

Memorandum



To: Josette Mitchell, City of Vernonia, City Administrator
From: Grace Coffey, AICP
Date: 6.20.23
Re: **Vernonia UGB Adjustment – Preliminary Wetland Determination Methodology**

Summary

Vernonia is in the process of bringing the “Boot” area into the Vernonia Urban Growth Boundary (UGB) using an Urban Growth Boundary Adjustment. Buildable lands are a key factor in determining development capacity for lands brought out of the UGB and into the UGB. All land within the Vernonia UGB was inventoried in the 2000 Local Wetlands Inventory by Shapiro and Associates, Inc. The Boot was not inventoried because it is outside of the current UGB, so no wetland areas were identified in initial “constrained land” analysis of the Boot area. However, residents in the Boot area testified during the public hearings process that the Boot contains large wetland areas. Therefore, Winterbrook evaluated the Boot for probable wetlands in order to inform the UGB adjustment and plan more effectively for the Boot area.

The following analysis is not a formal wetlands determination or delineation but provides preliminary off-site mapping of probable wetlands in the Boot. This analysis provides the basis for wetland contributions to “constrained lands” in the buildable land calculations. Preliminary wetland analysis was provided by Anita Smyth, SPWS¹ and Tim Brooks ASLA².

¹ Anita is a Senior Professional Wetland Scientist with 25 years of experience in natural resource inventories, with emphasis on wetland delineation and permitting. She holds a Professional Master’s Degree in Environmental Sciences from Oregon State University. Anita has served as the senior wetland scientist on LWIs for the Cities of Damascus, Junction City and Pendleton. During her nine years at a multidisciplinary civil engineering firm, she expanded that technical and project management expertise through execution of numerous wetland mitigation site design projects, natural resource inventories, and riparian and wetland functional assessments as stand-alone projects and as part of Joint Permit Applications for specific actions. She spent two years at Clackamas County’s Department of Transportation and Development, Engineering Section as a program manager and a resource for wetland and other environmental expertise.

² Tim has more than 30 years of experience managing State Goal 5 natural resource inventory and planning projects for local communities in Oregon. Tim managed wetland inventories for the cities of Albany, Corvallis, Damascus, Gresham, Junction City, Newberg, Pendleton, Portland, Prineville, West Linn and Woodburn. In addition to project management, Tim has completed field investigations, wetland delineations and assessments, sensitive species surveys, and wildlife habitat assessments for both public and private clients throughout Oregon and Washington. Tim completed the DSL/Corps/USFWS Interagency Wetland Delineation Course in 1993. Beginning in 1995, Tim worked under the guidance of Andy Castelle and other professional wetland scientists and has completed specialty courses in wetland science.

Vernonia 9-06 Development in Wetlands

Vernonia protects locally significant wetlands identified in the Vernonia Local Wetlands Inventory in Ordinance 9-06 Development in Wetlands. New development is prohibited in protected wetland areas, inventoried wetlands are not considered “buildable land”.

Methodology

Winterbook’s wetland experts reviewed publicly available existing literature, maps, and data sources to identify site characteristics indicative of wetlands within the Boot study area³. Wetland assessment was performed entirely off site.

The Department of State Lands defines wetlands in Administrative Rule 141-085-0510 (110):

“Wetlands” means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The basis of determining whether a site is a wetland subject to federal, state, and/or local jurisdiction rests on meeting three parameters which are 1) wetland hydrology 2) hydric soils and 3) hydrophytic (water-tolerant) vegetation. In other words, it must have sufficient prolonged saturation to cause chemical and morphological changes in the soil and to support a hydrophytic vegetation community. An offsite determination is performed by evaluating these characteristics from a distance using a variety of information sources.

Information sources included the following:

- National Wetlands Inventory (NWI) data (U.S. Fish and Wildlife Service, 2015);
- Vernonia Local Wetlands Inventory (LWI) data. (DSL, 2000)
- Soils, Columbia County, Oregon (U.S.D.A. Natural Resource Conservation Service, 2019);
- Hydric Soils List, Columbia County, Oregon (NRCS, 2023).
- Floodplains (Federal Emergency Management Agency, 2010).
- Rivers (Oregon Rivers Database System, 2009)
- Topography, LiDAR, 3’ contour intervals, OLC North Coast (DOGAMI, 2009)
- Historic Aerials (Google Earth)

The Geographic Information System (GIS) data layers served as the base for the preliminary wetland mapping. The preliminary mapping included the following data:

- Vernonia LWI wetlands
- NWI wetlands
- Hydric soils
- Topography-3’ contours
- FEMA floodplain
- 2022 aerial photos
- DOGAMI 2009 3’ Bare Earth Lidar Data

