13), (18), & (22)

Test pits and wetland boundaries were delineated in the field with pink, “Wetland Delineation” pin flags. The flags were labeled and numbered for identification. The pin flags were professionally surveyed by Harper Houf Peterson Righellis Inc. The level of accuracy is 1.0’ +/- . The delineated features were mapped with AutoCAD.

H Additional Information

OAR141-085-0015 (1-8), OAR141-090-0030(2), OAR141-090-0035(6) (c), (16) (c), and (21)

No additional information was researched regarding fish presence, T&E species.

I Results and Conclusions

OAR141-090-0035 (7) (j) Wetland A is predominantly POF with some PEM classifications. It contains approximately 20,710 sf along the unnamed tributary of the creek in TL 2000. Approximately 13 sf of Wetland A lies within TL 1900. It extends offsite to the north and northeast. Water A channel extends offsite upstream and downstream of the SA. The downstream (northeastern portion) of Wetland A and Water A are both influenced hydrologically by beaver activity.

Table 6 Project Summary of Wetland / Waters Types & Area

Resource Type	Area (sf/ac)
Wetland A	20,710/0.48
Water A	715 lin. Ft.

J Disclaimer Statement

OAR141-090-0035 (7) (k)

This report documents the investigation, best professional judgment, and conclusions of the investigators. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

Appendix A. Figures

OAR141-090-0035 (3) (c), (4),(6), (8-13), (16, and (20).



