

DRAFT

Cooper Mountain Community Plan

Local Wetland Inventory

Prepared for
City of Beaverton
P.O. Box 4755
12725 SW Millikan Way
Beaverton, Oregon 97076-4755

Prepared by



2100 SW River Parkway
Portland, Oregon 97201

June 2020

TABLE OF CONTENTS

1. INTRODUCTION	1
2. METHODS	2
2.1 General.....	2
2.2 Preliminary Resource Review	2
2.3 Mapping Procedures and Estimated Accuracy	3
2.4 OFWAM Functional Assessment	4
2.5 Public Involvement Process	4
3. RESULTS	5
3.1 Study Area Description	5
3.2 Wetland Inventory Process	7
3.3 Summary of Inventory Results	7
3.4 OFWAM Process and Results	9
3.5 Summary of Locally Significant Wetlands	10
4. PREPARERS AND CONTRIBUTORS	10
5. BIBLIOGRAPHY	10
6. APPENDICES	11

Appendix A: Figures

Appendix B: Data Sheets

Appendix C: Wetland Summary Sheets

Appendix D: Wetland Functional Assessment Results

Tables

Table 1: Drainage Basins and Streams in LWI Study Area	6
Table 2: LWI Wetland Summary Results	8
Table 3: Wetland Functional Assessment Results	9

1. INTRODUCTION

This Local Wetland Inventory (LWI) has been conducted for the City of Beaverton's Cooper Mountain Community Plan (Community Plan). The Community Plan LWI project area is shown in Appendix A, Figure 1. Tax lots covered by the LWI are shown in Figure 2, including those tax lots in which site access was available and on-site wetland delineation methods were used.

When adopted, this LWI will be an amendment to the City's existing LWI. It is intended to cover the new Community Plan project area. No work was performed to revise existing LWI mapping for other areas of the City.

The LWI is intended to support planning level decision making and is not intended to replace more detailed site level wetland delineation work that may be needed for compliance with local, state, or federal regulations governing the protection of wetlands and surface waters. The LWI purpose and applicability, as provided in the Oregon Administrative Rules (OAR), are provided verbatim in italics text below.

OAR 141-086-0180 Purpose

Pursuant to Oregon Revised Statute (ORS) 196.674 pertaining to the Statewide Wetlands Inventory (SWI), these rules establish a system for uniform wetland identification and comprehensive mapping. These rules also establish wetlands inventory standards for cities or counties developing a wetland conservation plan (WCP) pursuant to ORS 196.678. A Local Wetlands Inventory (LWI) is developed for all or a portion of a city or county according to the standards and guidelines contained in these rules (OAR 141-086-0180 through 141-086-0240).

OAR 141-086-0185 Applicability

(1) Once approved by the Department of State Lands (Department), the LWI must be used in place of the National Wetlands Inventory (NWI) and is incorporated into the SWI.

(2) The approved LWI must be used by cities and counties in lieu of the NWI for notifying the Department of land use applications affecting mapped wetlands and other waters (ORS 215.418 and 227.350).

(3) An LWI fulfills the wetlands inventory requirements for Goal 5 and Goal 17 (OAR 660-015 and 660-023). An LWI that meets the additional WCP requirements specified in these rules must be used as the wetlands inventory basis for a WCP.

(4) A wetland function and condition assessment of mapped wetlands must be conducted as part of the LWI using the Oregon Freshwater Wetland Assessment Methodology (OFWAM) published by the Department in 1996. An equivalent functional assessment methodology may be used or adjustments may be made to OFWAM upon written approval by the Director. The assessment results are used to determine the relative quality (functions, values, and condition) of the mapped wetlands and to designate significant wetlands (OAR 141-086-0300 through 141-086-0350) as required for Goal 5, or to assess wetland functions and values for a WCP.

(5) An LWI is used by the Department, other agencies and the public to help determine if wetlands or other waters are present on particular land parcels.

(6) An LWI provides information for planning purposes on the location of potentially regulated wetlands and other waters such as lakes and streams, but is not of sufficient detail for permitting purposes under the state Removal-Fill Law (ORS 196.800 through 196.990). Smaller wetlands may not be mapped, and wetlands may be missed due to lack of onsite access, tree canopy cover and other constraints. A wetland delineation or determination report may be needed for parcels without LWI-mapped wetlands. A Department-approved wetland delineation report for wetlands identified in an LWI is usually needed prior to site development.

(7) All wetlands inventory procedures and products are subject to review and approval by the Department before the products:

- (a) Are incorporated into the SWI;
- (b) Can be used in lieu of the NWI for Wetland Land Use Notification purposes; or
- (c) Can be used by a city or county for Goal 5, Goal 17 or WCP purposes.

2. METHODS

2.1 GENERAL

Methods included a review of project area background materials and drive-by and on-site field reconnaissance visits. Field work was conducted during the week of April 20-25, 2020. Wetland delineation was conducted at a reconnaissance level of accuracy suitable for LWI documentation and City planning purposes.

This LWI follows the Oregon Department of State Lands (DSL) rules, specifically OAR 141-086. All wetlands one-half acre in size or larger were mapped as wetlands, while smaller wetlands were mapped as “probable wetlands.” DSL only requires that probable wetlands be mapped as point features (meaning that a single point would represent the wetland). For this project, probable wetlands were mapped as polygons if site access was available; if it was clearly visible from a roadway, air photo signature, or Light Detection and Ranging (LIDAR) contours; or if a previous wetland delineation had been performed by others and that mapping was available. All other probable wetlands were mapped as point features. Mapping of probable wetlands as polygons, where good data was available, was done to aid the City planning process, as these features will likely need to be avoided or encroachment minimized. Where site access was available within the project area, a single sample plot documenting typical conditions for the respective wetland was completed and boundaries were mapped using global positioning system (GPS). Data collection and wetland boundary delineation followed the Level 2 Routine Delineation Method described in the U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual (Environmental Laboratory 1987) and further supported by the Western Mountains, Valleys, and Coast Region (Corps 2010) regional supplement (Supplement). This method requires the simultaneous presence of hydrophytic vegetation, hydric soils, and positive wetland hydrology in wetland delineations.

2.2 PRELIMINARY RESOURCE REVIEW

Reference materials were reviewed prior to the field investigation to provide information regarding the possible presence of wetlands, water features, hydric soils, wetland hydrology, site topography, and habitat conditions. The materials reviewed included:

- ESRI ArcGIS OnlineWorld Imagery aerial photo imagery for ArcGIS (2020)
- Metro Regional Land Information System (RLIS) Geographic Information System (GIS) wetlands layer, hydric soils layer, and GIS streams layer (2020)
- Metro Cooper Mountain Natural Resource Management Plan (November 2005)
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) for Washington County, Oregon (2020)
- Oregon Department of Fish and Wildlife (ODFW) fish distribution GIS layers (2020)
- Shapiro & Associates, Inc. City of Beaverton Local Wetland Inventory and GIS data (2000)
- David Evans and Associates, Inc. South Cooper Mountain Annexation Area Local Wetland Inventory. Prepared for the City of Beaverton. (2016)

- U.S. Fish and Wildlife Service. National Wetland Inventory Wetland Mapper (2020)
- U.S. Geological Survey (USGS) National Hydrographic Database (NHD) high resolution GIS streams layer (2020)
- City of Beaverton January 2013 LIDAR derived contours (January 2013)
- DSL wetland determination/delineation database search results for Community Plan project area (April 2020)

2.3 MAPPING PROCEDURES AND ESTIMATED ACCURACY

Mapping of LWI features was supported through use of high-resolution color aerial photography (Esri 2020), the USGS NHD high resolution streams layer (USGS 2020), and LIDAR contour data provided by the City of Beaverton (2013). Ground truthing occurred on tax lots where access was available and from publicly accessible viewing areas (i.e., roadway right of way). In office review using aerial and LIDAR contours was conducted using GIS technology, which allowed for viewing information at various scales. This included the minimum photo scale of 1 inch = 200 feet required by OAR 141-086-0210(2)(g). Metadata for the aerial photography provides the following description:

“The dataset encompasses portions of Washington, Multnomah, and Clackamas Counties. These data are LiDAR orthorectified aerial photographs of the West Metro study area. The data are delineated into north and south halves of 1/100th of standard USGS 7.5 minute quadrangles to create manageable file sizes. Each 4 band color image tile has a pixel resolution of 3 in. [Note pixel size measured in data provided by City of Beaverton was measured at 0.25 ft] These data are projected in NAD 83 State Plane, Oregon North, and their units are in feet. WSI collected the LiDAR and created this data set for the Oregon LiDAR Consortium.”

The Metro-RLIS wetlands layer and existing LWI-DSL layer provided by the City were merged and used as a starting point for mapping wetland resources within the project area. Obvious wetland boundary adjustments were made based on review of the ESRI (2020) aerial photography and roadside reconnaissance. All wetlands were assigned a Cowardin class (i.e., vegetation type such as forested, emergent, etc.) and a hydrogeomorphic (HGM) class (i.e., slope, depression, etc.). Assigning of Cowardin and HGM classes was typically based on review of aerial photo and LIDAR contours, or field verification where possible.

For properties in which site access was available (see Appendix A Figure 2), wetland and waterway mapping was supported through use of ESRI ArcCollector mapping software linked to a Trimble R1 GPS unit with typical accuracy of one meter or better. Representative boundary and sample plot locations were collected and then exported to GIS format (i.e., Esri shapefile format). Although typical GPS accuracy is considered one meter or better, the mapping accuracy of field verified wetlands should be considered to be five meters (16.4 feet) or better, as sample plots were conducted at a reconnaissance level of accuracy.

Per the OARs, probable wetlands can be recorded as a point, rather than a polygon. However, David Evans and Associates, Inc. (DEA) recorded approximate wetland polygon shapes, where feasible, to better inform the process. For the wetland acreage totals provided in Table 2, a wetland size was available for probable wetlands with a polygon associated with them, not for those identified with a point. Therefore, the acreage totals are somewhat underrepresented, since multiple small probable wetlands would increase the total if the actual shape of the wetland were known.

Streams and other waters were mapped in accordance with OAR 141-086-0210(19), which states that “Streams and other waters must be mapped, but no further documentation such as wetland summary sheets or OFWAM assessment is required. If an existing stream geospatial dataset is used, it may be necessary to adjust the layer to align with riparian or other linear wetlands.”

Mapping of streams started with use of the USGS NHD high resolution streams GIS layer, which matched very closely with LIDAR contours (City of Beaverton 2013). Stream lines were modified based on field observations where access was available. In other areas, stream lines were adjusted to better match topographic contours and aerial photo interpretation.

GIS data produced by DEA was originally created using the state plane, Oregon north coordinate system, North American Datum of 1983 (NAD83) horizontal datum, international feet to maintain consistency with other Community Plan mapping efforts. This data was then re-projected into the Lambert system to comply with Oregon statewide wetland mapping standards required by DSL.

2.4 OFWAM FUNCTIONAL ASSESSMENT

Wetland functions were evaluated for wetlands greater than one half acre using the Oregon Freshwater Wetland Assessment Method (OFWAM). OFWAM results were used to determine if any of the Community Plan wetlands qualify as “locally significant wetlands” in accordance with criteria set forth in OAR 141-086-0350. Following DSL guidance, probable wetlands were not included in the evaluation of locally significant wetlands.

2.5 PUBLIC INVOLVEMENT PROCESS

Landowners within the project area with the potential to have wetlands or waterways on their property (e.g., situated along known riparian corridors, mapped hydric soils) were contacted by the City to inform them of the LWI project, which would be conducted as part of the greater planning project. The City requested property access to allow City’s consultant, DEA, to perform on-site wetland delineation work. As shown on Figure 2 of Appendix A, access was granted to 23 tax lots, including large parcels owned by Metro. It should be noted that many of the Metro parcels and the less-developed parcels along McKernan Creek southwest of Winkelman Park were dominated by dense forest replete with poison oak. Therefore, it was not possible to physically enter the entire parcel, and small slope wetlands (probable wetlands) could have been missed in these areas. Similarly, the headwaters of some creeks were covered in dense blackberry and poison oak, making exact delineation of their starting points impossible. However, existing contours and stream data, combined with hydric soils mapping makes it unlikely that significant features were excluded.

Note to reviewers: The City of Beaverton intends to make the Local Wetlands Inventory available for public review as part of Cooper Mountain Community Plan public engagement process. As of June 2020, the engagement process is in its initial stages. Following public input, including comment from project partners and stakeholders, the City will finalize the LWI, summarize the outreach process, complete coordination with the Department of State Lands, and adopt the LWI. Adoption is preliminarily scheduled for 2021.

3. RESULTS

LWI results documentation has been prepared in accordance with OAR 141-086-0220 LWI Reports and is provided herein.

3.1 STUDY AREA DESCRIPTION

OAR 141-086-0220(2)(a) A general description of the study area including a description of the landscape setting;

The southwestern and central portion of the project study area primarily consists of rural agricultural lands with scattered residences and the riparian zone of McKernan Creek and its tributaries. Open spaces and forest owned primarily by Metro occupies much of the northern portion and includes Cooper Mountain Nature Park.

Four watersheds draining the LWI study area cover an area of approximately 1,241 acres, with Lindow Creek/Jackson Creek, which contains McKernan Creek, draining the greatest area (791.8 acres) followed by Summer Creek tributaries to the north and east (305.7 acres), Tualatin River tributaries to the south (131.8 acres), and Johnson Creek tributaries to the south (11.27 acres). The average slope of the watersheds is approximately 8 percent, with lower gradient slopes occurring in the southern/lower portion and steeper slopes occurring in the northern/upper portion.

Table 1 and Figure 5 (Appendix A) show Clean Water Services (CWS) stream sheds and associated drainages that occur within the LWI study area. Regarding watershed boundaries, this geospatial dataset represents the 6th level (12-digit) hydrologic unit boundaries from the Watershed Boundary Dataset (WBD) layer for Oregon. Hydrologic units within the WBD_OR_HUC_12 represent drainage areas delineated to the 6th level drainage systems.

Table 1: Drainage Basins and Streams in LWI Study Area

Clean Water Services Stream Shed ¹	Clean Water Services Basin ID ²	Water Bodies ³	Water Body ID ³
Jackson/Lindow	LW	McKernon Creek	MK
	LW	Unnamed trib to McKernon Creek-1	MK-1
	LW	Unnamed trib to McKernon Creek-2	MK-2
	LW	Unnamed trib to McKernon Creek-3	MK-3
	LW	Unnamed trib to McKernon Creek-4	MK-4
	LW	Unnamed trib to MK-4ab	MK-4a
	LW	Unnamed trib to MK-4ab	MK-4b
	LW	Unnamed trib to MK-4ab	MK-4ab
	LW	Unnamed trib to McKernon Creek-5	MK-5
	LW	Unnamed trib to McKernon Creek-6	MK-6
Summer Creek	SM7W4	Summer Creek	SM
	SM7W4	Unnamed trib to Summer Creek	SM-1
Unnamed Tributary to Tualatin River	SMC	*Unnamed trib to SMC	SMC
	TR06.5	*Unnamed trib to Tualatin River	TR-1
	TR06.5	*Unnamed trib to TR-1	TR-1a
Johnson Creek South	JSBS	No streams mapped in study area	--
	JSE	No streams mapped in study area	--
	JSCS	No streams mapped in study area	--

¹ Data from "CWS_SmallSubBasins" GIS shapefile, "STREAMSHED" data field

² Data from "CWS_SmallSubBasins" GIS shapefile, "IDALL" data field

³ Water body IDs assigned by Cooper Mountain Community Plan project

Most streams in the watershed have been modified to varying degrees by incision, channelization, or other manipulations for agriculture. For the most part, water is not being taken out of the streams through diking, drainage or irrigation districts in the watershed upstream of the assessment area. However, most of the area to the north and east of the Community Plan project area is being rapidly urbanized.

The LWI study area drains to the Tualatin River or tributaries of the Tualatin River, with most of the watershed draining southwest via McKernan Creek. Drainages typically begin as headwater drainages or wetlands, with much of the stream length likely only flowing intermittently, drying out in the late summer. A historic cattle pond dam/water control structure occurs near the headwaters of tributary 6 to McKernan Creek (S-MK-6-1). McKernan Creek originates in a small wetland in the southwest corner of Winkelman Park, along SW 175th Avenue. The upper reaches of McKernan Creek flow through primarily forested lots with large residences along SW Horse Tale Drive. Winkelman Park is a large recreational open space west of SW 175th Avenue. East of SW 175th Avenue, lots and residences are somewhat smaller, and are bordered to the east, north, and south by suburban development and recent heavy urbanization within the UGB.

Land use is predominantly rural residential and agricultural, with a mix of annual crop production, pasture, orchards, and viticulture. Within the Cooper Mountain LWI area, medium and large remnant patches of native forest habitat occur, including mixed upland fir-deciduous forest in much of the eastern residential area and to the north, Oregon ash dominated wetland forest along McKernan Creek and its tributaries, and patches of Oregon oak forest. Most Oregon oak forest lies in Metro properties to the north, and the Oregon oak forest previously mapped (Oakquest 2018) north of SW Horse Tail Drive has been logged in recent years, with only a few trees remaining to the southwest on properties where access was not granted.

Several fir dominated lots were being logged or had recently been logged as observed during the April 2020 site visits. Most significantly, the majority of the forested areas in the northernmost portion of the study area had been cleared within the previous year and converted to grass fields with slash piled along the perimeter.

3.2 WETLAND INVENTORY PROCESS

OAR 141-086-0220(2)(b) A description of the wetland inventory process including the public involvement process; the inventory methods including the date(s) and scale(s) of source maps and aerial photos used; the offsite and onsite wetland determination procedures including procedures used for visual confirmation and probable wetland identification; and all mapping and map transfer procedures used;

See methods discussion above.

3.3 SUMMARY OF INVENTORY RESULTS

OAR 141-086-0220(2)(c) A summary of the inventory results including the total acreage of the study area and the total number and acreage of wetlands identified within the study area, excluding the acreage of deepwater habitat and artificially created wetlands such as detention ponds or aggregate extraction ponds;

The project area occupies approximately 1,240 acres. The study area contains an estimated 23.36 acres of wetlands and probable wetlands. Table 2 provides a list of individual wetlands, their sizes, and their HGM and Cowardin classifications. For the wetland acreage totals provided in Table 2, a wetland size was available only for probable wetlands with a polygon associated with them, not for those mapped as a point. Study area wetlands are displayed in Appendix A Figure 5. Representative sample plots for each wetland are provided in Appendix B and summary sheets describing each wetland are provided in Appendix C.

Table 2: LWI Wetland Summary Results

Wetland ID¹	Cowardin²	HGM	Acres
PW-MK-1-a	PEM1B	Slope	0.07
PW-MK-4-a	PEM1B	Depressional	0.37
PW-MK-4a-a	PEM1B	Depressional	0.00
PW-MK-4-b	PSS1B	Depressional	0.00
PW-MK-a	PEM1B	Depressional	0.06
PW-MK-b	PEM1B	Depressional	0.04
PW-MK-c	PSS1B	Slope	0.22
PW-MK-e	PSS1B	Slope	0.48
PW-MK-f	PSS1B	Slope	0.57
PW-MK-g	PSS1B	Slope	0.41
PW-MK-h	PSS1B	Depressional	0.00
PW-SM-a	PEM1B	Slope	0.00
PW-SM-b	PEM1B	Slope	0.13
PW-SM-c	PEM1B	Slope	0.11
PW-SM-d	PSS1B	Riverine	0.12
PW-SMC-a	PSS1B	Slope	0.00
PW-TR-1-a	PSS1B	Riverine	0.17
PW-TR-1a-a	PEM1B	Slope	0.00
PW-TR-1a-b	PEM1B	Slope	0.08
PW-TR-1a-c	PEM1B	Slope	0.09
PW-TR-1a-d	PEM1B	Depressional	0.00
W-MK-1	PEM2Bf	Slope	4.01
W-MK-1	PEM1B	Slope	1.10
W-MK-1	PFO1B	Slope	7.26
W-MK-1-1	PEM1B	Slope	1.31
W-MK-4-1	PEM1B	Slope	1.14
W-MK-6-1	PSS1B	Slope	1.38
W-MK-6-1	PEM2Bf	Slope	3.21
W-MK-6-1	PFO1B	Slope	1.05
Probable Wetland Acreage			2.91
Wetland Acreage			20.45
Grand Total			23.36

¹ "W" = wetland, "PW" = probable wetland

² PEM2Bf= Palustrine Emergent, Nonpersistent, Seasonally Saturated, farmed

PEM1B = Palustrine Emergent, Persistent, Seasonally Saturated

PSS1B= Palustrine Scrub-shrub, Broad-leaved Deciduous, Seasonally Saturated

PFO1B= Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated

The following discussion summarizes the range of wetland resources identified in the project area. More detailed descriptions are provided in the Appendix C summary sheets. Only four wetlands greater than 0.5 acres occur in the study area. These tend to consist of relatively long and linear shaped wetlands that follow along the McKernan Creek riparian corridors. These wetlands contain a patchwork of palustrine emergent wetland dominated by non-native grasses [e.g., meadow foxtail (*Alopecurus pratensis*)] or in agricultural production, as well as forested and scrub-shrub wetlands typically dominated by native plant species. One relatively large palustrine emergent wetland area occurs within Cooper Mountain Nature Park and contains a relatively diverse native plant community as a result of active management.

Most wetlands were considered to be slope wetlands as the dominant source of hydrology is likely to be hillside seepage or shallow subsurface flow. However, several small probable wetlands appeared to be fed primarily by precipitation and a small amount of runoff and had no outlet—these were classified as depressional. Two probable wetlands were fed primarily by flows from small streams rather than mainly groundwater and were classified as riverine.

3.4 OFWAM PROCESS AND RESULTS

OAR 141-086-0220(2)(d) A discussion of the OFWAM assessment process (e.g. how assessment units were defined) and the results;

Table 3 provides a summary of wetland functional assessment results for the four wetlands that are one-half acre or greater in size. Wetland characteristics for these wetlands are summarized in the individual wetland summary sheets provided in Appendix C. Wetland W-MK-1 was the largest, most diverse, and most intact wetland within the study area, and scored high for all functions except Water Quality. Vegetative diversity in Wetland W-MK-4-1 was high and wildlife use was presumed to be high given the vernal nature of the wetland, which is unusual and limited in the region. However, it did not rate well for the functions assessed by OFWAM, which generally focuses on wetland structure and water features. Similarly, the lack of structure and fish habitat in W-MK-1-1 and W-MK-6-1 resulted in a low rating.

Table 3: Wetland Functional Assessment Results

Wetland ID	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Meets Locally Significant Criteria
W-MK-1	Diverse	Intact	Degraded	Intact	Yes
W-MK-1-1	Degraded	Degraded	Degraded	Degraded	No
W-MK-4-1	Degraded	Degraded	Degraded	Degraded	No
W-MK-6-1	Degraded	NA	Not present	Not present	No

3.5 SUMMARY OF LOCALLY SIGNIFICANT WETLANDS

OAR 141-086-0220(2)(e) A summary of Locally Significant Wetlands, if identified (may be in table format);

Wetland W-MK-1 met locally significant wetland criteria (which means at least one of the four functions evaluated rated highly). W-MK-1-1, W-MK-4-1, and W-MK-6-1 did not meet locally significant wetland criteria, primarily because they do not provide fish habitat support and are fed by groundwater rather than river flows due to their higher position in the watershed than W-MK-1. However, it should be noted that the forested portions of both W-MK-6-1 and W-MK-1 met criteria as wetlands of Special Interest for Protection because they are mapped Goal 5 resources.

4. PREPARERS AND CONTRIBUTORS

Phil Rickus, DEA Ecologist, and Valerie Thompson, DEA Environmental Specialist, performed the field work. Mr. Rickus is the primary author of this report, and Ethan Rosenthal, DEA Ecologist, provided quality control review. Corie Peters, DEA Project Assistant, provided editing assistance. Sara Gilbert, DEA GIS Specialist, conducted GIS analysis and prepared report figures.