³ Tax Lots: 44W04AV00200, 44W04AB01000, 44W04AB00100, 44W04AB01700, 44W04AB01701, 44W040000200, 44W040000102, 44W04AC00100, 44W04AC00102, 44W04AC00101, 44W04AC00103, 44W04AC00104, 44040000401

Using the data sources provided above, Winterbrook used the following site characteristics to map areas of high wetland probability:

- Areas bordering mapped LWI wetlands within UGB
- Areas within or bordering mapped NWI wetlands
- Areas with hydric soils
- Aerial photos and Google/Bing street views showing indicative wetland species
- Species signatures using nearby inventoried wetlands as a reference.
- Areas of low or depressional topography, consistent with LWI wetlands outside of study area, and topography patterns
- Floodplains

Analysis

Much of the Boot area has hydric soils, as listed by the NRCS. Soils in the area include:

- 60971-Mayger silt loam, Kenusky (Hydric)
- 60958-Glohmsilt loam, Kenusky (Hydric)
- 61013-OR009

Hydric soils are classified as those that developed under anaerobic soil conditions resulting from the presence of water. The NRCS maps hydric soils in the northern half of the Boot.

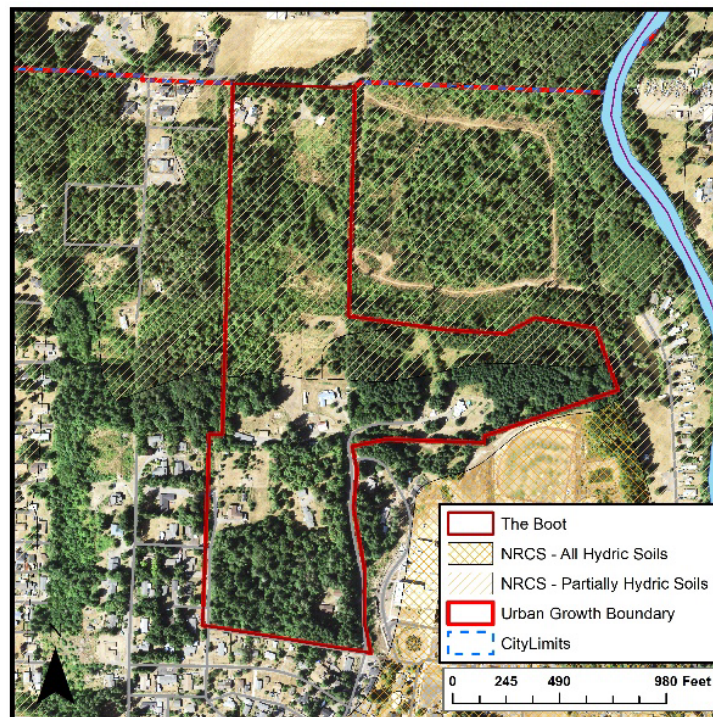


Figure 1: Hydric Soils

Additionally, there is an LWI-inventoried wetland that artificially ends at the study area border, and that likely extends into the Boot area based on topographic and vegetation signatures. When the Vernonia Local Wetlands Inventory was performed, the inventory did not extend past the Urban Growth

Boundary. The 0.8-acre wetland to the west of the Boot⁴ is likely to extend further into the Boot. The 1.1-acre wetland to the east of the Boot⁵ is an excavated pond. The pond “may receive surface water from intermittent drainages”.⁶