Figure 1 – Location Map

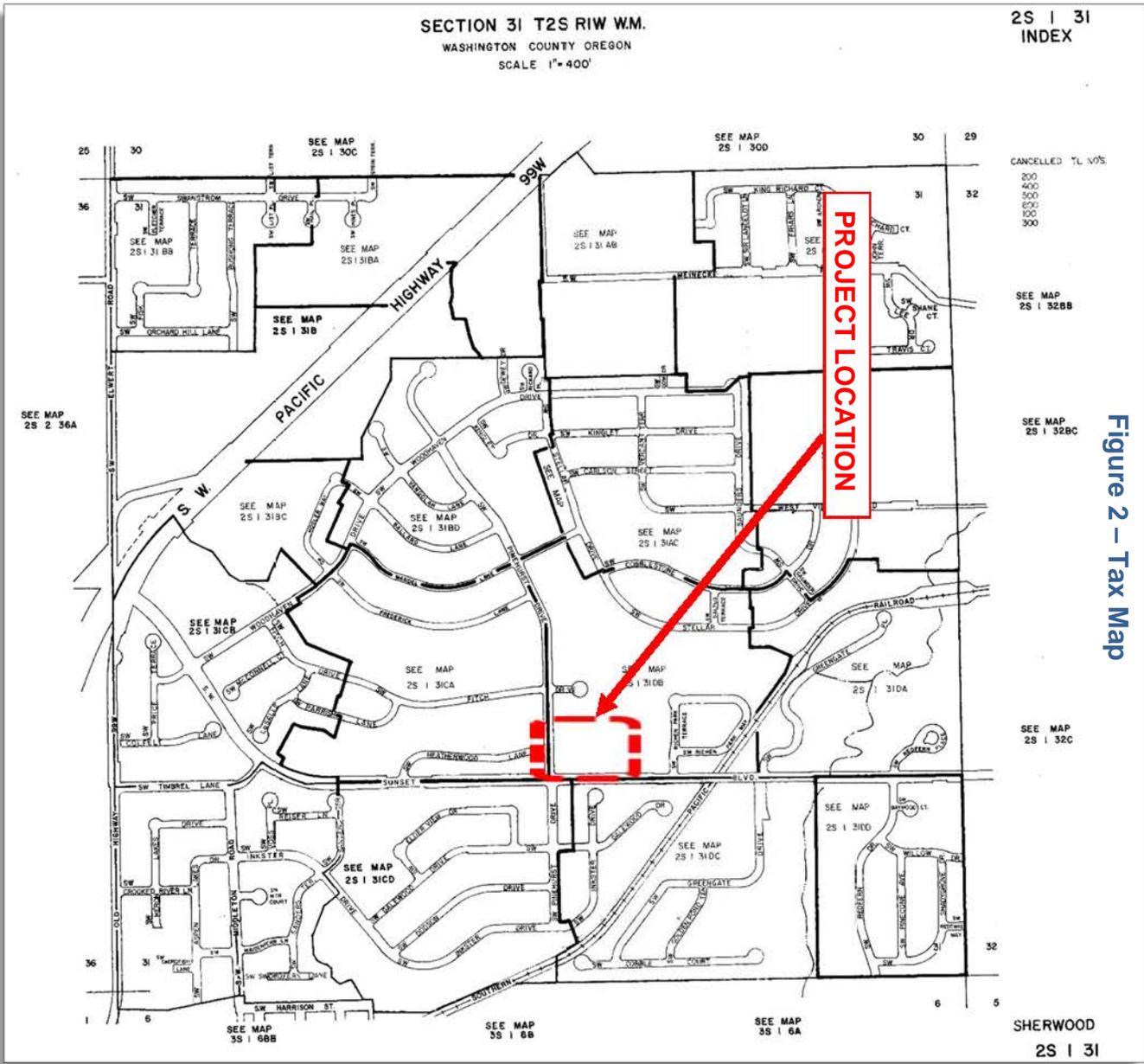


Figure 2 – Tax Map

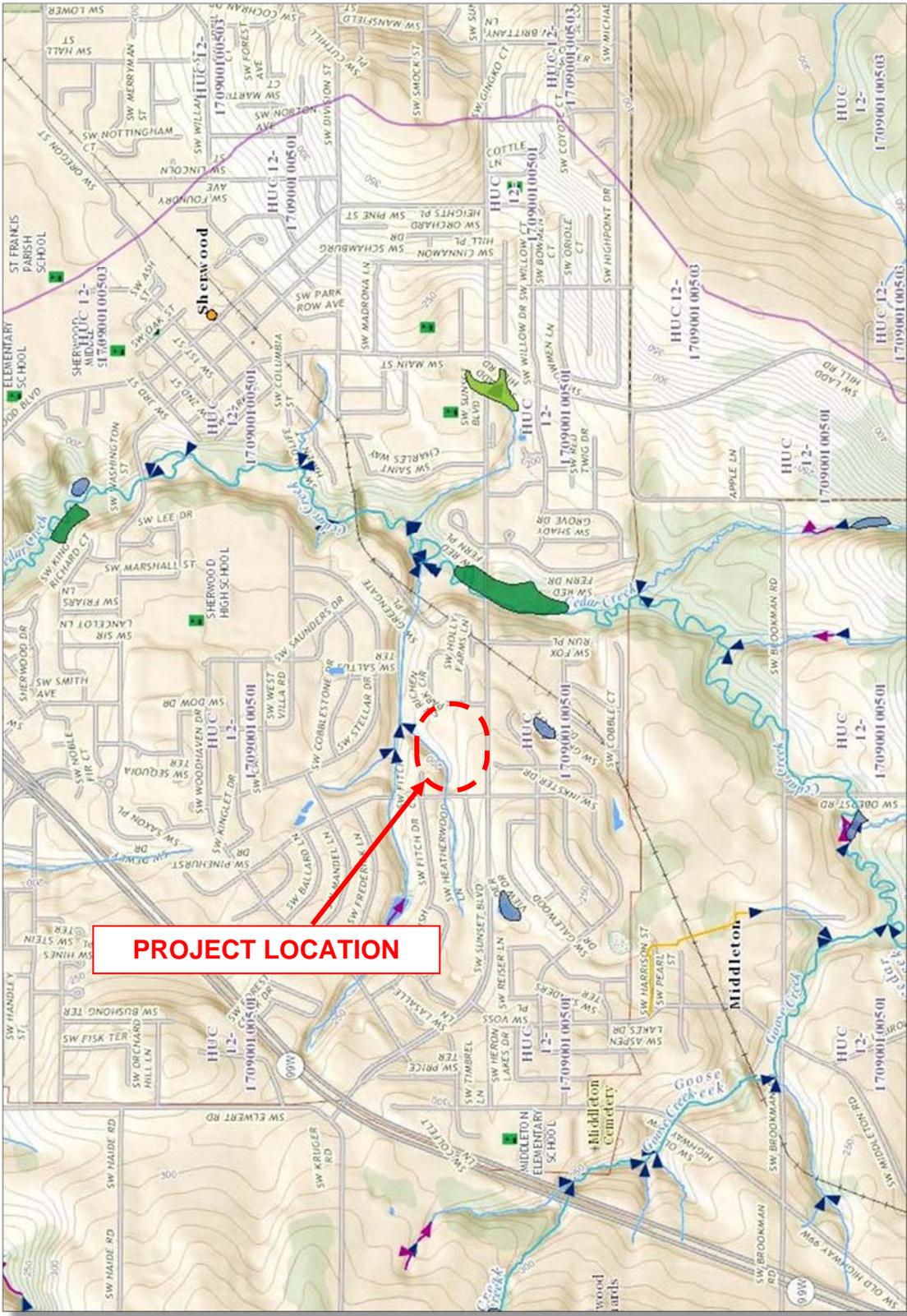


Figure 3 – USGS National Wetland Inventory & NHD Map



Figure 4 – Local Wetland Inventory

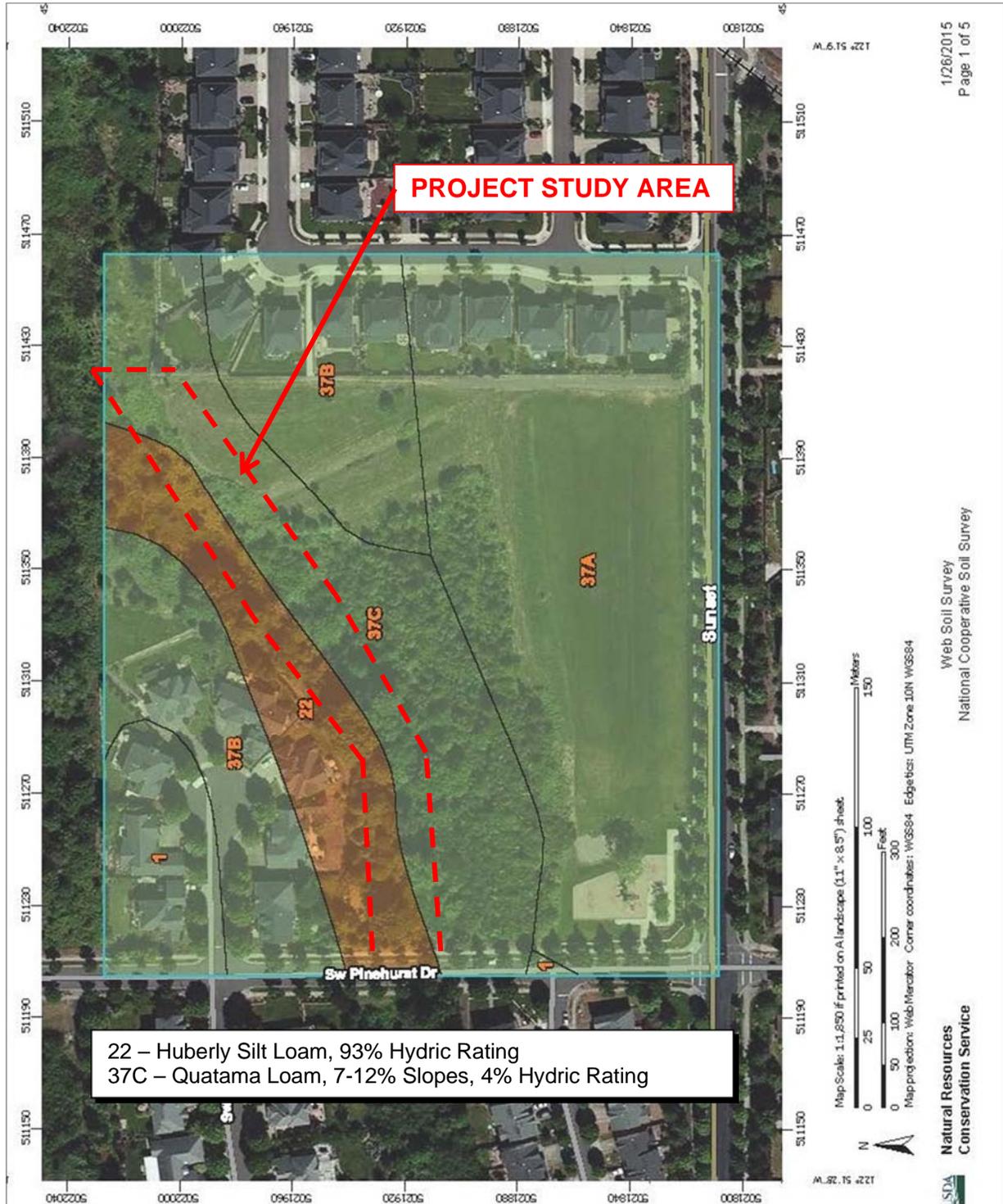


Figure 5 – Hydric Soils Map

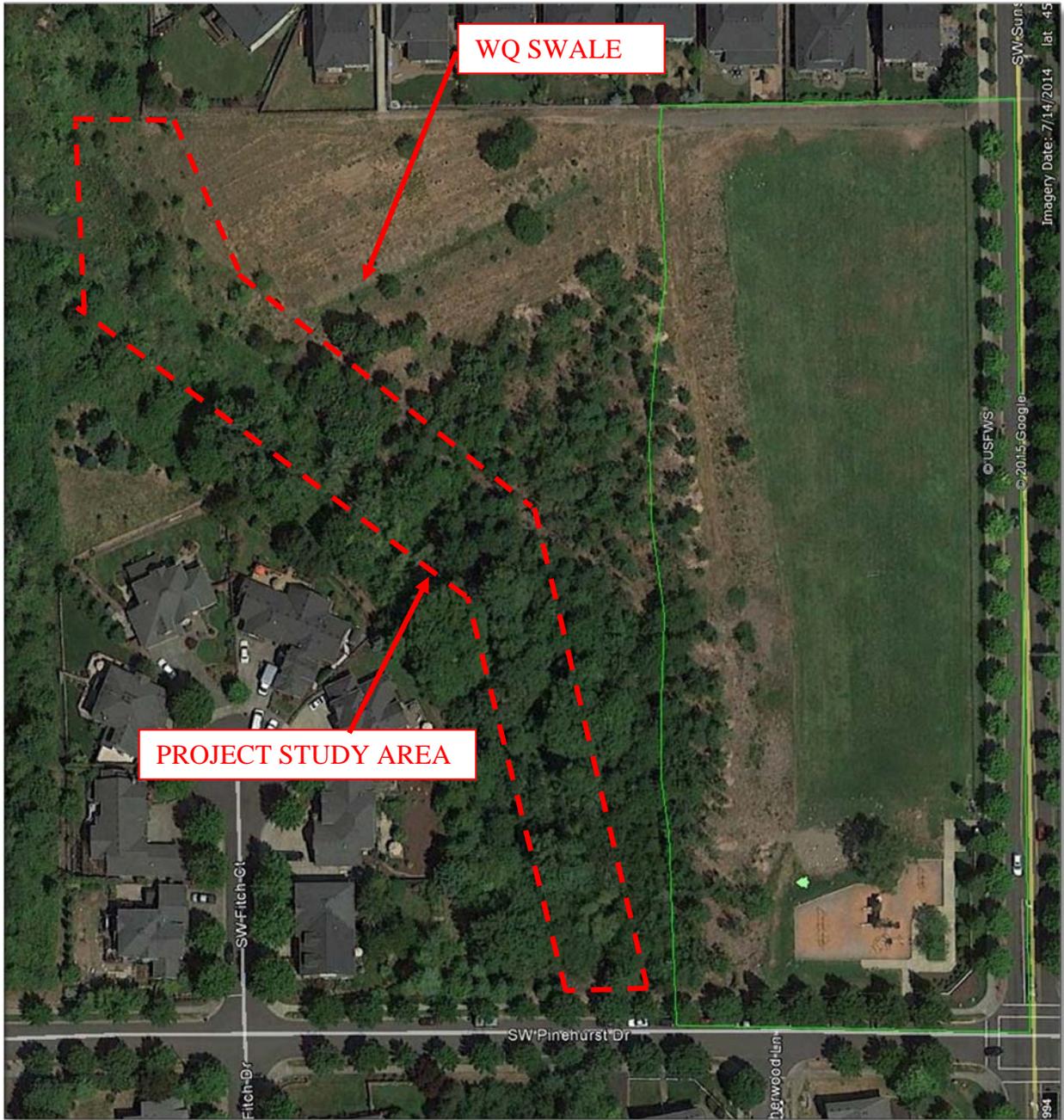


Figure 6 – Existing Conditions

Appendix B. Wetland Field Data Forms

OAR141-090-0035 (3)(d), (4), & (14-15)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: WOODHAVEN PARK, PH 2 City/County: SHERWOOD WASH. CO. Sampling Date: 2/4/15
 Applicant/Owner: CITY OF SHERWOOD State: OR Sampling Point: TP-1
 Investigator(s): SCOTT BANKER Section, Township, Range: S31 T2S R1W
 Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): <20
 Subregion (LRR): NW FOREST Lat: 45.350031 Long: -122.856560 Datum: MSL
 Soil Map Unit Name: 22-HUBERLY SILT LOAM NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No _____ (If no, explain in Remarks.)
 Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes Y No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No _____	
Remarks: <u>VEGETATION HAS BEEN AFFECTED BY INVASIVE SPECIES REMOVAL EFFORTS</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Fraxinus latifolia</u>	<u>50</u>	<u>Y</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>Acer circinatum</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>100</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>0</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>30</u>				

Hydrophytic Vegetation Present? Yes No _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - 5 - Wetland Non-Vascular Plants¹
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Remarks: _____

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 3/2						SL	
8-16	10YR 3/2		10YR 3/6				SLC	
			5YR 3/2					

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>14</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>8</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: WOODHAVEN PARK PH 2 City/County: SHERWOOD WASH. CO. Sampling Date: 2/4/15
 Applicant/Owner: CITY OF SHERWOOD State: OR Sampling Point: TP-2
 Investigator(s): SCOTT BANKER Section, Township, Range: S31 T2S R1W
 Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 520
 Subregion (LRR): NW FOREST Lat: 45.350031 Long: -122.856560 Datum: MSL
 Soil Map Unit Name: 37 - QUATAMA LOAM, 7-120/0 NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No _____ (If no, explain in Remarks.)
 Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes Y No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: <u>VEGETATION HAS BEEN AFFECTED BY INVASIVE SPECIES REMOVAL EFFORTS</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Corylus cornuta</u>	<u>40</u>	<u>Y</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>40</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: _____)				
1. <u>Polystichum munitum</u>	<u>50</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>50</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>25</u>				

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: _____

SOIL

Sampling Point: TP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR 3/2							
7-10	10YR 3/3							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:
UPSLOPE OF SLOPE BREAK @ CHANNEL TERRACE

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>		<p><u>Secondary Indicators (2 or more required)</u></p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	
<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____</p>		<p>Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/></p>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

* TP-3 NOT USED

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: WOODHAVEN PARK, PH 2 City/County: SHERWOOD WASH. CO. Sampling Date: 2/4/15
 Applicant/Owner: CITY OF SHERWOOD State: OR Sampling Point: TP 4
 Investigator(s): SCOTT BANKER Section, Township, Range: S31 T2S R1W
 Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): <20
 Subregion (LRR): NW FOREST Lat: 45.350031 Long: -122.856560 Datum: MSL
 Soil Map Unit Name: 22-HUBERLY SILT LOAM NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No _____ (If no, explain in Remarks.)
 Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes Y No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			
Remarks: <u>VEGETATION HAS BEEN AFFECTED BY INVASIVE SPECIES REMOVAL EFFORTS</u>					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>67</u> (A/B)
4. _____				= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. <u>Corylus cornuta</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	Total % Cover of:	Multiply by:
2. _____				OBL species _____	x 1 = _____
3. _____				FACW species _____	x 2 = _____
4. _____				FAC species _____	x 3 = _____
5. _____				FACU species _____	x 4 = _____
				UPL species _____	x 5 = _____
				Column Totals:	(A) _____ (B) _____
				Prevalence Index = B/A = _____	
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1. <u>Typha latifolia</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>	___ 1 - Rapid Test for Hydrophytic Vegetation	
2. <u>Juncus effusus</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>	___ 2 - Dominance Test is >50%	
3. _____				___ 3 - Prevalence Index is ≤3.0 ¹	
4. _____				___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. _____				___ 5 - Wetland Non-Vascular Plants ¹	
6. _____				___ Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8. _____					
9. _____					
10. _____					
11. _____					
				= Total Cover	
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present?	
1. _____				Yes <u>X</u>	No _____
2. _____					
				= Total Cover	
% Bare Ground in Herb Stratum _____					

Remarks: _____

SOIL

Sampling Point: TP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2							
3-18	2.5Y 3/1		5YR 3/3					

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|---|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): 15"
 Saturation Present? Yes No Depth (inches): 3"
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: WOODHAVEN PARK, PH 2 City/County: SHERWOOD WASH. CO. Sampling Date: 2/4/15
 Applicant/Owner: CITY OF SHERWOOD State: OR Sampling Point: TP-5
 Investigator(s): SCOTT FRANKER Section, Township, Range: S31 T25 R1W
 Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 420
 Subregion (LRR): NW FOREST Lat: 45.350031 Long: -122.856560 Datum: MSL
 Soil Map Unit Name: 37 - QUATAMA LOAM, 7-120/0 NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No _____ (If no, explain in Remarks.)
 Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes Y No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>VEGETATION HAS BEEN AFFECTED BY INVASIVE SPECIES REMOVAL EFFORTS</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Pseudotsuga menziesii</u>	<u>5</u>		<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Corylus cornuta</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species <u>1</u> x 3 = <u>3</u>
5. _____				FACU species <u>2</u> x 4 = <u>8</u>
_____ = Total Cover				UPL species _____ x 5 = _____
				Column Totals: <u>3</u> (A) <u>11</u> (B)
				Prevalence Index = B/A = <u>3.6</u>
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Festuca arundinacea</u>	<u>75</u>	<u>Y</u>	<u>FAC</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. _____				<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
6. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
9. _____				
10. _____				
11. _____				
<u>0</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes _____ No _____
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: _____				

SOIL

Sampling Point: TP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR	3/3						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

Indicators for Problematic Hydric Soils³:

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No _____ Depth (inches): 16"

Saturation Present? (includes capillary fringe) Yes No _____ Depth (inches): 14"

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

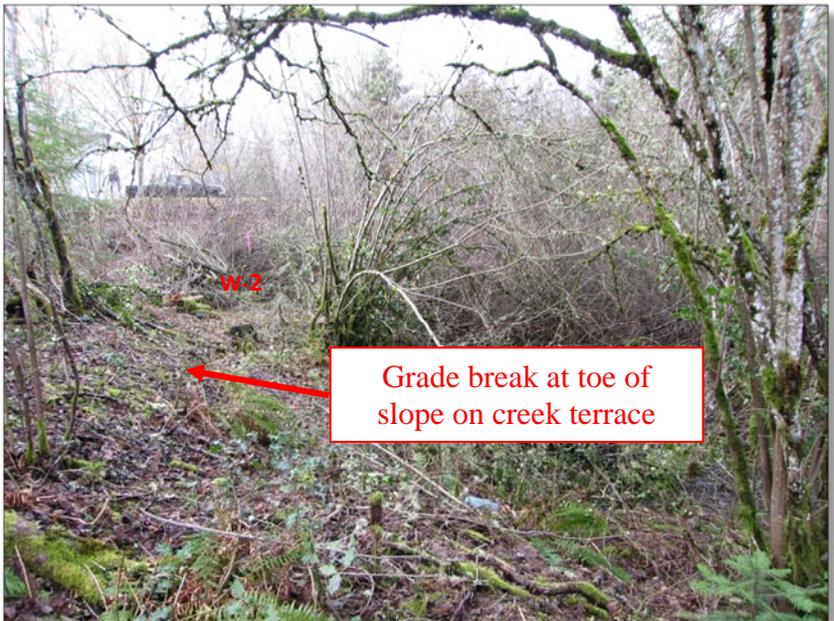
Appendix C. Ground Level Color Photographs

OAR141-090-0035 (3) (f) and (4)

Photograph 1 – View of W-3 and TP-2 flags in western portion of Wetland A. Note the cleared understory and ground plan from invasive species removal efforts

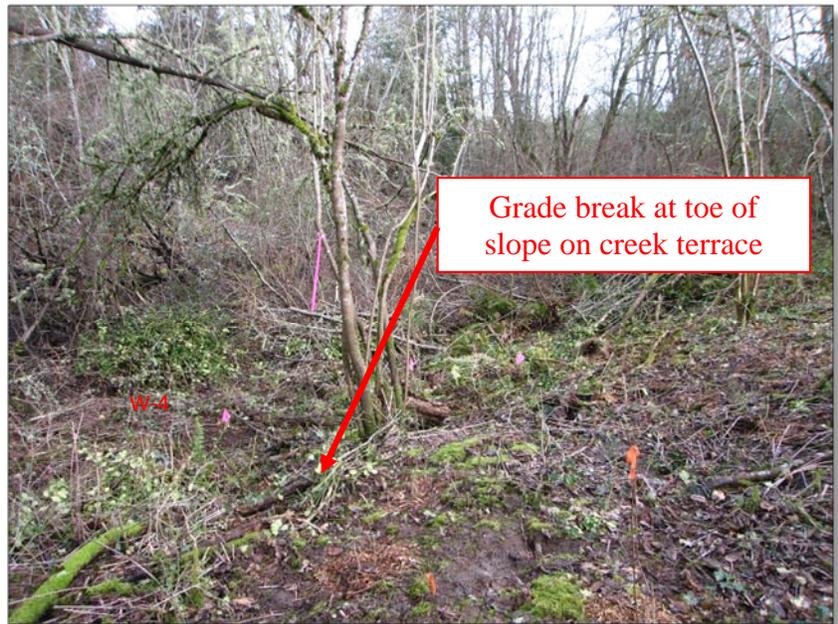


Photograph 2 - View of Wetland A flag W-2 looking toward the west from near W-3. SW Pinehurst Drive road prism is behind W-2.