5. BIBLIOGRAPHY

City of Beaverton. 2013. LIDAR derived contours (flown January 2013).

David Evans and Associates, Inc. (DEA). 2016. South Cooper Mountain Annexation Area Local Wetland Inventory. Prepared for the City of Beaverton. Approved by Oregon Department of State Lands April 18, 2016.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

Environmental Systems Research Institute (ESRI). 2020. ArcGIS OnlineWorld Imagery aerial photo imagery for ArcGIS.Metro. 2005. Technical Report for Fish and Wildlife Habitat. April 2005

Metro. 2005. Cooper Mountain Natural Resource Management Plan. November 2005

Metro Regional Land Information System (RLIS). 2020. GIS wetlands layer, hydric soils layer, and streams layer.

Oakquest. 2018. Oregon Oak GIS database covering the Portland Metro area, 2018 update.

Oregon Department of Fish and Wildlife (ODFW). 2020. Fish distribution GIS layers.

Oregon Department of State Lands (DSL). 2020. Wetland determination/delineation database search results for Cooper Mountain Community Plan study area.

Shapiro & Associates, Inc. 2000. City of Beaverton Local Wetland Inventory and GIS data.

U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Final Technical Report ERDC/EL TR-10-3, May, 2010. US Army Engineer Research and Development Center, Environmental Laboratory, Vicksburg Mississippi.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2020. Soil Survey Geographic Database (SSURGO) for Washington County, Oregon.

U.S. Fish and Wildlife Service. 2020. National Wetland Inventory Wetland Mapper GIS data.

U.S. Geological Survey (USGS). 2020. National Hydrographic Database National Hydrographic Database (NHD) GIS streams layer.

6. APPENDICES

APPENDIX A: Figures

OAR 141-086-0220(2)(f) All figures, with the study area clearly outlined.

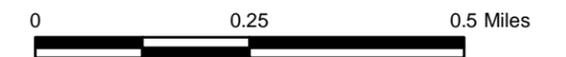
**Figure 1
Vicinity Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Stream/Creek
-  PLSS Section
-  Beaverton City Limits
-  Park
-  Washington County Tax Lot
-  Street

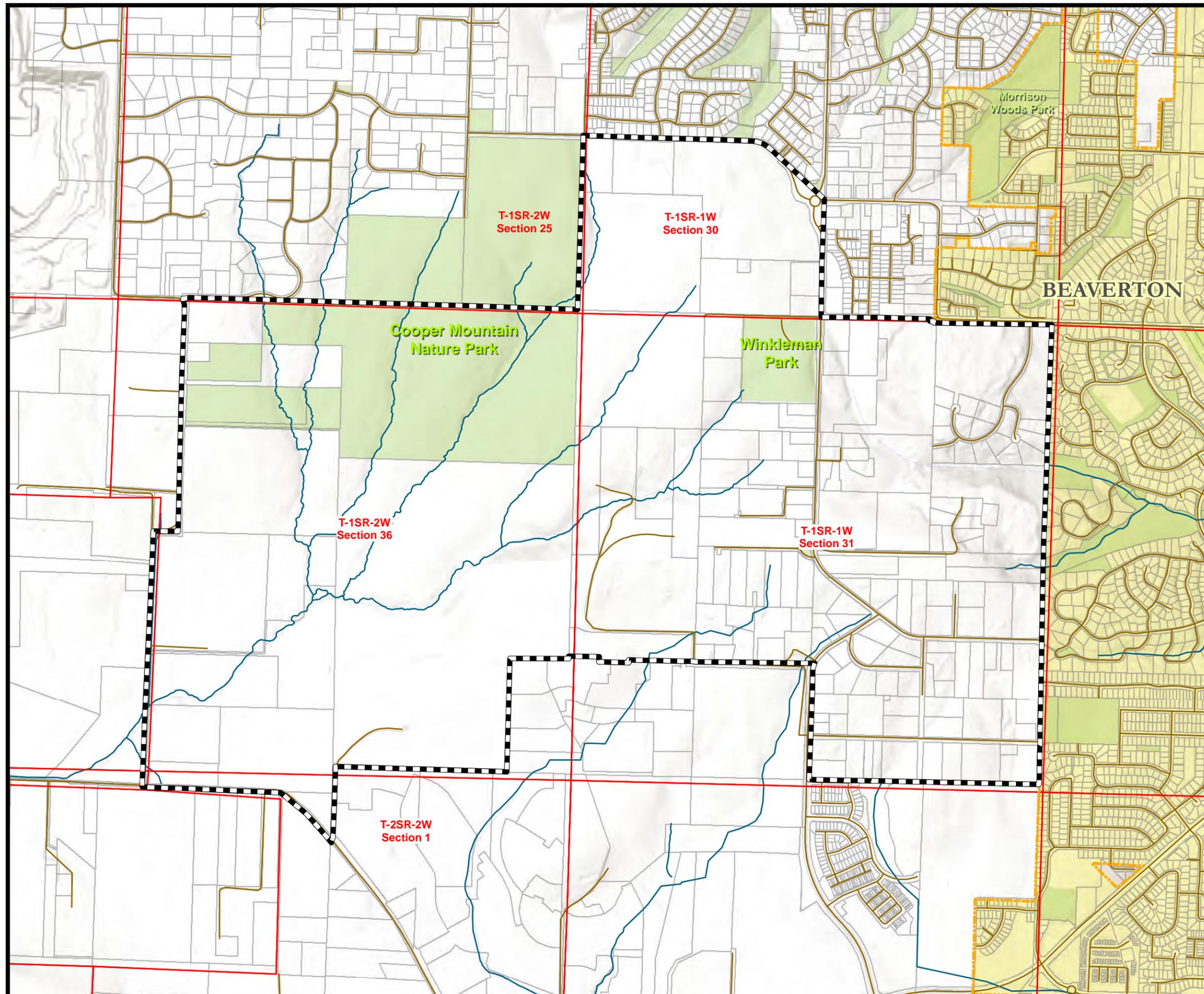


Data Sources:
LWI Study Area: City of Beaverton, 2020
Metro RLIS, USGS NHD

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



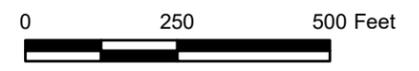
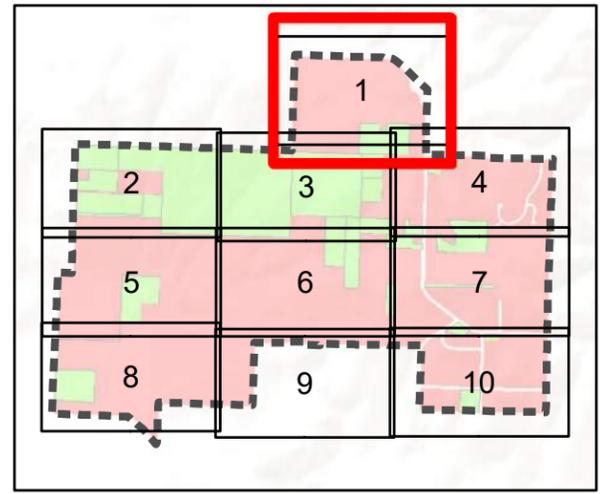
**Figure 2, Sheet 1 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street

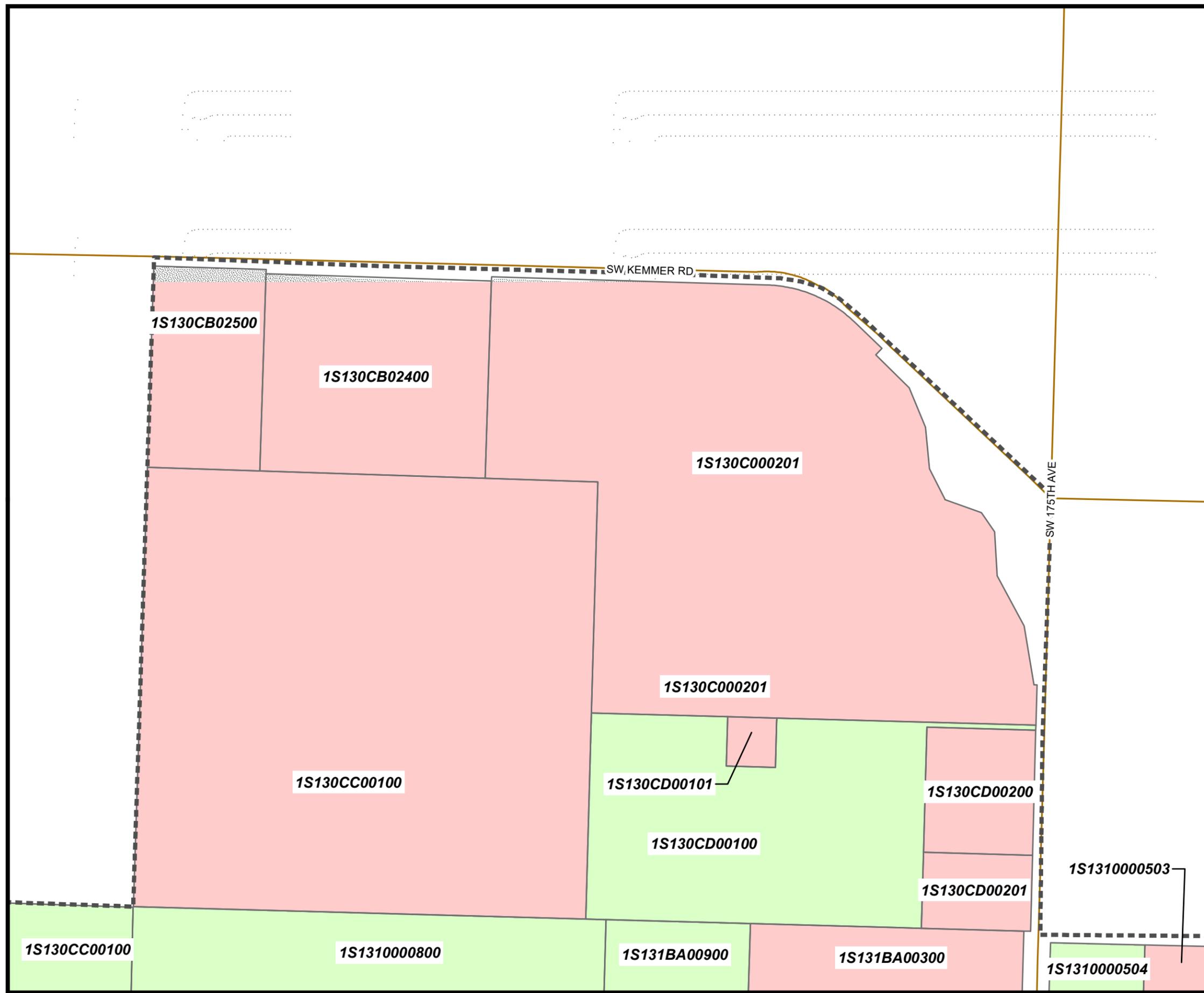


Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



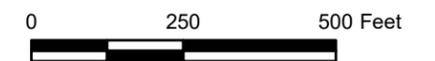
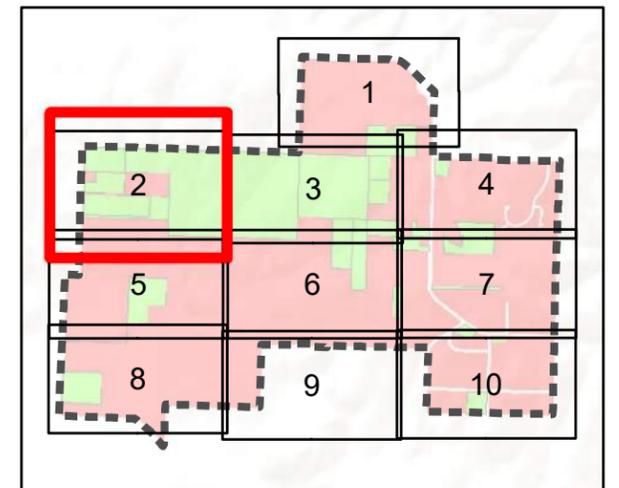
**Figure 2, Sheet 2 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street



Data Sources:

LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

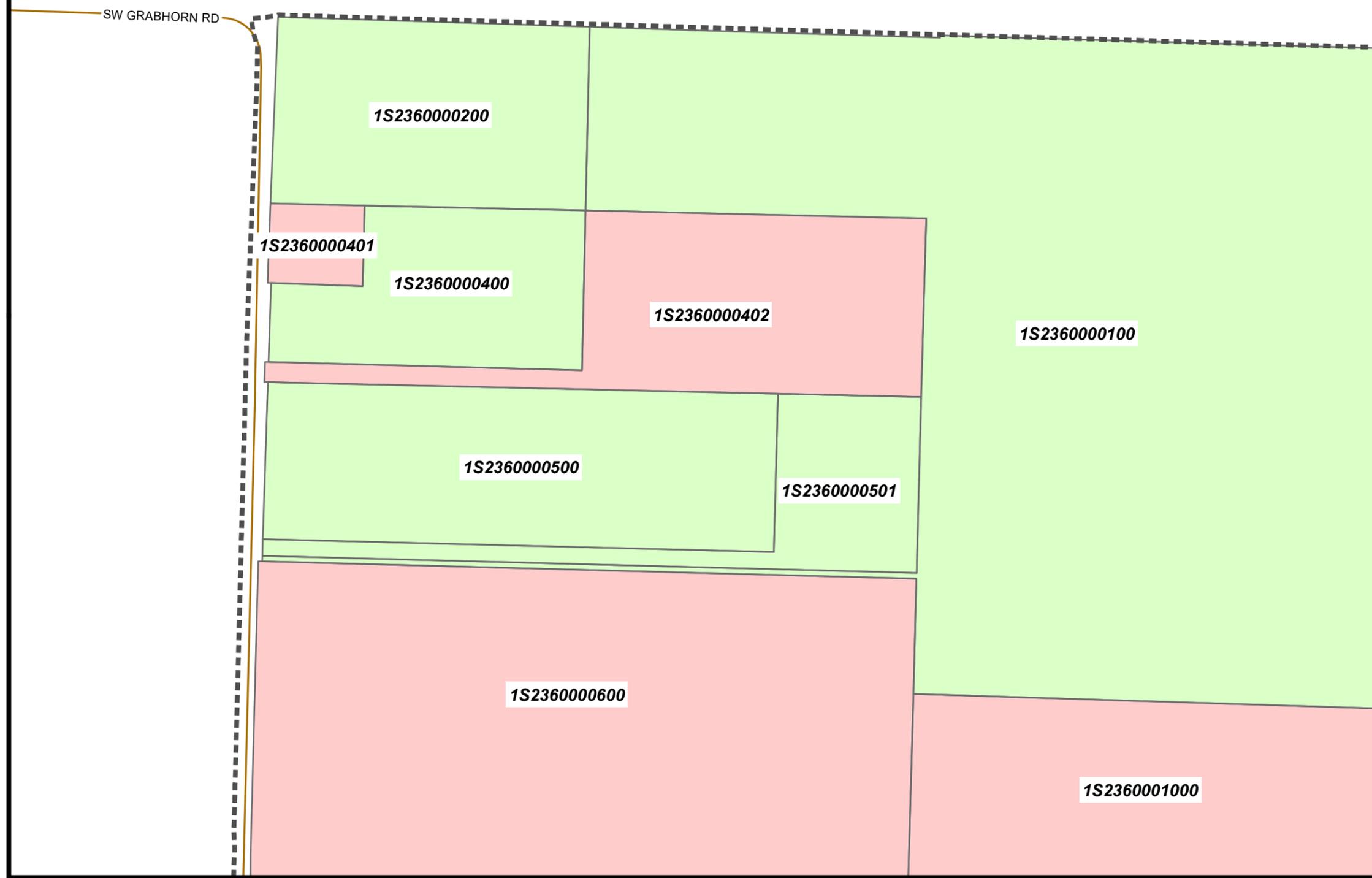
Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



North

Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020



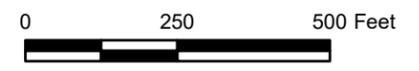
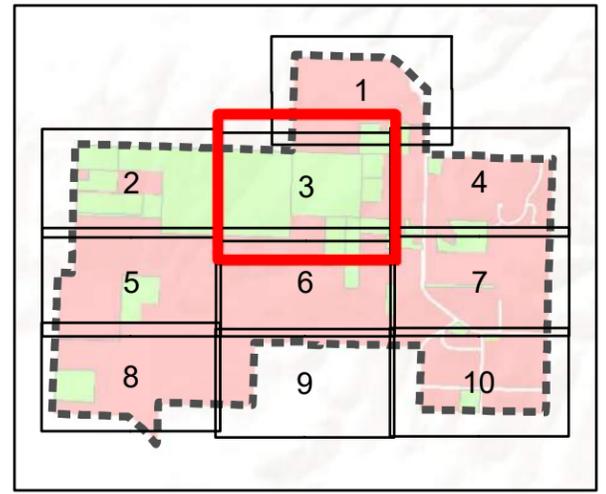
**Figure 2, Sheet 3 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street

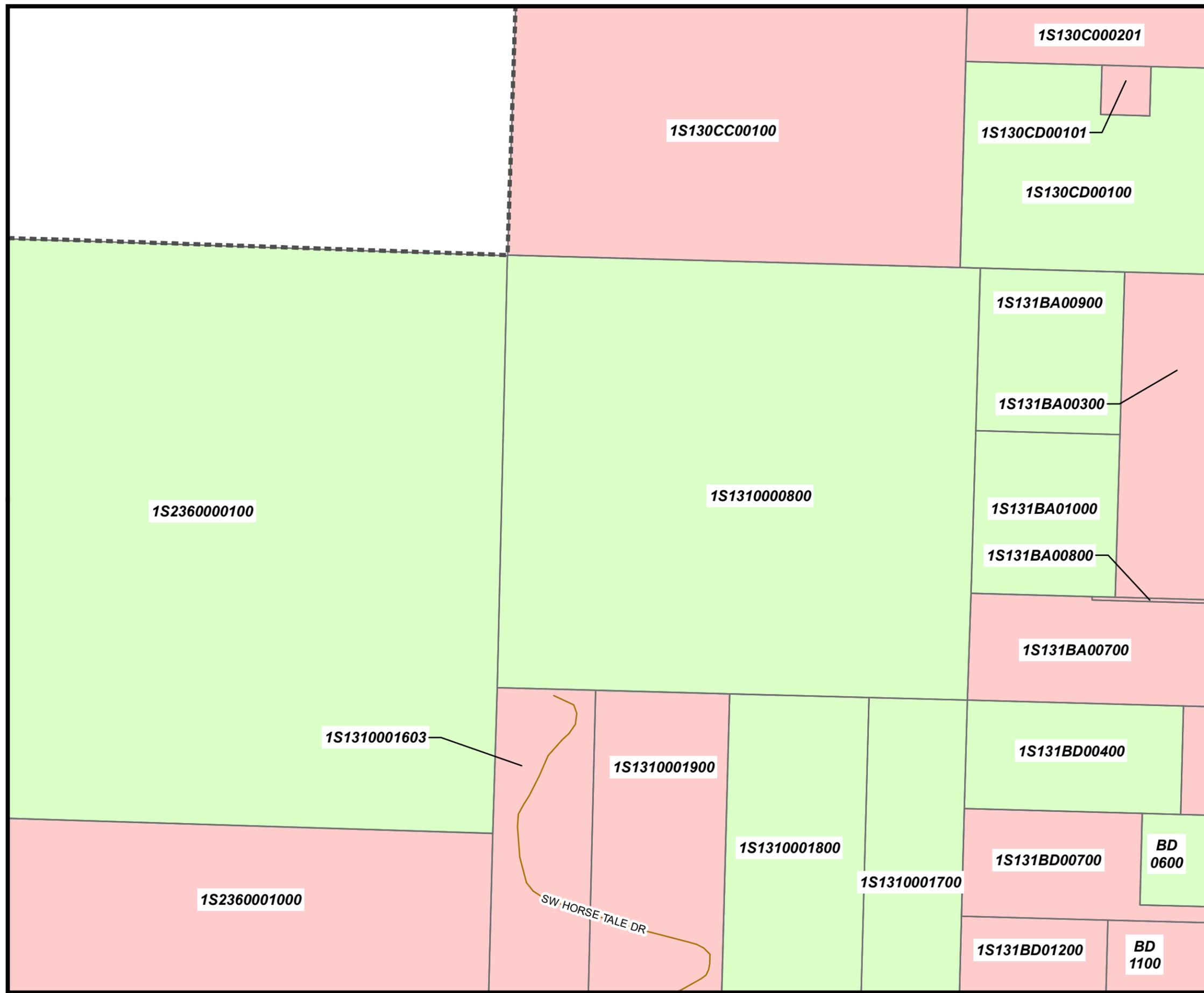


Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



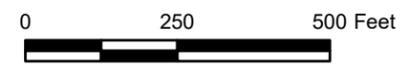
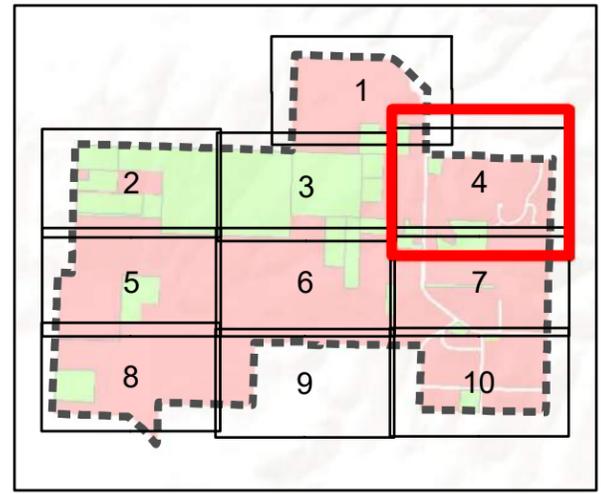
**Figure 2, Sheet 4 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street

