

# Exhibit G



## **Castle-Rose Environmental**

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## **Wetland Determination**

Parcel            00677306  
Site Address:    19618 SE Bornstedt Road  
Site City/Zip:   Sandy, Oregon 97055

**April 15, 2022**

### **Prepared For:**

Even Better Homes  
PO Box 2021  
Gresham, OR 97030

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## Summary

This stream determination report is submitted for Clackamas County Parcel 00677306 with site address 19618 Bornstedt Road, Sandy OR 97055. Various databases, including the National Wetland Inventory (NWI), National Hydrography Dataset, the Oregon Statewide Wetland Inventory (SWI), etc. – map an *intermittent* stream on the property.

The City of Sandy annexed the property effective October 3, 2019, triggering review of stream classification for new development permits per Municipal Code 17.60 – Flood and Slope Hazard (FSH) Overlay review to confirm the stream is not perennial (17.60.30.2). The City of Sandy FSH Overlay (buffer) does not apply to intermittent or ephemeral streams.

On December 3, 2021, Castle-Rose Environmental (CRE) prepared a stream assessment using the Streamflow Duration Assessment Method (SDAM) for Oregon [Nadeau, T-L. 2011 Streamflow Duration Assessment Method for Oregon, U.S. Environmental Protection Agency, Region 10, Document No. EPA 910-R-11-002.] The finding was an ephemeral stream.

The SDAM five-indicator field evaluation was negative for fish presence, and the findings were supported by the Oregon Department of Fish and Wildlife (ODFW) COMPASS mapping program and StreamNet – which show no mapped fish presence in the unnamed stream.



A) Landscape Setting

**Primary Address:** 19618 SE Bornstedt Rd, Sandy, 97055  
**Jurisdiction:** [Sandy](#)  
**Map Number:** 24E24C  
**Taxlot Number:** 24E24C 00100  
**Parcel Number:** 00677306  
**Document Number:** 2021-052061 **Census Tract:** 023403  
**Landclass:** 401

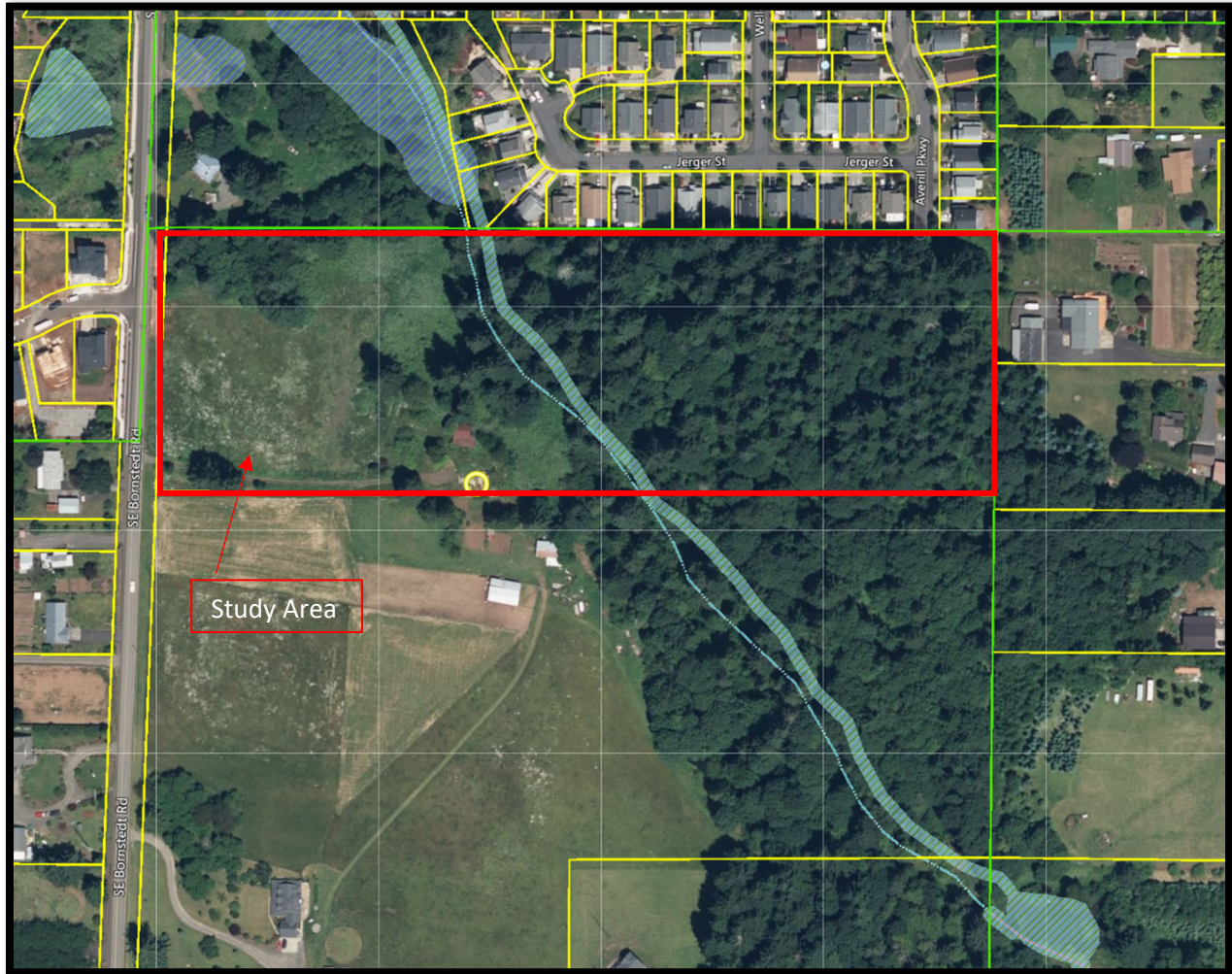


Figure 1: Study Area ~12.64 Acres (Clackamas CMAP)

The study area includes the entirety of subject parcel.

Parcel 00677306 historically was developed as a single-family residential farm.

An unnamed intermittent stream meanders through the parcel, flowing south to north, connecting an upstream source pond (artificial) with mapped wetlands downstream. The stream elevation at the north exit is approximately 979 feet (see Figure 5 – Stream Map, appendices) and 989 feet at the south property line (~2% slope: 10' rise over 572' run).



Project Type: Stream Determination  
Subject Property: Clackamas County Parcel 00677306  
Project #: CR-Stream-2022-03-01



## B) Site Alterations

The study area is slightly altered from natural conditions. The west third of the property is developed as pasture since at least 1956. The pasture is fenced. Portions of the study area were developed for a single-family residential farm, including driveway, a pair of sheds, house and small orchard. The residential development occurred on the west side of the stream. East of the stream, the property has no indication of development and remains forested.

The north and south property lines are fenced, including a fence installed across the stream at the north exit from the study area.

The stream is altered from natural flow by a temporary debris dam that has accumulated at the fence where the stream crosses the north property line.

In September 2020, the riparian areas around the west side of the stream had been cleared to dirt to remove Himalayan blackberry.

No other alterations to natural features noted.

## C) Precipitation Data and Analysis

Antecedent precipitation data is provided from the Natural Resources Conservation Service (NRCS) Agricultural Applied Climate Information System (AgACIS) stations Sandy 1.0 WSW and Sandy 1.4 NE. No other station data is relevant due to geography limitations (elevation). The Sandy 1.0 WSW station is the most relevant geographically, but has no full-year data available. Data from Sandy 1.4 NE is more complete – but the best fit data was a combination of data from both stations. The data from the two stations best reflects the relationship between local surface water flow and precipitation.

Site visit dates:

1. September 4, 2020
2. November 13, 2021
3. February 5, 2022

Table 1: Annual Precipitation														
Station Sandy 1.4 NE (elevation 435 feet)														
Station Sandy 1.0 WSW (elevation 865 feet)														
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	%Diff
2017	M	M	M	6.47	3.42	2.25	0.00	0.24	M	7.12	9.86	5.17	4.32	-0.46%
2018	8.96	4.13	4.41	7.36	0.59	1.53	0.07	0.41	1.47	4.58	5.30	8.92	3.98	-8.65%
2019	5.07	7.96	2.55	7.73	2.43	2.12	1.02	1.60	5.21	3.24	2.15	4.48	3.80	-13.3%
2020	12.37	4.46	5.07	2.39	7.24	5.75	0.22	0.53	2.20	3.19	7.97	10.01	5.12	+16.5%
2021	7.71	6.12	3.79	1.30	3.38	2.29	0.04	0.26	4.83	5.77	10.78	7.85	4.51	+3.84%
2022	5.50	2.40	5.65											
Mean	8.53	5.67	3.96	5.05	3.41	2.79	0.27	0.61	3.43	4.78	7.21	7.29	4.34	

Table 1 data used for Water Year analysis.