Photograph 3 – View of Wetland A flag W-4.

Note the cleared understory and ground plane from invasive species removal and slope grade break.



Photograph 4 - View of Wetland A between W-10 and W-11.



Photograph 5 - View of
Wetland A and W-12
from water quality
swale.



Photograph 6 - View of
Wetland A and W-13
from water quality
swale.



Appendix D. Additional Tables and Information

OAR141-090-0035(4)

D.1 Soil Survey

The Washington County Soil Survey and soil data was accessed via the internet thru the NRCS Web Soil Survey program.

Table 8 Soils Mapped within the Project Area

Soil Phase (Map Unit)	Hydric / Hydric Inclusions	Location of Occurrence	Drainage Class	Depth to Groundwater (cm/in)
22: Huberly silt loam	Map unit 93% hydric. Huberly and Verboort components listed as hydric.	Huberly (90%) on terraces. Verboort (3%) on floodplains.	C/D	23/9.05
37C: Quatama loam, 7 to 12% slopes	Map unit is 4% hydric. Hydric inclusion is Huberly.	Huberly (85%) on terraces.	C	76/29.9

Source: Web Soil Survey of Washington County, Oregon. USDA NRCS WEB Soil Survey Accessed January 26, 2015.

D.2 Vegetation

The primary wetland community is dominated with *Alnus rubra* and *Fraxinus latifolia*. In the northeast corner of the SA, beaver activity has created a *Typha latifolia* marsh.

Tables 9 and 10 Dominant Vegetation within Plant Communities Tables

Table 9 - Wetland Plant Community

Scientific Name	Common Name	Indicator Status
<i>Fraxinus latifolia</i>	Oregon Ash	FACW
<i>Alnus rubra</i>	Red alder	FAC
<i>Typha latifolia</i>	Cattail	OBL
<i>Juncus effusus</i>	Soft Rush	FACW

The primary upland community is dominated with *Pseudotsuga menziesii* and *Pinus ponderosa*. *Festuca arundinacea* dominates in the northeast corner of the SA.

Table 10 - Upland Plant Community

Scientific Name	Common Name	Indicator Status
<i>Pinus ponderosa</i>	Ponderosa Pine	FACU
<i>Pseudotsuga menziesii</i>	Douglas Fir	FACU
<i>Oemleria cerasiformis</i>	Indian Plum	FACU
<i>Polystichum munitum</i>	Sword Fern	FACU
<i>Corylus cornutta</i>	Beaked Hazelnut	FACU
<i>Festuca arundinacea</i>	Tall Fescue	FAC

D.3 Hydrology

Refer to Appendix G Climate Data for WETS table and National Weather Service climate data for the SA.

Appendix F. Prior DRAFT Jurisdictional Determination Report & Natural Resource Assessment

**Natural Resource Assessment
for Woodhaven Park
in Washington County, Oregon**
(Township 2 South, Range 1 West, Section 31,
Tax lots 1800, 1900, 2000)

Prepared for
City of Sherwood
Sherwood, Oregon

Prepared by
Pacific Habitat Services, Inc.
Wilsonville, Oregon
(503) 570-0800

October 28, 2004

**Natural Resource Assessment
for Woodhaven Park
in Washington County, Oregon**
(Township 2 South, Range 1 West, Section 3,
Tax lots 1800, 1900, 2000)

Prepared for

Craig Sheldon
City of Sherwood, Operations Manager
400 SE Willamette Street
Sherwood, OR 97140

Prepared by

Shawn Eisner
Michele Eccleston
Heather Ardnt
Pacific Habitat Services, Inc.
9450 SW Commerce Circle, Suite 180
Wilsonville, Oregon 97070
(503) 570-0800
(503) 570-0855 FAX
PHS Project Number: 3246

October 28, 2004

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1.0 INTRODUCTION

Pacific Habitat Services, Inc. (PHS) conducted a natural resource assessment for the Woodhaven Park site. The 7-acre site is located at 17375 Sunset Boulevard in Sherwood, Washington County, Oregon (Township 2 South, Range 1 West, Section 31 Tax lots 1800, 1900, 2000). The general site location is shown on Figure 1. All figures are in Appendix A.

A tributary to Cedar Creek and adjacent wetlands are located along the northern site boundary (Figure 2). The results of the wetland delineation are included in this report.

This report outlines the definitions and methodology used to assess the natural resources on the property as required by Clean Water Services. This report also presents the findings of the natural resource assessment which includes a wetland delineation and a vegetated corridor analysis. The wetland delineation was conducted on August 26, 2004. The natural resource assessment and data collection were completed on October 21, 2004.

2.0 NATURAL RESOURCE ASSESSMENT

2.1 Regulatory Jurisdiction

Clean Water Services as part of their revised Design and Construction Standards requires that natural resource assessments be conducted for Sensitive Natural Resource Areas within their jurisdiction. Sensitive Natural Resource Areas include intermittent and perennial creeks, wetlands, and associated vegetated corridors. The intent of these requirements is to "...prevent or reduce adverse impacts to the drainage system and water resources of the Tualatin River Basin." (CWS, 2000). CWS requires a wetland determination/delineation and vegetated corridor assessment on projects that contain or are within 200 feet of a Sensitive Area. The presence of a perennial stream in the northern portion of the site necessitated a natural resource assessment.

2.2 Natural Resource Assessment Methodology

The Natural Resource Assessment (NRA) contains two components: a delineation of the water quality sensitive areas and a vegetated corridor evaluation. A detailed discussion of the methodology is included in Chapter 3 and Appendix C of CWS's revised Design and Construction Standards (CWS, 2000). A brief description of each component is included below.

Delineation of water quality sensitive areas

A delineation of water quality sensitive areas (wetland, intermittent/perennial streams, springs, and natural lakes or ponds) must first be conducted. For wetlands, the required criteria and suggested methodologies of the *Corps of Engineers Wetland Delineation Manual Technical Report Y-87-1*, (Environmental Laboratory, 1987) must be used to delineate the boundaries. This manual defines wetlands as requiring indicators of hydric soils, a dominance of hydrophytic vegetation, and wetland hydrology. A determination as to whether streams are intermittent or perennial must be made. The extent of all streams, springs, and natural lakes or ponds must also be determined.

Determine Vegetated Corridor Width and Condition

The width of the vegetated corridor must first be determined at least every 100 feet along the boundary of the water quality sensitive area. The corridor width can range between 15 and 200 feet and is measured horizontally from the outer edge of the water quality sensitive area. The boundaries of the sensitive areas and their vegetated corridors must be staked, surveyed, and mapped within the property and within 200 feet of the property line on a base map. The vegetated corridor width is based on the type of water resource (wetland, lake, stream), the size and nature of the water resource (acreage and/or perennial/intermittent), the size of the watershed, and the adjacent slope.

The existing condition of the vegetated corridor must be determined. This is accomplished by 1) identifying the plant community types present in the vegetated corridor, 2) documenting representative sample points, 3) characterizing each plant community type, 4) determining the cover by native species, invasive species, and noxious plants, and 5) based on this information determining whether the existing vegetated corridor condition for each plant community is good, marginal, or degraded.

3.0 DELINEATION OF WATER QUALITY SENSITIVE AREAS

3.1 Off-site Research

Prior to field work, available information was reviewed to ascertain where potential wetland/waters of the state may exist on-site. This review included the U.S.G.S. topographic quadrangle, the Soil Conservation Service (SCS) soil series maps, the list of Oregon hydric soils by County, the U.S. Fish and Wildlife Service (USFWS) *National Wetlands Inventory* (NWI) map, and the City of Sherwood Local Wetland Inventory map.

3.2 Wetland Delineation Field Methodology

Observations of hydrology, soils, and vegetation, were made using the "Routine On-site" delineation method as defined in the 1987 manual. One-foot diameter soil pits were excavated up to a depth of 18 inches in selected locations. The soil profiles were examined for hydric soil and wetland hydrology field indicators. In addition, a visual percent-cover estimate of the dominant species of the plant community was performed using soil pit locations as a center of reference. Dominant plant species are based on estimates of percent cover for herbaceous, woody vine, and shrub species within a 5 foot radius of the sample point, and basal area cover for tree species within a 30 foot radius of the sample point. Plant species in each vegetative layer, which are estimated at less than 20%, are not considered to be dominant. The wetland indicator status is then used to determine if there is an overall dominance (greater than 50%) of wetland or upland plant species.

Data documenting the three criteria for the representative sample locations are recorded in the field. This information is subsequently transferred to standard wetland delineation data sheets, which are included in the Appendix B. In addition to the sample points, numerous other soil pits were excavated between the sample points to verify changes in the three criteria.

3.3 Topography and Site Conditions

Woodhaven Park, the site, is located north of Sunset Boulevard, east of Pinehurst Drive with a tributary of Cedar Creek roughly defining the northern edge of the study area. The site is owned by the City of Sherwood and is currently undeveloped. A water quality facility swale located in the northeastern portion of the site collects storm water runoff from Sunset Boulevard.

Downslope from the swale (north) water is allowed to overland flow towards the tributary.

Available mapping indicates the tributary flows northeast and converges with another tributary just north of the study area. The confluence with the main stem of Cedar Creek is located about one-quarter mile east of the study area.

Elevations on the site slope north towards the tributary and adjacent wetland area. The elevations in the southern and central portions of the site range from 227 to 205 feet National Geodetic Vertical Datum (NGVD). The northeastern corner, in the vicinity of the bioswale, ranges from 205 to 181 feet at the edge of the delineated wetland area. Elevations at the edge of the wetland range from 196 feet along the southern boundary on the west end, to 180 feet on the east end.

3.4 Soils

The U.S. Department of Agriculture Natural Resources Conservation Service has mapped two soil series within the site (Figure 3). The soil in the drainage and adjacent wetland were not assigned a number, but based upon soils in adjacent portions of the tributary, the area is believed to be Wapato silty clay loam (43). Wapato is considered a hydric soil (USDA, 1989). Quatama loam (37A, 37B, 37C), which is not considered a hydric soil, but can contain hydric inclusions, is mapped north and south of the drainage features.

Table 1 Summary of Site Soils Characteristics

Soil Series	Slope	Drainage Class	Hydric?	Hydric Inclusions?
Quatama silt loam (37A)	0-3%	Moderately well drained	No	Yes, Huberly
Quatama silt loam (37B)	3-7%	Moderately well drained	No	Yes, Huberly
Quatama silt loam (37C)	7-12%	Moderately well drained	No	Yes, Huberly
Wapato silty clay loam (43)	0-3%	Poorly drained	Yes	All

Soils in the upland areas south of the creek and wetland area include very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2) silt loams and silty clay loams and dark reddish gray (5Y 4/2) silty clay loam. Redoximorphic features including yellowish red (5Y 4/2) and dark yellowish brown (10YR 4/6) were found in sample point 1 between 6-16 inches.

The soils identified in the wetland areas in the northern portion of the site include very dark gray (10YR 3/1 & 5Y 3/1) and very dark grayish brown (10YR 3/2) silt loam, silty clay and silty clay loams. Redoximorphic features were identified in all the sample points taken in the wetland and include dark yellowish brown (10YR 3/6) and yellowish red (5Y 5/6 & 5Y 4/6) colors.

The hydric soils criterion for jurisdictional wetland/waters of the state/US was satisfied in the adjacent wetland south of the tributary. Hydric soils were also identified in sample point 1 located in the easternmost portion of the site.