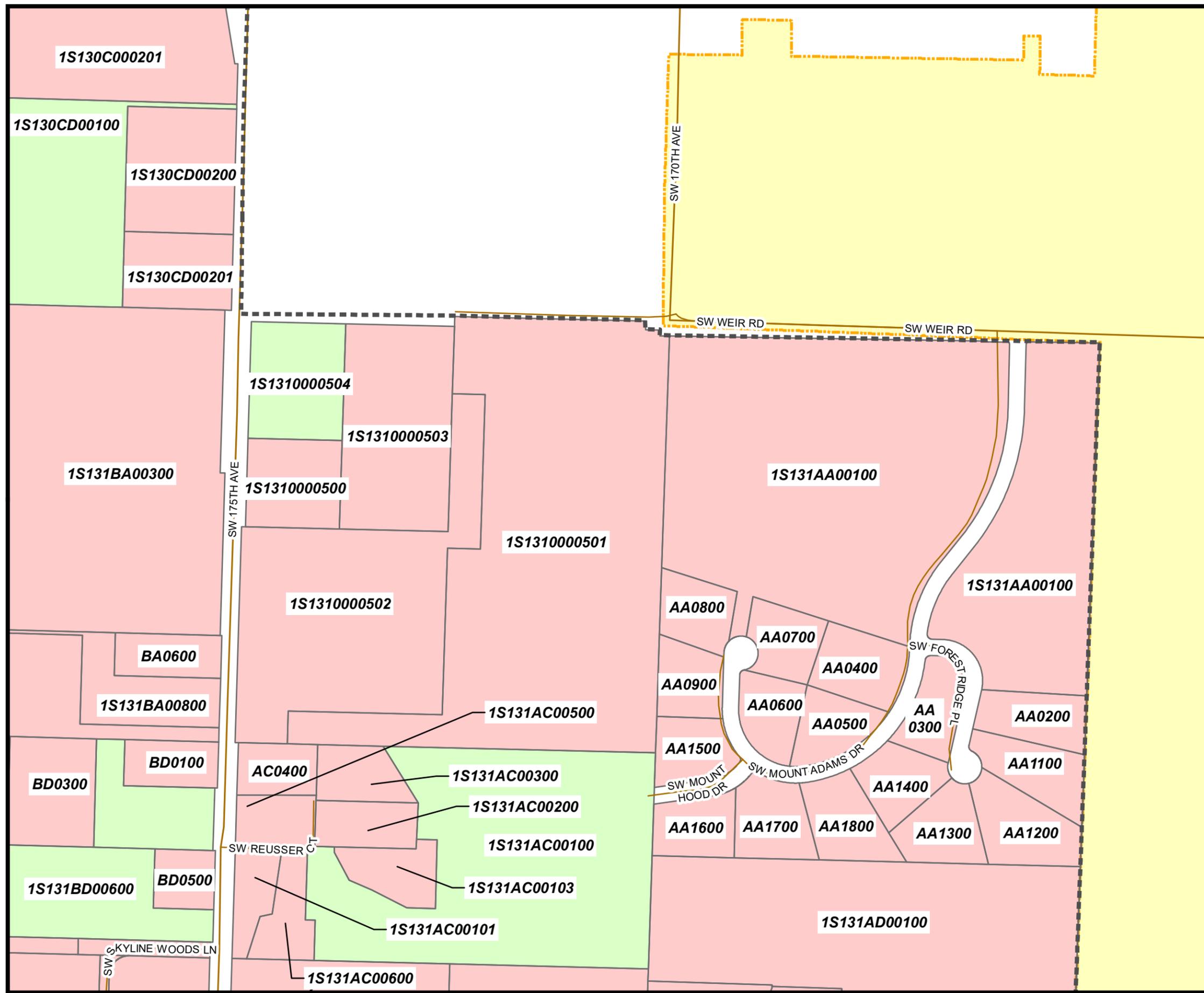


Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



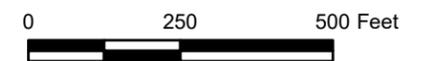
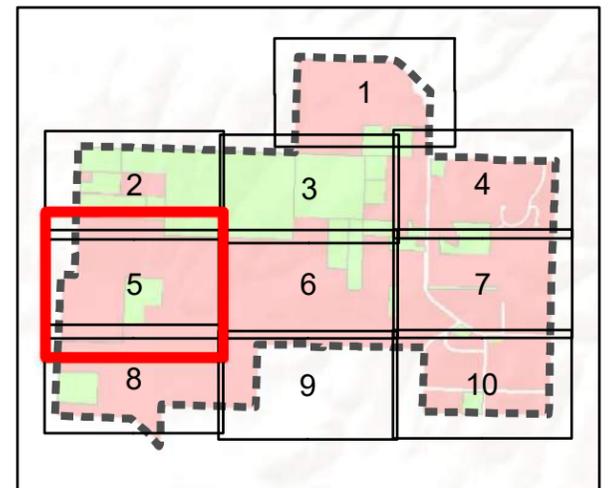
**Figure 2, Sheet 5 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street



Data Sources:

LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

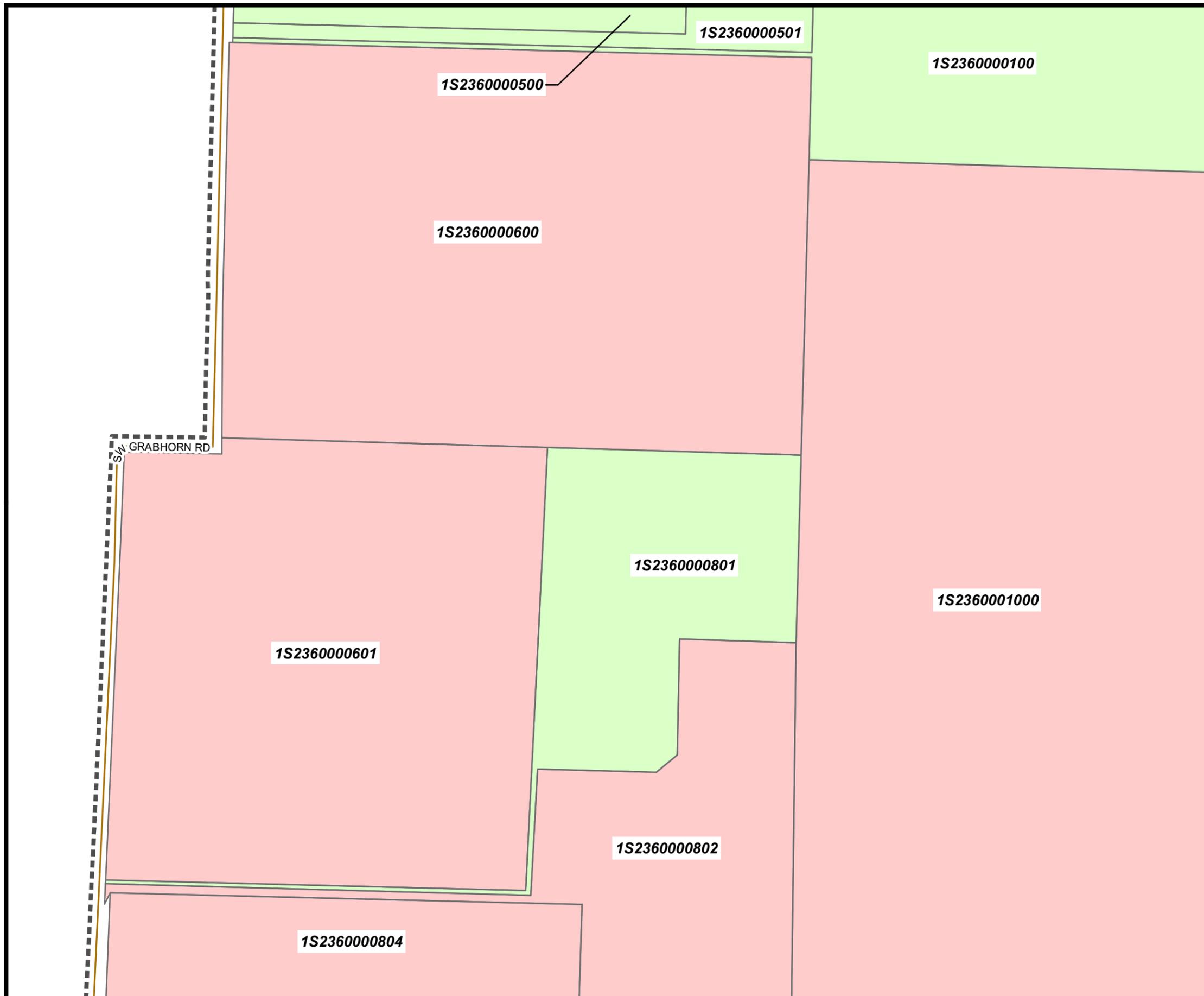
Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



North

Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020



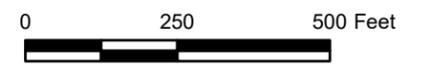
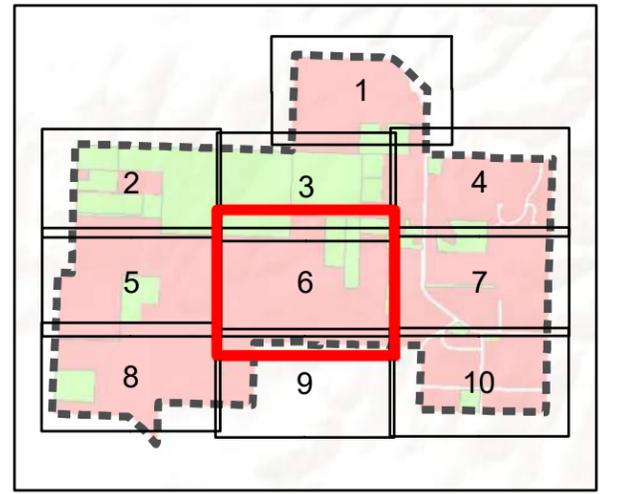
**Figure 2, Sheet 6 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street

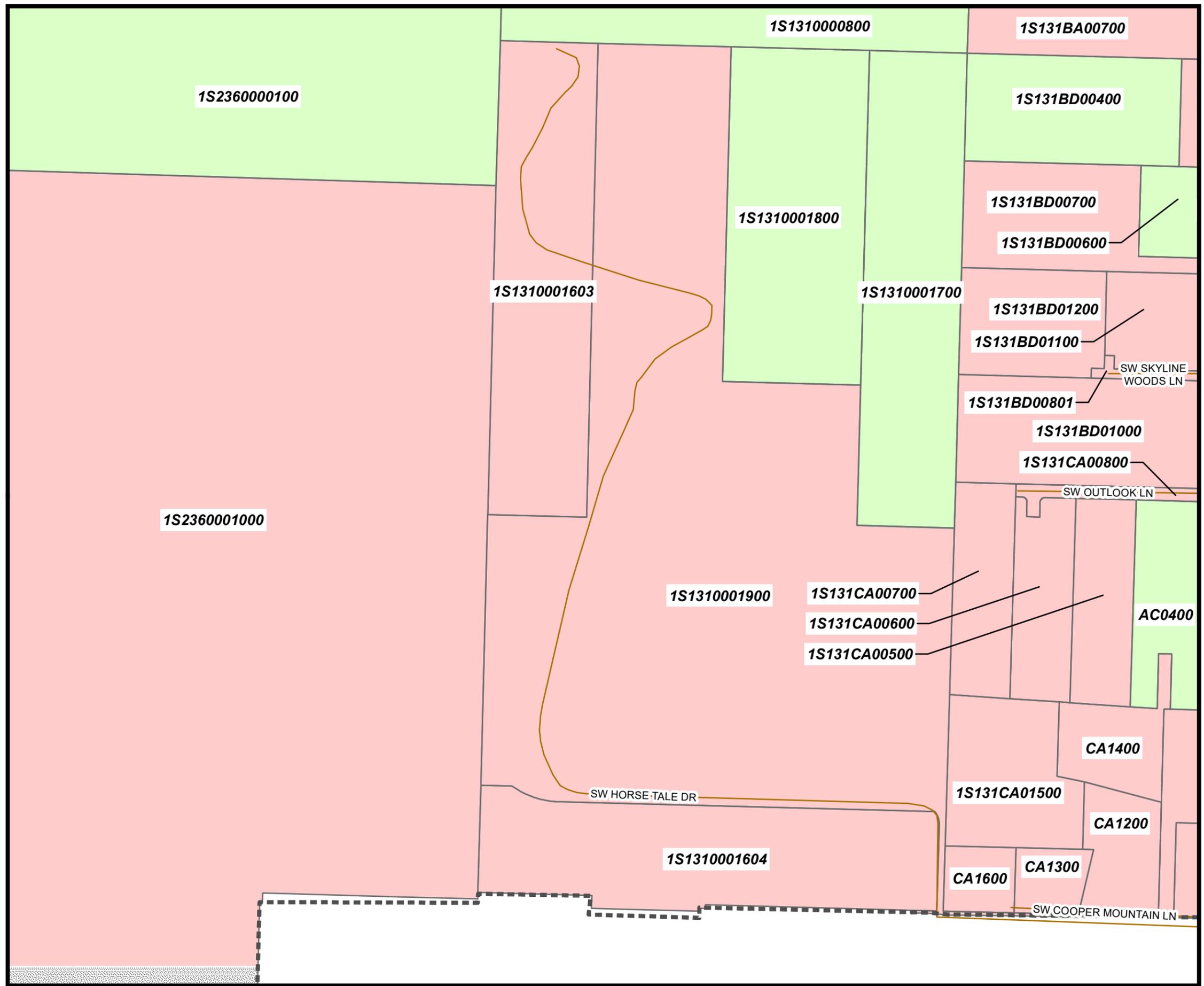


Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



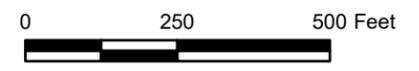
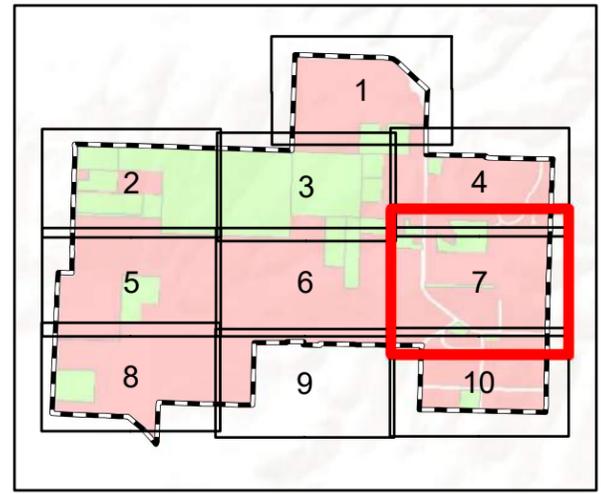
**Figure 2, Sheet 7 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street

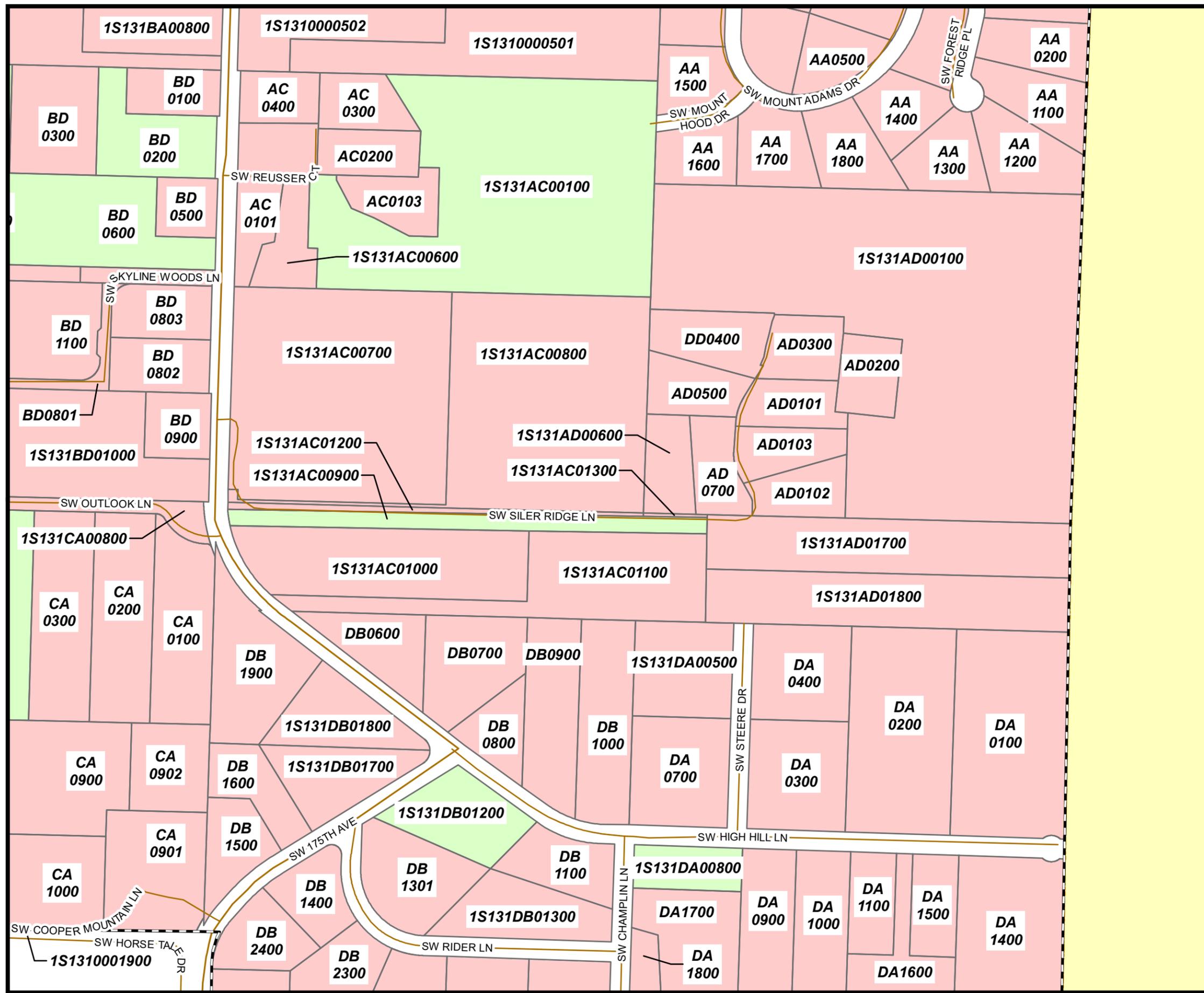


Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



5/19/2020 \\deainc.com\files\PROJECT\A\APG\0000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig2 Tax Lots and Property Access Map.mxd

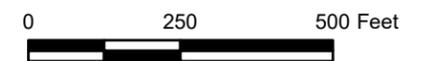
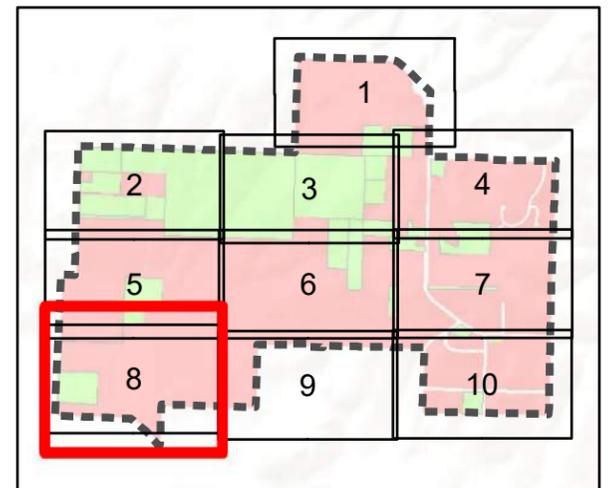
**Figure 2, Sheet 8 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street



Data Sources:

LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

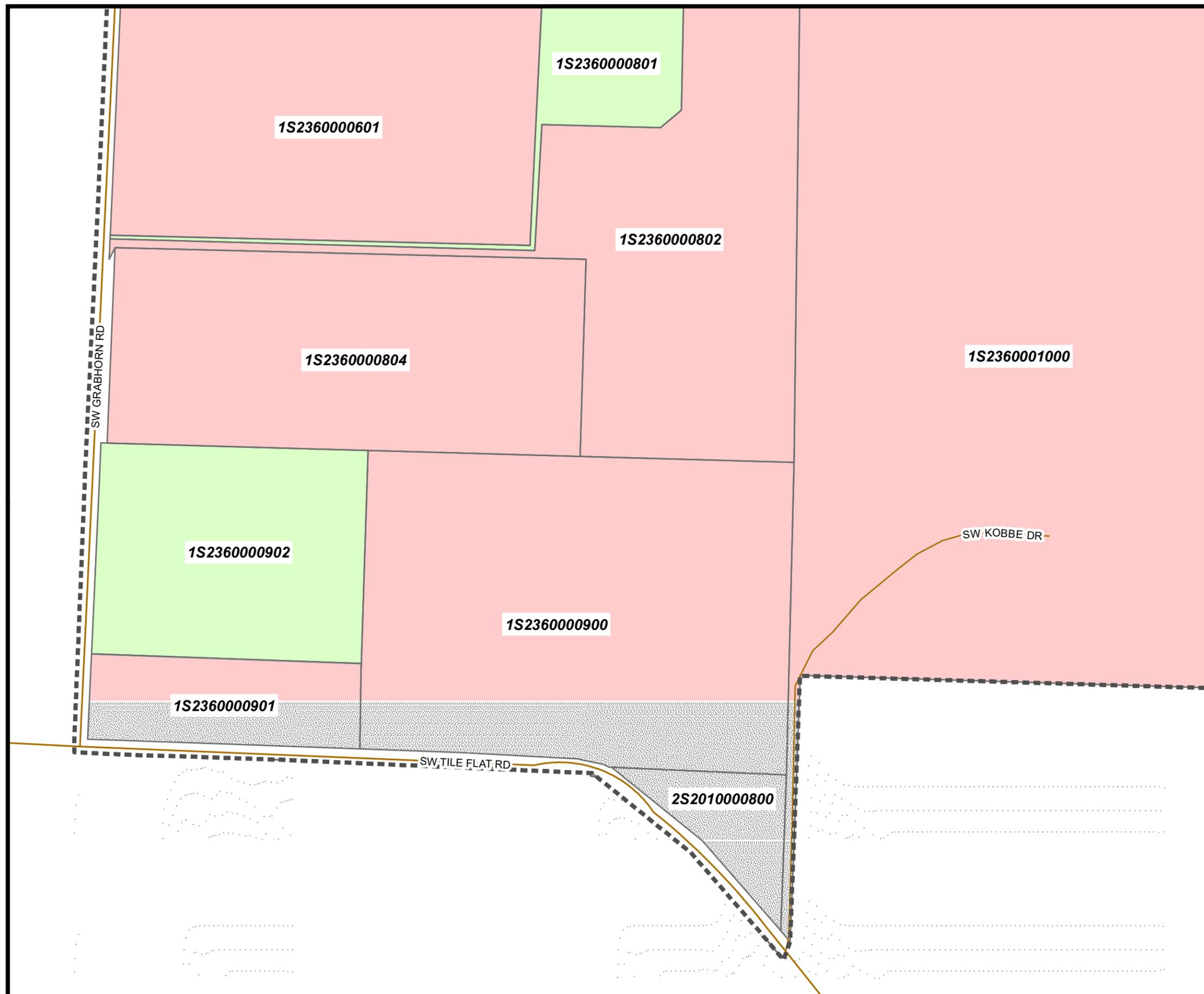
Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



North

Information Current as of:
May 2020

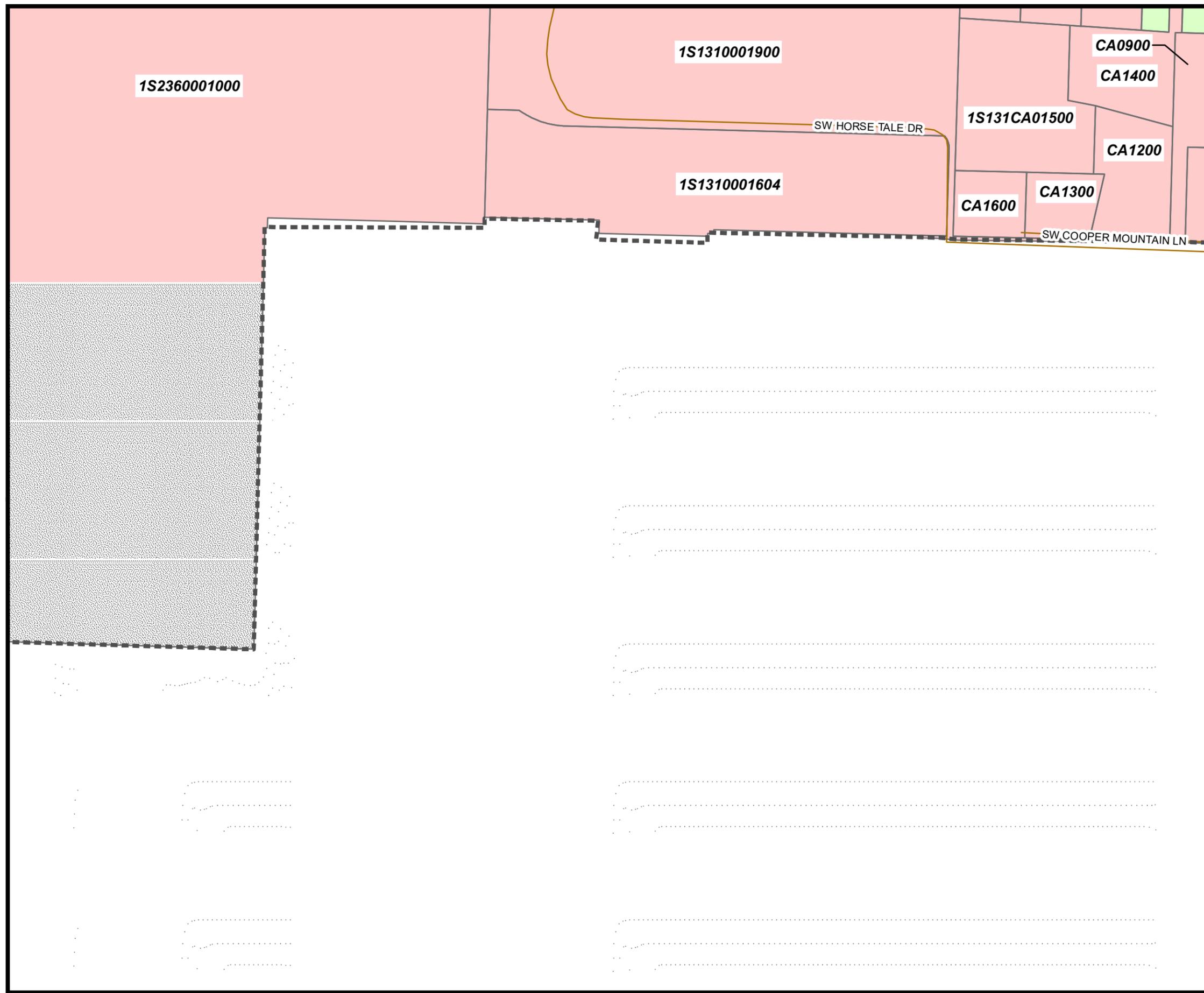
Printed on and Corrections as of:
May 2020