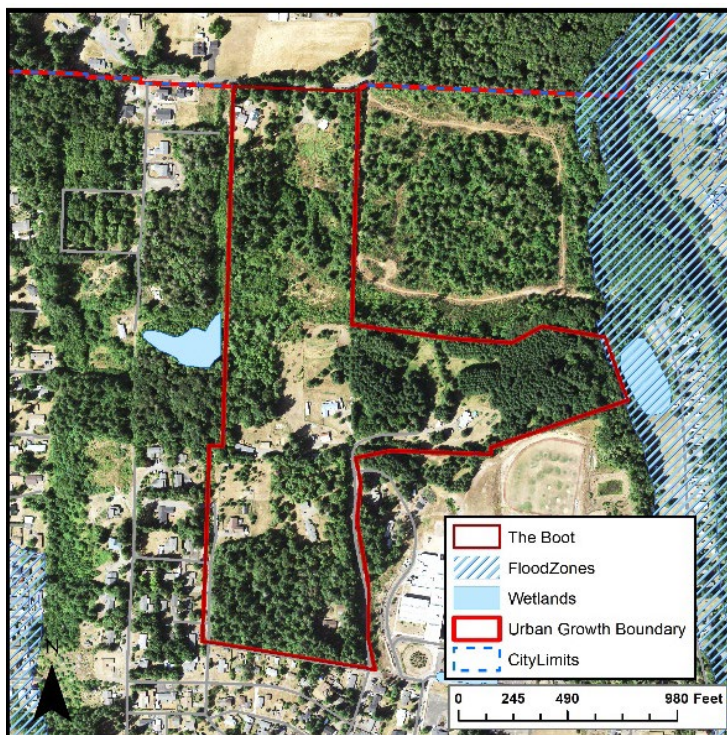


Figure 2: Wetlands and Floodplains

The data sheet for the westerly wetland identified in the LWI lists tree cover as the dominant vegetation cover in the wetland west of the boot. Species listed include Oregon ash (*Fraxinus latifolia*), red alder (*Alnus rubra*) and willow (*Salix spp.*). Aerial maps show vegetation signatures in parts the Boot that are suggestive of wetlands, including a transition from coniferous to deciduous woody vegetation, clear areas without tree growth, and emergent wetland grasses. A large open area in the north of the Boot has a vegetation signature typical for reed canarygrass (*Phalaris arundinacea*) when it has died back in the dormant season, with evidence of Himalayan blackberry (*Rubus armeniacus*) near the tree line. Winterbrook utilized current and historical aerial photography to consider reference sites with known vegetation to compare the vegetation community signatures of both locations. Areas with predominately Douglas fir (*Pseudotsuga menziesii*) and other conifer trees were generally considered outside of wetland areas, as they are intolerant of saturated soils and thus unlikely to occur within the wetland boundary.

⁴ LWI Wetland Mapping Code: VR-11

⁵ LWI Wetland Mapping Code: VR-6

⁶ Vernonia LWI Report 2000, Data sheet for Wetland VR-6.