3.5 Vegetation

The vegetation in the southern and central portions of the site include a dominance of mowed and maintained grasses and forbs with scattered thickets of Himalayan blackberry (*Rubus discolor*, FACU). There were some trees and shrubs that include beaked hazelnut (*Corylus cornuta*, FACU), English hawthorn (*Crataegus monogyna*, FACU+) and English holly (*Ilex aquifolium*, UPL). The herbaceous cover includes tall fescue (*Festuca arundinacea*, FAC-), orchard grass (*Dactylis glomerata*, FACU), red clover (*Trifolium pratense*, FACU), colonial bentgrass (*Agrostis tenuis*, FAC), hairy cat's ear (*Hypochaeris radicata*, FACU), perennial ryegrass (*Lolium perenne*, FACU), English plantain (*Plantago lanceolata*, FAC), dandelion (*Taraxacum officinale*, FACU), Robert's geranium (*Geranium molle*, UPL), bedstraw (*Galium aparine*, FACU), nipplewort (*Lapsana communis*, UPL), Canada thistle (*Cirsium arvense*, FACU+), self-heal (*Prunella vulgaris*, FACU+), Queen Anne's lace (*Daucus carota*, UPL), oxeye daisy (*Chrysanthemum leucanthemum*, UPL), and curly dock (*Rumex crispus*, FAC+).

The area south and adjacent to the tributary in the west and central portion of the site is forested. The tree and shrub layer in the upland areas south of the delineated wetland boundary include a mix of native and non-native species, such as Douglas fir (*Pseudotsuga menziesii*, FACU), beaked hazelnut, sweet cherry (*Prunus avium*, UPL), western red cedar (*Thuja plicata*, FAC), English hawthorn, snowberry (*Symphoricarpos albus*, FACU), English holly, Indian plum (*Oemleria cerasiformis*, FACU), Scot's broom (*Cytisus scoparius*, UPL), Ponderosa pine (*Pinus ponderosa*, FACU-), and vine maple (*Acer circinatum*, FAC-). The woody vine layer consists of Himalayan blackberry, which is dominant in the northeastern portion of the site. The herbaceous layer, where present beneath a dense tree and shrub canopy, consists of sword fern (*Polystichum munitum*, FACU), lady fern (*Athyrium filix-femina*, FAC), coastal strawberry (*Fragaria chiloensis*, UPL), bedstraw, tall fescue, English plantain, Queen Anne's lace, common horsetail (*Equisetum arvense*, FAC), oxeye daisy, hairy cat's ear, common velvetgrass (*Holcus lanatus*, FAC), and Dewey sedge (*Carex deweyana*, FAC+).

The vegetation in the wetland includes a predominantly native tree and shrub layer. Documented species included red alder (*Alnus rubra*, FAC), Oregon ash (*Fraxinus latifolia*, FACW), Douglas hawthorn (*Crataegus douglasii*, FAC), Scouler's willow (*Salix scouleriana*, FAC), western red cedar, Pacific ninebark (*Physocarpus capitatus*, FACW-), and red osier dogwood (*Cornus stolonifera*, FACW). The woody vine layer consists of nightshade (*Solanum dulcamara*, FAC+), and Himalayan blackberry. The herbaceous layer includes Watson's willow herb (*Epilobium watsonii*, FACW-), lady fern, Dewey's sedge, common horsetail, water parsley (*Oenanthe sarmentosa*, OBL), tall fescue, Cooley's hedge nettle (*Stachys cooleyae*, FACW), common vetch (*Vicia sativa*, UPL), bedstraw, and piggy back plant (*Tolmiea menziesii*, FAC).

The City of Sherwood has planted several species of trees south of the wetland. The plantings are located south of the forested areas in the western and central portions of the site. These species include Douglas fir, red alder, western red cedar, and ponderosa pine.

3.6 Hydrology

The primary source of hydrology is the tributary to Cedar Creek. The tributary flows into the site from the west through a culvert under Pinehurst Drive and continues along the northern site boundary in a north-northeasterly direction before it converges with another tributary to Cedar Creek. The tributary continues for approximately one-quarter mile east to Cedar Creek. Water levels within the creek are also heavily influenced by the activity of beavers. A number of small dams across the tributary were identified. There also appears to be a larger dam north of the study area as there is a significant area of shallow ponded water associated with the wetland in the eastern portion of the site.

The sample plots taken in the wetland identified saturation within the upper 12 inches of the surface. There was 6 inches of free water in sample plot 2.

There was 0.38 inch of rainfall recorded at the Portland International Airport (the closest available weather station - located approximately 30 miles away) over the two weeks prior to the wetland delineation (August 12 to August 26, 2004; University of Washington, 2004). There was also 1.52 inches of rainfall recorded at the Portland International Airport over the two weeks prior to the data collection on October 21 (University of Washington, 2004). A majority of the rainfall (0.72 inches) fell four days prior to the data collection.

Total observed rainfall for the 2003/04 water year (since October 1, 2003) for Portland was 32.56 inches. Average rainfall for the same period is 37.07 inches (Oregon Climate Service, September 2004). Therefore, the total rainfall for the 2003/04 water year was 88% of normal. Water year data through October 2004 was not available at the time of this report.

The hydrology criterion for jurisdictional waters of the state/US was satisfied by wetland drainage patterns and flowing water in the tributary to Cedar Creek. The hydrology criterion for jurisdictional wetland was satisfied by wetland drainage patterns, saturation in the upper 12 inches of the surface, and oxidized rhizospheres in the wetland areas south of the tributary.

3.7 National and Local Wetland Inventories

The Sherwood quadrangle of the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) map shows the tributary located in the northern portion of the site. The NWI identifies the tributary as a palustrine forested, emergent broadleaf deciduous, persistent, saturated/semipermanent/seasonal (PFO1Y/PEM1Y) wetland. The NWI maps are generated primarily on the basis of interpretation of color infrared aerial photographs (scale of 1:58,000), with limited "ground truthing" to confirm the interpretations.

The Local Wetland Inventory (LWI) maps the tributary and adjacent wetland (Figure 4) (City of Sherwood, 1992). The approximate location of the wetland as mapped on the LWI agrees very well with the actual delineated boundaries.

3.8 Wetland Delineation Conclusions

Based on an investigation of the three required wetland criteria (wetland hydrology, hydric soils, and a dominance of hydrophytic vegetation), PHS has identified a total of approximately 0.52 acre of potentially jurisdictional wetland, which includes the tributary and adjacent wetland within the identified study area. The tributary to Cedar Creek is a jurisdictional water of the state/US.

The wetland boundaries were defined by using the obvious topographic breaks and changes in hydrophytic vegetation and hydric soils. Hydrology in the wetland includes soils saturated within the upper 12 inches of the profile. Paired sample plots were taken in the western, central, and eastern portions of the site. The wetland boundary as identified on Figure 2 was flagged in the field and then transferred to a base map of the site provided by Westlake Engineering. Using topography and known points, such as trees and property lines, the delineated boundary was transferred to the base map. The estimated accuracy of the wetland boundary is estimated to be no greater than ± 5 feet.

The wetland discussion 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

4.0 VEGETATED CORRIDOR ASSESSMENT

4.1 Vegetated Corridor Width Determination

PHS determined the width of the vegetated corridor for the study area. The on-site sensitive area includes a perennial drainage, which flows into Cedar Creek east of the site (Figure 2). The results of the vegetated corridor width determination are presented in Table 2.

On-site waters of the state/US include a perennial drainage and an associated wetland that is greater than one-half acre in size. Slopes south of the sensitive areas range between 15-23%, based upon on-site measurements with a Suunto, hand-held inclinometer. Approximately eight measurements of slope were taken across the site. This is an average interval of one measurement every 85 feet.

Table 2. Summary of Vegetated Corridor Width Determination

	Streams		Wetland size (acres)		Adjacent slope (%)		Width of Vegetated Corridor (feet)
	Peren.	Inter.	<0.5	>0.5	<25	>25	
Cedar Creek trib	✓				✓		50'
Creekside wetland				✓	✓		50'

Based on these characteristics, the required vegetated corridor adjacent to on-site and off-site sensitive areas is 50 feet. The location of off-site portions of the creek and wetland are such that they will have no effect on the location of on-site vegetated corridors.

4.2 Vegetated Corridor Plant Community

The on-site vegetated corridor is located along the northern portion of the site and consists of three plant communities (Figure 5). Figure 6A and 6B provide photodocumentation of each plant community.

Community A (0.38 acre) is a riparian forested area consisting of red alder (*Alnus rubra*), beaked hazelnut (*Corylus cornuta*), English hawthorn (*Crataegus monogyna*), English holly (*Ilex aquifolium*), and vine maple (*Acer circinatum*). A woody vine layer includes Himalayan blackberry (*Rubus discolor*) and trailing blackberry (*Rubus ursinus*). The herbaceous layer includes sword fern (*Polystichum munitum*), colonial bentgrass (*Agrostis tenuis*), dandelion (*Taraxacum officinale*), and coastal strawberry (*Fragaria chiloensis*). The following table summarizes the species distribution within Plant Community A.

Table 3. Plant Community A (0.38 acre)

Botanical Name	Common Name	Cover (%)
Trees		20%
<i>Alnus rubra</i> *	Red alder	100%
Shrubs:		60%
<i>Acer circinatum</i> *	Vine maple	5%
<i>Crataegus monogyna</i> **	English hawthorn	10%
<i>Corylus cornuta</i> *	Beaked hazelnut	40%
<i>Ilex aquifolium</i> **	English holly	45%
Woody Vines:		15%
<i>Rubus discolor</i> **	Himalayan blackberry	70%
<i>Rubus ursinus</i> *	Trailing blackberry	30%
Ground Cover:		5%
<i>Agrostis tenuis</i>	Colonial bentgrass	70%
<i>Fragaria chiloensis</i>	Coastal strawberry	10%
<i>Polystichum munitum</i> *	Sword fern	10%
<i>Taraxacum officinale</i> **	Dandelion	10%
% Cover by Natives		52%
% Tree Canopy		90%
% Invasive/Noxious		45%

* Native Species

** Invasive species or noxious weed (Oregon Dept. of Agriculture (ODA))

Community B (0.26 acre) is more open, the result of periodic maintenance to control blackberry and weedy forbs in an area of recent riparian plantings which include Douglas fir (*Pseudotsuga menziesii*), red alder, western red cedar (*Thuja plicata*), and Ponderosa pine (*Pinus ponderosa*). Other tree and shrub volunteers include beaked hazelnut, English hawthorn, red elderberry (*Sambucus racemosa*), and Scot's broom (*Cytisus scoparius*). The herbaceous layer is dominated by tall fescue and bedstraw (*Galium aparine*). Other common grasses and forbs are present but are only locally dominant.

Table 4. Plant Community B (0.26 acre)

Botanical Name	Common Name	Cover (%)
Shrubs:		40%
<i>Alnus rubra</i> *	Red alder	15%
<i>Corylus cornuta</i> *	Beaked hazelnut	20%
<i>Crataegus monogyna</i> **	English hawthorn	10%
<i>Cytisus scoparius</i> **	Scot's broom	5%
<i>Pinus ponderosa</i> *	Ponderosa pine	15%
<i>Pseudotsuga menziesii</i> *	Douglas fir	20%
<i>Sambucus racemosa</i> *	Red elderberry	10%
<i>Thuja plicata</i> *	Western red cedar	5%
Ground Cover:		60%
<i>Festuca arundinacea</i>	Tall fescue	70
<i>Galium aparine</i>	Bedstraw	30
% Cover by Natives		34%
% Tree Canopy		0%
% Invasive/Noxious		6%

* Native Species, ** Invasive species or noxious weed (Oregon Dept. of Agriculture (ODA))

The tree and shrub layer in Community C (0.31 acre) consists of a dominant woody vine layer of Himalayan blackberry. The herbaceous layer includes bedstraw, tall fescue, English plantain (*Plantago lanceolata*), Queen Anne's lace, oxeye daisy (*Chrysanthemum leucanthemum*), common horsetail (*Equisetum arvense*), and common velvetgrass (*Holcus lanatus*). The southern portion of this community is periodically mowed. In the mowed areas the blackberry is less prevalent, but still present. The 50 percent cover of woody vines is an average over the mowed and unmowed areas. The following table summarizes the species distribution within Plant Community C.

Table 5. Plant Community C (0.31 acre)

Botanical Name	Common Name	Cover (%)
Shrubs:		5%
<i>Crataegus monogyna</i> **	English hawthorn	100%
Woody Vines:		50%
<i>Rubus discolor</i> **	Himalayan blackberry	100%

Table 5, continued

Botanical Name	Common Name	Cover (%)
Ground Cover:		45%
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	5%
<i>Daucus carota</i>	Queen Anne's lace	20%
<i>Equisetum arvense</i> *	Common horsetail	15%
<i>Festuca arundinacea</i>	Tall fescue	15%
<i>Galium aparine</i>	Bedstraw	20%
<i>Holcus lanatus</i>	Common velvetgrass	20%
<i>Plantago lanceolata</i>	English plantain	5%
% Cover by Natives		7%
% Tree Canopy		0%
% Invasive/Noxious		55%

* Native Species, ** Invasive species or noxious weed (Oregon Dept. of Agriculture (ODA))

4.3 Vegetated Corridor Plant Community Condition

The following table summarizes the condition of the plant communities in accordance with Clean Water Services' standards.