**Figure 2, Sheet 9 of 10
Tax Lots and Property Access Map**

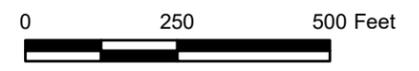
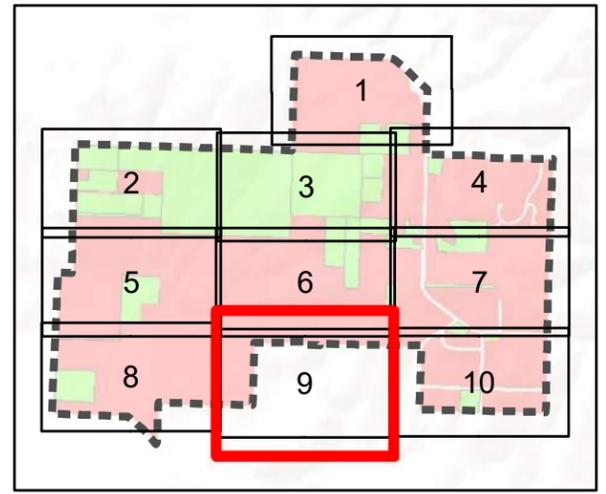
**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY



Legend

- LWI Study Area
- Beaverton City Limits
- Washington County Tax Lot
- Property with Site Access
- ROE not granted (as of April 30, 2020)
- Street



Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020

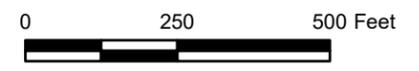
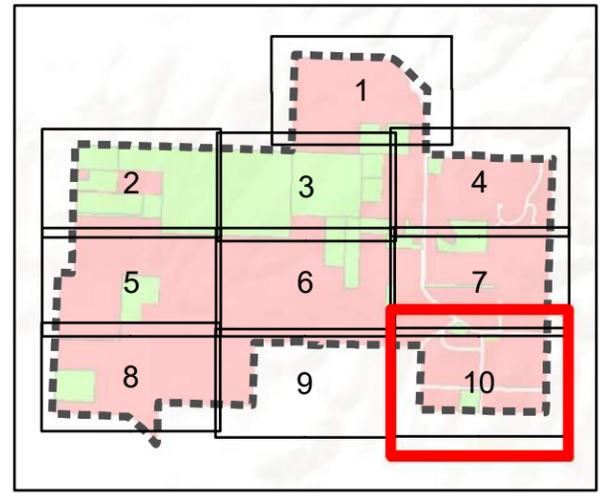
**Figure 2, Sheet 10 of 10
Tax Lots and Property Access Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  Beaverton City Limits
-  Washington County Tax Lot
-  Property with Site Access
-  ROE not granted (as of April 30, 2020)
-  Street



Data Sources:
LWI Study Area: City of Beaverton, 2020
Taxlots, City Limits, Streets: Metro RLIS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020

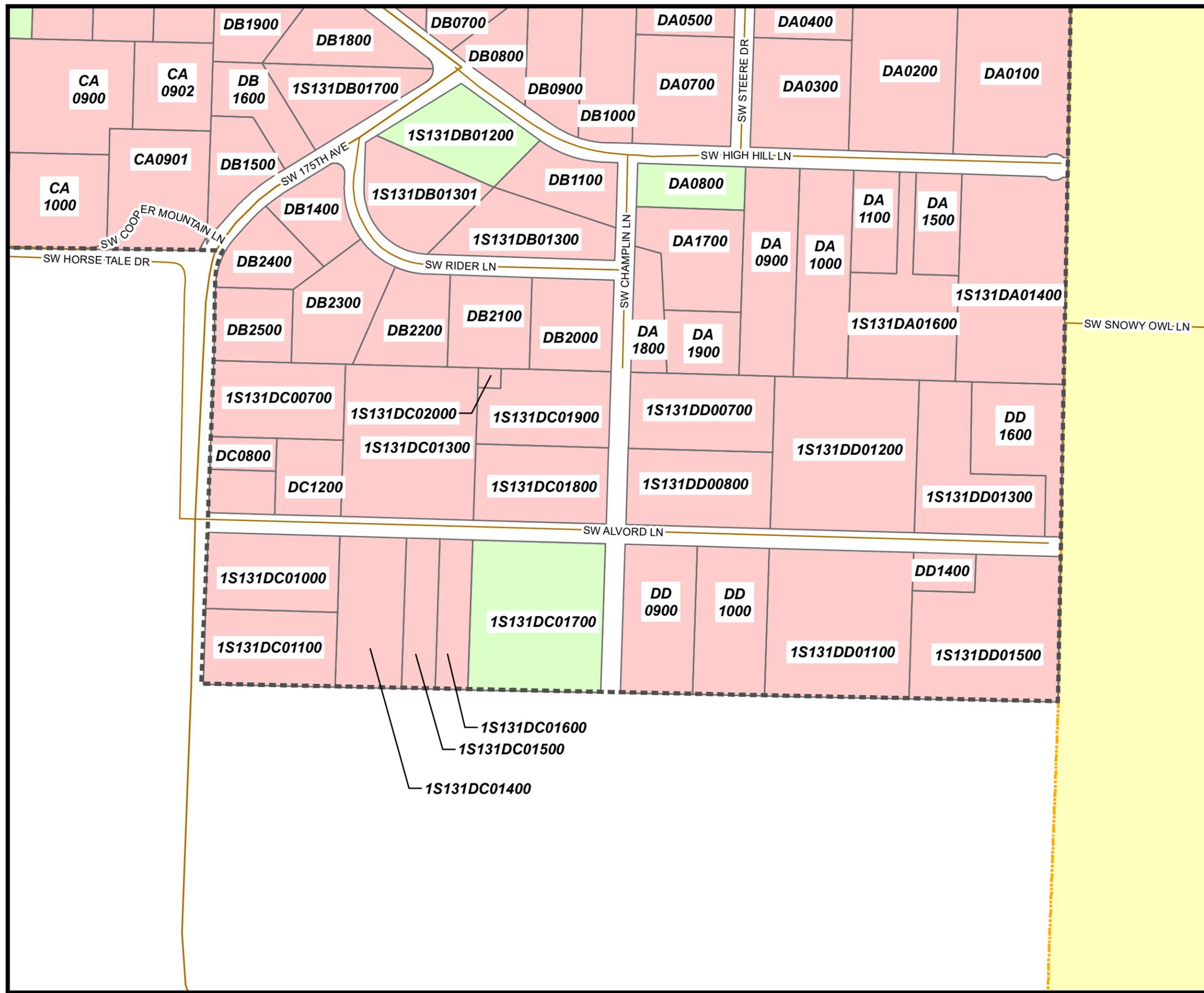


Figure 3 National Wetland Inventory Map

City of Beaverton Cooper Mountain Community Plan Area

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  NWI Wetland
-  Beaverton City Limits
-  Street

Wetland ID	Wetland Type within Study Area
PFO1/SS1C	Freshwater Forested/Shrub Wetland
PFO1A	Freshwater Forested/Shrub Wetland
PFO1C	Freshwater Forested/Shrub Wetland
PUBK	Freshwater Pond
PUBHh	Freshwater Pond
R4SBC	Riverine
R5UBH	Riverine

Data Sources:
 LWI Study Area: City of Beaverton, 2020
 City Limits, Streets: Metro RLIS, 2020
 Wetlands: USFWS NWI, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
 Printed on and Corrections as of:
May 2020

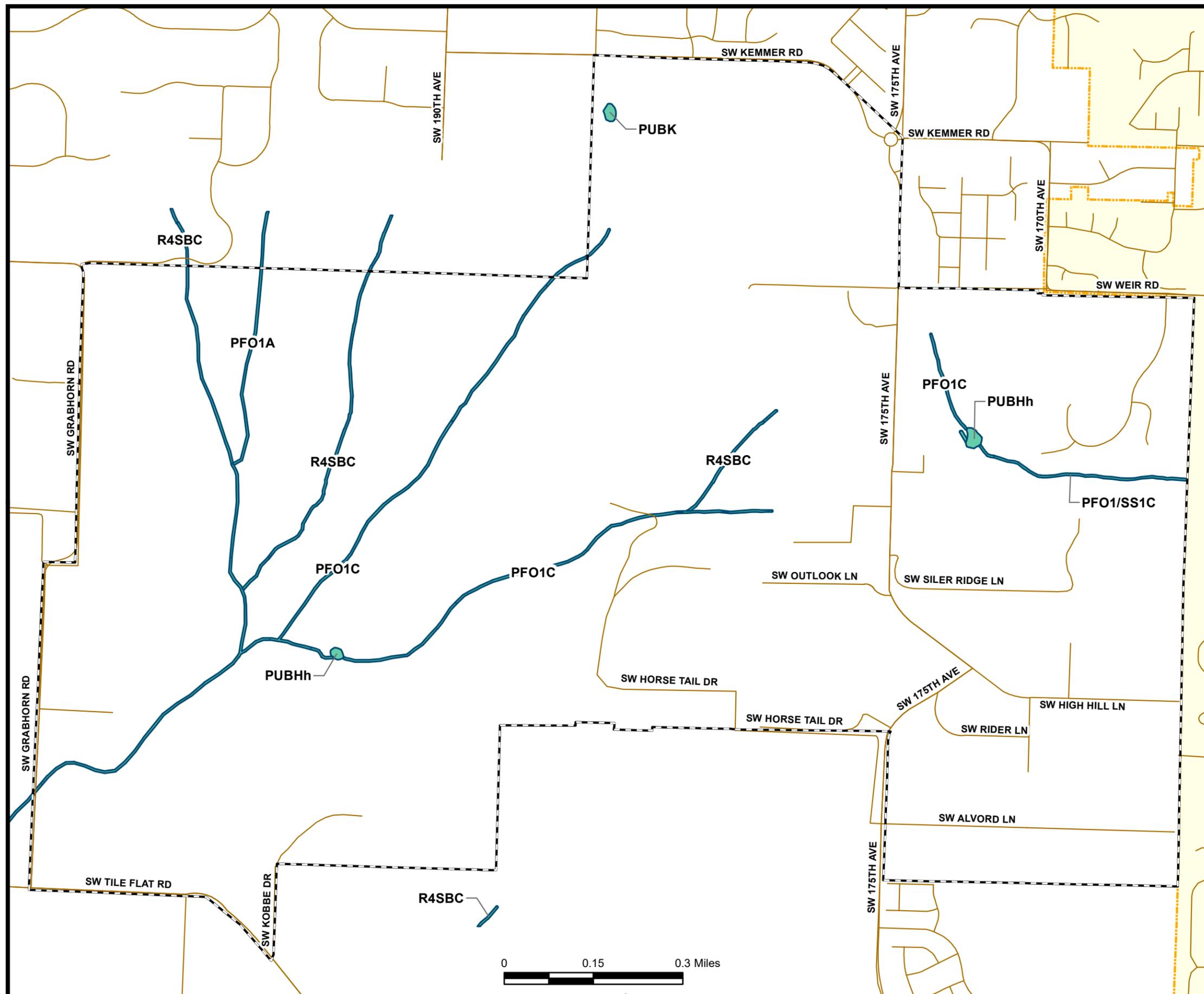


Figure 4 NRCS Soils Map

City of Beaverton Cooper Mountain Community Plan Area

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
-  NRCS Soil Type
-  Beaverton City Limits
-  Street

Soil ID	Soil Type within Study Area
1	Aloha silt loam
7B	Cascade silt loam, 3 to 7 percent slopes
7C	Cascade silt loam, 7 to 12 percent slopes
7D	Cascade silt loam, 12 to 20 percent slopes
11B	Cornelius and Kinton silt loams, 2 to 7 percent slopes
11C	Cornelius and Kinton silt loams, 7 to 12 percent slopes
11D	Cornelius and Kinton silt loams, 12 to 20 percent slopes
11E	Cornelius and Kinton silt loams, 20 to 30 percent slopes
11F	Cornelius and Kinton silt loams, 30 to 60 percent slopes
16C	Delena silt loam, 3 to 12 percent slopes
19C	Helvetia silt loam, 7 to 12 percent slopes
22	Huberly silt loam
38C	Saum silt loam, 7 to 12 percent slopes
38D	Saum silt loam, 12 to 20 percent slopes
38E	Saum silt loam, 20 to 30 percent slopes
38F	Saum silt loam, 30 to 60 percent slopes
43	Wapato silty clay loam
45A	Woodburn silt loam, 0 to 3 percent slopes
45B	Woodburn silt loam, 3 to 7 percent slopes

Data Sources:
 LWI Study Area: City of Beaverton, 2020
 City Limits, Streets: Metro RLIS, 2020
 Soils: USDA NRCS, 2020

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
 Printed on and Corrections as of:
May 2020



Figure 5, Overview Map Local Wetland Inventory Map

City of Beaverton Cooper Mountain Community Plan Area

LOCAL WETLAND INVENTORY

Legend

- LWI Study Area
 - LWI Stream
 - NHD Stream
 - Sample Plot
 - Watershed Boundary**
 - Johnson Creek South
 - Lindow Creek/Jackson Creek
 - Summer Creek
 - Tualatin River Tributary
 - LWI Wetlands***
 - Palustrine Emergent (PEM2Bf)
 - Palustrine Emergent (PEM1B)
 - Palustrine Forested (PFO1B)
 - Palustrine Scrub-Shrub (PSS1B)
 - Palustrine Unconsolidated Bottom (PUBx)
 - Quarry
 - PLSS Section
 - Other Delineation Study Area
 - Beaverton City Limits
 - Street
- * W = Wetland
PW = Probable
Wetland
(mapped as point
feature if no
access)

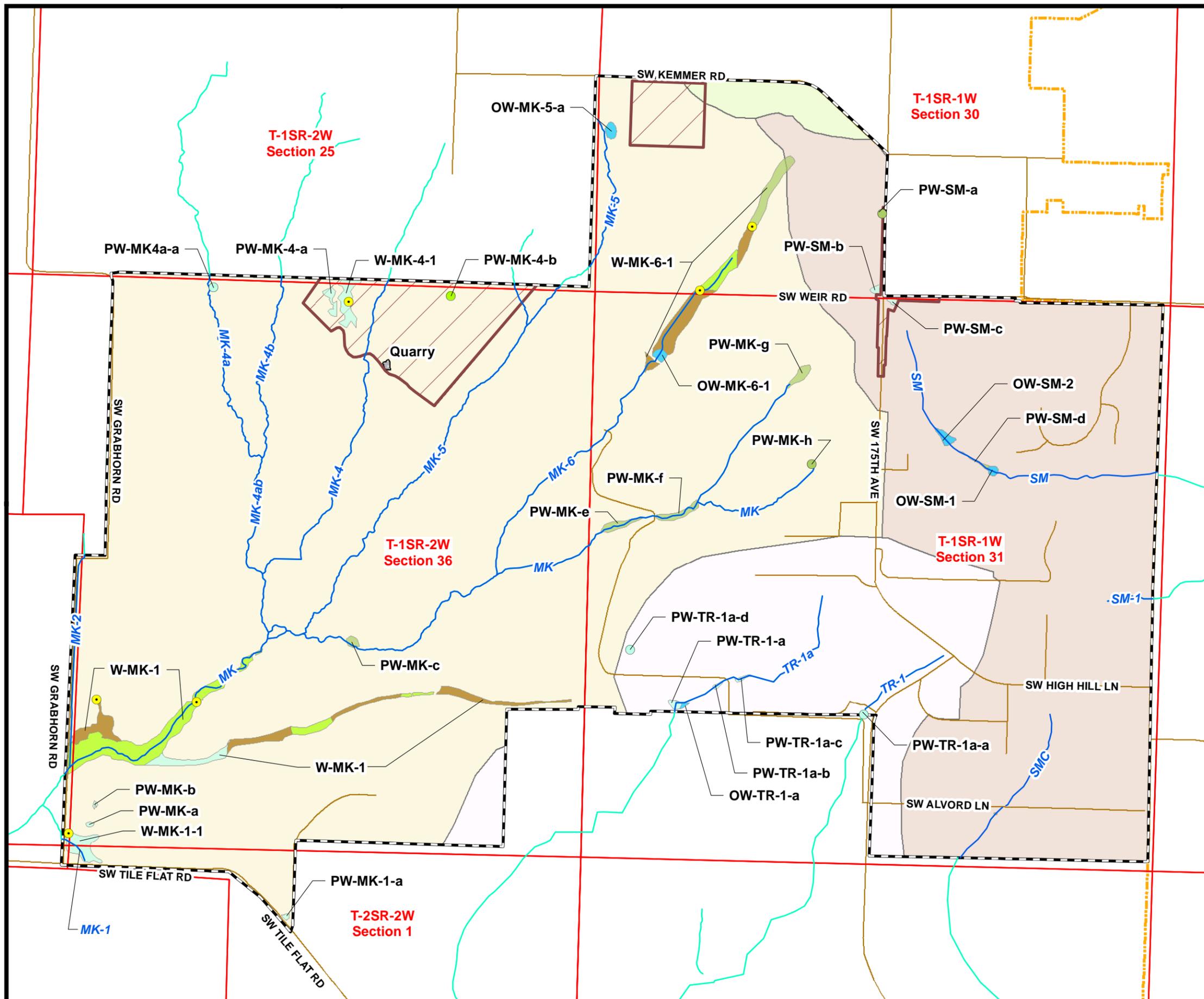


Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS
NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 1 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

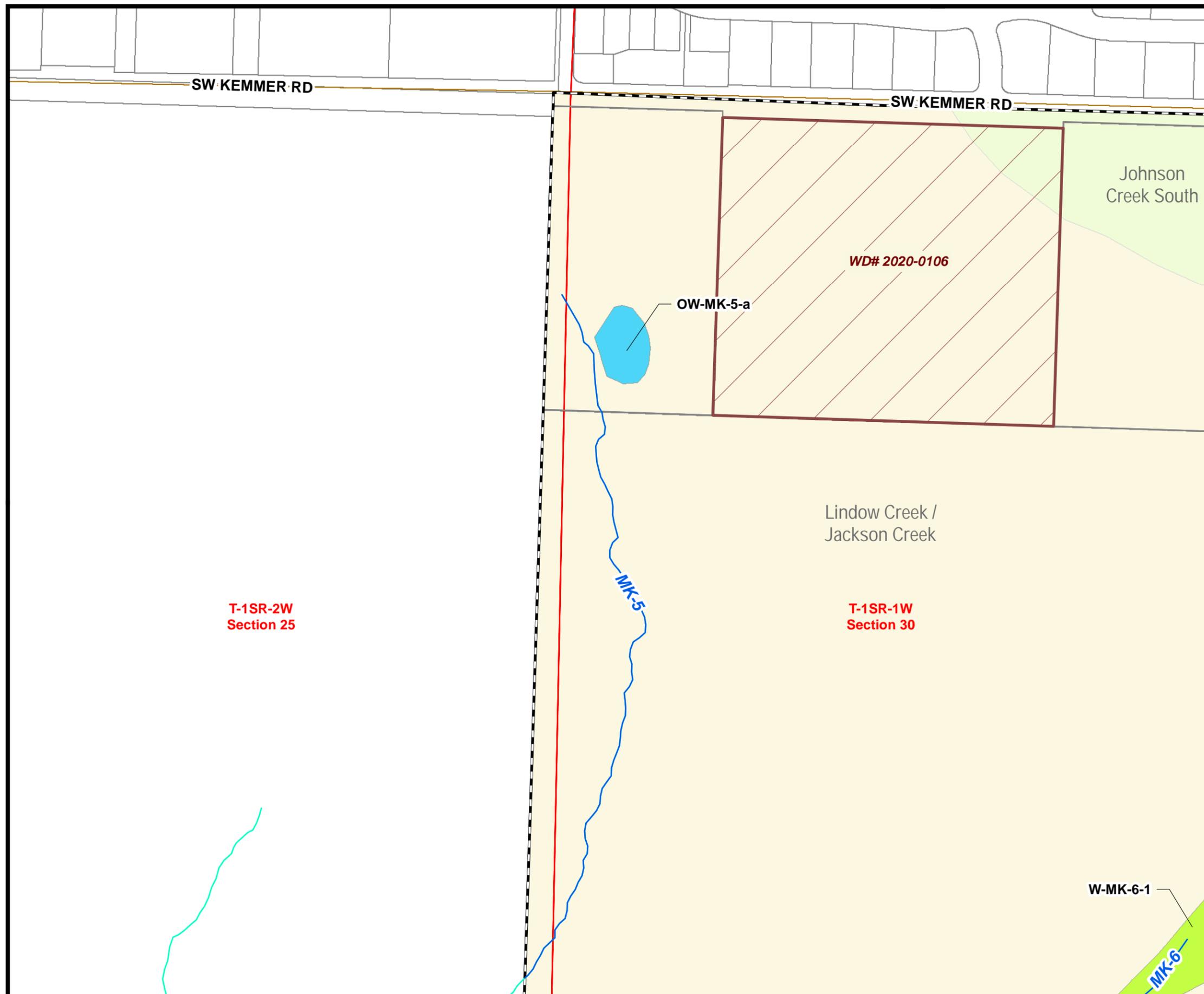
- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry * W = Wetland
PLSS Section PW = Probable Wetland
Other Delineation Study Area (mapped as point feature if no access)
Beaverton City Limits
Washington County Tax Lot
Street

0 150 300 Feet



Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020

**Figure 5, Sheet 2 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area

Beaverton City Limits

Washington County Tax Lot

Street

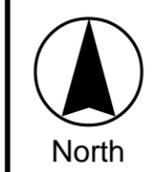
* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)

0 150 300 Feet



Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\APG\100000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 3 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry * W = Wetland
 PLSS Section PW = Probable Wetland
 Other Delineation Study Area (mapped as point feature if no access)
 Beaverton City Limits
 Washington County Tax Lot
 Street