<b>Table 2: Water Year to Date</b>			
	<b>Actual</b>	<b>Average</b>	<b>%Change</b>
Sep 4, 2020 (Oct 2019 – Aug 2020)	47.9	48.21	-0.65%
November 13, 2021 (Oct 2021 – Nov 13, 2021)	12.28	8.46	+45.15%
Feb 5, 2022 (Oct 2021 – Jan 2022)	28.88	26.53	+8.86%

<b>Table 3: Site Visit and 2-Week Antecedent Precipitation</b>			
	<b>Day of</b>		
<b>Site Visit</b>	<b>Actual</b>	<b>Average</b>	<b>%Change</b>
4-Sep-20	0	0.01	-100%
13-Nov-21	1.21	0.42	188%
5-Feb-22	0.08	0.41	81%
	<b>2-week Prior</b>		
	<b>Actual</b>	<b>Average</b>	<b>%Change</b>
4-Sep-20	0.23	0.25	8%
13-Nov-21	6.51	3.68	77%
5-Feb-22	1.51	3.3	54.20%

A storm event from November 10 – 13, 2021 presented an opportunity to observe the site under higher-than-normal flow conditions.

Precipitation data shows the four-day precipitation 248% greater than normal for the time period of November 10-13:

<b>Table 4: 3-Day Storm Event (Station Sandy 1.0 WSW)</b>			
<b>Date</b>	<b>Inches/Precip</b>	<b>Mean for Calendar Day</b>	<b>Percent Change</b>
11/10/2021	0.21	0.10	+110%
11/11/2021	0.91	0.24	+279%
11/12/2021	<b>1.92</b>	0.43	+347%
11/13/2021	<b>1.21</b>	0.42	+188%
sum	5.25	1.51	+248%

Under these conditions, the stream flow was approximately 6” in depth and formed the basis for the bankfull width mapping (see Figure 5 Stream Map, appendices). The November storm event yields a conservative estimate of channel width. On February 5, 2022 – in a higher-than-normal precipitation year to date (+9%) – the channel contained no water in the upper reaches of the stream.

The data also reveals the stream flow dependency on recent heavy precipitation. Although year-to-date precipitation was higher than normal for the February 5, 2022 site visit – the stream channel had no surface water except for the debris dam pool – which had reduced in water depth from 6” to 2” since November 13, 2021.



## D) Methods

### Dates of Field Investigations

- September 4, 2020
- November 13, 2021
- February 5, 2022

### Site-specific Methods

The mapped stream was assessed using the Streamflow Duration Assessment Method (SDAM) for Oregon [Nadeau, T-L. 2011 Streamflow Duration Assessment Method for Oregon, U.S. Environmental Protection Agency, Region 10, Document No. EPA 910-R-11-002.] The completed form is available in the appendices.

#### *SDAM Evaluation Criteria*

##### 1. Observed Hydrology

During the 04-Sep-20 site visit, stream channel was dry for the entire study area reach.

Stream water flow up to 6" in depth was observed during the 13-Nov-21 site visit. Surface and hyporheic flow was observed in the lowest stream reach near the north property line during the 05-Feb-22 site visit. Hyporheic flow was caused by a debris dam at the fence line. No surface water flow for the upper 80% of the stream reach.

##### 2. Indicators of Streamflow Duration

###### i. **Presence of Aquatic Macroinvertebrates**

All available habitat was assessed in less than 15 minutes during the 04-Sep-20 site visit. Six samples were collected in more than 15 minutes during the 13-Nov-21 site visit using the small net and tray method.

No aquatic macroinvertebrates were identified during either site visit.

###### ii. **Presence of 6 or more *EPHEMEROPTERA***

No individuals of *EPHEMEROPTERA* identified during the 04-Sep-20 or 13-Nov-21 site visits.

###### iii. **Presence of perennial indicator tax**

No life stages of *Juga spp.*, *Margaritiferidae* or *Unionidae* identified during 04-Sep-20 or 13-Nov-21 site visits. No larvae or nymphs of other indicator species per Table 1 of the Streamflow Duration Assessment Method for Oregon (November 2011).

###### iv. **Wetland plants in or near streambed**

No FACW, OBL or Submerged Aquatic Vegetation species observed within ½ the bankfull width of the stream (no FACW, OBL or Submerged Aquatic Vegetation observed anywhere in the study area).



For a complete list of species occurring in the riparian zone, please see Table 6.

#### v. Slope

The channel slope is extrapolated from Figure 4 – Stream Map (appendices). The Stream Map includes 1-foot contours mapped with survey-grade precision. The elevation at the valley/ravine south end (maximum elevation) is approximately 989' (City of Sandy elevation datum). The elevation at the north property line is approximately 979'. The distance is approximately 560'. The slope is less than 2% (~1.7).

In addition to the five field assessment criteria listed above, the SDAM method includes Single Indicator Criteria based on fish or amphibian presence:

##### 1. One or more fish are found in the assessment reach

No fish were observed by either CRE or PHS during the field investigations. The ODFW COMPASS and StreamNet fish distribution databases show no indication of fish presence or habitat in the subject stream. StreamNet map included as Figure 6 in the appendices.

##### 2. One or more individuals of an amphibian or snake life stage (adult, juvenile, larva, or eggs) identified as obligate or facultative wet (Table 2) are present in the assessment reach.

No amphibians or snakes at any life stage were observed in the assessed stream.

#### Locally Significant Wetlands

Locally significant wetlands (LSW) are an evaluation criteria for the City of Sandy Flood And Slope Hazard (FSH) Overlay and site analysis is required for properties newly annexed into the city jurisdictional limits.

The site was reviewed for potential wetlands using Level 3 Routine Wetland Determination in accordance with methods prescribed by the US Army Corps of Engineers 1987 Wetland Delineation Manual:

##### *Section B. Preliminary Data Gathering and Synthesis*

53. This section discusses potential sources of information that may be helpful in making a wetland determination. When the routine approach is used, it may often be possible to make a wetland determination based on available vegetation, soils, and hydrology data for the area.

*Level 3 - Combination of Levels 1 and 2.* This level should be used when there is sufficient information already available to characterize the vegetation, soils, and hydrology of a portion, but not all, of the project area. Methods described for Level 1 may be applied to portions of the area for which adequate information already exists, and onsite methods (Level 2) must be applied to the remainder of the area (see Section D, Subsection 3).

##### *Offsite Preliminary Data Gathering and Synthesis*



Consistent with '87 Manual and Regional Supplement procedures, the general approach for this study area included Section B - Preliminary Data Gathering and Synthesis methods. For this study area, the data sources included:

1. National Wetland Inventory (Wetlands Mapper)
  - a. Cowardin stream classification
2. Oregon Statewide Wetlands Inventory mapping program
  - a. NWI-mapped Wetlands
  - b. NRCS Hydric Soils
  - c. National Hydrography Dataset
3. The National Map
  - a. Topographic data
  - b. National Hydrography Dataset
  - c. FWS Topo Wetlands
4. NRCS Web Soil Survey
  - a. Soil Profiles for entire site
5. NETRONLINE Historical Aerials Viewer (<https://www.historicaerials.com/viewer>)
  - a. Historical topographic maps:
    - i. 1956, 1958, 1962, 1971, 1980, 1985
  - b. Historical Aerials reviewed:
    - i. 1953, 1956, 1970, 1981, 1995, 2000
6. Google Earth Pro Historical Aerials
  - a. 1994, 2000 – 2021
7. Clackamas County CMAP
  - a. Property Information
8. Oregon Department of Geology and Mineral Industries (DOGAMI)
  - a. Lidar Data Viewer (<https://gis.dogami.oregon.gov/maps/lidarviewer/>)
9. Oregon Dept. of Fish and Wildlife COMPASS map
  - a. Fish distribution
10. StreamNet
  - a. Fish distribution

Data included in this report are sourced from the enumerated list.

<b>Table 5 – Preliminary Data Gathering</b>		
<b>Dataset</b>	<b>Wetland Indicator</b>	<b>Findings</b>
National Wetlands Inventory	X	FWS-mapped stream (unnamed stream)
Statewide Wetlands Inventory	X	FWS-mapped stream
Local Wetlands Inventory		Study area is not within the Sandy LWI
National Hydrography Data Set	X	Unnamed intermittent stream
NRCS Soil Survey		No mapped hydric soils
FWS Topo Wetlands		
Historical Aerials		
Historical Topographic	X	Unnamed stream
ODFW COMPASS		No mapped fish presence
StreamNet		No mapped fish presence





The preliminary data gathering indicates an intermittent stream. The stream was mapped by the US Geological Survey since at least 1911.