Table 6. Summary of Plant Communities

Corridor Condition		Plant Community		
		A	B	C
Good	>80% cover of native plants, <u>or</u> >50% tree canopy	90% tree canopy		
Marginal	50% -80% cover of native plants, <u>or</u> 26-50% tree canopy	52% natives		
Degraded	<50% cover of native plants, <u>or</u> ≤ 25% tree canopy		34% natives; 0% tree canopy	7% natives; 0% tree canopy

4.4 Vegetated Corridor Discussion and Conclusions

The on-site vegetated corridor can be characterized based on differing proportions of dominant native species, percent canopy cover, and invasive plant cover. Community A is in "Good to Marginal" condition because of the high percent cover of native plants (52%) and tree canopy (90%) as well as a high percentage of noxious/invasive plants (45%). Community B is in "Degraded" condition because of the low percent cover of natives (34%) and lack of a tree canopy (0%). Community C is in "Degraded" condition because of the low percent cover of natives (7%) and absence of tree canopy (0%).

Enhancement through non-native species removal is proposed for the entire vegetated corridor. There will be more extensive non-native removal in Community C because of the dominance of Himalayan blackberry. In addition to non-native species removal, enhancement plantings are proposed for plant communities A and C. Plant Community B has been recently planted with native trees (identified in Table 4 as shrubs because they are less than 20 feet in height) and no additional planting should be required. This area will need continue maintenance in order to discourage the introduction of non-natives.

4.4.1 Control of Invasive Plants

Himalayan blackberry, Scot's broom, English holly and English ivy are located within the vegetated corridor. It is recommended the nuisance species in the entire site be controlled to eliminate the possibility of further recruitment. Recommended control measures are identified in the CWS Integrated Vegetation and Animal Management Guidance.

4.4.2 Enhancement Plantings

Enhancement plantings are proposed for the vegetated corridor. The areas to be planted are shown in Figure 7 and suggested species are provided in Table 7. A landscaping plan will be developed to include species number upon receiving the Service Provider Letter.

Table 7. Suggested enhancement plantings for Woodhaven Park

Botanical Name	Common Name	Sizes (Height or 1 gallon)
Trees		
<i>Acer macrophyllum</i>	Big leaf maple	24-36"
<i>Populus trichocarpa</i>	Black cottonwood	24-36"
<i>Pseudotsuga menziesii</i>	Douglas fir	24-36"
Shrubs		
<i>Amelanchier alnifolia</i>	Western serviceberry	12-24"
<i>Rosa nutkana</i>	Nootka rose	12-24"
<i>Holodiscus discolor</i>	Ocean spray	12-24"
<i>Ribes sanguineum</i>	Red flowering currant	12-24"
<i>Sambucus racemosa</i>	Red elderberry	12-24"
<i>Symphoricarpos albus</i>	Snowberry	12-24"
Herbaceous		
<i>Gaultheria shallon</i>	Salal	12-18'
<i>Mahonia aquifolium</i>	Tall Oregon grape	12-18'
<i>Polystichum munitum</i>	Sword fern	12-18'

The planting of trees, shrubs, and seed mix should be consistent with Clean Water Services' standards. Species should be grouped with a minimum of 2 tree species, 4 shrub species, and 3 herbaceous species used. The overall goal of the enhancement is to restore the degraded portion of the vegetated corridor as required by Clean Water Services.

5.0 DISCUSSION OF PROPOSED DEVELOPMENT

The future development of Woodhaven Park includes bringing in fill material to raise the site elevations south of the vegetated corridor in order to bring the north end of the park up to the same elevation as the south end. The City of Sherwood has no specific plans for development at the this time but future park expansion includes ball fields and an off-street parking area. As the City has the opportunity to obtain fill material to bring the site up to grade, they are requesting a service provider letter to continue with ongoing development in the park.

6.0 NATURAL RESOURCE ASSESSMENT SUMMARY

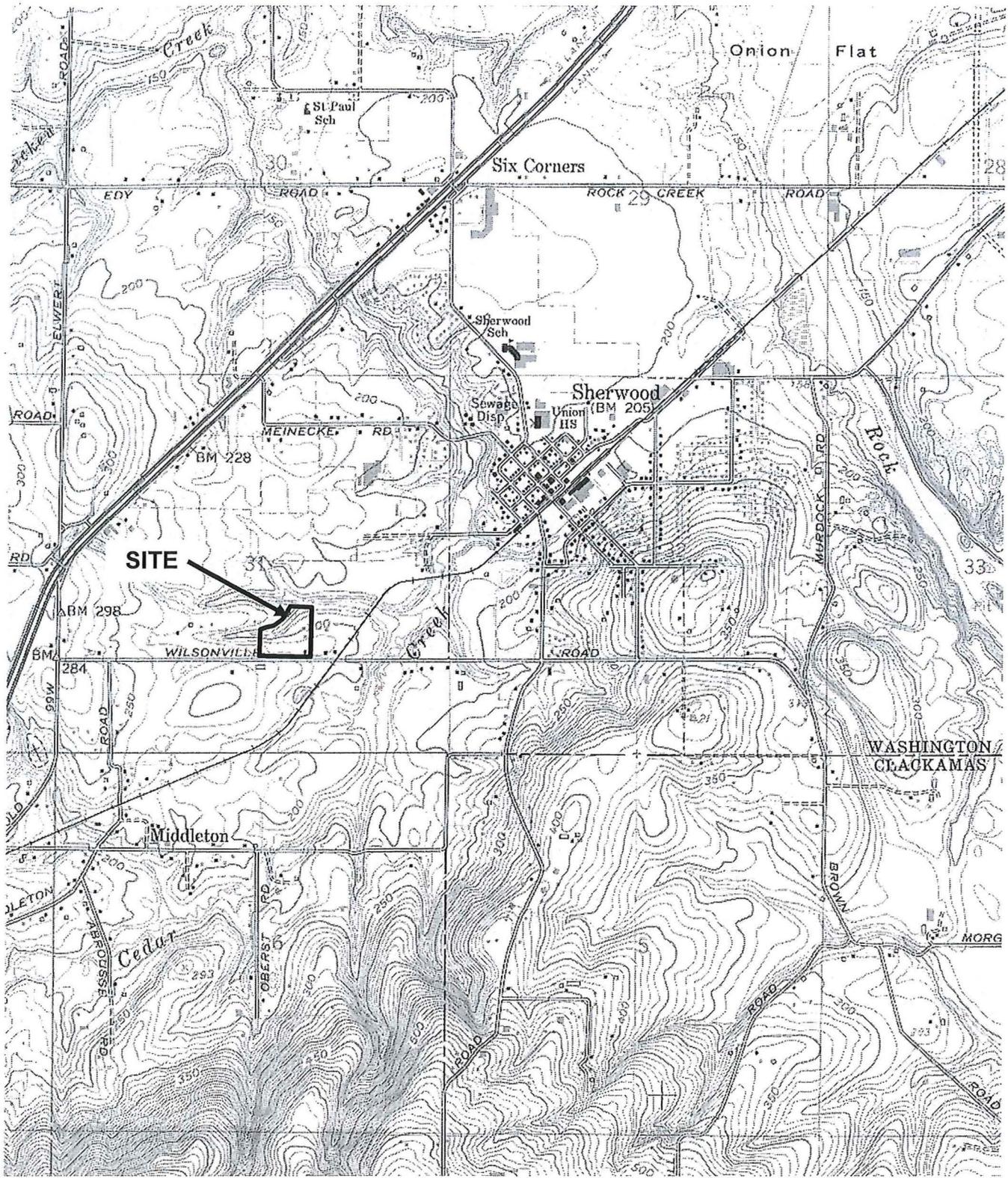
- A perennial drainage, which is a tributary to Cedar Creek, and adjacent wetlands are located on-site and they extend onto adjacent properties within 200 feet of the site to the north, east and west.
- Slopes adjacent to the creek are less than 25%.
- The proposed vegetated corridor was determined by a combination of the 50 foot setback from the tributary and adjacent wetland. The corridor contains three plant communities. Plant Community A is in "Good to Marginal Condition," Plant Communities B and C are in "Degraded" condition.
- The future development of the Woodhaven Park will not impact wetlands or the Clean Water Services vegetated corridor.
- Enhancement measures to remove noxious/invasive plant species is recommended for the entire on-site vegetated corridor (0.95 acre) Enhancement planting of natives is recommended only for Plant Communities A and C.

7.0 REFERENCES

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- U.S. Fish and Wildlife Service *National Wetlands Inventory* map, Sherwood, Oregon quadrangle. Color infrared aerial photography in August 1981 1:58,000.
- U.S.G.S. 7.5 Minute topographic map. 1961 photorevised 1985. Sherwood, Oregon quadrangle.

Appendix A

Figures



10/25/04

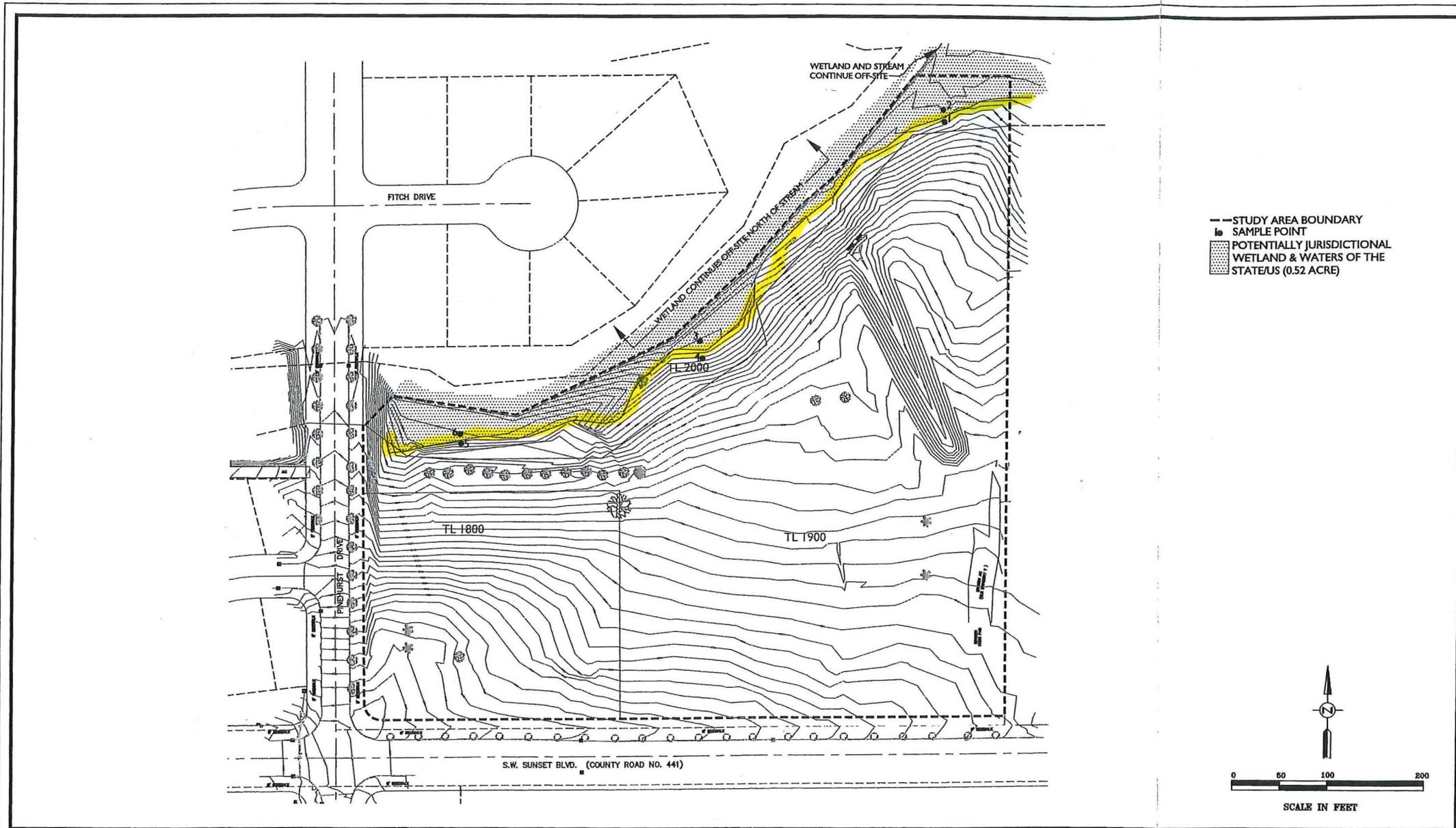
3246

Location and general topography of a wetland delineation and natural resource assessment for Woodhaven Park in Sherwood, Oregon (USGS, Sherwood, Oregon quadrangle, 1961, photorevised 1985).