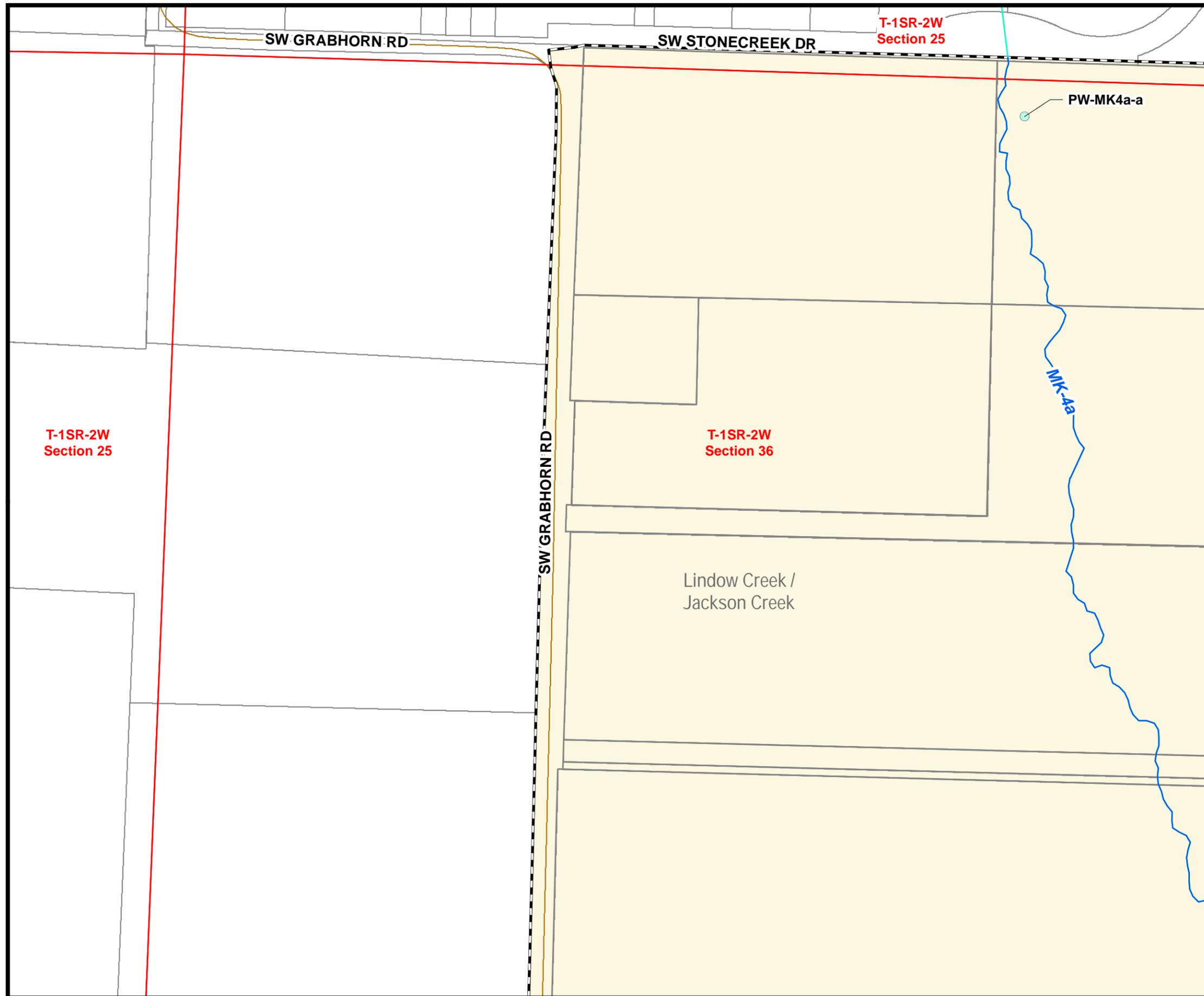
0 150 300 Feet

Data Sources:
 LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
 Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 4 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area

Beaverton City Limits

Washington County Tax Lot

Street

0 150 300 Feet

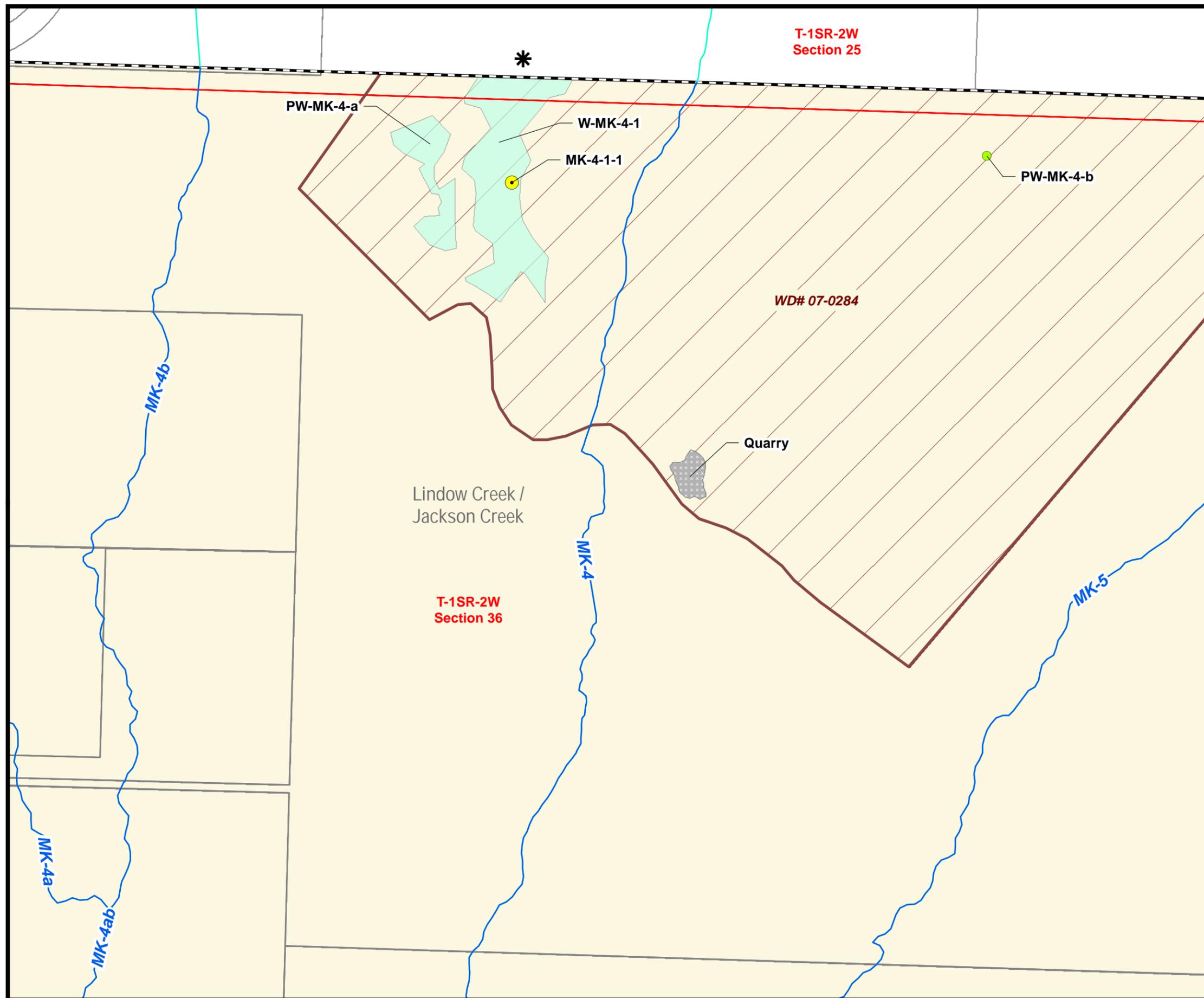
* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)

Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 5 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry * W = Wetland
 PLSS Section PW = Probable
 Other Delineation Study Area Wetland
 (mapped as point
 feature if no
 access)

Beaverton City Limits
 Washington County Tax Lot
 Street

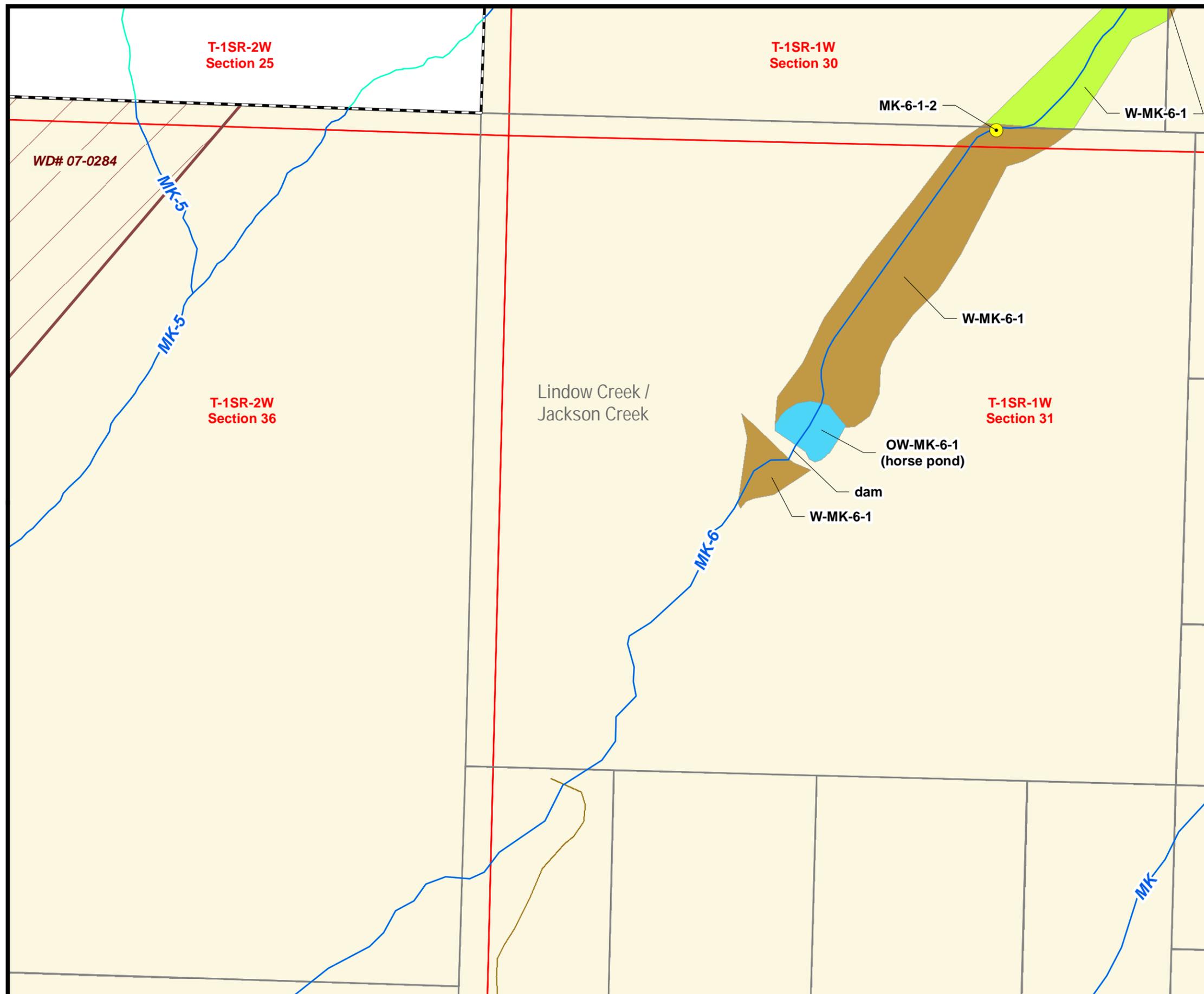
0 150 300 Feet

Data Sources:
 LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS
 NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
 Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 6 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area

Beaverton City Limits

Washington County Tax Lot

Street

* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)

0 150 300 Feet

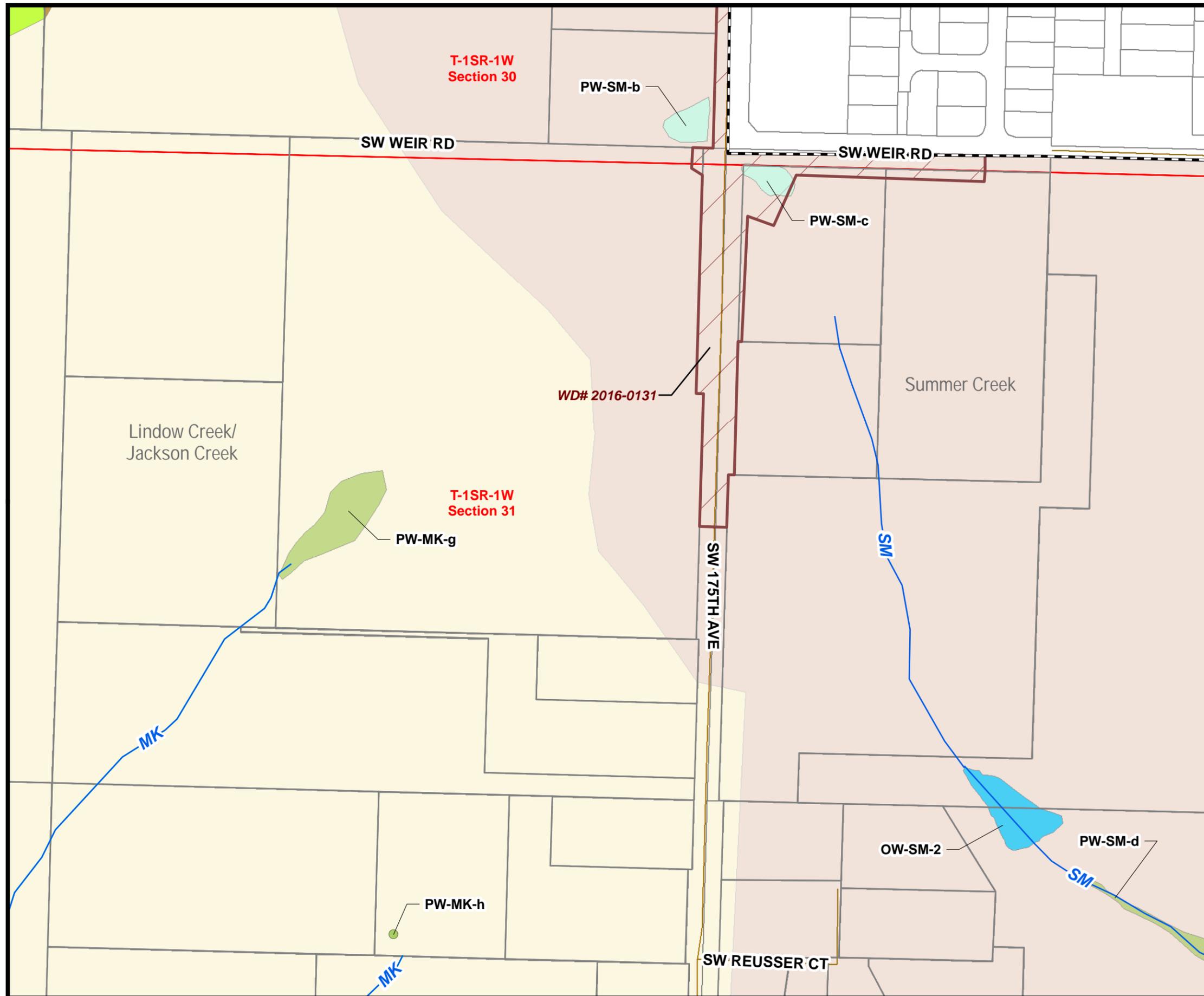
Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 7 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

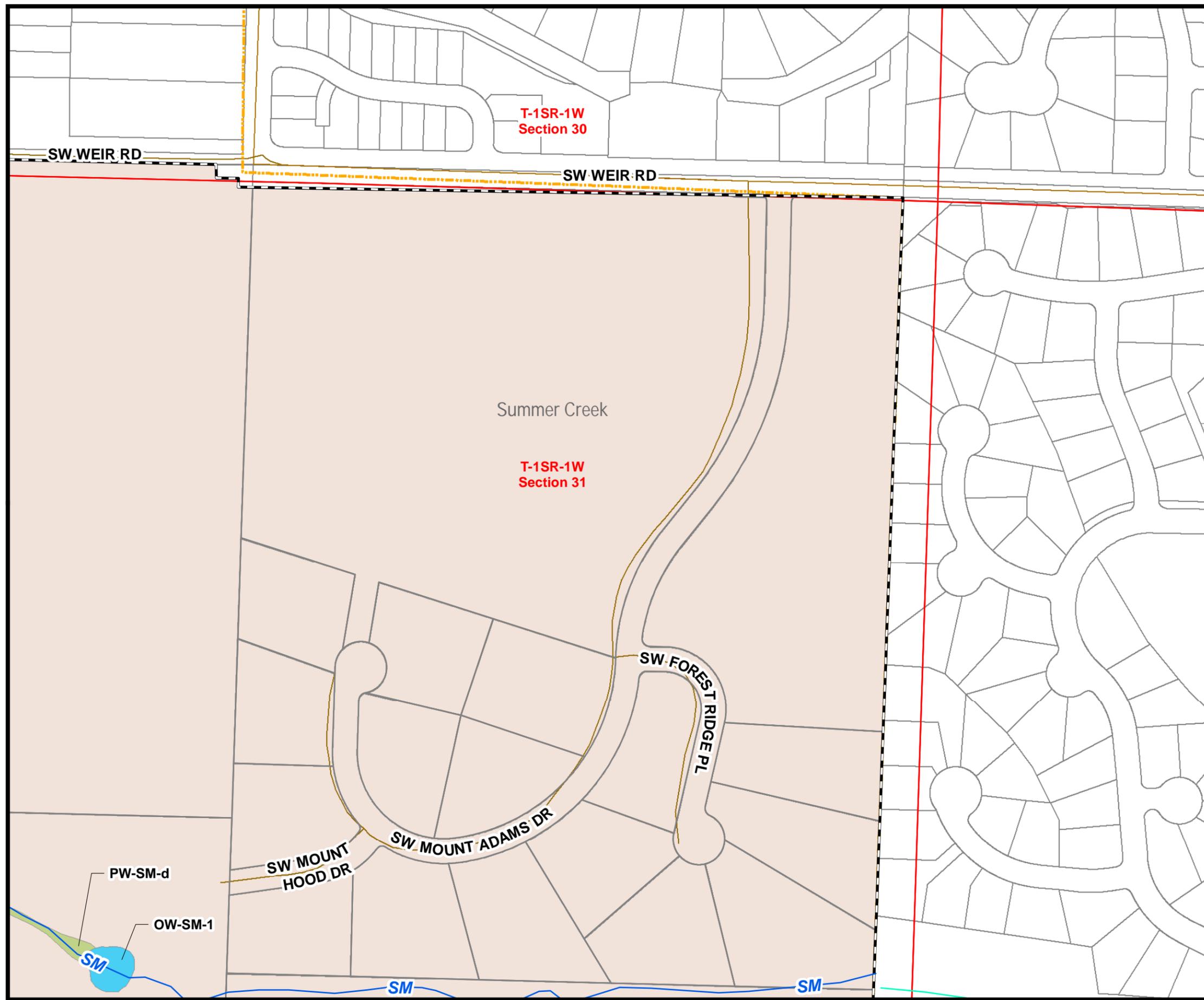
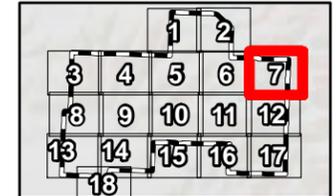
Other Delineation Study Area

Beaverton City Limits

Washington County Tax Lot

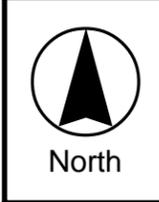
Street

* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)



Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\APG\00000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 9 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

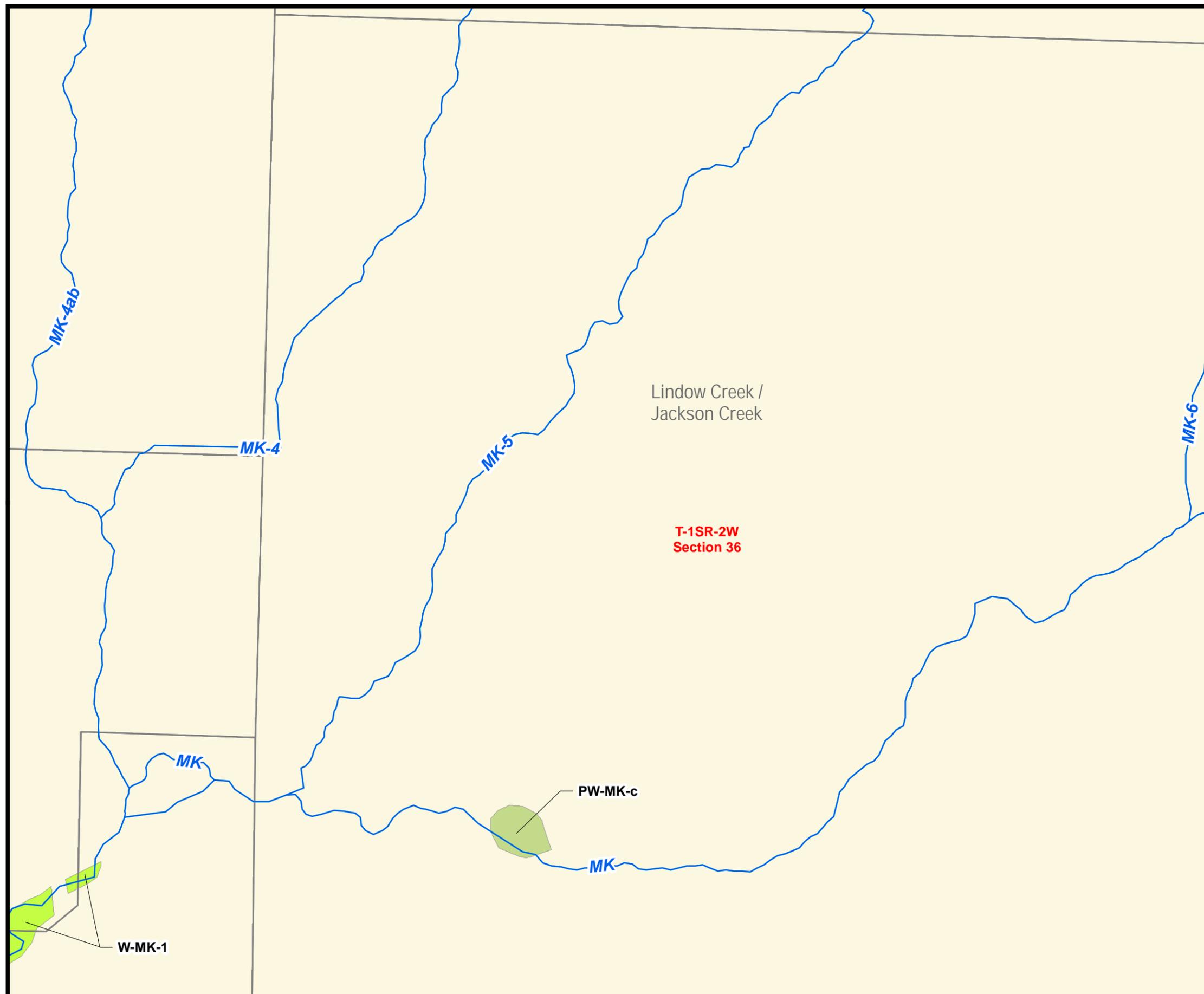
- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry * W = Wetland
 PLSS Section PW = Probable Wetland
 Other Delineation Study Area (mapped as point feature if no access)
 Beaverton City Limits
 Washington County Tax Lot
 Street

0 150 300 Feet



Data Sources:
 LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\APG\00000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 10 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area

Beaverton City Limits

Washington County Tax Lot

Street

* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)

0 150 300 Feet



Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\PGI\0000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 11 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Other Features:

- Quarry
- PLSS Section
- Other Delineation Study Area
- Beaverton City Limits
- Washington County Tax Lot
- Street

Wetland Codes:

- * W = Wetland
- PW = Probable Wetland
- (mapped as point feature if no access)