### *Onsite*

- September 4, 2020

The lower reach of the stream within the study area had been recently cleared (to dirt) of Himalayan blackberry. No distinctive channel observed – but area had been partially graded and any channel obscured. Himalayan blackberry had started to grow. No other vegetation in the lower reach observed.

A mixture of FAC and UPL plants observed in the middle and upper stream channel and riparian areas. No observed hydrology on the surface or subsurface.

- November 13, 2021

The previously cleared riparian and channel areas now covered completely with dominant Himalayan blackberry. Water flow at average depth of six inches observed (storm event November 10 – 13, 2021). Water was flowing throughout the study area stream reach. Water flow slows down in lower reach of stream due to debris accumulation at fence line.

- February 5, 2022

No stream flow in upper two thirds of stream reach. Scour channel from November storm event clearly visible, including under the north pool Himalayan blackberry cover. Riparian and flooded channel vegetation remains mix of FAC and UPL species. No FACW or OBL species observed. Water in pool at lower 1/3<sup>rd</sup> of stream reach approximately two inches and visibly flowing north before passing underground at the fence line debris dam. Limits of soil saturation (within 12” of surface) sampled and mapped. Mapped saturated area is a linear polygon reflecting a widening of the stream hyporheic zone due to slowing of stream flow caused by the debris dam.

Within 20 feet upstream of visible surface water, the stream channel was not saturated within 16 inches of the surface.

### Data Point Summary

Several data points were collected on February 5, 2022 to determine extent of saturation relative to the stream channel. The lower pool (north end of stream) data points identified the expansion of the stream hyporheic zone due to the debris dam at the fence line, and a mid-channel datapoint was collected to observe stream channel saturation above the lowest elevation of observed surface water. The data points confirm that the stream does not support riparian wetlands.



## E) Description of All Wetlands and Other Non-Wetland Waters

### Unnamed Ephemeral Stream

The reach of the unnamed stream in the study area is approximately 560 feet, with a surface area of approximately 4,000 square feet (0.09 acre). The average bankfull width is ~4 feet. Stream flow is south to north. All stream flow is in direct response to precipitation. No groundwater or snowmelt contribution to flow is observed. The pool at the lowest elevation drains slower than the rest of the channel due to accumulation of debris at the north property line fence. The channel is partially vegetated year-round with complete scour in discrete reaches during high-flow stormwater events. Channel is observable in vegetated areas.

Riparian vegetation is a mix of FAC, FACU and UPL species. No observed fish or herpetological species. Documented vegetation listed in Table 6.

<b>Table 6: Riparian Vegetation</b>			
<b>Species</b>		<b>Wetland Indicator</b>	<b>Notes and Prevalence (random 5-ft radius plots)</b>
<b>Scientific Name</b>	<b>Common Name</b>		
<b>Herbs</b>			
<i>Rubus armeniacus</i>	Himalayan blackberry	FAC	90% to 100% in two open areas; 5% in areas with tree canopy.
<i>Rubus laciniatus</i>	Cutleaf blackberry	FACU	5% in understory
<i>Galium aparine</i>	Stickywilly	FACU	Understory 5-20%
<i>Vinca minor</i>	Common periwinkle	NOL	Species has zero tolerance for anaerobic soil conditions. UPL species. 5-10% in understory
<i>Polystichum munitum</i>	Western swordfern	FACU	Up to 50% in understory
<i>Symphoricarpos albus</i>	Common snowberry	FACU	Up to 50% in understory
<i>Symphoricarpos albus</i>	Curly dock	FAC	Up to 35% in understory
<i>Ranunculus repens</i>	Creeping buttercup	FAC	Up to 20% in understory
<i>Claytonia perfoliata</i>	Miner's lettuce	FAC	5-10% in understory
<i>Dactylis glomerata</i>	Orchardgrass	FACU	Up to 50% in areas (species identified using mature stands in adjacent pasture for reference)
<b>Trees and shrubs within 30 feet of OHW *see arborist tree inventory with Figure 4 – Stream Map</b>			
<i>Ilex aquifolium</i>	English holly	FACU	Up to 50% in tree stratum (understory)
<i>Sambucus racemosa</i>	Red elderberry	FACU	<10% in understory
<i>Rubus spectabilis</i>	Salmonberry	FAC	Up to 15% in shrub stratum
<i>Acer macrophyllum</i>	Bigleaf maple	FACU	Up to 100% in tree stratum (overstory)
<i>Acer circinatum</i>	Vine maple	FAC	Up to 20% in understory
<i>Thuja plicata</i>	Western red cedar	FAC	Single tree
<i>Pseudotsuga menziesii</i>	Douglas fir	FACU	Up to 100% in overstory
<i>Abies grandis</i>	Grand Fir	FACU	Up to 50% in overstory
<i>Tsuga heterophylla</i>	Western Hemlock	FACU	Up to 50% in overstory
<i>Crataegus douglasii</i>	Black Hawthorn	FAC	Single tree



## F) Deviation from LWI or NWI

The US FWS Cowardin classification for the stream is PFO1C (Palustrine Forested Broad-leaved Deciduous Seasonally Flooded) based on photo interpretation using 1:58,000 scale, color infrared imagery from 1981.

As an ephemeral stream, a Cowardin classification does not apply (Cowardin classification limited to perennial and intermittent streams).

## G) Mapping Method

Data points mapped by All County Surveyors using local control survey methods with sub-centimeter accuracy. Each surveyed data point is marked by staking flags in the field. Topographic map produced by local control survey data used to extrapolate the OHW mark based on six-inch water depth. Photo data points are mapped using +/- 3-meter GPS.

## H) Additional Information

### *Jurisdictional Considerations*

The City of Sandy submitted the CRE 03-DEC-2021 SDAM report for third-party review by Pacific Habitat Services (PHS), which was completed January 27, 2022 (field work on January 5, 2022). The PHS finding was an intermittent stream on the basis of an Obligate (OBL) plant within ½ of the stream width.

PHS reported finding a "...sizable stand of American brooklime (*Veronica americana*; FACW [sic]), a wetland plant,.." in one section of the stream. PHS did not specify the location of the ostensible stand of the OBL species or otherwise document the occurrence (e.g., with photographs), but no incidences were observed during the three CRE site visits. During the 05-Feb-2022 site visit, CRE photographed all species that had any resemblance to *Veronica americana*. It was determined that PHS misidentified the plant, likely confusing it with *Rumex crispus* – curly dock [FAC].



Figure 2: USDA image of *Veronica americana* at an early stage growth.



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Figure 2 shows a “substantial stand” of *Veronica americana* at an early growth stage. This plant does not occur in the study area.

Figure 3 below shows example of *Rumex crispus* (curly dock) in the stream channel area.



Figure 3: *Rumex crispus* in the stream area (CRE 05-Feb-2022)

As documented by both CRE and PHS – no other Facultative Wet (FACW) or OBL species were identified within the required setback from the stream.

Regardless of the plant identification discrepancy, both PHS and CRE documented No Fish Presence or Fish Habitat as defined by Oregon Revised Statute (ORS) 196.800. Fish presence is required for intermittent streams to be jurisdictional per the Oregon Department of State Lands (DSL) Removal-Fill Guide (2019):

1. An intermittent stream is defined in statute as “any stream that flows during a portion of every year and which provides spawning, rearing, or food-producing areas for food and game fish” (ORS 196.800). In other words, an intermittent stream is a stream which flows during a portion of every year and which provides one or more of the following:
  - Spawning areas for at least one species of food fish and one species of game fish
  - Rearing areas for at least one species of food fish and one species of game fish
  - Food-producing areas for at least one species of food fish and one species of game fish

The Oregon Department of Fish and Wildlife (ODFW) COMPASS mapping system reports no fish presence in the Trickle Creek tributary, with similar results from StreamNet. COMPASS does not support printing functions, but the StreamNet map is included in the appendices as Figure 6.

#### Potential Wetlands





Under certain conditions, SDAM provides for analysis of stream segments as wetlands rather than stream:

#### ADDITIONAL CONSIDERATIONS

If the stream does not have a bed and banks, is covered with wetland plant species, and/or indicators cannot be assessed, it may be more appropriate to consider the reach as a swale, wetland, or upland.