FIGURE
1



— Pacific Habitat Services, Inc. —



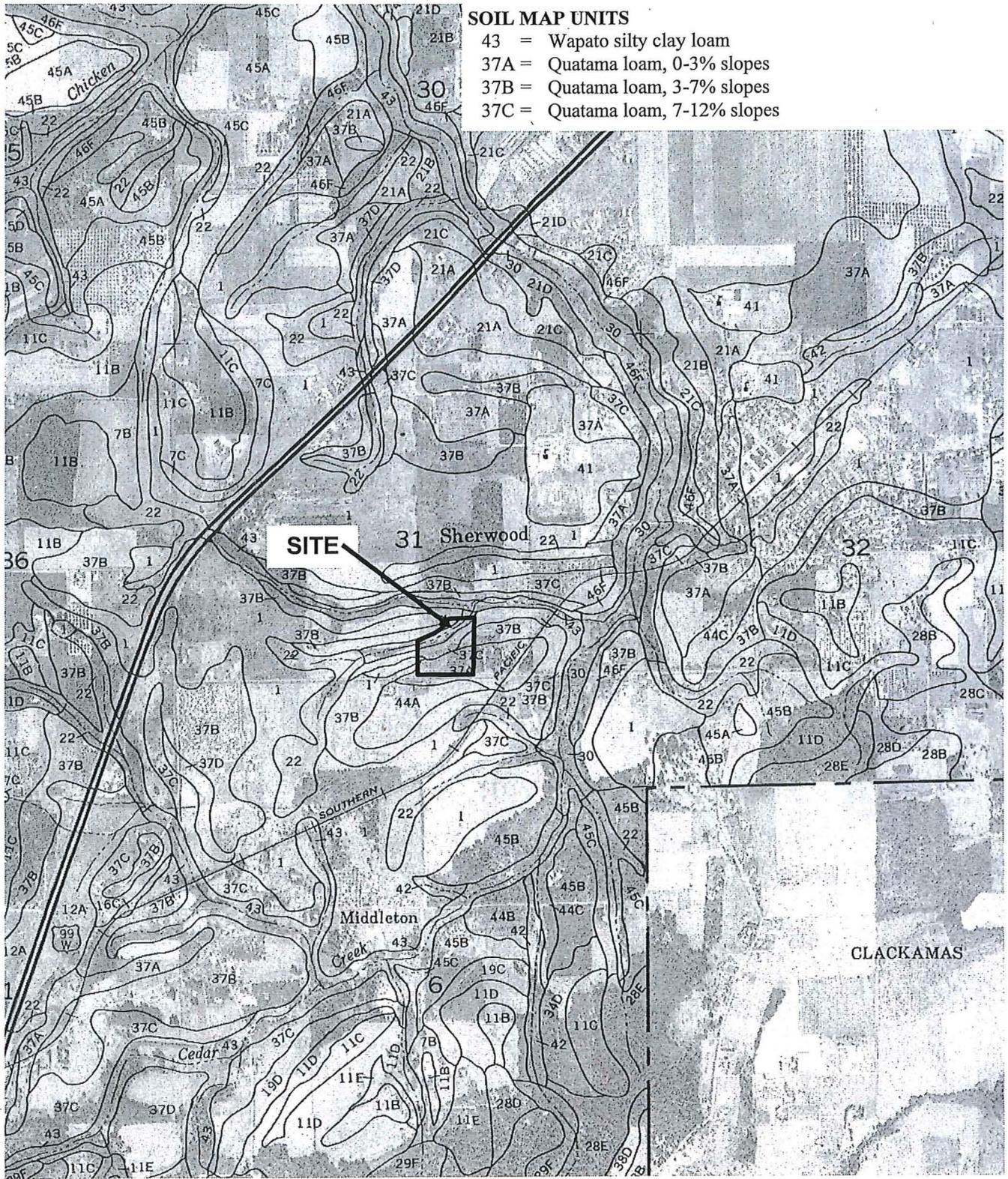
3246
10/25/04

Approximate location of potentially jurisdictional wetland and waters of the state/US for Woodhaven Park in Sherwood, Oregon. Location of flagged wetland boundary and sample sites are approximated from known points. The accuracy of the wetland boundary is +/- 5 feet. Base map provided by Westlake Consultants, 2001.



Pacific Habitat Services, Inc.

FIGURE
2



SOIL MAP UNITS
 43 = Wapato silty clay loam
 37A = Quatama loam, 0-3% slopes
 37B = Quatama loam, 3-7% slopes
 37C = Quatama loam, 7-12% slopes

10/25/04

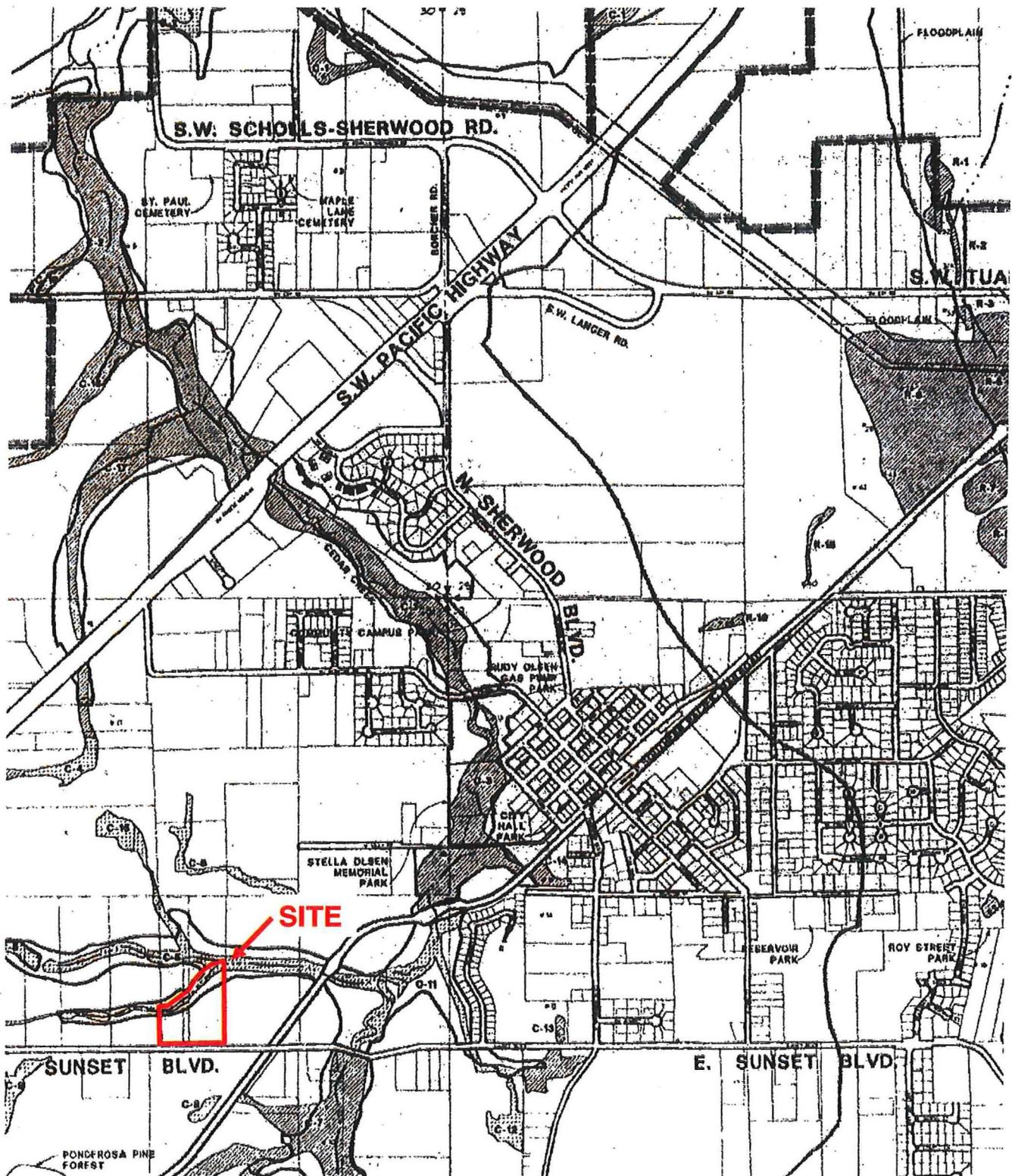
3246

Soil series for a wetland delineation and natural resource assessment for Woodhaven Park in Sherwood, Oregon (SCS, Soil Survey of Washington County, Oregon, 1982, Sheet number 49).

FIGURE
 3



— Pacific Habitat Services, Inc. —



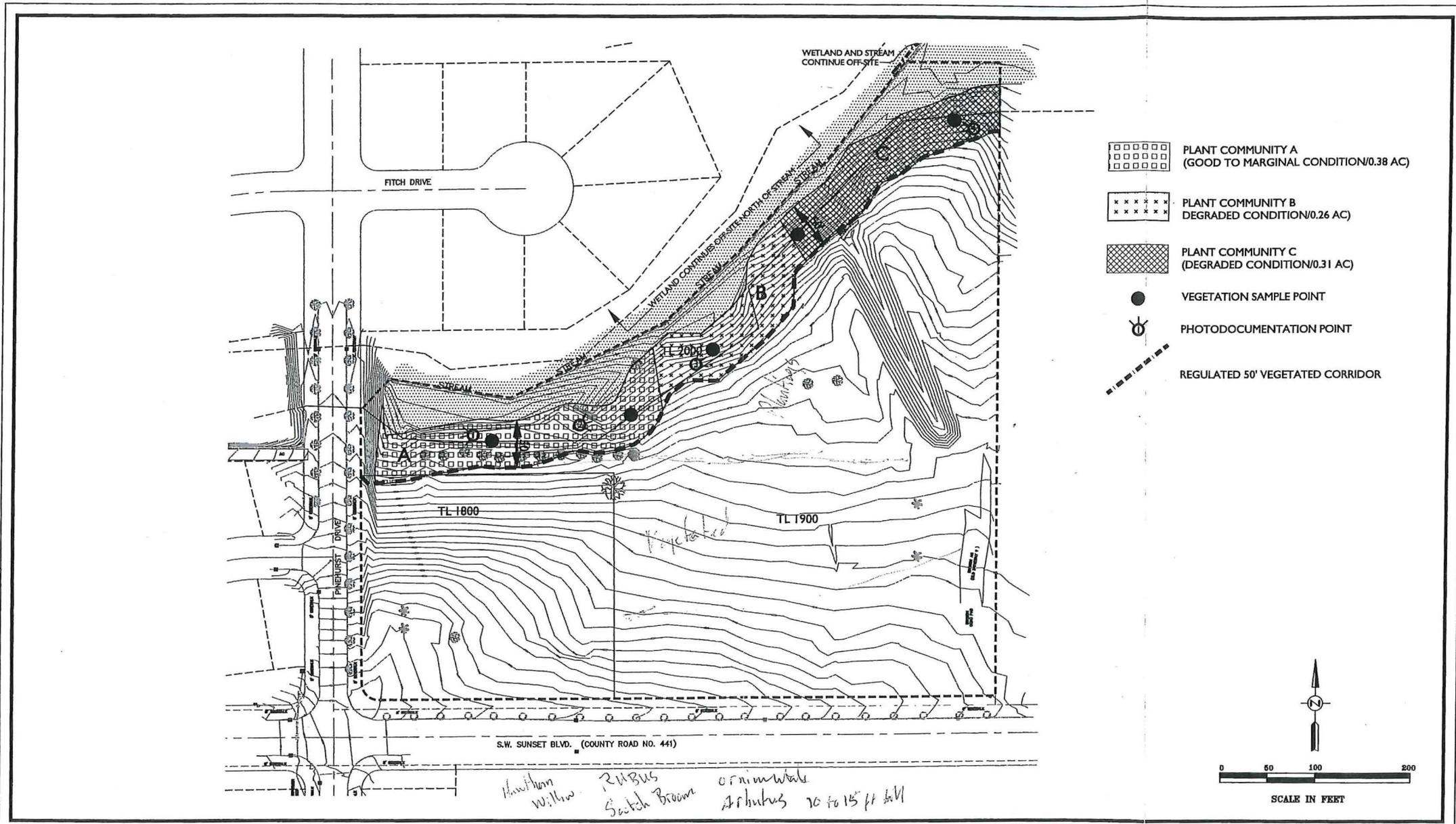
10/25/04

3246

Local Wetland Inventory information for a wetland delineation and natural resource assessment for Woodhaven Park in Sherwood, Oregon (City of Sherwood, Oregon Local Wetland Inventory Final Summary Report, 1992).

FIGURE
4





3246
10/29/04

Location of the wetlands, regulated 50' vegetated corridor, plant communities, sample points, and photodocumentation points for Woodhaven Park in Sherwood, Oregon. Base map provided by Westlake Consultants, 2001.