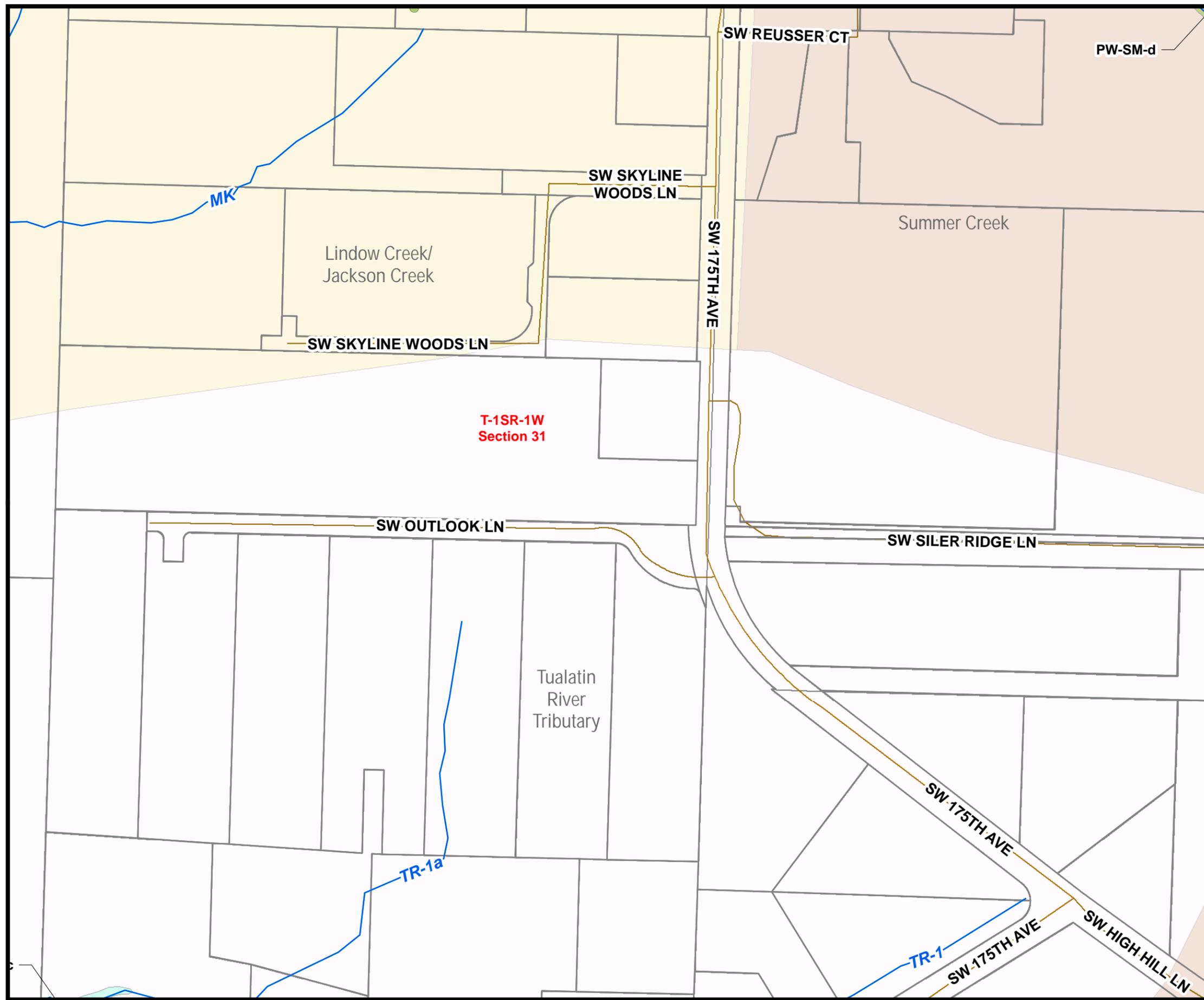
Scale: 0 150 300 Feet

Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 12 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area

Beaverton City Limits

Washington County Tax Lot

Street

* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)

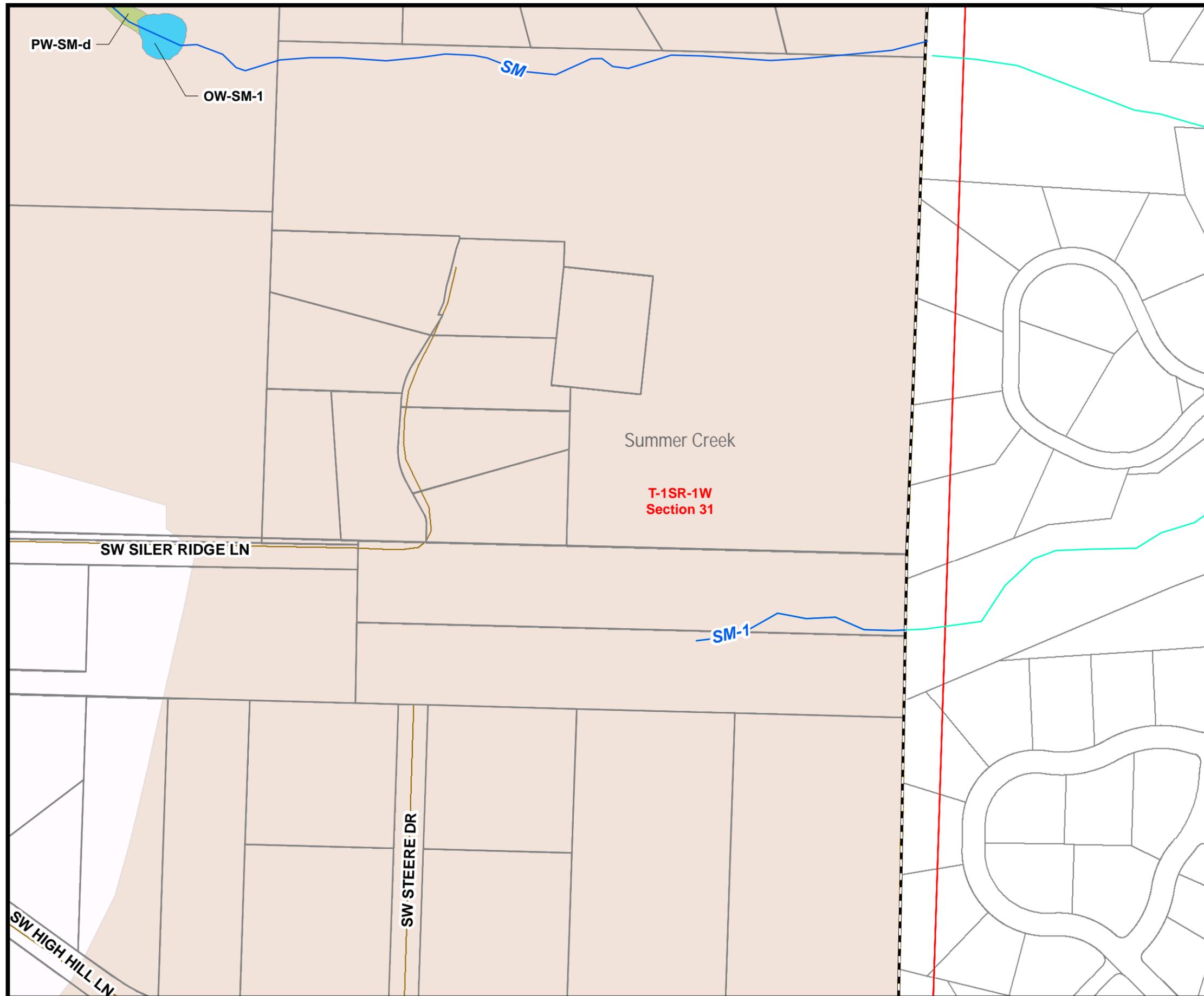
0 150 300 Feet

Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



**Figure 5, Sheet 13 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area

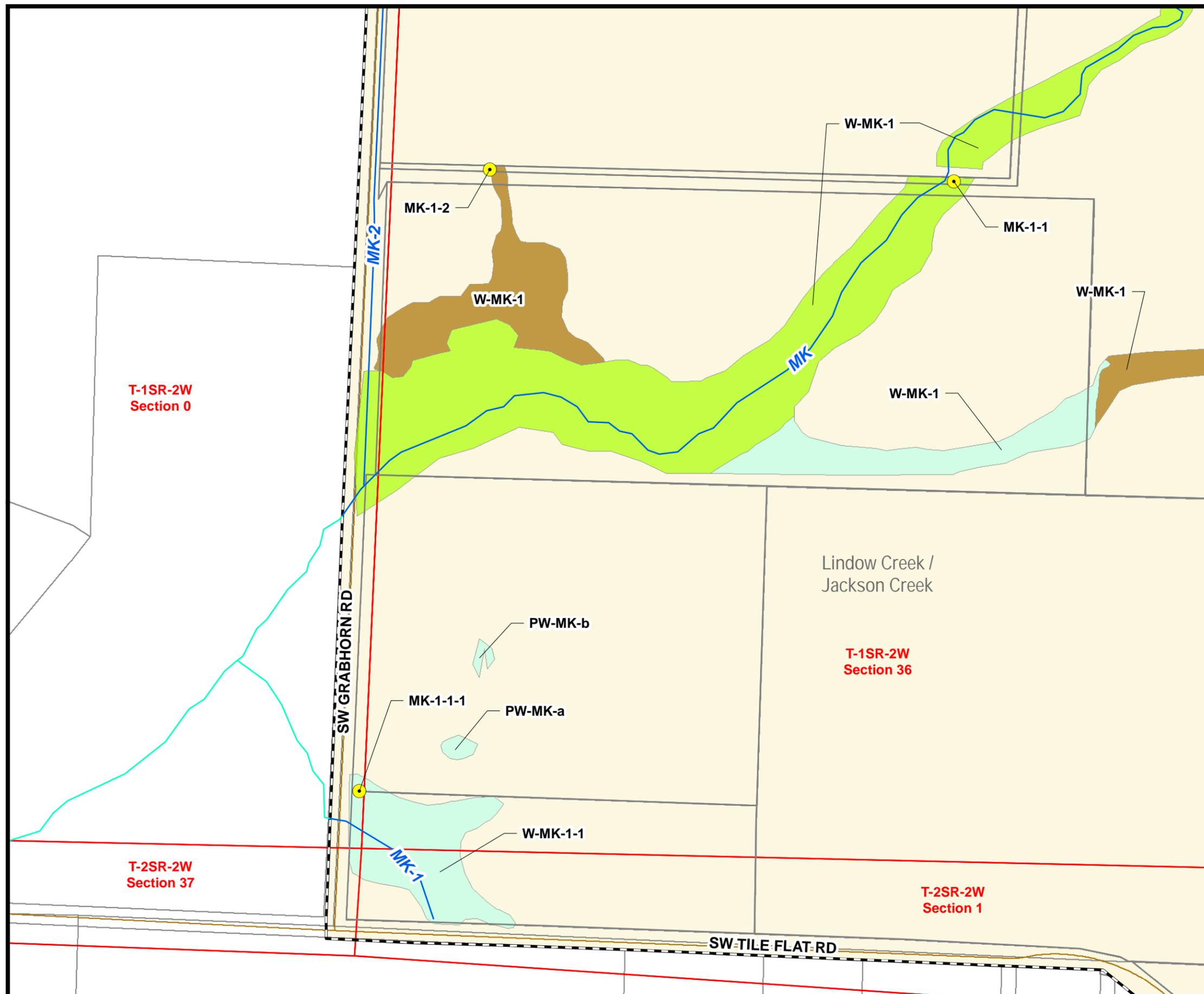
Beaverton City Limits

Washington County Tax Lot

Street

* W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)

0 150 300 Feet



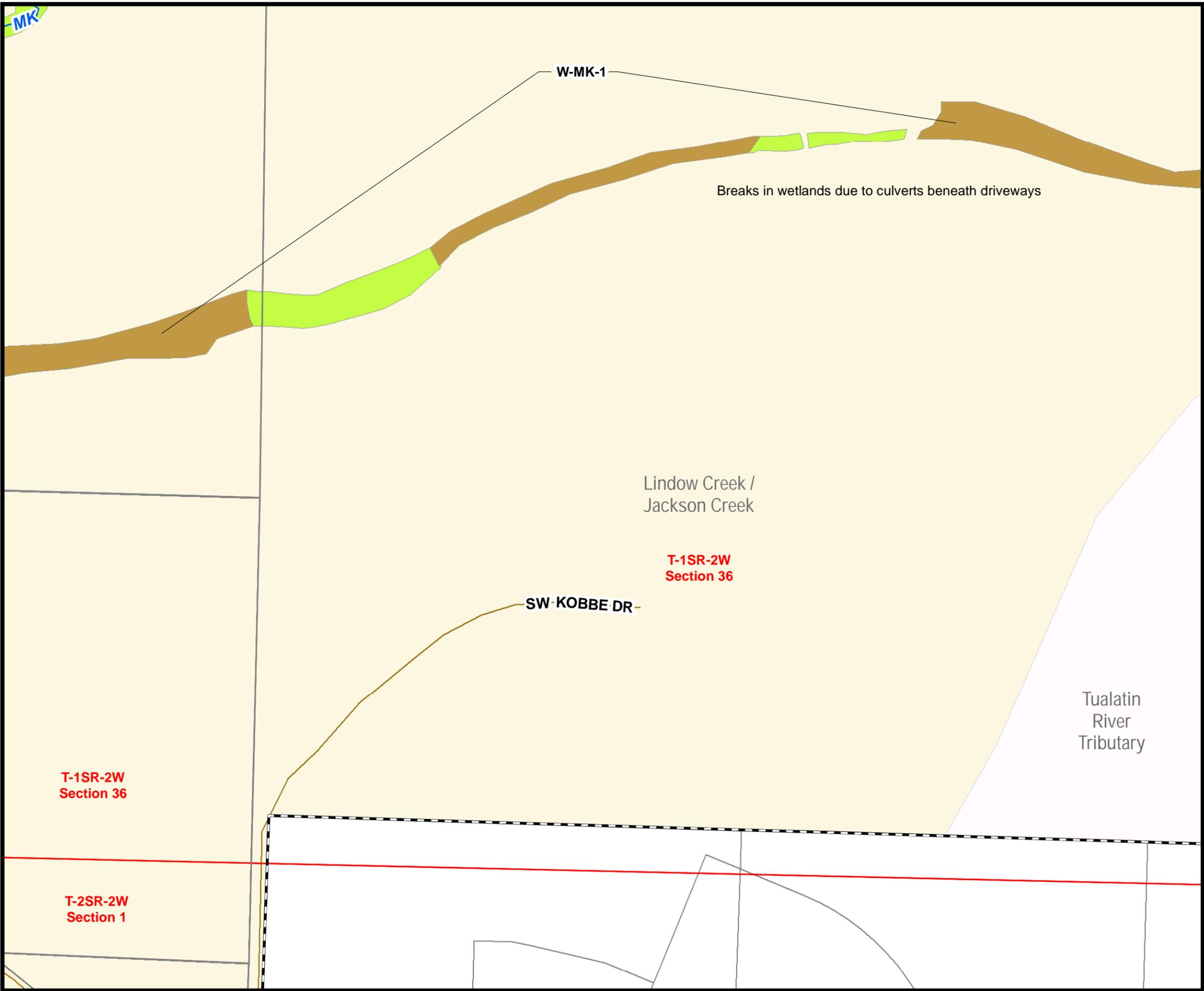
Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020

MK



**Figure 5, Sheet 14 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

	LWI Study Area	
	LWI Stream	
	NHD Stream	
	Sample Plot	
	Feature Extends Outside Study Area	
Watershed Boundary		
	Johnson Creek South	
	Lindow Creek/Jackson Creek	
	Summer Creek	
	Tualatin River Tributary	
LWI Wetlands*		
	Palustrine Emergent (PEM2Bf)	
	Palustrine Emergent (PEM1B)	
	Palustrine Forested (PFO1B)	
	Palustrine Scrub-Shrub (PSS1B)	
	Palustrine Unconsolidated Bottom (PUBx)	
	Quarry	
	PLSS Section	
	Other Delineation Study Area	(mapped as point feature if no access)
	Beaverton City Limits	
	Washington County Tax Lot	
	Street	0 150 300 Feet

Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

 North	Information Current as of: May 2020
	Printed on and Corrections as of: May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\APG\00000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 15 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

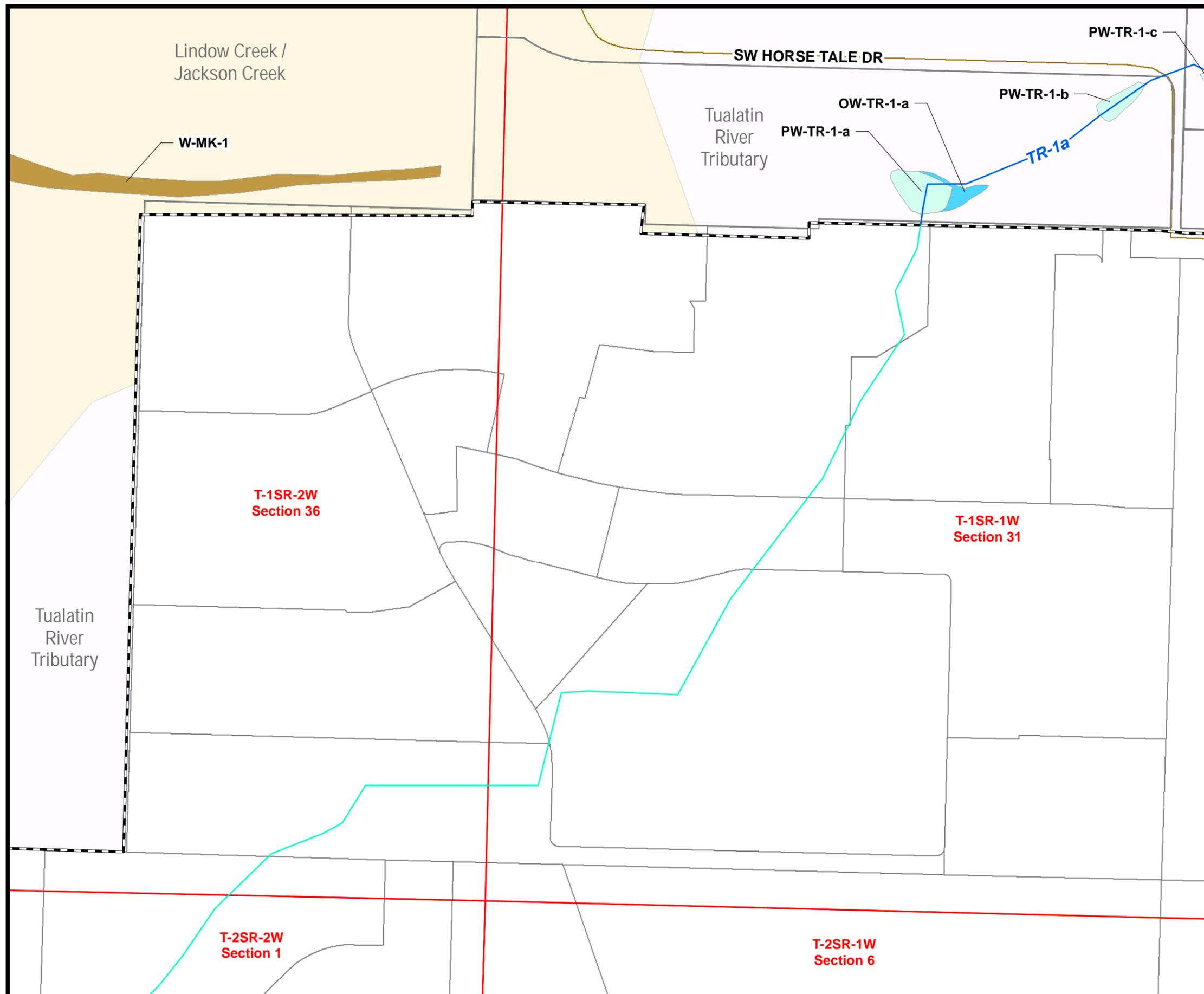
Other Symbols:

- Quarry
- PLSS Section
- Other Delineation Study Area
- Beaverton City Limits
- Washington County Tax Lot
- Street

Scale: 0 150 300 Feet

Inset Map: A 4x4 grid with cells numbered 1-18. Cell 15 is highlighted in red.

Notes: * W = Wetland, PW = Probable Wetland (mapped as point feature if no access)



Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020

Printed on and Corrections as of:
May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\PGI\00000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 16 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry * W = Wetland
 PLSS Section PW = Probable Wetland
 Other Delineation Study Area (mapped as point feature if no access)
 Beaverton City Limits
 Washington County Tax Lot
 Street

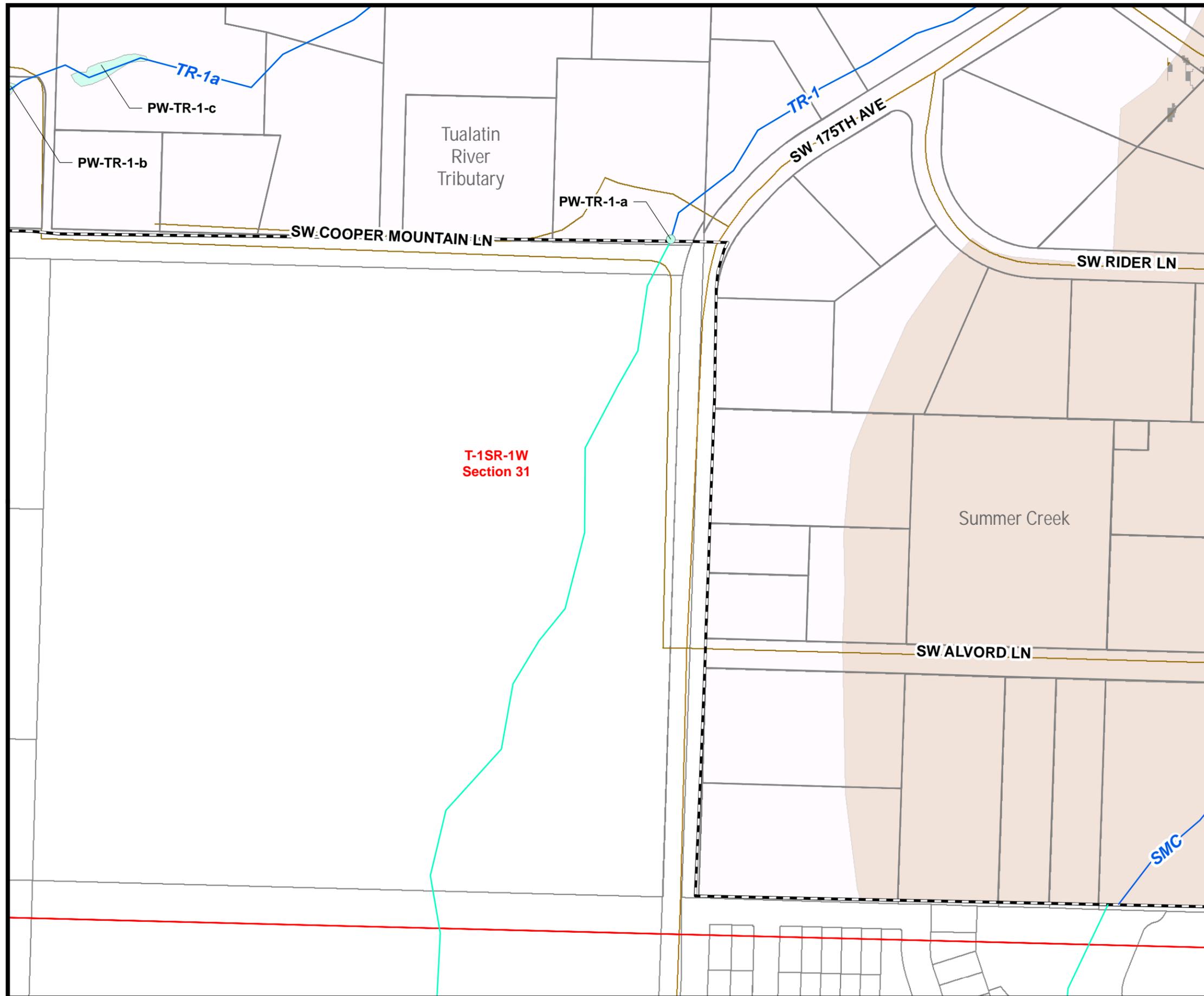
0 150 300 Feet

Data Sources:
 LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
 Printed on and Corrections as of:
May 2020