The most appropriate designation for the entire reach is 'stream'. The north pool is covered in *Rubus armeniacus* (Himalayan blackberry) – a dominant FAC plant. Soils in the pool area are documented with redoximorphic features. However, the stream banks and bed are identifiable during high flow events.

Additionally, the pool forms under artificial conditions due to debris accumulation at the fence line. If the fence is removed and the debris cleared, the pool and associated hyporheic flow would disappear. Under natural flow conditions, the lower reach would resemble the rest of the stream reach in hydrogeomorphic characteristics. During the 05-FEB-2022 site visit, water continued to flow downstream – passing under the debris dam (a hyporheic flow characteristic).

The plant community formed during late summer dry season and is not hydrophytic, but representative of an invasive species takeover of a mowed site:



Figure 4: north pool reach - 04SEP2020







Figure 5: north fence line 04SEP2020 (hyporheic flow observed here on 05FEB2022)

## Results and Conclusion

The stream reach in the study area is ephemeral. No other waterbodies in the study area.

### I) Disclaimer

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

Jason Smith  
Principal Investigator



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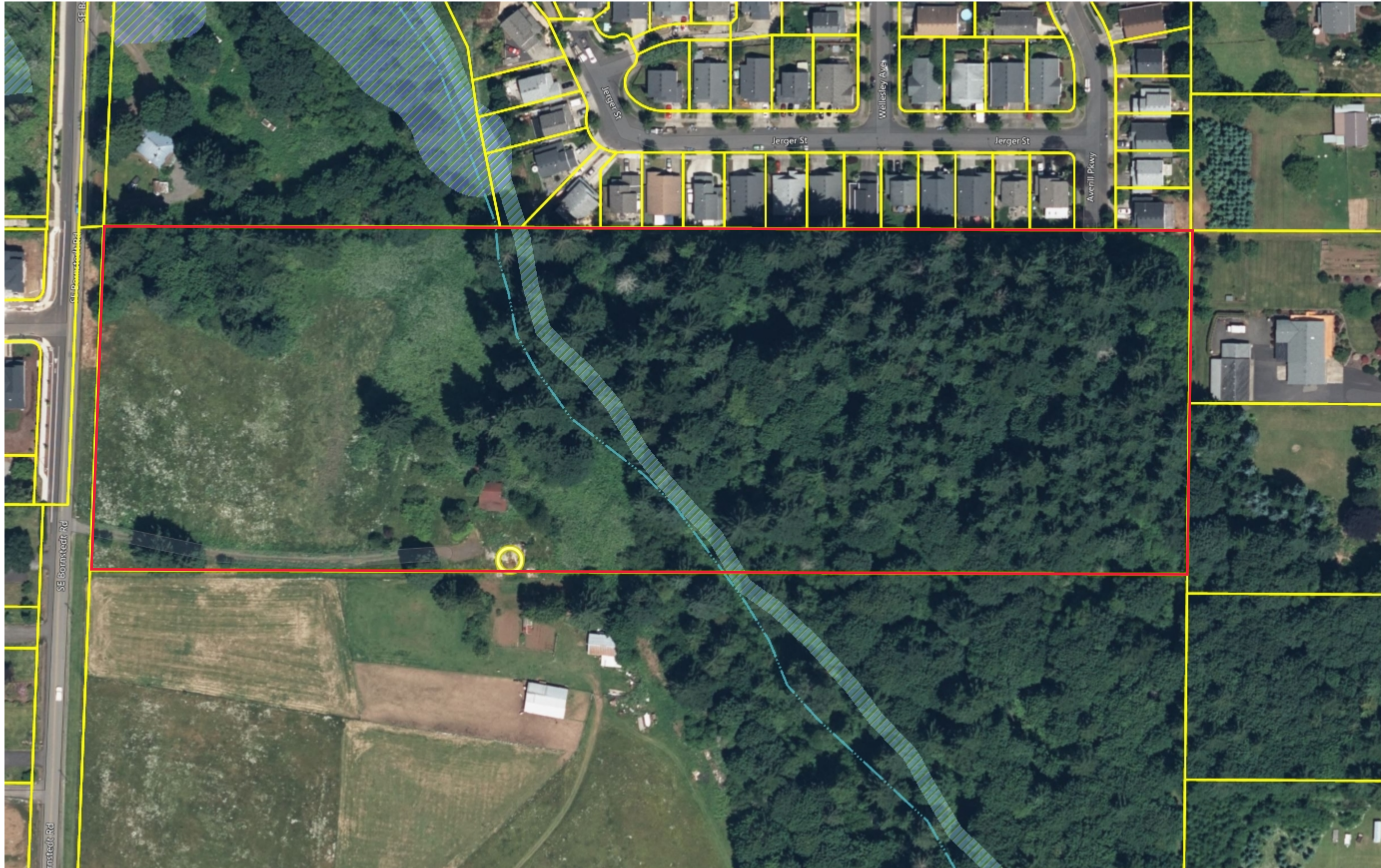
April 15, 2022

# Appendix A

## Maps and Figures



Figure 1: Location Map - **19618 Bornstedt Road**



- Legend**
- States & Provinces
    - Other States and Provinces
    - Oregon
  - LWI Wetlands
  - NWI Wetlands
  - NRCS Predominantly Hydric Soil Map Units
  - Flowline - Large Scale
    - Perennial
    - Intermittent
    - Ephemeral
    - Artificial Path
    - Canal Ditch
    - Coastline
    - Connector
    - Pipeline
    - Underground Conduit
  - Essential Salmonid Habitat
  - taxlot

1: 1,982



0.1 0 0.03 0.1 Miles

**Notes**



Figure 2: Tax Lot Map 2 4 E 24C

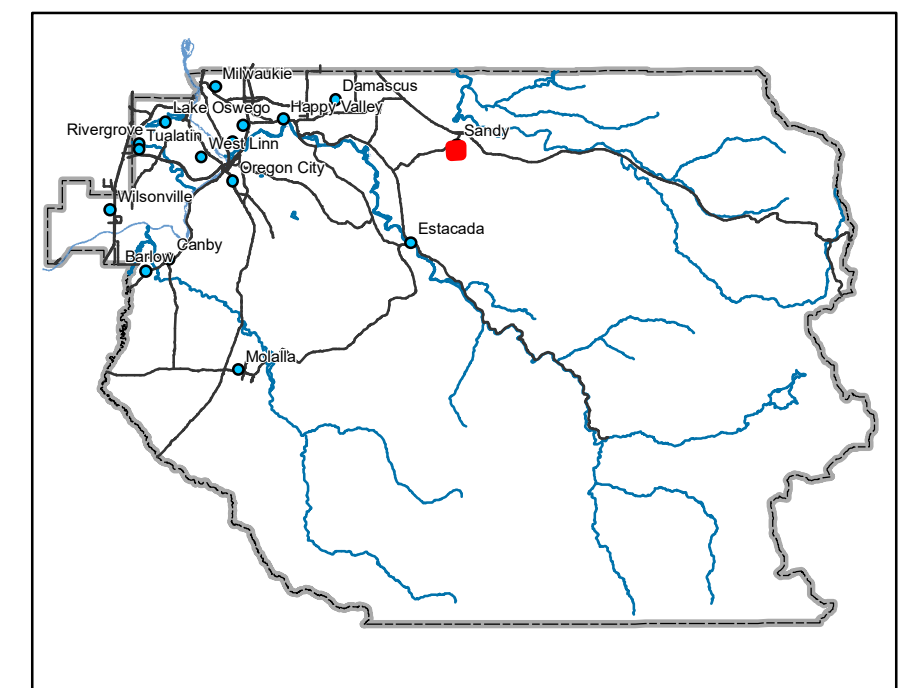
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CLACKAMAS COUNTY  
1" = 200'