FIGURE
5



Pacific Habitat Services, Inc.



10/25/04

3246

Photodocumentation of the vegetated corridor for Woodhaven Park. Top photo (1) looking northwest shows Plant Community A. Bottom photo (2) looking east shows Plant Community A. Both photos taken on October 21, 2004.

FIGURE
6A





10/25/04

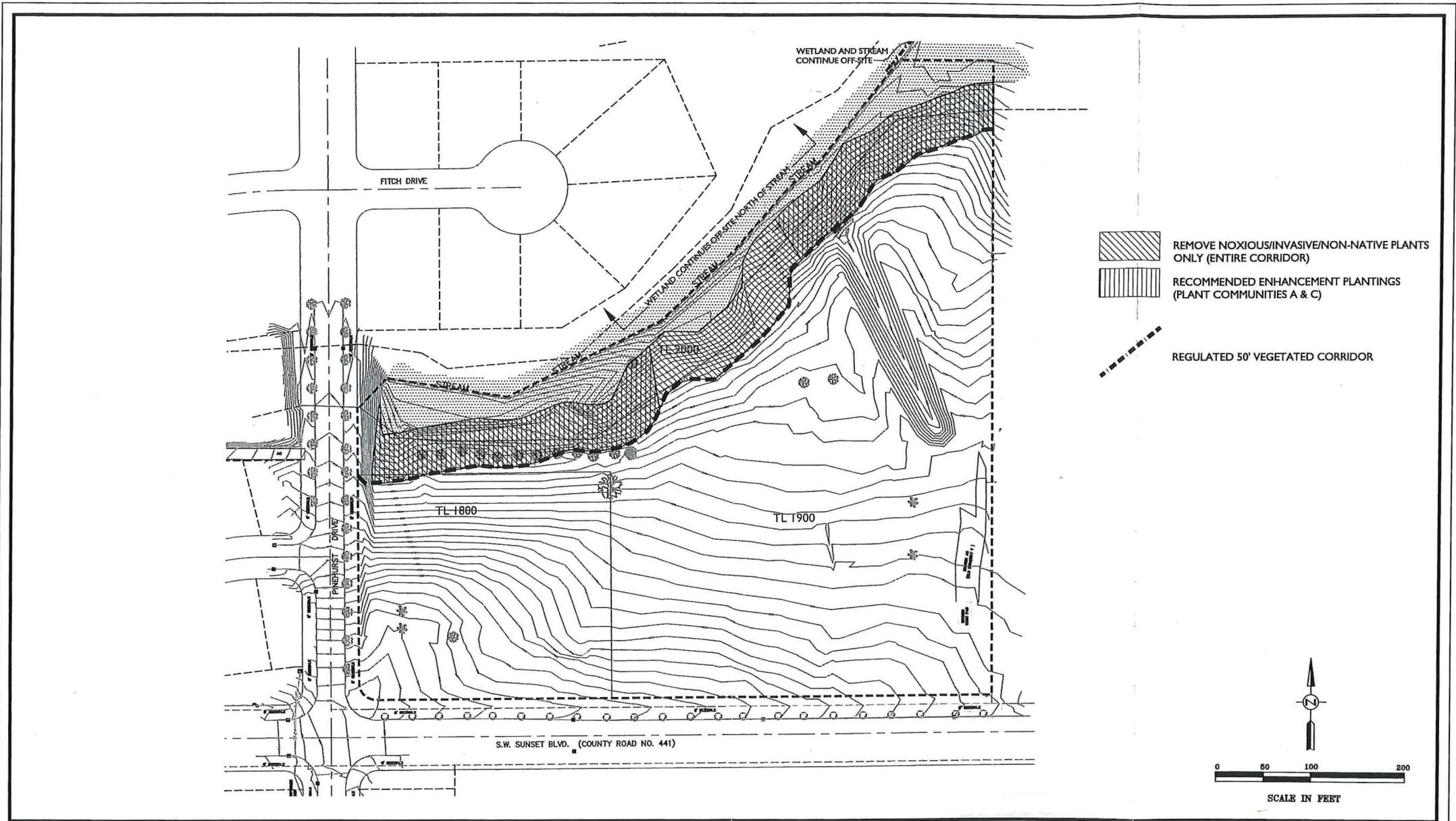
3246

Photodocumentation of the vegetated corridor for Woodhaven Park. Top photo (3) looking northeast shows Plant Community B. Bottom photo (4) looking northwest shows Plant Community C. Both photos taken on October 21, 2004.

FIGURE
6B



Pacific Habitat Services, Inc.



3246
10/29/04

Vegetated corridor enhancement and proposed planting areas for Woodhaven Park in Sherwood, Oregon. Base map provided by Westlake Consultants, 2001.

FIGURE
7



Pacific Habitat Services, Inc.

Appendix B

Wetland Determination Data Forms



Wetland Determination Data Form

Routine Onsite Method

Pacific Habitat Services, Inc.

Project: Woodhaven	Number: 3246	Sample Site: 1
Applicant: City of Sherwood	County: Washington	Date: 10/21/2004
Investigators: SE/HA	Township: 2 South	Range: 1 West Section: 31
Do Normal Circumstances exist on this site? Yes		Is the area a potential Problem Area? No
Is this an Atypical Situation? No		

	<u>Primary Indicators</u>	<u>Secondary Indicators</u>
HYDROLOGY	Inundated	Ox. rhizospheres
	Sat. in Upper 12"	H2O-stained leaves
Depth of Surf. H2O Inches	Water Marks	Local Soil Survey
Depth to Free H2O >16 Inches	Drift Lines	FAC Neutral Test
Depth to Saturation >16 Inches	Sediment Deposits	Other _____
	Drainage patterns	Criteria Met: No

SOILS	Series: Wapato silty clay loam	Hydric?: Yes
	Classification: Fluvaquentic Endoaquolls	Drainage Class: poorly drained

Depth (Inches)	Matrix Color	Soil Texture*	Redox Concentrations		Other Hydric Soil Field Indicators	Comments
			Color	abundance/size/contrast		
0-6	10YR 3/2	SL				
6-12	10YR 3/2	SCL	5YR 4/6	few/medium/prominent		
12-16	5Y 4/2	SCL	10YR 4/6	many/coarse/prominent		

*SD=Sand, SDL=Sandy Loam, L=Loam, SDCL=Sandy Clay Loam, S=Silt, SL=Silt Loam, SCL=Silty Clay Loam, CL=Clay Loam, C=Clay

Criteria Met:	Yes
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VEGETATION							
Tree Stratum	(0%)	Status	% Cover	Herbaceous Stratum	(90%)	Status	% Cover
				<i>Plantago lanceolata</i> *		FAC	25
				<i>Daucus carota</i> *		UPL	25
				<i>Chrysanthemum leucanthemum</i> *		UPL	15
				<i>Equisetum arvense</i>		FAC	10
				<i>Hypochaeris radicata</i>		FACU	5
				<i>Trifolium repens</i>		FAC	5
Shrub Stratum	(0%)	Status	% Cover	<i>Vicia sativa</i>		UPL	5
				<i>Holcus lanatus</i>		FAC	10
				Woody Vine Stratum	(10%)	Status	% Cover
				<i>Rubus discolor</i> *		FACU	100

*Percent of dominant species FAC, FACW, or OBL: 25%		Criteria Met: No
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Comments:	Determination: Upland
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Wetland Determination Data Form

Routine Onsite Method

Pacific Habitat Services, Inc.

Project: Woodhaven	Number: 3246	Sample Site: 2
Applicant: City of Sherwood	County: Washington	Date: 10/21/2004
Investigators: SE/HA	Township: 2 South Range: 1 West	Section: 31
Do Normal Circumstances exist on this site? Yes		Is the area a potential Problem Area? No
Is this an Atypical Situation? No		

	<u>Primary Indicators</u>	<u>Secondary Indicators</u>
HYDROLOGY	Inundated	Ox. rhizospheres yes
	Sat. in Upper 12" yes	H2O-stained leaves
Depth of Surf. H2O Inches	Water Marks	Local Soil Survey
Depth to Free H2O 6 Inches	Drift Lines	FAC Neutral Test
Depth to Saturation 0 Inches	Sediment Deposits	Other
	Drainage patterns yes	Criteria Met: Yes

SOILS	Series: Wapato silty clay loam	Hydric?: Yes
	Classification: Fluvaquentic Endoaquolls	Drainage Class: poorly drained

Depth (Inches)	Matrix Color	Soil Texture*	Redox Concentrations		Other Hydric Soil Field Indicators	Comments
			Color	abundance/size/contrast		
0-4	10YR 3/2	SL				
4-16	5Y 3/1	SC	5YR 4/6	many/medium/prominent	H2S odor	mucky

*SD=Sand, SDL=Sandy Loam, L=Loam, SDCL=Sandy Clay Loam, S=Silt, SL=Silt Loam, SCL=Silty Clay Loam, CL=Clay Loam, C=Clay

Criteria Met:	Yes
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VEGETATION							
Tree Stratum	(0%)	Status	% Cover	Herbaceous Stratum	(95%)	Status	% Cover
				<i>Ranunculus repens</i> *		FACW	65
				<i>Epilobium watsonii</i>		FACW-	9
				<i>Holcus lanatus</i> *		FAC	20
				<i>Equisetum arvense</i>		FAC	5
				<i>Lemna minor</i>		OBL	1
Shrub Stratum	(0%)	Status	% Cover	Woody Vine Stratum	(5%)	Status	% Cover
				<i>Rubus discolor</i> *		FACU	100

*Percent of dominant species FAC, FACW, or OBL: 67%	Criteria Met: Yes
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Comments:	Determination: Wetland
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Wetland Determination Data Form

Routine Onsite Method

Pacific Habitat Services, Inc.

Project: Woodhaven	Number: 3246	Sample Site: 3
Applicant: City of Sherwood	County: Washington	Date: 10/21/2004
Investigators: SE/HA	Township: 2 South Range: 1 West	Section: 31
Do Normal Circumstances exist on this site? Yes		Is the area a potential Problem Area? No
Is this an Atypical Situation? No		

HYDROLOGY			Primary Indicators	Secondary Indicators
Depth of Surf. H2O	Inches		Inundated	Ox. rhizospheres yes
Depth to Free H2O	>16	Inches	Sat. in Upper 12" yes	H2O-stained leaves
Depth to Saturation	12	Inches	Water Marks	Local Soil Survey
			Drift Lines	FAC Neutral Test
			Sediment Deposits	Other _____
			Drainage patterns yes	Criteria Met: Yes

SOILS		Series: Wapato silty clay loam		Hydric?: Yes		
Classification: Fluvaquentic Endoaquolls		Drainage Class: poorly drained				
Depth (Inches)	Matrix Color	Soil Texture*	Redox Concentrations		Other Hydric Soil Field Indicators	Comments
			Color	abundance/size/contrast		
0-8	10YR 3/1	SCL				
8-16	10YR 3/1	SCL	5YR 5/6	common/medium/prominent		

*SD=Sand, SDL=Sandy Loam, L=Loam, SDCL=Sandy Clay Loam, S=Silt, SL=Silt Loam, SCL=Silty Clay Loam, CL=Clay Loam, C=Clay

Criteria Met: Yes

VEGETATION							
Tree Stratum (10%)		Status	% Cover	Herbaceous Stratum (80%)		Status	% Cover
<i>Crataegus douglasii</i> *		FAC	100	<i>Stachys cooleyae</i> *		FACW	25
				<i>Festuca arundinacea</i> *		FAC-	20
				<i>Athyrium filix-femina</i> *		FAC	20
				<i>Galium aparine</i> *		FACU	20
				<i>Geranium molle</i>		UPL	5
				<i>Vicia sativa</i>		UPL	10
Shrub Stratum (0%)		Status	% Cover	Woody Vine Stratum (10%)		Status	% Cover
				<i>Solanum dulcamara</i> *		FAC+	50
				<i>Rubus discolor</i> *		FACU	50

*Percent of dominant species FAC, FACW, or OBL: **57%** **Criteria Met: Yes**

Comments: _____ **Determination: Wetland**



Wetland Determination Data Form

Routine Onsite Method

Pacific Habitat Services, Inc.