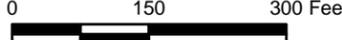


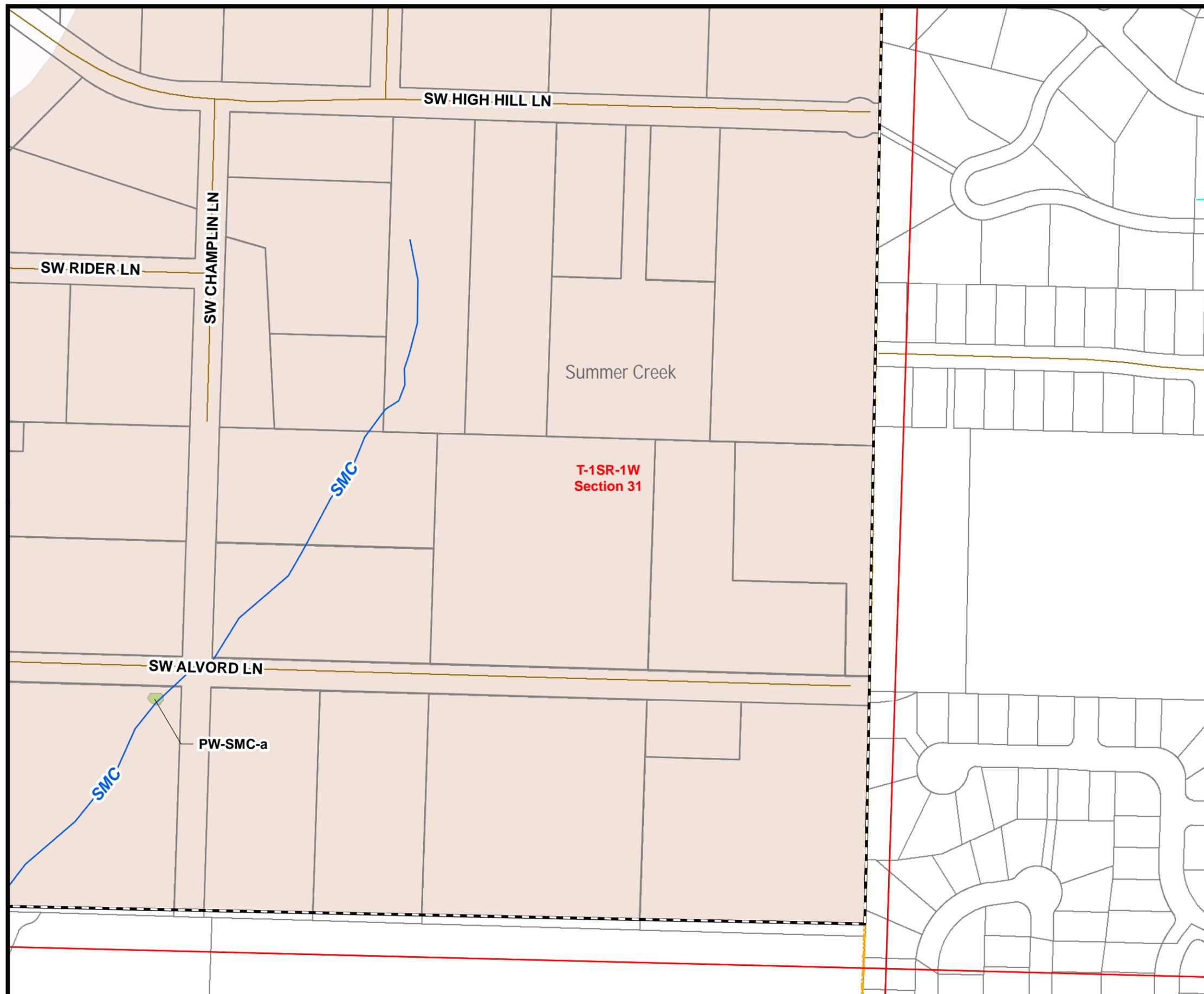
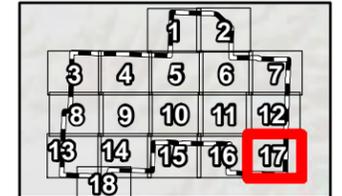
**Figure 5, Sheet 17 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

-  LWI Study Area
 -  LWI Stream
 -  NHD Stream
 -  Sample Plot
 -  Feature Extends Outside Study Area
- Watershed Boundary**
-  Johnson Creek South
 -  Lindow Creek/Jackson Creek
 -  Summer Creek
 -  Tualatin River Tributary
- LWI Wetlands***
-  Palustrine Emergent (PEM2Bf)
 -  Palustrine Emergent (PEM1B)
 -  Palustrine Forested (PFO1B)
 -  Palustrine Scrub-Shrub (PSS1B)
 -  Palustrine Unconsolidated Bottom (PUBx)
 -  Quarry
 -  PLSS Section
 -  Other Delineation Study Area
 -  Beaverton City Limits
 -  Washington County Tax Lot
 -  Street
- * W = Wetland
PW = Probable Wetland
(mapped as point feature if no access)
- 



Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020

5/26/2020 \\deainc.com\files\PROJECT\A\PGI\00000006\0600\INFO\GIS\Maps\2020 LWI Report\Fig5 LWI Delineation.mxd

**Figure 5, Sheet 18 of 18
Local Wetland Inventory Map**

**City of Beaverton
Cooper Mountain Community
Plan Area**

LOCAL WETLAND INVENTORY

Legend

Legend

- LWI Study Area
- LWI Stream
- NHD Stream
- Sample Plot
- Feature Extends Outside Study Area

Watershed Boundary

- Johnson Creek South
- Lindow Creek/Jackson Creek
- Summer Creek
- Tualatin River Tributary

LWI Wetlands*

- Palustrine Emergent (PEM2Bf)
- Palustrine Emergent (PEM1B)
- Palustrine Forested (PFO1B)
- Palustrine Scrub-Shrub (PSS1B)
- Palustrine Unconsolidated Bottom (PUBx)

Quarry

PLSS Section

Other Delineation Study Area (mapped as point feature if no access)

Beaverton City Limits

Washington County Tax Lot

Street

* W = Wetland
PW = Probable Wetland

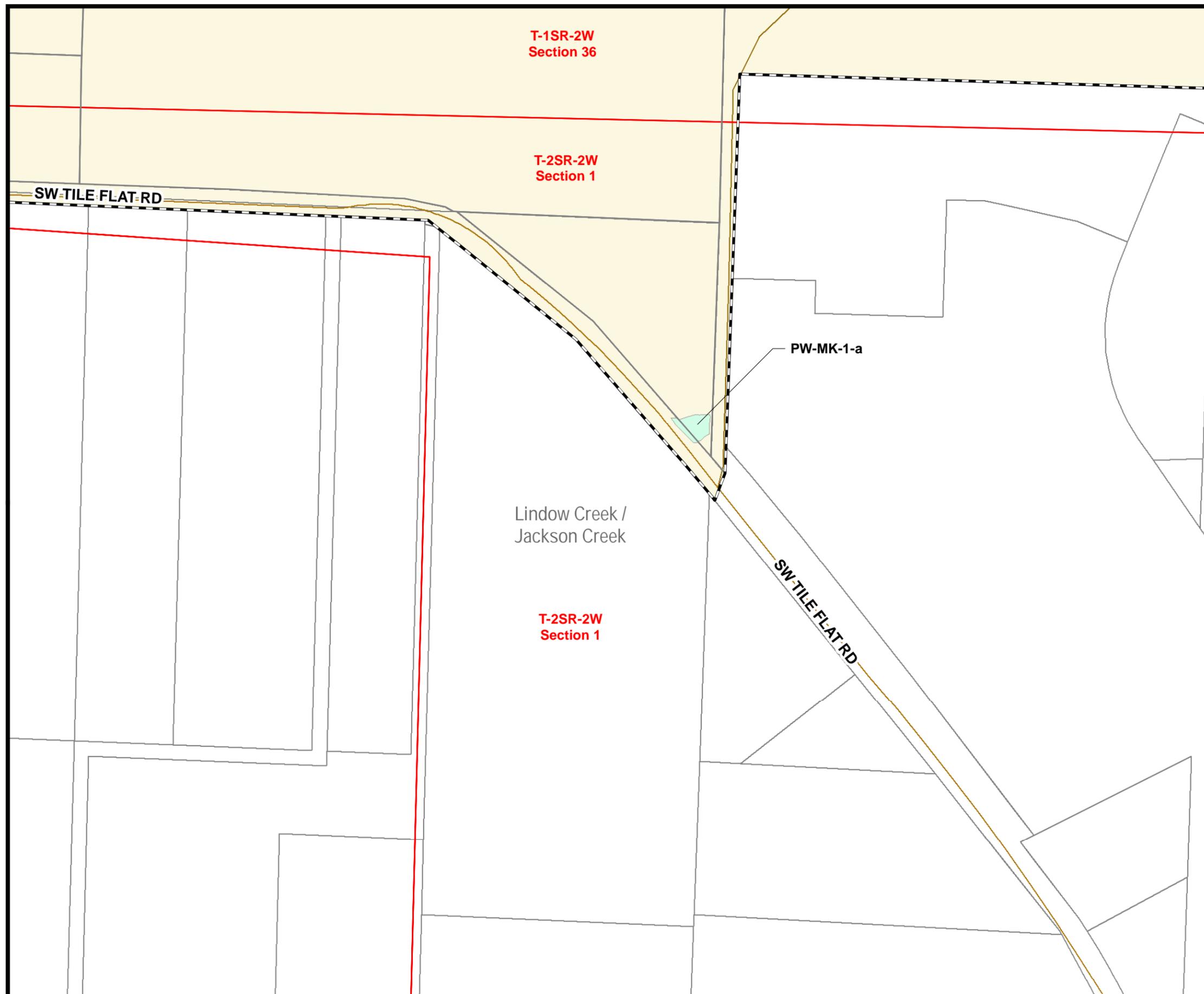
0 150 300 Feet

Data Sources:
LWI Study Area: City of Beaverton, 2020; LWI Streams: USGS NHD modified by DEA; LWI Wetlands: DEA; Metro RLIS

Disclaimer: Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.



Information Current as of:
May 2020
Printed on and Corrections as of:
May 2020



APPENDIX B: Data Sheets

OAR 141-086-0220(3)(a) Sample plot data on standard field data forms per OAR 141-090 et seq.

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

Project/Site: Cooper Mountain LWI City/County: Washington Sampling Date: 4-28-20
 Applicant/Owner: City of Beaverton State: Oregon Sampling Point: MK-1-1
 Investigator(s): Thompson, Rickus Section, Township, Range: T1S R1W S36 NW
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): A Lat: 45.447609 Long: -122.863509 Datum: NAD 83 (2011)
 Soil Map Unit Name: Delena silt loam, 3 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology 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 <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Plot lies in a wetland adjacent to McKernan Creek.	

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: <u>20x30'</u>)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)	
1. <u>Fraxinus latifolia</u>	<u>40</u>	<u>y</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
2. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
3. _____				Prevalence Index worksheet:	
4. _____					Total % Cover of: _____ Multiply by: _____
	<u>40</u> = Total Cover			OBL species _____ x 1 = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>20x30'</u>)				FACW species _____ x 2 = _____	
1. <u>Fraxinus latifolia</u>	<u>5</u>	<u>y</u>	<u>FACW</u>	FAC species _____ x 3 = _____	
2. <u>Rubus armeniacus</u>	<u>5</u>	<u>y</u>	<u>FAC</u>	FACU species _____ x 4 = _____	
3. _____				UPL species _____ x 5 = _____	
4. _____				Column Totals: _____ (A) _____ (B)	
5. _____				Prevalence Index = B/A = _____	
	<u>10</u> = Total Cover			Hydrophytic Vegetation Indicators:	
<u>Herb Stratum</u> (Plot size: <u>5'</u>)					<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
1. <u>Phalaris arundinacea</u>	<u>60</u>	<u>y</u>	<u>FACW</u>		<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
2. <u>Alopecurus pratensis</u>	<u>10</u>	<u>n</u>	<u>FAC</u>		<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
3. <u>Carex bolanderi</u>	<u>5</u>	<u>n</u>	<u>FAC</u>		<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. <u>Solanum dulcamara</u>	<u>10</u>	<u>n</u>	<u>FAC</u>		<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
5. _____					<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____					Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
8. _____					
9. _____					
10. _____					
	<u>85</u> = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____					
2. _____					
	<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>5</u> bare					
Remarks: PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE					

SOIL

Sampling Point: MK-1-1

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		
0-16	10YR 3/2	92	10YR 3/6	5	C	M	silt loam	
			10YR 2/1	1	C	M		
			10YR 4/1	2	D	M		

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.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (**except MLRA 1**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (2 or more required)

- Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Stunted or Stressed Plants (D1) (**LRR A**)
- Other (Explain in Remarks)
- Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) (**LRR A**)
- Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): 5
 Saturation Present? Yes No Depth (inches): surface
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

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

Remarks:

PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE

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

Project/Site: Cooper Mountain LWI City/County: Washington Sampling Date: 4-29-20
 Applicant/Owner: City of Beaverton State: Oregon Sampling Point: MK-1-1-1
 Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S36 SW
 Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): concave Slope (%): 8
 Subregion (LRR): A Lat: 45.433205 Long: -122.885984 Datum: NAD 83 (2011)
 Soil Map Unit Name: Huberly silt loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology 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 <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Plot lies on the edge of a grassy field.	

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: _____)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
1. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
2. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
3. _____				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 = _____
4. _____				
_____ = Total Cover	<u>0</u>			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>30'</u>)				
1. <u>Rosa nutkana</u>	<u>3</u>	<u>y</u>	<u>FAC</u>	
2. _____				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 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.
3. _____				
4. _____				
5. _____				
_____ = Total Cover	<u>3</u>			
<u>Herb Stratum</u> (Plot size: <u>5'</u>)				
1. <u>Alopecurus pratensis</u>	<u>85</u>	<u>y</u>	<u>FAC</u>	
2. <u>Phalaris arundinacea</u>	<u>15</u>	<u>n</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
_____ = Total Cover	<u>100</u>			
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover	<u>0</u>			
% Bare Ground in Herb Stratum <u>0</u>				
Remarks: PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE				

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

Project/Site: Cooper Mountain LWI City/County: Washington Sampling Date: 4-27-20
 Applicant/Owner: City of Beaverton State: Oregon Sampling Point: MK-1-2
 Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S36
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): A Lat: 45.436660 Long: -122.885102 Datum: NAD 83 (2011)
 Soil Map Unit Name: Huberly silt loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology 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 <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Plot lies at the upper edge of a farmed portion of wetland MK-1 within a tree farm, at the outfall of a culvert. A short distance downslope the area is more obviously wetland, but no access was granted to that portion of the wetland. Downslope portions of this wetland are dominated more densely by <i>Alopecurus pratensis</i> .	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0 = Total Cover				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 = _____
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				
Herb Stratum				
(Plot size: <u>5'</u>)				
1. <u><i>Alopecurus pratensis</i></u>	45	y	FAC	
2. <u><i>Plantago lanceolata</i></u>	10	n	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
55 = Total Cover				
Woody Vine Stratum				
(Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum <u>45 bare</u>				
Remarks: PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE				

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

Project/Site: Cooper Mountain LWI City/County: Washington Sampling Date: 4-29-20
 Applicant/Owner: City of Beaverton State: Oregon Sampling Point: MK-4-1-1
 Investigator(s): Thompson, Rickus Section, Township, Range: T1S R2W S36
 Landform (hillslope, terrace, etc.): shallow swale on slope Local relief (concave, convex, none): concave Slope (%): 20
 Subregion (LRR): A Lat: 45.447056 Long: -122.876325 Datum: NAD 83 (2011)
 Soil Map Unit Name: Saum silt loam, 12 to 20 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology 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 <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:
 Plot lies in a sloped vernal swale with shallow soils. Groundwater emerges and flows through the area during the wet season and dries up quickly in the dry season. The wetland has no defined outlet and appears to infiltrate into the soil at the downslope end.

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
4. _____	_____	_____	_____	
0 = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	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 = _____
0 = Total Cover				UPL species _____ x 5 = _____
0 = Total Cover				Column Totals: _____ (A) _____ (B)
0 = Total Cover				Prevalence Index = B/A = _____
<u>Herb Stratum</u> (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Juncus tenuis</u>	<u>15</u>	<u>y</u>	<u>FAC</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Erodium cicutarium</u>	<u>10</u>	<u>y</u>	<u>UPL</u>	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
3. <u>Centaureum erythraea</u>	<u>10</u>	<u>y</u>	<u>FAC</u>	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. <u>Parentucellia viscosa</u>	<u>10</u>	<u>y</u>	<u>FAC</u>	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. <u>Saxifraga oregana</u>	<u>10</u>	<u>y</u>	<u>FACW</u>	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
6. <u>Trifolium sp</u>	<u>5</u>	<u>n</u>	<u>UNK</u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. <u>Bromus diandrus</u>	<u>5</u>	<u>n</u>	<u>UPL</u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
65 = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum <u>15 bare</u>				
Remarks: <div style="display: flex; justify-content: space-between;"> 20% moss PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE </div>				

SOIL

Sampling Point: MK-4-1-1

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		
0-4	10YR 4/2	95	10YR 4/4	5	C	M	silt loam	with rocks
4+								rock

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.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) **(except MLRA 1)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: rock
 Depth (inches): 4

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Stunted or Stressed Plants (D1) **(LRR A)**
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) **(LRR A)**
- Frost-Heave Hummocks (D7)

Field Observations:

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

Wetland Hydrology Present? Yes No

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

Remarks:

Shallow-soil vernal wetland sampled in May during a low end of normal water year. Therefore, it was assumed that the indicators of hydrology from WD# 07-0284 would be present during the wet portion of a normal year.

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

Project/Site: Cooper Mountain LWI City/County: Washington Sampling Date: 4-28-20
 Applicant/Owner: City of Beaverton State: Oregon Sampling Point: MK-6-1-1
 Investigator(s): Thompson, Rickus Section, Township, Range: T1S R1W S30 SE
 Landform (hillslope, terrace, etc.): swale on slope Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): A Lat: 45.449294 Long: -122.861663 Datum: NAD 83 (2011)
 Soil Map Unit Name: Cascade silt loam, 3 to 7 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology 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 <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Plot lies at the upper edge of a farmed portion of wetland MK-6-1 within a hay field.	

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: _____)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
1. _____				Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
2. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
3. _____				Prevalence Index worksheet:	
4. _____					Total % Cover of: _____ Multiply by: _____
0 = Total Cover				OBL species _____ x 1 = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				FACW species _____ x 2 = _____	
1. _____				FAC species _____ x 3 = _____	
2. _____				FACU species _____ x 4 = _____	
3. _____				UPL species _____ x 5 = _____	
4. _____				Column Totals: _____ (A) _____ (B)	
5. _____				Prevalence Index = B/A = _____	
0 = Total Cover				Hydrophytic Vegetation Indicators:	
<u>Herb Stratum</u> (Plot size: <u>5'</u>)					<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
1. <u>Alopecurus pratensis</u>	99	y	FAC		<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
2. <u>Poa pratensis</u>	1	n	FAC		<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
3. _____					<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____					<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
5. _____					<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
100 = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<u>Woody Vine Stratum</u> (Plot size: _____)					
1. _____					
2. _____					
0 = Total Cover					
% Bare Ground in Herb Stratum <u>0</u>					
Remarks: PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE					

SOIL

Sampling Point: MK-6-1-1

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		
0-16	10YR 3/1	95	2.5Y 3/3	5	C	M	silty clay loam	

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.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) **(except MLRA 1)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Stunted or Stressed Plants (D1) **(LRR A)**
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) **(LRR A)**
- Frost-Heave Hummocks (D7)

Field Observations:

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

Wetland Hydrology Present? Yes No

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

Remarks:

According to the landowner there is soil saturation in the area throughout the wet season. Therefore it was assumed that hydrology would be present for extended periods during the growing season in a normal water year.

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

Project/Site: Cooper Mountain LWI City/County: Washington Sampling Date: 4-28-20
 Applicant/Owner: City of Beaverton State: Oregon Sampling Point: MK-6-1-2
 Investigator(s): Thompson, Rickus Section, Township, Range: T1S R1W S36 NW
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 10
 Subregion (LRR): A Lat: 45.447609 Long: -122.863509 Datum: NAD 83 (2011)
 Soil Map Unit Name: Delena silt loam, 3 to 12 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology 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 <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Plot lies on the southern edge of forested portion of wetland MK-6-1.	

VEGETATION – Use scientific names of plants.