*Cancelled Taxlots*

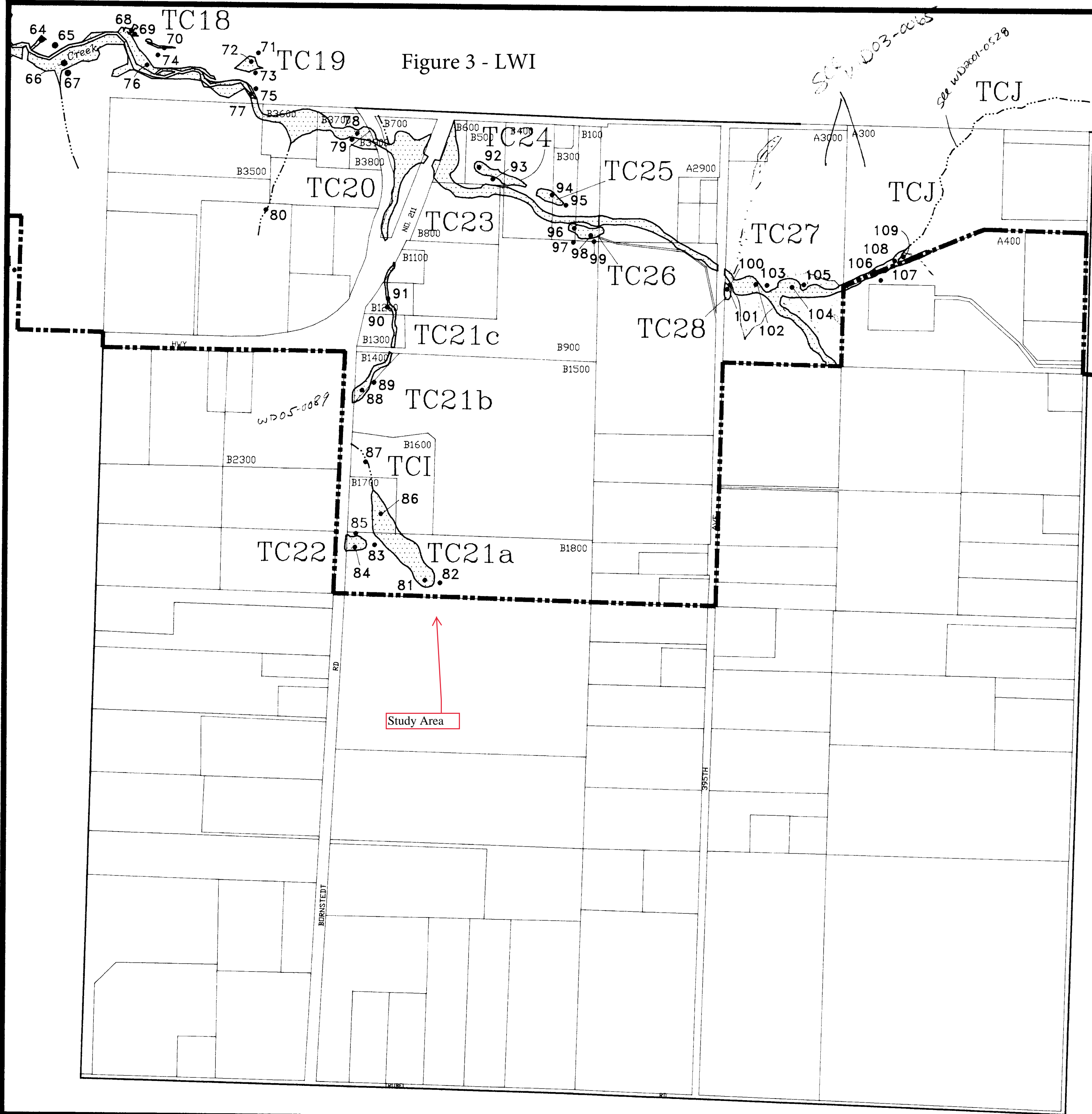
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2200  
301

Study Area

- Parcel Boundary
- - - Private Road ROW
- - - Historical Boundary
- + + + Railroad Centerline
- TaxCodeLines
- ☒ Map Index
- WaterLines
- Land Use Zoning
- ▨ Plats
- ☒ Water
- ⊙ Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- - - DLC Line
- - - Meander Line
- - - PLSS Section Line
- ⊗ Historic Corridor 40'
- ⊗ Historic Corridor 20'



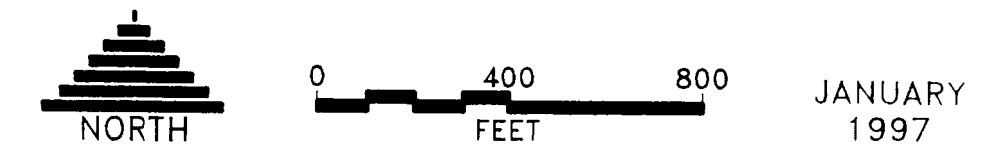
THIS MAP IS FOR ASSESSMENT  
PURPOSES ONLY



T 2S R 4E Section 24

# CITY OF SANDY LOCAL WETLAND INVENTORY

- 8 Sample site
- TC4 Wetland designator
- Urban Growth Boundary
- Potentially jurisdictional wetland
- - - Intermittent stream
- Wetland acreage  
1 acre  
1/10th acre  
1/100th acre



JANUARY 1997

WETLAND INFORMATION IS SUBJECT TO CHANGE

This map is for planning purposes only. It has not been finalized and adopted by the City of Sandy or approved by the wetland regulatory agencies. You are advised to contact the Oregon Division of State Lands or the U.S. Army Corps of Engineers with any regulatory questions. Mapped wetland boundaries were not flagged or surveyed, but are accurate to within 25 feet, and there may be unmapped wetlands subject to regulation. Some areas have been identified as potential wetlands and are located on the maps. In all cases, actual field conditions determine wetland boundaries.

*City of Sandy*

39250 Pioneer Boulevard  
Sandy, Oregon 97055

SRI/SHAPIRO AGCO  
INCORPORATED

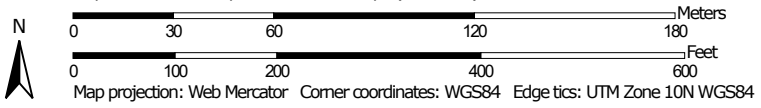
WETLANDS INVENTORY  
Local Wetlands Inventory  
Date 2/19/97 Approved by J. Morlan



Soil Map—Clackamas County Area, Oregon  
(Figure 4: 19618 SE Bornstedt Rd)



Map Scale: 1:2,260 if printed on A landscape (11" x 8.5") sheet.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon

Survey Area Data: Version 18, Oct 27, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 22, 2020—Jun 26, 2020

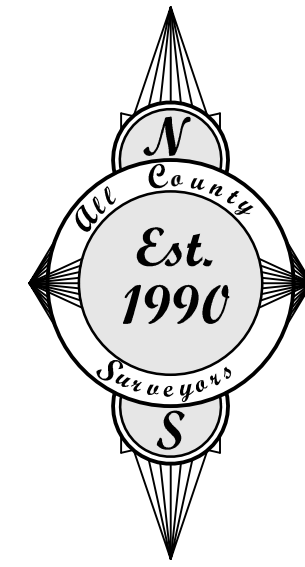
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
15B	Cazadero silty clay loam, 0 to 7 percent slopes	2.1	17.0%
15C	Cazadero silty clay loam, 7 to 12 percent slopes	5.4	42.4%
15D	Cazadero silty clay loam, 12 to 20 percent slopes	1.8	14.6%
24B	Cottrell silty clay loam, 2 to 8 percent slopes	3.3	26.0%
<b>Totals for Area of Interest</b>		<b>12.6</b>	<b>100.0%</b>