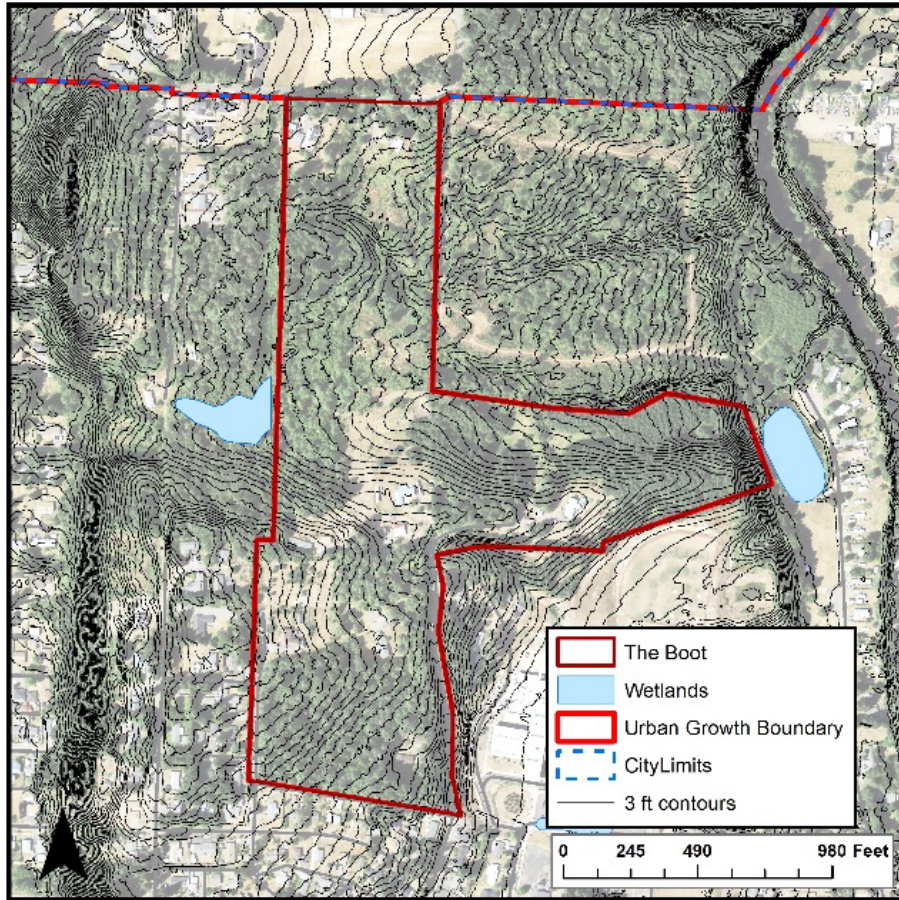


Figure 3: 3 ft Contours

Potential Wetlands

By analyzing vegetation signatures, historical aeriels, topography, and soils, Winterbrook identified an area that exhibits characteristics suggestive of wetland conditions in the northern half of the Boot, shown in Figure 4. The western border likely extends from the border of the LWI- wetland and follows the flat topography to the north. Topographic information is reinforced by a mapped hydric soil, a wetland indicator, as well as a vegetation community transition from water-intolerant conifers to a more deciduous plant community believed to be dominated by Oregon ash, which is classified as a hydrophyte. Moving downslope, the deciduous trees give way to what appears to be a reed canarygrass-dominated area, which would be consistent with wet conditions. The 8.1-acre wetland likely ends at the developed portion of the properties to the south and north. The wetland as shown extends into a drainageway that runs along the north of the toe of the Boot, which is believed to drain into the pond to the east of the Boot and from there to the Nehalem River. There are indications of an intermittent drainage feature along this drainageway, but these would likely not be mapped as riparian features because they would not be fish-bearing.

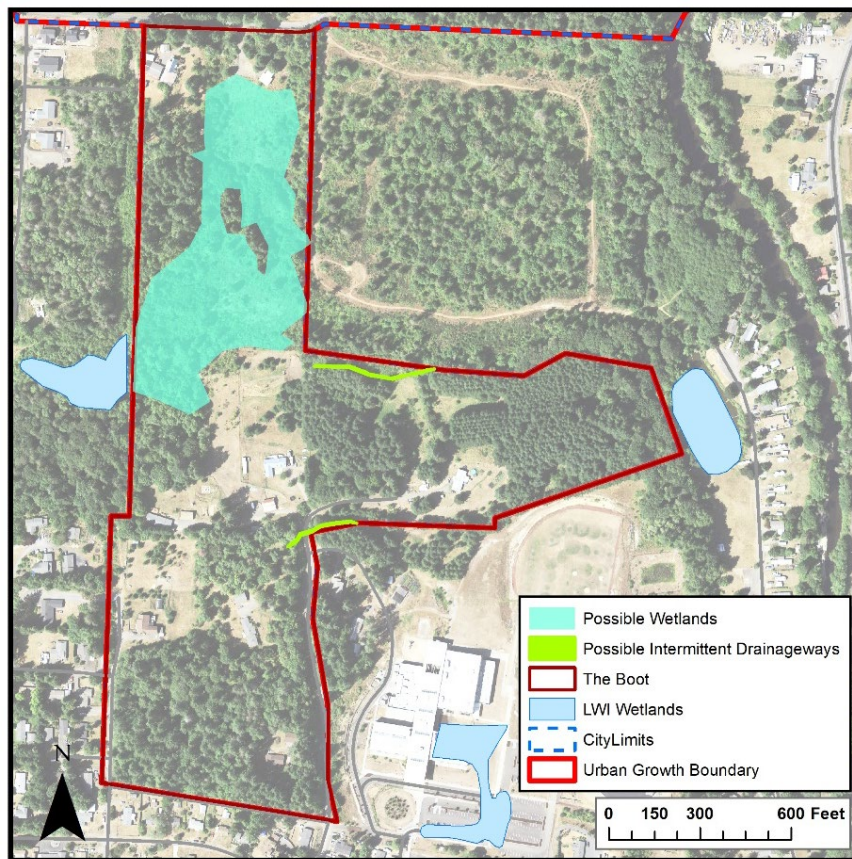


Figure 4: Possible Wetlands

A second area identified as a possible intermittent drainage feature was found near the center of the site where the Boot extends east. Topographic contours suggest an area of convergent drainage at the head of what is likely a headwater stream. Based on landscape positioning, this is consistent with a Slope Valley wetland configuration, which is driven by groundwater discharge from a hillslope. In the Willamette Valley, a common scenario is an intermittent stream fed by a small wetland or seep area from which the groundwater discharges, which then gradually creates a channel. Any wetland conditions would most likely be at the top of the drainage; the steepness of the channel as it extends offsite likely precludes the development of other wetlands adjacent to the channel. These wetlands are typically fairly small unless the seep or spring is perennial.⁷

⁷ This off-site wetland determination would not obviate the need for an on-site wetland delineation to identify wetland boundaries more definitively, particularly if land-disturbing work in these areas is proposed. Wetland boundaries are not final for permit purposes until the Oregon Department of State Lands concurs with a wetland delineation.

Conclusions

Gathering evidence from vegetation that appeared in aerial photographs, looking at the topography and physiography of the area using DEM and topography maps, analyzing soils, and comparing these features with existing inventoried wetlands, Winterbrook identified what is likely an 8.1-acre wetland that encompasses much of the northern portion of the Boot. This evidence is consistent with property owner testimony of the wetlands in the area. For the purposes of this analysis, this probable wetland can be considered “constrained land” due to Vernonia’s local wetland protections.