Project: Woodhaven	Number: 3246	Sample Site: 4
Applicant: City of Sherwood	County: Washington	Date: 10/21/2004
Investigators: SE/HA	Township: 2 South Range: 1 West	Section: 31
Do Normal Circumstances exist on this site? Yes		Is the area a potential Problem Area? No
Is this an Atypical Situation? No		

	<u>Primary Indicators</u>	<u>Secondary Indicators</u>
HYDROLOGY	Inundated	Ox. rhizospheres
	Sat. in Upper 12"	H2O-stained leaves
Depth of Surf. H2O Inches	Water Marks	Local Soil Survey
Depth to Free H2O >16 Inches	Drift Lines	FAC Neutral Test
Depth to Saturation >16 Inches	Sediment Deposits	Other _____
	Drainage patterns	Criteria Met: No

SOILS Series: Wapato silty clay loam		Hydric?: Yes			
Classification: Fluvaquentic Endoaquolls		Drainage Class: poorly drained			
Depth (Inches)	Matrix Color	Soil Texture*	Redox Concentrations Color abundance/size/contrast	Other Hydric Soil Field Indicators	Comments
0-16	10YR 2/2	SL			decomposed wood is common

*SD=Sand, SDL=Sandy Loam, L=Loam, SDCL=Sandy Clay Loam, S=Silt, SL=Silt Loam, SCL=Silty Clay Loam, CL=Clay Loam, C=Clay

Criteria Met: No

VEGETATION							
Tree Stratum	(0%)	Status	% Cover	Herbaceous Stratum	(100%)	Status	% Cove
				<i>Galium aparine</i> *		FACU	70
				<i>Festuca arundinacea</i> *		FAC-	30
Shrub Stratum	(0%)	Status	% Cover	Woody Vine Stratum	(0%)	Status	% Cove

*Percent of dominant species FAC, FACW, or OBL: **0%**

Criteria Met: No

Comments: _____

Determination: Upland



Wetland Determination Data Form

Routine Onsite Method

Pacific Habitat Services, Inc.

Project: Woodhaven	Number: 3246	Sample Site: 5
Applicant: City of Sherwood	County: Washington	Date: 10/21/2004
Investigators: SE/HA	Township: 2 South Range: 1 West	Section: 31
Do Normal Circumstances exist on this site? Yes		Is the area a potential Problem Area? No
Is this an Atypical Situation? No		

	<u>Primary Indicators</u>	<u>Secondary Indicators</u>
HYDROLOGY	Inundated	Ox. rhizospheres
	Sat. in Upper 12"	H2O-stained leaves
Depth of Surf. H2O Inches	Water Marks	Local Soil Survey
Depth to Free H2O >16 Inches	Drift Lines	FAC Neutral Test
Depth to Saturation >16 Inches	Sediment Deposits	Other _____
	Drainage patterns	Criteria Met: No

SOILS Series: Wapato silty clay loam		Hydric?: Yes			
Classification: Fluvaquentic Endoaquolls		Drainage Class: poorly drained			
Depth (Inches)	Matrix Color	Soil Texture*	<u>Redox Concentrations</u>	<u>Other Hydric Soil Field Indicators</u>	<u>Comments</u>
0-16	10YR 3/2	SL	Color abundance/size/contrast		

*SD=Sand, SDL=Sandy Loam, L=Loam, SDCL=Sandy Clay Loam, S=Silt, SL=Silt Loam, SCL=Silty Clay Loam, CL=Clay Loam, C=Clay

Criteria Met: No

VEGETATION							
Tree Stratum (10%)	Status	% Cover	Herbaceous Stratum (65%)	Status	% Cover		
<i>Corylus cornuta</i> *	FACU	100	<i>Polystichum munitum</i> *	FACU	40		
			<i>Athyrium filix-femina</i> *	FAC	45		
			<i>Fragaria chiloensis</i>	UPL	5		
			<i>Carex deweyana</i>	FAC+	10		
Shrub Stratum (15%)	Status	% Cover					
<i>Ilex aquifolium</i> *	UPL	100	Woody Vine Stratum (10%)	Status	% Cover		
			<i>Rubus discolor</i> *	FACU	100		

***Percent of dominant species FAC, FACW, or OBL:** **20%** **Criteria Met: No**

Comments: _____

Determination: Upland



Wetland Determination Data Form

Routine Onsite Method

Pacific Habitat Services, Inc.

Project: Woodhaven	Number: 3246	Sample Site: 6
Applicant: City of Sherwood	County: Washington	Date: 10/21/2004
Investigators: SE/HA	Township: 2 South Range: 1 West	Section: 31

Do Normal Circumstances exist on this site? **Yes** Is the area a potential Problem Area? **No**
 Is this an Atypical Situation? **No**

	<u>Primary Indicators</u>	<u>Secondary Indicators</u>
HYDROLOGY	Inundated	Ox. rhizospheres
Depth of Surf. H2O Inches	Sat. in Upper 12" yes	H2O-stained leaves
Depth to Free H2O 14 Inches	Water Marks	Local Soil Survey
Depth to Saturation 6 Inches	Drift Lines	FAC Neutral Test
	Sediment Deposits	Other
	Drainage patterns yes	Criteria Met: Yes

SOILS Series: **Wapato silty clay loam** Hydric?: **Yes**
 Classification: **Fluvaquentic Endoaquolls** Drainage Class: **poorly drained**

Depth (Inches)	Matrix Color	Soil Texture*	Redox Concentrations		Other Hydric Soil Field Indicators	Comments
			Color	abundance/size/contrast		
0-8	10YR 3/2	SCL				
8-16	10YR 3/2	SCL	10YR 3/6	many/coarse/distinct		clay chunks mottles get larger with depth

*SD=Sand, SDL=Sandy Loam, L=Loam, SDCL=Sandy Clay Loam, S=Silt, SL=Silt Loam, SCL=Silty Clay Loam, CL=Clay Loam, C=Clay

Criteria Met: **Yes**

VEGETATION								
Tree Stratum (30%)	Status	% Cover	Herbaceous Stratum (20%)	Status	% Cover			
<i>Salix scouleriana</i> *	FAC	100	<i>Epilobium watsonii</i> *	FACW-	15			
			<i>Athyrium filix-femina</i> *			15		
			<i>Tolmiea menziesii</i>			10		
			<i>Oenanthe sarmentosa</i> *			15		
			<i>Equisetum arvense</i> *			15		
			<i>Carex deweyana</i> *			30		
Shrub Stratum (30%)	Status	% Cover	Woody Vine Stratum (20%)	Status	% Cover			
<i>Physocarpus capitatus</i> *	FACW-	100	<i>Solanum dulcamara</i> *	FAC+	50			
			<i>Rubus discolor</i> *			50		

*Percent of dominant species FAC, FACW, or OBL: **88%** **Criteria Met:** **Yes**

Comments: **Determination:** **Wetland**

Appendix G. Prior SPL #4948

**Clean Water Services
Service Provider Letter**

Jurisdiction	Washington County	Date	April 20, 2006
Map & Tax Lot	2S131DB-01800, 01900	Owner	City of Sherwood
Site Address	17375 Sunset Boulevard	Applicant	PACIFIC HABITAT SERVICES
	Sherwood, OR 97140	Address	9450 SW Commerce Cir Suite 180
Proposed Activity	Fill placement along southern portion of Tax lots 01800 and 01900	Phone	Wilsonville, OR 97070 (503) 570-0800

This form and the attached conditions will serve as your Service Provider Letter in accordance with Clean Water Services Design and Construction Standards (R&O 04-9).

	YES	NO		YES	NO
Natural Resources Assessment (NRA) Submitted	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alternatives Analysis Required (Section 3.02.6)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
District Site Visit Date: Feb 22, 2005	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tier 1 Alternatives Analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Concur with NRA/or submitted information	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tier 2 Alternatives Analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sensitive Area Present On-Site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tier 3 Alternatives Analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sensitive Area Present Off-Site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vegetated Corridor Averaging	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vegetated Corridor Present On-Site: wetland/stream	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vegetated Corridor Mitigation Required	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Width of Vegetated Corridor (feet)	50 Feet		On-Site Mitigation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Condition of Vegetated Corridor	Marginal/ Degraded		Off-Site Mitigation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Enhancement Required	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Planting Plan Attached	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Encroachment into Vegetated Corridor (Section 3.02.4)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Enhancement/restoration completion date	Concurrent with fill placement	
Type and Square Footage of Encroachment	None proposed under this SPL		Geotechnical Report required	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Allowed Use (Section 3.02.4) N/A	<input type="checkbox"/>	<input type="checkbox"/>	Conditions Attached	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This Service Provider Letter does NOT eliminate the need to evaluate and protect water quality sensitive areas if they are subsequently discovered on your property.

In order to comply with Clean Water Services (the District) water quality protection requirements the project must comply with the following conditions:

1. No structures, development, construction activities, gardens, lawns, application of chemicals, uncontained areas of hazardous materials as defined by Oregon Department of Environmental Quality, pet wastes, dumping of materials of any kind, or other activities shall be permitted within the sensitive area which may negatively impact water quality, except those allowed by Section 3.02.3.
2. No structures, development, construction activities, gardens, lawns, application of chemicals, uncontained areas of hazardous materials as defined by Oregon Department of Environmental Quality, pet wastes, dumping of materials of any kind, or other activities shall be permitted within the vegetated corridor which may negatively impact water quality, except those allowed by Section 3.02.4.
3. Prior to any site clearing, grading or construction the vegetated corridor and water quality sensitive areas shall be surveyed, staked, and temporarily fenced per approved development plan. During construction the vegetated corridor shall remain fenced and undisturbed except as allowed by Section 3.02.5 and per approved plans.
4. Prior to any activity within the sensitive area, the applicant shall gain authorization for the project from the Oregon Division of State Lands (DSL) and US Army Corps of Engineers (USACE). The applicant shall provide the District or its designee (appropriate city) with copies of all DSL and USACE project authorization permits. **No impact proposed.**
5. An approved Oregon Department of Forestry Notification is required for one or more trees harvested for sale, trade, or barter, on any non-federal lands within the State of Oregon.
6. Appropriate Best Management Practices (BMP's) for Erosion Control, in accordance with the CWS Erosion Control Technical Guidance Manual shall be used prior to, during, and following earth disturbing activities.
7. Prior to construction, a Stormwater Connection Permit from the District or its designee is required pursuant to Ordinance 27, Section 4.B.
8. The District or City/County may require an easement over the vegetated corridor conveying storm, surface water management, and/or sanitary sewer rights to the District or City that would prevent the owner of the vegetated corridor from activities and uses inconsistent with the purpose of the corridor and any easements therein.
9. Activities located within the 100-year floodplain shall comply with Section 3.13 of R&O 04-9.
10. Removal of native, woody vegetation shall be limited to the greatest extent practicable.
11. Should final development plans differ significantly from those submitted for review by the District, the applicant shall provide updated drawings, and if necessary, obtain a revised Service Provider Letter.

SPECIAL CONDITIONS

12. The vegetated corridor width for sensitive areas within the project site shall be a minimum of 50 feet wide, as measured horizontally from the delineated boundary of the sensitive area.
13. For vegetated corridors 50 feet wide or greater, the first 50 feet closest to the sensitive area shall be equal to or better than a "good" corridor condition as defined in Section 3.02.7, Table 3.2.

14. Clean Water Services shall be notified 72 hours prior to the start and completion of enhancement/restoration activities. Enhancement/restoration activities shall comply with the guidelines provided in Landscape Requirements (R&O 04-9: Appendix D).
15. Prior to installation of plant materials, all invasive vegetation within the vegetated corridor shall be removed. During removal of invasive vegetation care shall be taken to minimize impacts to existing native trees and shrub species.
16. Enhancement/restoration of the vegetated corridor shall be provided in accordance with the attached planting plan and R&O 04-9, Appendix D.
17. Prior to any site clearing, grading or construction, the applicant shall provide the District with the required vegetated corridor enhancement/restoration plan in compliance with R&O 04-9.
18. Maintenance and monitoring requirements shall comply with Section 2.11.2 of R&O 04-9. If at any time during the warranty period the landscaping falls below the 80% survival level, the Owner shall reinstall all deficient planting at the next appropriate planting opportunity and the two year maintenance period shall begin again from the date of replanting.
19. Performance assurances for the vegetated corridor shall comply with Section 2.06.2, Table 2-1 and Section 2.10, Table 2-2.

CONDITIONS TO BE INCLUDED ON CONSTRUCTION PLANS

20. Final construction plans shall include landscape plans. Plans shall include in the details a description of the methods for removal and control of exotic species, location, distribution, condition and size of plantings, existing plants and trees to be preserved, and installation methods for plant materials. Plantings shall be tagged for dormant season identification. Tags to remain on plant material after planting for monitoring purposes.
21. A Maintenance Plan shall be included on final plans including methods, responsible party contact information, and dates (minimum two times per year, by June 1 and September 30).
22. Final construction plans shall clearly depict the location and dimensions of the sensitive area and the vegetated corridor (indicating good, marginal, or degraded condition). Sensitive area boundaries shall be marked in the field. (See attached figure).

This Service Provider Letter is not valid unless CWS-approved site plan is attached.

Please call (503) 681-5157 with any questions.

**Astrid Dragoy
Environmental Plan Review**

Attachments (1)