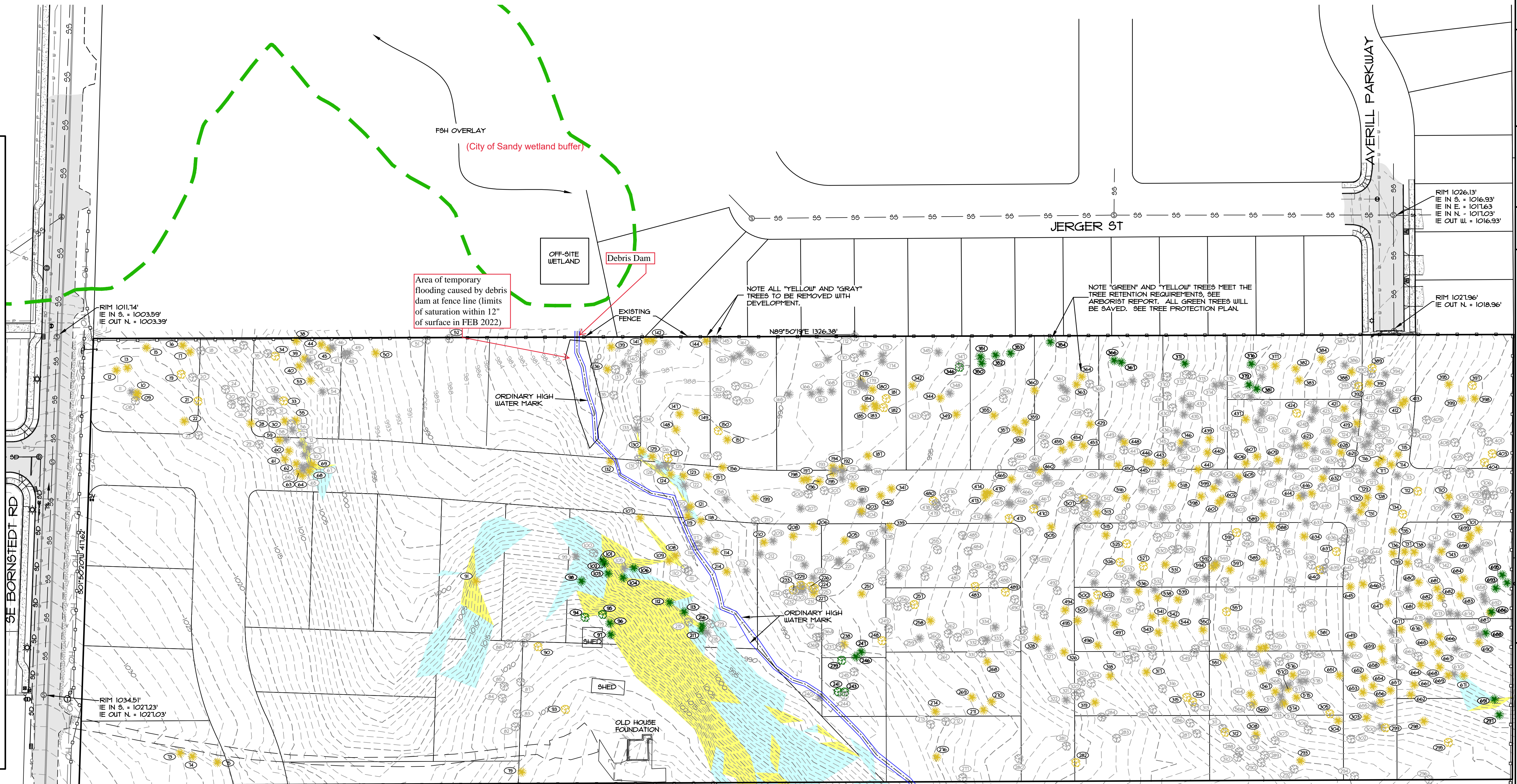
Figure 5: Stream Map



SCALE: 1" = 50'

**LEGEND**

- (E) PROPERTY LINE
- (E) LOT LINE
- (E) CL RIGHT OF WAY
- (E) EASEMENT LINE
- (E) 5' GROUND CONTOUR
- (E) 1' GROUND CONTOUR
- (E) BUILDING WALL
- (E) AC PAVEMENT
- (E) SIDEWALK/CONCRETE
- (E) GRAVEL
- (E) CURB & GUTTER
- (E) FENCE
- (E) WATER LINE
- (E) 6" WATER LINE
- (E) 8" WATER LINE
- (E) 12" WATER LINE
- (E) STORM LINE
- (E) SANITARY LINE
- (E) GAS LINE
- (E) TELEPHONE LINE, CAT
- (E) OVERHEAD POWER LI
- FOUND SURVEY MONUMENT
- (E) STORM MANHOLE
- (E) CATCH BASIN
- (E) WATER METER
- (E) WATER VALVE
- (E) MANHOLE
- (E) GAS VALVE
- (E) LIGHT POLE
- (E) UTILITY POLE
- (E) POLE W/ GUY WIRE
- (E) SIGN
- (E) DECIDUOUS TREE
- (E) CONIFEROUS TREE
- (P) SANITARY LINE
- (P) SANITARY MANHOLE
- (P) STORM LINE
- (P) STORM MANHOLE
- (P) CATCH BASIN
- (P) WATER LINE
- (P) WATER METER
- (P) WATER VALVE
- (P) FIRE HYDRANT
- (P) STREET LIGHT



Mapping Precision:  
\*Local control survey method =  
sub-centimeter accuracy

NOTE THE SUBJECT SITE IS PARCEL 3 PARTITION  
PLAT 2018-045. MONUMENTS WERE FOUND AND  
HELD AND THE MEASURED DISTANCE MATCH  
CLOSELY TO THE PLAT. SEE RECORDED SURVEY  
SN2022-026 RECORDED 1-3-2022 FOR DETAILED  
BOUNDARY DETERMINATION.

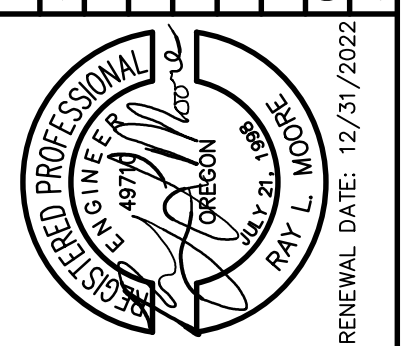
**TOPOGRAPHIC SURVEY**  
SCALE: 1" = 50'

**SLOPE ANALYSIS LEGEND**

- SLOPES OF 0-24.99%
- SLOPES OF 25-34.99%
- SLOPES OF 35% AND GREATER

BENCHMARK  
ELEVATIONS ARE BASED ON CITY OF SANDY  
ELEVATION DATUM

BY		SHEET	3
REVISION		OF	10
DATE		DESIGNED:	RLM
		DRAWN:	RLM
		CHECKED:	DLH
		APPROVED:	RLM



SCALE	VERT: N/A	SECTION	24	4E
HORIZ: 1" = 50'	DATE: 7-26-21	RANGE	25	
FILE: 19-266 - Planning.dwg	LEGAL			

**THE BORNSTEDT VIEWS**  
TOPOGRAPHIC SURVEY

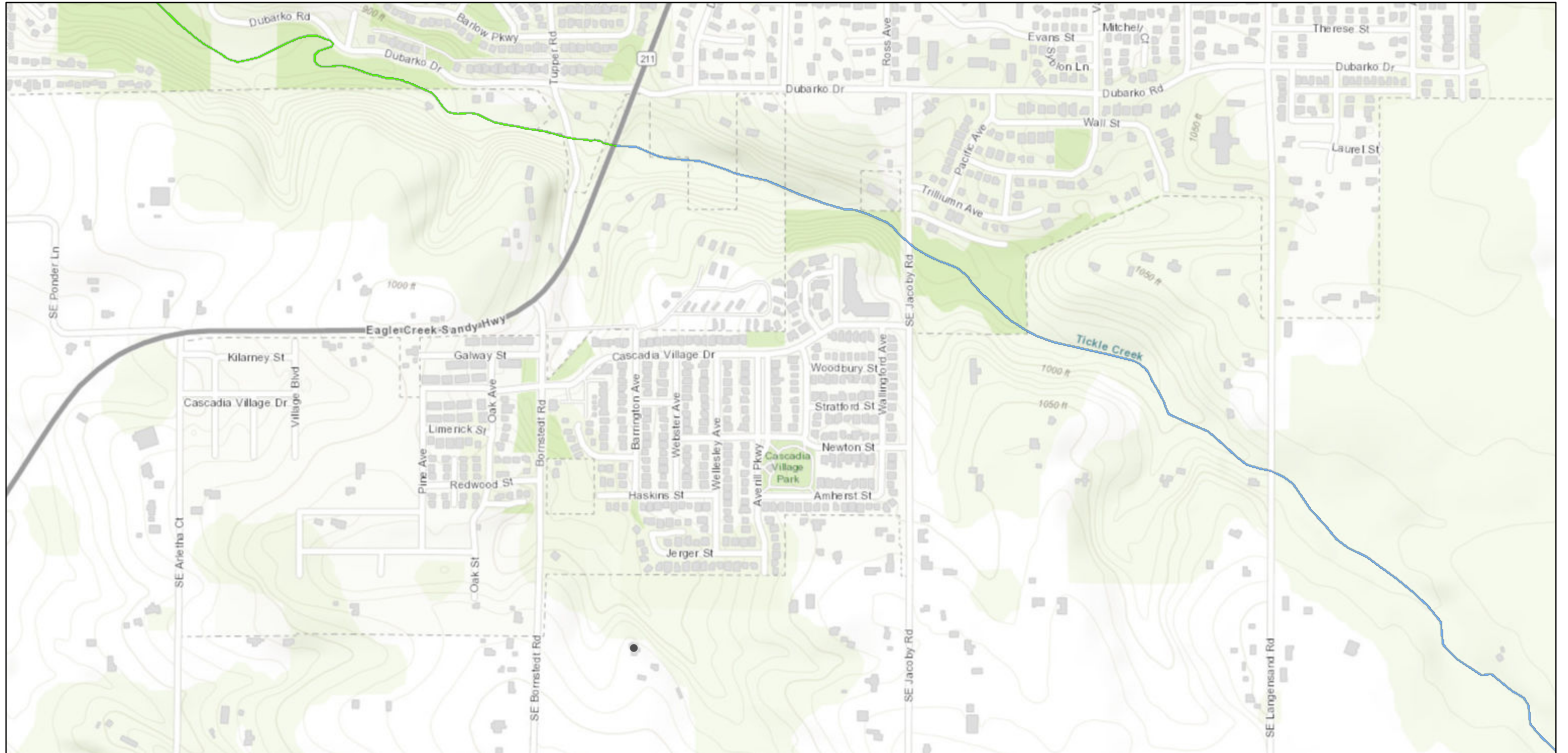
PROJECT LOCATION: 19618 SE BORNSTEDT ROAD, SANDY, OR