Stratum	Plot size	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet
<u>Tree Stratum</u>	<u>(Plot size: 10x30')</u>				
1. <u>Fraxinus latifolia</u>		<u>65</u>	<u>y</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)
2. _____					Total Number of Dominant Species Across All Strata: <u>7</u> (B)
3. _____					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____					
		<u>65</u>	<u>= Total Cover</u>		
<u>Sapling/Shrub Stratum</u>	<u>(Plot size: 10x30')</u>				
1. <u>Fraxinus latifolia</u>		<u>35</u>	<u>y</u>	<u>FACW</u>	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 = _____
2. <u>Rubus armeniacus</u>		<u>15</u>	<u>y</u>	<u>FAC</u>	
3. <u>Physocarpus capitatus</u>		<u>25</u>	<u>y</u>	<u>FACW</u>	
4. _____					
5. _____					
		<u>75</u>	<u>= Total Cover</u>		
<u>Herb Stratum</u>	<u>(Plot size: 5')</u>				
1. <u>Tolmeia menziesii</u>		<u>20</u>	<u>y</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Alopecurus pratensis</u>		<u>30</u>	<u>y</u>	<u>FAC</u>	
3. <u>Juncus patens</u>		<u>20</u>	<u>y</u>	<u>FACW</u>	
4. <u>Epilobium ciliatum</u>		<u>10</u>	<u>n</u>	<u>FACW</u>	
5. <u>Ranunculus acris</u>		<u>5</u>	<u>n</u>	<u>FAC</u>	
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
		<u>85</u>	<u>= Total Cover</u>		
<u>Woody Vine Stratum</u>	<u>(Plot size: _____)</u>				
1. _____					Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____					
		<u>0</u>	<u>= Total Cover</u>		
% Bare Ground in Herb Stratum <u>15 bare</u>					
Remarks: PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE					

SOIL

Sampling Point: MK-6-1-2

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		
0-16	10YR 3/2	90	10YR 4/4	10	C	M	silty clay loam	

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.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (**except MLRA 1**)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

- Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Stunted or Stressed Plants (D1) (**LRR A**)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Raised Ant Mounds (D6) (**LRR A**)
- Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): 8
 Saturation Present? Yes No Depth (inches): 4
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

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

Remarks:

PRELIMINARY DRAFT - 6/16/2020 - SUBJECT TO CHANGE

APPENDIX C: Wetland Summary Sheets (Wetlands less than 0.5 acres Not Included)

OAR 141-086-0220(3)(b) *A summary sheet for each wetland that must at a minimum include:*

- (A) The unique wetland code;*
- (B) Street address or equivalent location description;*
- (C) Township, Range, Section, Quarter Quarter Section and tax lot(s) that contain the mapped wetland;*
- (D) Approximate wetland size (in acres);*
- (E) Cowardin classification(s);*
- (F) HGM classification(s);*
- (G) Mapped soil unit(s);*
- (H) Watershed boundaries at the 6th field Hydrologic Unit Code scale as defined by the US Geological Survey or finer;*
- (I) Sample plot numbers, if any;*
- (J) Department wetland determination or delineation file numbers, where applicable;*
- (K) Scientific and common names of dominant plant species;*
- (L) Primary hydrology sources;*
- (M) Sampling or visual confirmation date(s) and method;*
- (N) Locally Significant Wetland determination, if made; and*
- (O) Comments that describe the wetland, including topographic position, land uses and significant alterations (including agricultural).*



LOCAL WETLAND INVENTORY

Wetland Characterization Sheet

GENERAL INFORMATION			
Wetland Code:	W-MK-1 (Locally Significant)	Method:	Onsite and Offsite
Wetland Size:	12.37 acres	Field Date(s):	April 27 and 29, 2020
Cowardin Class:	PFO1B, PEM1B, PEM2Bf	Data Plot #s:	MK-1-1, MK-1-2
HGM Class:	Slope and Riverine	Investigators:	Rickus, Thompson
LOCATION			
T1S R2W S36 SE			
Street/landmark	East of SW Grabhorn Rd, North of SW Tile Flat Rd.		
Legal/tax map:	1S2360001000, 1S2360000801, 1S2360000802, 1S2360000804, 1S2360000902		
Sub-basin code:	MK (McKernan Creek)		
WETLAND CHARACTERISTICS			
<p>Description: This wetland is situated within a relatively narrow riparian area of McKernan Creek in a gently sloped agricultural area just downslope of the confluence of several tributaries. It is fed by groundwater and a high water table associated with McKernan Creek, which is a tributary to the Tualatin River. The northwestern portion has been converted to a tree farm, and is dominated by the non-native grass meadow foxtail (<i>Alopecurus pratensis</i>), while the remainder consists of forested and scrub-shrub wetland along McKernan Creek, with a mix of agricultural and remnant forested wetland patches extending east within a swale in mapped hydric soil. This portion was visible only slightly and from a distance, and actual wetland composition and nature is unknown on TL 1S2360001000. Site access was granted for only TL 1S2360000801 and 1S2360000902, and the rest was viewed from adjacent lots and appeared to be similar in nature.</p> <p>Based on air photos the riparian zone of the creek has been reduced from historical condition, and has been converted to agriculture, with drainage alterations likely within much of the agricultural areas.</p> <p>Representative plots were taken in herbaceous and forested vegetative communities. Forested wetland dominant species are provided below. Herbaceous wetland was dominated by non-native grasses such as meadow foxtail. Vegetative diversity and wildlife use in the forested portions of the wetland was fairly high, and a yellow-breasted chat (an Oregon Conservation Strategy species) was heard within the McKernan Creek riparian area. Since it was during migration, it is not certain whether the species was resident, though the relatively large and undisturbed, shrubby nature of the area would provide habitat.</p> <p>Soils: Aloha silt loam, Cascade silt loam, 3 to 7 percent slopes, Cascade silt loam, 12 to 20 percent slopes, Huberly silt loam and Woodburn silt loam, 0 to 3 percent slopes, Delena silt loam, 3 to 12 percent slopes, Wapato silty clay loam, Woodburn silt loam, 0 to 3 percent slopes.</p> <p>Hydrologic Source: McKernan Creek; groundwater discharge</p>			



LOCAL WETLAND INVENTORY
Wetland Characterization Sheet

Dominant Vegetation					
Trees		Shrubs		Vines/Herbs	
Oregon ash	<i>Fraxinus latifolia</i>	Red twig dogwood	<i>Cornus sericea</i>	Himalayan blackberry	<i>Rubus armeniacus</i>
Pacific willow	<i>Salix lucida</i>	Nootka rose	<i>Rosa nutkana</i>	Reed canarygrass	<i>Phalaris arundinacea</i>
		Pacific willow	<i>Salix lucida</i>	Meadow foxtail	<i>Alopecurus pratensis</i>
				Curly dock	<i>Rumex crispus</i>
<p>Potential Enhancement Opportunities:</p> <ul style="list-style-type: none"> -Weed removal and native plantings throughout. If the landowners are amenable, there are many opportunities to expand riparian buffers around agricultural wetlands to improve wildlife habitat and water quality. This could also benefit the yellow-breasted chat heard within the McKernan Creek riparian area, if it is a resident species. -Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals. -Snag and downed wood creation would also benefit many OCS species. -Limiting herbicide/fertilizer application on upstream farm fields would further protect water quality. 					

LOCAL WETLAND INVENTORY
Wetland Characterization Sheet

GENERAL INFORMATION			
Wetland Code:	W-MK-1-1	Method:	Onsite and Offsite
Wetland Size:	1.31 acres	Field Date(s):	April 28, 2020
Cowardin Class:	PEM1B	Data Plot #s:	MK-1-1-1
HGM Class:	Slope	Investigators:	Rickus, Thompson
LOCATION			
T1S R2W S36 SE			
Street/landmark	Corner of SW Grabhorn Rd and SW Tile Flat Rd.		
Legal/tax map:	1S2360000901, 1S2360000902		
Sub-basin code:	MK (McKernan Creek)		
WETLAND CHARACTERISTICS			
<p>Description: W-MK-1-1 lies in the southwest corner of the study area and was delineated partially by DEA in 2017 (WD2017-0024); however, the majority of the wetland was mapped for the LWI using offsite methods since access was not granted. It is situated in a swale occupied by a tributary to McKernan Creek (MK-1-1), and consists of an old hay field that has reverted to emergent wetland. It is dominated by non-native grasses and is primarily fed by groundwater. Representative plots were taken in primarily herbaceous habitat. Vegetative diversity was minimal and wildlife use in the wetland was assumed to be relatively low, being at the corner of a busy street. However, since it is connected to larger open spaces and farms, habitat function is provided for common species and for a variety of migratory birds.</p> <p>Hydrologic Source: Groundwater discharge</p>			
Dominant Vegetation			
Trees	Shrubs		Vines/Herbs
None	Nootka rose	<i>Rosa nutkana</i>	Meadow foxtail <i>Alopecurus pratensis</i>
	Himalayan blackberry	<i>Rubus armeniacus</i>	Reed canarygrass <i>Phalaris arundinacea</i>
Potential Enhancement Opportunities:			
<p>-Weed removal and native plantings throughout. If the landowners are amenable, there are many opportunities to expand riparian buffers around agricultural wetlands to improve wildlife habitat and water quality.</p> <p>-Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals.</p>			

LOCAL WETLAND INVENTORY

Wetland Characterization Sheet

GENERAL INFORMATION			
Wetland Code:	W-MK-4-1	Method:	Onsite and Offsite
Wetland Size:	1.12 acres (in study area)	Field Date(s):	April 29, 2020
Cowardin Class:	PEM1B	Data Plot #s:	MK-4-1-1
HGM Class:	Slope	Investigators:	Rickus, Thompson
LOCATION			
T1S R1W S30 SE			
Street/landmark	Southeast of SW Stone Creek Drive (within Cooper Mountain Nature Park)		
Legal/tax map:	1S2360000100		
Sub-basin code:	MK-4 (Tributary to McKernan Creek)		
WETLAND CHARACTERISTICS			
<p>Description: W-MK-4-1 lies within Cooper Mountain Nature Park and was delineated by others in 2007 (WD# 07-0284). It is situated higher in the watershed on a moderately steep slope between two tributaries to McKernan Creek. It occupies 1.14 acres within the study area- the upper end of the wetland lies outside the LWI study area, and was not included in this total, but according to WD# 07-0284 total wetland size is 2.03 acres. The wetland is a shallow-soil vernal wetland and was dry during the LWI site visits, with plant communities that change rapidly as the wetland dries, often succeeding to species adapted to less soil moisture as the dry season progresses.</p> <p>A representative plot was taken in this herbaceous community. Vegetative diversity was high and wildlife use was presumed to be high given the vernal nature of the wetland, which is unusual and limited in the region. Actual wildlife use observed was primarily from insects (including butterflies, bees, and others) and foraging by migratory birds. According to WD# 07-0284, the area is burned for restoration frequently to maintain vegetative diversity and wildlife habitat.</p> <p>Soils: Saum silt loam, 12 to 20 percent slopes</p> <p>Hydrologic Source: Groundwater discharge</p>			
Dominant Vegetation			
Herbs		Herbs	
Slender rush-	<i>Juncus tenuis</i>	European centaury	<i>Centaurium erythraea</i>
Oregon saxifrage	<i>Saxifraga oregana</i>	Redstem stork's bill	<i>Erodium cicutarium</i>
Yellow glandweed	<i>Parentucellia viscosa</i>		

LOCAL WETLAND INVENTORY

Wetland Characterization Sheet

Potential Enhancement Opportunities:

-The area is already being managed by METRO for conservation and is burned frequently to maintain vegetative diversity and wildlife habitat. Since this and other Metro-owned parcels contain the last remaining large blocks of oak savannah in the area, they are highly valuable for conservation. The following opportunities are likely already being implemented by METRO.

-Additional Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals.

-Snag and downed wood creation would also benefit many OCS species.

-Limiting encroachment by recreational visitors appears to be working to preserve resources and should be continued. Poison oak in much of the grassy areas serves this purpose to some degree.

-Weeds such as blackberry and common bedstraw are present in some areas. Reducing populations would help reduce spread of these weeds.

LOCAL WETLAND INVENTORY
Wetland Characterization Sheet

GENERAL INFORMATION			
Wetland Code:	W-MK-6-1	Method:	Onsite and Offsite
Wetland Size:	5.64 acres	Field Date(s):	April 28, 2020
Cowardin Class:	PFO1B, PEM2Bf	Data Plot #s:	MK-6-1-1, MK-6-1-2
HGM Class:	Slope	Investigators:	Rickus, Thompson
LOCATION			
T1S R1W S30 SE			
Street/landmark	West of SW 175 th Ave, S of SW Kemmer Rd.		
Legal/tax map:	1S130C000201, 1S130CD00100, 1S130CC00100, 1S1310000800		
Sub-basin code:	MK-6 (Tributary to McKernan Creek)		
WETLAND CHARACTERISTICS			
<p>Description: This wetland lies in a swale in the upper portion of the watershed. It is fed by groundwater, and consists of a mix of agricultural and remnant forested wetland patches extending southwest in a swale within mapped hydric soil. W-MK-6-1 originates near the topographic high point of the area, and apparently collects groundwater from the top of the ridgeline above, which consists primarily of scrub forest and recently converted farmland.</p> <p>Biologists were not granted right of entry to the upper extent of the wetland (on TL 1S130C000201), which was mapped based on contours and the significant amount of groundwater found moving through accessible parcels. The wetland passes through hay fields, a short section of ash-dominated wetland. It then spreads out in a grazed pasture and is impounded in a dam with a weir (OW-MK-6-1), which then forms tributary MK-6 where the wetland turns into a channel that becomes more incised as it flows downhill. MK-6 is a tributary to McKernan Creek, which is a tributary to the Tualatin River.</p> <p>Representative plots were taken in herbaceous and forested vegetative communities. Forested wetland dominant species are provided below. The herbaceous community was dominated by non-native grasses such as meadow foxtail. Vegetative diversity and wildlife use in the forested portions of the wetland was moderate given the relatively small size of forest remaining. Recent conversion of forest to the north and west of the wetland has further reduced potential for wildlife, although the forest to the east remains relatively undisturbed, as do nearby Metro-owned parcels west and south of Winkleman Park.</p> <p>Soils: Cascade silt loam, 3 to 7 percent slopes, Cascade silt loam, 7 to 12 percent slopes, Delena silt loam, 3 to 12 percent slopes, Cornelius and Kinton silt loams, 2 to 7 percent slopes</p> <p>Hydrologic Source: Groundwater discharge</p>			



LOCAL WETLAND INVENTORY

Wetland Characterization Sheet

Dominant Vegetation					
Trees		Shrubs		Vines/Herbs	
Oregon ash	<i>Fraxinus latifolia</i>	Red twig dogwood	<i>Cornus sericea</i>	Himalayan blackberry	<i>Rubus armeniacus</i>
Shining willow	<i>Salix lucida</i>	Nootka rose	<i>Rosa nutkana</i>	Reed canarygrass	<i>Phalaris arundinacea</i>
		Pacific ninebark	<i>Physocarpus capitatus</i>	Meadow foxtail	<i>Alopecurus pratensis</i>

Potential Enhancement Opportunities:

- Given the apparently abundant source of groundwater in the wetland, restoration of any degraded portions of the wetland to conditions found in the southeast corner of TL 1S130CC00100 would greatly improve a valuable natural resource within a rapidly urbanizing area. Weed removal and native plantings could be completed in many areas.
- Additional upland habitat buffer plantings with native trees and shrubs. Oregon white oak and native prairie species would help fulfill Oregon Conservation Strategy (OCS) goals, and supplement the oak habitat round on Metro parcels just to the west.
- Snag and downed wood creation would also benefit many OCS species.
- Limiting grazing and herbicide/fertilizer application on upstream farm fields would further protect water quality.
- Weeds such as thistle, blackberry, and common bedstraw are common in some agricultural areas. Reducing populations would help reduce spread of these weeds to neighboring parcels.

APPENDIX D: Wetland Functional Assessment Results

OAR 141-086-0220(3)(c) *OFWAM assessment results for each wetland assessment unit that must include:*

- (A) Wetlands of Special Interest for Protection (OFWAM, Chapter Five);*
- (B) Wetland Characterization results (OFWAM, Appendix B);*
- (C) Assessment results represented in table format;*
- (D) Answer sheets for all wetland assessment questions (OFWAM, Appendix C);*
- (E) Function and condition summary sheets for fish habitat, wildlife habitat, water quality, hydrologic control and, if applicable, education and recreation (OFWAM, Appendix C);*
- (F) Watershed summary sheet (OFWAM, Appendix C); and*
- (G) Technical staff members and qualifications.*

Watershed summary sheet for the Oregon Method

Watershed or community identification: Lower Willamette Drainage Basin

Characteristic	Description
Physical characteristics of the watershed	<p>Gentle to fairly steep slope south facing watershed. Drains to Tualatin River or tributaries of the Tualatin River, with most of the watershed draining southwest via McKernan Creek. Drainages typically begin as headwater drainages or wetlands, with much of the stream length likely only flowing intermittently, drying out in the late summer. A historical cattle pond dam/water control structure occurs near the headwaters of tributary 6 to McKernan Creek (S-MK-6-1). McKernan Creek itself, as mapped, originates in a small wetland in the southwest corner of Winkelman Park, along SW 175th Avenue.</p> <p>Four watersheds draining the LWI study area cover an area of approximately 1,241 acres, with Lindow Creek/Jackson Creek, which contains McKernan Creek draining the greatest area (791.8 acres) followed by Summer Creek tributaries to the north and east (305.7 acres), Tualatin River tributaries to the south (131.8 acres), and Johnson Creek tributaries to the south (11.27 acres). The average slope of the watersheds is approximately 8 percent, with lower gradient slopes occurring in the southern/lower portion and steeper slopes occurring in the northern/upper portion. Most streams in the watershed have been modified to varying degrees by incision, channelization, or other manipulations for agriculture. For the most part, water is not being taken out of the streams through diking, drainage or irrigation districts in the watershed upstream of the assessment area, but most of the area to the north and east is being rapidly urbanized as a new part of the Urban Growth Boundary.</p>
Land uses within the watershed	<p>The dominant land use in the watershed upstream from the assessment area is rapidly urbanizing previously agricultural, forested, and rural residential areas. The area within the assessment area is dominated by the Cooper Mountain Nature Park, remnant patches of forest, rural residential, agricultural land uses, including a mix of annual crops, pasture, orchards, and viticulture.</p>
Water quality	<p>No streams within the study area are listed as water quality limited according to DEQ 303(d) databases. A recent Oregon Statewide Assessment of Nonpoint Sources of Water Pollution was not available. It is assumed that most project stream reaches would be classified as "no data available" since they are intermittent headwater streams. Many of these tributaries pass through dense forest and contain relatively intact riparian areas in spite of the presence of rural residences. However, portions of S-MK-6-1 are lacking substantial native vegetation, especially trees and shrubs, along stream reaches. This results in a lack of stream shading and affective water quality buffers to capture sediment from agricultural fields. These factors likely lead to somewhat reduced water quality compared to more intact reaches.</p>
Biological characteristics of the watershed	<p>Assessment area streams are intermittent streams and contain fish passage barriers at the downstream end of the assessment area. They drain to stream reaches that support an anadromous fishery, including designated Essential Salmonid Habitat within the HUC12 of McKernan Creek.</p> <p>Native plant communities persist in patches, while in many areas they have largely been replaced by agricultural lands or urbanization. No sensitive wildlife or plant species are known to exist, although remnant habitat may be present, and a yellow-breasted chat (<i>Icteria virens auricollis</i>), a Federal Species of Concern and State Sensitive species, was heard along the lower reaches of McKernan Creek during fieldwork conducted for the LWI. Wildlife that persist or thrive in agricultural settings, such as deer, coyote, raccoon, etc. are present within the watershed. High quality native habitat exists within Cooper Mountain Nature Park and in patches along McKernan Creek.</p>

Narrative summary of watershed description

The southwestern and central portion of the project study area primarily consists of rural agricultural lands with scattered residences and the riparian zone of McKernan Creek and its tributaries. Open spaces and forest owned primarily by Metro occupies much of the northern portion, and includes Cooper Mountain Nature Park.

The upper reaches of McKernan Creek flow through primarily forested lots with large residences along SW Horse Tail Dr, and the headwaters originate in a small wetland in the southwest corner of Winkleman Park, a large recreational open space west of SW 175th Ave. East of SW 175th Ave, lots and residences are somewhat smaller, and are bordered to the east, north, and south by suburban development and recent heavy urbanization within the UGB.

Slopes range from gently rolling in the south half to moderately steep in the north half of the study area. The majority of the land drains to the south, with a small portion of the northeast corner draining to the east along Summer Creek. Land use is predominantly rural residential and agricultural, with a mix of annual crop production, pasture, orchards, and viticulture. Many medium and large remnant patches of native forest habitat occur within the area, including mixed upland fir-deciduous forest in much of the eastern residential area and to the north, Oregon ash dominated wetland forest along McKernan Creek and its tributaries, and patches of Oregon oak forest. Most Oregon oak forest lies in Metro properties to the north, and the Oregon oak forest mapped north of SW Horse Tale Dr has been logged in recent years, with only a few trees remaining to the southwest on properties where access was not granted. Several fir dominated lots were being logged or had recently been logged as observed during the April 2020 site visits. Most significantly, the majority of the forested areas in the northernmost portion of the study area had been cleared within the previous year, and converted to grass fields, with slash piled along the perimeter.

Wetland Characterization Questions: Answer Sheet

Wetland	W-MK-1 (12.37 acres)	W-MK-1-1 (1.31 acres)	W-MK-4-1 (1.14 acres)	W-MK-6-1 (5.64 acres)
Question #				
1	Lower Willamette	Lower Willamette	Lower Willamette	Lower Willamette
2	927 acres	145 acres	98 acres	129 acres
3	6.37%	4.42%	9.15%	8.83%
4	a	b	a	b
5	b	b	b	b
6	b	b	b	b
7	b	b	b	b
8	a	a	a	a
9	f	f	f	f
10	b	b	b	b
11	a, c	a, c	a, c	a, c
12	b	b	b	b
13	a	a	a	a
14	b	b	b	b
15	1-b, 2-c, 4-a	1-b, 2-c, 4-a	1-c, 3-b	1-b, 2-c, 4-a
16	1-b, 2-c, 4-a	1-b, 2-c, 4-a	1-c, 3-b	1-b, 2-c, 4-a
17	a	a	b	a
18	a	a	b	a
19	b	b	b	b
20	2-b, 3-b	2-b, 3-b	1-c, 3-b	2-b, 3-b
21	1-n/a, 2-c, 3-c, 4-c	1-n/a, 2-b, 3-c, 4-c	2-a	1-n/a, 2-b, 3-c, 4-c
22	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural
23	a	c	c	c
24	b	b	c	b
25	a	b	a	b
26	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural
27	a	a	b	a
28	d	d	d	d
29	b	c	c	c
30	a	b	NA, no stream	b
31	a	c	NA, no stream	c
32	b	c	NA, no stream	c
33	NA, no lake	NA, no lake	NA, no lake	NA, no lake
34	NA, no lake	NA, no lake	NA, no lake	NA, no lake
35	NA, no lake	NA, no lake	NA, no lake	NA, no lake
36	c	c	c	c
37	a, sediment deposits	c	c	c
38	b	a	a	a
39	a	NA	NA	NA
40	a	b	b	b
41	c	c	b	c
42	a	a	b- poison oak	a
43	a, forest and ag land	a, forest and ag land	a, forest and meadow	a, forest and ag land
44	b	b	a	b
45	b, rough ground	b, rough ground	b, rough ground	b, rough ground
46	c	c	a, CMNP trails near	c
47	c	c	c	c
48	c	c	c	c
49	b	c	c	c
50	b	b	b	b
51	b	b	a	b
52	NA, currently rural	NA, currently rural	NA, currently rural	NA, currently rural
53	b	b	b	b
54	NA, no visual detractor	NA, no visual detractors	NA, no visual detractor	NA, no visual detractors
55	a	a	a	a
56	a	b	a	b
57	c	b	b	b
58	a	b	c	b

Wetland Assessment Questions: Answer Sheet

Wetland Identifier	W-MK-1 (12.37 acres)	W-MK-1-1 (1.31 acres)	W-MK-4-1 (1.14 acres)	W-MK-6-1 (5.64 acres)
Wildlife habitat				
Question 1	a	c	c	a
Question 2	a	c	c	c
Question 3	b	c	b	b
Question 4	c	c	c	c
Question 5	a	a	a	a
Question 6	a	a	a	a
Question 7	a	a	a	a
Question 8	b	b	b	b
Question 9	a	b	a	b
Assessment Descriptor	Diverse	Degraded	Degraded	Degraded

Fish habitat				
<i>Streams and rivers</i>				
Question 1	a	c	-	c
Question 2	a	c	-	b
Question 3	b	c	-	c
Question 4	a	a	-	a
Question 5	b	b	-	b
Question 6	b	c	-	c
<i>Lakes and ponds</i>				
Question 1	-	-	-	-
Question 2	-	-	-	-
Question 3	-	-	-	-
Question 4	-	-	-	-
Question 5	-	-	-	-
Question 6	-	-	-	-
Assessment Descriptor	Intact	Degraded	NA	Degraded

Water quality				
Question 1	a	b	b	c
Question 2	a	c	c	c
Question 3	a	a	c	a
Question 4	a	b	b	a
Question 5	a	b	c	a
Question 6	c	c	c	c
Assessment Descriptor	Degraded	Degraded	Not present	Degraded

Hydrologic control				
Question 1	a	a	b	b
Question 2	a	c	c	c
Question 3	a	b	b	b
Question 4	c	b	a	a
Question 5	a	c	c	c
Question 6	b	b	c	b
Question 7	b	b	c	a
Assessment Descriptor	Intact	Degraded	Not present	Degraded

Wetlands of Special Interest for Protection Questions: Answer Sheet

Wetland Identifier	W-MK-1 (12.37 acres)	W-MK-1-1 (1.31 acres)	W-MK-4-1 (1.14 acres)	W-MK-6-1 (5.64 acres)
Question 1	b	b	b	b
Question 2	b	b	b	b
Question 3	b	b	b	b
Question 4	b	b	b	b
Question 5	a (portion of wetland)	b	b	a (portion of wetland)
Question 6	b	b	b	b
Question 7	b	b	b	b
Question 8	b	b	b	b
Question 9	b	b	b	b
Question 10	b	b	b	b
<i>Meets WISP criteria*</i>	yes (portion of wetl)	no	no	yes (portion of wetl)

*Only one question out of the ten needs to be answered as "a" in order to meet WISP criteria.

Phil Rickus is an Ecologist and Wetland Biologist with over 25 years of experience
 Valerie Thompson is a Wetland Biologist with over 8 years of experience