**Surveyors & Planners, Inc.**  
Surveying, Planning and  
Civil Engineering  
P.O. Box 925, Sandy, OR 97055  
Phone: (503) 348-5602  
Fax: (503) 668-4720  
EMAIL: mocc@evenbetterhomes.com

CLIENT:  
EVEN BETTER HOMES, INC.  
MAC EVEN  
PO BOX 2021  
GRESHAM, OR 97030  
PHONE: (503) 348-5602  
EMAIL: mocc@evenbetterhomes.com

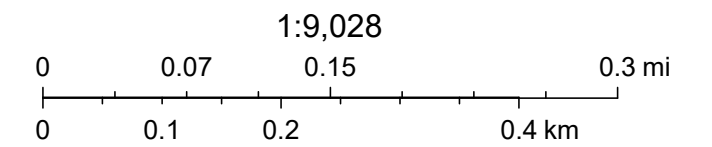


# Figure 6: StreamNet for 1968 SE Bornstedt



4/12/2022, 12:01:41 PM

- |  |                  |                           |                           |                               |                              |                         |
|--|------------------|---------------------------|---------------------------|-------------------------------|------------------------------|-------------------------|
| — Fish Distribution - All Species Combined | — Unknown        | — Nodal (adult residence) | — Nodal (adult residence) | — Nodal (adult residence)     | — Unknown                    | — Unknown               |
| — Pacific Lamprey                          | — White Sturgeon | — Rearing and migration   | — Rearing and migration   | — Rearing and migration       | — Westslope Cutthroat Trout  | — Winter Steelhead      |
| — Rearing and migration                    | — Migration only | — Spawning and rearing    | — Spawning and rearing    | — Spawning and rearing        | — Spawning and rearing       | — Migration only        |
| — Spawning and rearing                     | — Year-round use | — Year-round use          | — Year-round use          | — Year-round use              | — Year-round use             | — Rearing and migration |
| — Unknown                                  | — Unknown        | — Unknown                 | — Unknown                 | — Unknown                     | — Unknown                    | — Spawning and rearing  |
| — Green Sturgeon                           | — Redband Trout  | — Rainbow Trout           | — Bull Trout              | — Yellowstone Cutthroat Trout | — Bonneville Cutthroat Trout | — Unknown; <Null>       |
| — Migration only                           | — Foraging       | — Foraging                | — Foraging                | — Nodal (adult residence)     | — Rearing and migration      | — Summer Steelhead      |
| — Year-round use                           | — Migration only | — Migration only          | — Migration only          | — Year-round use              | — Spawning and rearing       | — Migration only        |



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, StreamNet, Pacific States Marine Fisheries Commission



# Appendix B

## Data & Forms

1. CRE SDAM Form
2. PHS SDAM Form & Report
3. ORWAP Report
4. Stream Statistics Report
5. Wetland Data Form 1
6. Wetland Data Form 2

# Appendix C

## Photos

# Appendix D

## Statement of Qualifications

Castle-Rose Environmental  
849 Woodpecker DR  
Kelso, WA 98626  
360.270.8497



Jason A. Smith  
Environmental Professional  
[jason@castle-rose.net](mailto:jason@castle-rose.net)

### *STATEMENT OF QUALIFICATIONS*

**Experience & Capabilities**      **Castle-Rose Environmental (Oct 2005 – Present)**  
**Natural Resource Consulting, Inc. (Mar 2002 – Oct 2005)**

*Qualifications  
Required by  
Code*

- Qualified as Senior Biologist for Washington State Dept. of Transportation Biological Evaluations and Biological Assessments
- Qualified Professional for Washington State Critical Areas Ordinance
  - **Wetlands.** Biologist or wetland ecologist who has a bachelor's degree in wetland science, hydrology, soil science, botany, ecology, resource management, or a related field, from an accredited college or university; at least two years of experience under the supervision of a practicing wetland professional; and has experience delineating wetlands, preparing wetland reports, conducting function assessments, and developing and implementing mitigation plans.
  - **Fish and Wildlife Habitat Areas.** Biologist/wildlife biologist/stream ecologist/habitat ecologist who has a bachelor's degree in biological, wildlife and/or stream ecology science from an accredited college or university and has at least two years of experience under the supervision of a practicing professional biologist or ecologist.

*Typical Duties*

- Develop Quality Assurance Project Plans, Sampling and Analysis Plans, NEPA & SEPA Environmental Assessments
- Project manager, designer, & estimator for environmental construction projects
- Develop environmental management plans for projects and works
- Provide specialist advice on environmental protection measures
- Undertakes environmental monitoring auditing and surveillance
- Perform critical areas delineations and impact assessment
- Provide environmental awareness and training

- Assess construction-related impacts to offsite receptors and develops appropriate control measures
- Provides scientific and technical support for project scoping & planning, impact assessment, risk assessment, and site assessment
- Provides field analytical methods, sampling for all media, and QA/QC for data collection, analysis, and reporting
- Works with federal, state and local agencies to develop projects within regulatory, economic, and functional constraints

### **Education**

- **University of Idaho (2004 – 2011)**
  - Master of Science, Environmental Science (2007)
  - Graduate Certificate, Environmental Contamination Assessment (2005)
  - Graduate Certificate, Restoration Ecology (2008)
- **University of Hawaii @ Hilo (1994 – 1998)**
  - Bachelors in Natural Science, Minor in Chemistry

### **Graduate, Continuing Education & Training Summary**

#### **University of Idaho (Graduate Wetland and Ecological Study & Research)**

- Plant Ecophysiology
- GIS Remote Sensing – Hydrology Applications
- GIS Applications in Natural Resources
- GIS Applications in Fire Ecology
- Wildland Restoration Ecology
- Wetland Restoration
- Soil Environmental Physics
- Environmental Hydrology
- Geochemistry of Natural Waters
- Advanced Geochemistry of Natural Waters
- Planning & Decision Making for Watershed Management
- Human Dimensions of Restoration Ecology

#### **Northwest Environmental Training Center**

- Fundamental Contaminant Chemistry - An Overview of Chemistry Principles Essential to Understanding Contaminant Behavior in the Environment (2004)
- Quality Assurance/Quality Control Management of Environmental Analytical Data (2003)
- Computer Statistical Models for Environmental Sampling

#### **Agency Training**

- Naval Facilities Engineering Service Center, Environmental Restoration Technology Transfer
  - The PCB Training Tool (2004)
  - Assessing Risks to Amphibians Training Tool (2005)

- The DNAPL Detection and Characterization Tool (2004)
- USACE Nationwide Permit Training (Vancouver, 2003)
- USACE Wetland Regulatory Assistance Program, Wetland Training (2005)
- Advanced Biological Assessment Preparation (WA Technology Transfer Center, 2003, 2006, 2008)
  - WSDOT-Certified as a Senior Biological Assessment Writer (2006, recertified 2008)
- Channel Migration Zone training (WA DNR, Enumclaw, 2003)
- USACE Construction Quality Management Certificate, 2011

### **EPA Watershed Academy**

- Watershed Management Training Certificate (2005)

### **Technical Experience Summary:**

**Provide scientific & technical support for development and maintenance projects impacting natural resources in urban and rural settings. Work directly with federal and state agencies and local governments to develop projects within regulatory, economic, and functional constraints. Project types include government, industrial, commercial, and residential:**

1. *Federal facilities including military bases, hydropower and flood control dams*
2. *In-water and over-water work including wharfs/piers/docks/dolphins/marinas/weirs/dredging, etc.*
3. *Wetland fills & enhancement, restoration, creation, monitoring*
4. *Riparian & aquatic habitat restoration (including fish passage improvement), etc.*
5. *Wind and water erosion control, construction erosion control, industrial runoff control*

### **Independently performed data collection for spatial, physical, chemical, biological and cultural elements.**

1. *Used advanced laser ranging, GPS methods (including RTK) and CADD to locate and delineate natural resource features within the context of project impacts. Calculations and delineations included aquatic, riparian, and wetland habitat surface areas, fill volumes, buffers, mitigation areas, stream velocity & discharge, percolation & infiltration rates, and surface runoff calculations.*
2. *Evaluated project sites to determine environmental baseline conditions for various habitat indicators including hydric soil, hydrology, vegetation, fish, wildlife, etc., in context of natural and anthropogenic disturbances.*
3. *Evaluated sites for soil, water and sediment contamination. Developed scientifically rigorous Sampling and Analysis Plans, Quality Assurance Project Plans (federal projects), executed fieldwork (including field chemistry), analyzed data, and developed final analytical reports. Fieldwork included upland soil, water-column, and sediment sample collection.*

### **Analyzed data and prepared reports, permit applications and supporting documents including:**

1. *NEPA Environmental Assessments & Impact Statements*
2. *Biological Assessments & Evaluations*
3. *Critical Habitat Assessments*
4. *Wetland Delineations & Wetland Mitigation Plans*
5. *Habitat Restoration Plans*
6. *Riparian Functional Assessments*
7. *WA, OR & CA Joint Applications w/ maps & figures*
  - a. *401 Water Quality Certifications*

*b. Federal Section 10 & 404 Permits*

*c. Hydraulic Project Approvals*

*d. Aquatic Use Authorizations*

*e. Fill & Removal Permits*

*8. Dredged Material Characterizations*

*9. Oregon Preliminary & Expanded Preliminary Assessments*

*10. Ecological Risk Assessments*

*11. NPDES Permits, including Stormwater Management Plans*

*12. SEPA checklists*

## **Summary Project History**

*Multiple Environmental Planning/Environmental Assessment projects – local:* Routinely provide Wetland Delineations, Biological Assessments and Evaluations, Critical Habitat Analysis and stream/riparian assessment. All project types for municipal, industrial, commercial and private clients each year. Recent project history (2018 – Present):

- Oregon Wetlands
  - Eight wetland projects for Removal/Fill permit analysis in Multnomah and Clackamas Counties
    - Wetland delineation review and update for expired concurrence
    - New wetland delineations
- Oregon Jurisdictional Determinations
  - Gresham 2020; Happy Valley 2021
    - For subdivision Removal/Fill Permit, provided jurisdictional analysis for roadside ditch
  - Fairview 2020
    - Performed jurisdictional analysis of artificial drainage ditch connecting to fish-bearing stream and lake.
- Washington Critical Areas Ordinance (Cowlitz County; Clark County; Pacific County)
  - Stream typing and impact analysis for residential septic system and driveway
  - Review and update of wetland delineations prepared by others; stream/riparian analysis; incorporation of updated wetland delineation into current Critical Areas Ordinance with analysis of Wetland Function Rating
  - Critical Areas Ordinance to correct/update online GIS data (e.g., Cowlitz County EPIC, the National Hydrography Dataset; Washington Water Quality Atlas; Washington Forest Practices Application Mapping Tool, etc.) for three stream channels using a combination of field investigation for fish presence and seasonal/perennial flow and 3DEP LIDAR analysis. Mapped riparian buffers.
  - Critical Areas Ordinance report including wetland determination and riparian buffer analysis for Weyerhaeuser development project



- Review and update of wetland delineation reports prepared by others; new wetland delineation report; Critical Areas Report with Wetland Function Rating analysis and shoreline/riparian analysis
- Critical Areas Ordinance report including Fish Habitat Analysis; riparian buffers; wetland determination; Wetland Functional Rating analysis for offsite wetlands with overlapping buffers on project site
- Washington Sand & Gravel Permits
  - Prepared environmental permit application for sand/gravel quarry (maps/environmental impact analysis/mitigation planning)
    - Longview 2019
    - Ridgefield 2021

Additional Select Projects (starting 2002):

*Bureau of Land Management, Arizona – Hazardous Fuels Reduction/Riparian Ecosystem Restoration (2008 – 2009)* As a consultant for the Bureau of Land Management’s (BLM) Lower Sonoran Field Office, developed the invasive species removal and riparian ecosystem restoration plan and NEPA Environmental Assessment for prescribed burn of 3,200 acres of salt cedar-infested riparian habitat along a 13-mile reach of the Gila River, outside of Phoenix. Project deliverables included mapping the project area based on riparian and wetland features and invasive species distribution, developing weed eradication strategies (including combination mechanical, herbicide and fire treatments), and assessing impacts of all project activities on human and natural resources.

*Coleman Bulkhead Replacement, Silver Lake WA, 2008*

Designed the replacement of an existing concrete bulkhead at a Silverlake, WA residence. Project included design of a vinyl sheet pile bulkhead, developing construction methods to minimize impacts to aquatic resources, and coordinating environmental permits with Cowlitz County, Washington Department of Fish and Wildlife, and the US Army Corps of Engineers.

*USACE Portland District LePage Park Design/Build (2007)*

Designed in-water work project to replace docks at LePage Park, Oregon. As the project manager/designer, worked with USACE Regulatory Branch and project manager, NOAA Fisheries, and USFWS biologists to ensure project compliance with NEPA (categorical exclusion), Clean Water Act, and Endangered Species Act. Assisted the USACE project engineers with developing shoreline restoration strategies along a 250-foot reach of the campground.

*Pierson Shoreline Restoration, Cowlitz County (2006)*

Developed a riparian/wetland habitat and shoreline restoration plan along several hundred feet of the Cowlitz River, near Castle Rock, WA. Project included developing a planting plan and bio-engineering methods to save existing vegetation compromised by toe erosion. Prepared Biological Evaluation, Critical Habitat Assessment, JARPA for HPA, USACE Section 10 & 404 permits, WA DNR Water Quality Permits, Cowlitz County Shoreline Substantial Development Permits, etc.

*Columbia County, OR Linear Park (Rails-to-Trails) (2005)*

Performed phase I and phase II environmental risk assessments for a right-of-way donation to Columbia County for the purpose of conversion to a linear park (equestrian and bicycle trail with amenities). Right-of-way bordered several wetlands and streams supporting endangered salmonids and priority habitats. After completing the phased risk assessment, coordinated two public scoping meetings to support NEPA EIS development. Used field analytical and GIS methods to delineate project impacts to adjacent landowners and natural resources, including wetland impacts.

*Warpala Marina, Lower Columbia River WA (2005)*

Prepared the Environmental Impact Statement (SEPA) for a new 250-slip marina on the Lower Columbia River. Project functions included surveying and mapping, a riparian habitat functional analysis, wetland delineation and mitigation, biological assessment, and negotiation and development of mitigation measures including restoration of several acres of wetlands infested by invasive species (Scotch broom) on an adjacent island.

*USFWS Abernathy Fish Technology Center (2005)*

Provided environmental planning and permitting for the replacement of the Abernathy Fish Technology Center electric fish weir (in-stream construction). Included delineating natural resources in the project site (riparian vegetation, fish habitat, etc.), preparing impact assessments and coordination of conservation measures, minimization measures, reasonable and prudent measures, etc. required by the US Fish and Wildlife Service, Washington Department of Fish and Wildlife Service, NOAA Fisheries, Washington Department of Ecology and Cowlitz County.

*FAA Instrument Landing System, Goldendale WA (2005)*

Prepared the NEPA Environmental Assessment for the installation of a new instrument landing system at the Goldendale Airport, Goldendale WA. Project scope included biological/ecological, cultural, and social impacts (including noise impact assessment).

*Port of St. Helens, Multnomah Plywood Mill (2004-2005)*

Developed the wetland delineation for a 50-acre abandoned mill site under the jurisdiction of the Port of St. Helens (Columbia County, OR). Project included restoration impact analysis for project areas along the Multnomah Channel (Columbia River).

*Port of St. Helens, McNulty Creek Industrial Park (2004)*

Designed a wetland fill project in support of a new industrial park in St. Helens, Oregon. Project included coordinating the development of a wetland delineation and mitigation plan with US Army Corps of Engineers and Oregon Department of Environmental Quality representatives. Developed the wetland habitat restoration plan.

*Stream Typing – (2002 – Present)*

In support of forest management and land use activities in Washington and Oregon, provide stream typing services including classification system of streams and other water bodies that identifies whether streams/water bodies are used by fish, and whether streams experience perennial or seasonal flow. Establish riparian buffers for forestry and shoreline use permits; use electroshocking and other fish presence identification methods; hydrologic analysis; GIS methods, etc.

# Appendix E

## Citations