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*Delineation of Wetlands and Other Waters for
NW Bethany Boulevard (NW Bronson Road to
NW West Union Road) Improvements*

Prepared for

**Washington County Department
of Land Use and Transportation**

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
A LANDSCAPE SETTING AND LAND USE	2
B SITE ALTERATIONS	2
C PRECIPITATION DATA AND ANALYSIS	2
D METHODS.....	3
E DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS... 	4
F MAPPING METHOD AND ACCURACY STATEMENT	8
G DEVIATION FROM NATIONAL WETLAND INVENTORY	8
H ADDITIONAL INFORMATION USED TO ESTABLISH JURISDICTION.....	8
I RESULTS AND CONCLUSIONS	11
J DISCLAIMER	11

LIST OF FIGURES

Figure 1	Location Map
Figure 2	Tax Lot Map
Figure 3	National Wetland Inventory Map
Figure 4	County Soil Survey Map
Figure 5	Aerial Photograph
Figure 6	Wetland Map

TABLES

Table 1:	Monthly Precipitation Data for 2009-2010 Water Year to Date
Table 2:	Wetlands and Waters Within Study Area

APPENDICES

Appendix A:	Maps
Appendix B:	Data Forms
Appendix C:	Site Photographs
Appendix D:	Additional Information: Tax Lot List
Appendix E:	References
Appendix F:	WETS Table for Hillsboro Weather Station

EXECUTIVE SUMMARY

The NW Bethany Boulevard Improvements project between NW Bronson Road and NW West Union Road is located in an area of residential development and open space, and runs across a level to gently sloping terrace and the floodplain of Bronson Creek.

We performed a delineation of wetlands and waters in the project area in April 2010.

We identified four areas of potentially jurisdictional wetland in the study area: forested or emergent wetlands along the floodplain of Bronson Creek. Parts of the wetlands are owned and managed as parks by Tualatin Hills Parks and Recreation District. There are a total of 3.12 acres of wetland within the study area, plus 0.09 acre classified as “waters of the State”. Adjacent roadside swales and ditches were found not to be wetlands.

The wetlands directly abut either Bronson Creek, or a small tributary of Bronson Creek, which is a non-navigable tributary ultimately of the Willamette River, a navigable waterway.

Based on our delineation, and examination of the above evidence, we conclude that the wetlands in the study area fall under both State (Department of State Lands) and federal (Corps of Engineers) jurisdiction.

A LANDSCAPE SETTING AND LAND USE

The study area is the NW Bethany Boulevard corridor from NW Bronson Road to NW West Union Road. See Figure 1 (Vicinity Map) for an overview of the surrounding area. The study area is located in Township 1N, Range 1W, Section 29. It consists of a section of Washington County right of way, plus portions of numerous adjacent mainly residential tax lots (see attached tax lot list). See Figure 2, Tax Lot Map, showing the tax lots that are in the study area. The study area extends up to 250 feet either side of the existing centerline on NW Bethany Boulevard for the linear distance of the project.

The landscape setting of the study area is on a level to gently sloping terrace in the Bronson Creek and Willow Creek watersheds. It lies between the two drainages. Both streams are major tributaries of Beaverton Creek, which is itself a tributary of the Tualatin River, and ultimately of the Willamette River, a navigable waterway.

The NW Bethany Boulevard corridor passes through a developed residential neighborhood, with the exception of the area around the intersection with NW West Union Road, which is undeveloped park land belonging to Tualatin Hills Park and Recreation District (Tokola Wetlands Park and Bethany Wetlands Park). Intersecting residential roadways are found on both the western and eastern side of the study area corridor.

B SITE ALTERATIONS

The NW Bethany Boulevard study area corridor has changed from predominantly agricultural land use in the 1930's to residential land use at present (as seen in Figure 5). From examination of the county soil survey map it appears that the residential development has occurred over some minor natural drainages that once connected to Bronson Creek and Willow Creek. A stormwater drainage system discharges to the Bronson Creek floodplain near the intersection with NW West Union Road.

Structures in the study area include the roadway, associated culverts, stormwater infrastructure, power and telephone poles, homes, and intersecting roadways.

C PRECIPITATION DATA AND ANALYSIS

Daily precipitation totals were obtained from the National Weather Service's Hillsboro weather station. We accessed the Preliminary Local Climatology Data (F6) for the period October 2009-June 19, 2010 (the day of the final site visit). The table below presents these data.

Table 1 – Monthly Precipitation Data for 2009-2010 Water Year to Date

Month	Actual (in.)	Departure from Average (in.)	Cumulative Rainfall (in.)	Cumulative Departure from Average (in.)
October 2009	3.32	+0.65	3.32	+0.65
November 2009	5.72	-0.18	9.04	+0.47
December 2009	3.96	-2.37	13.00	-1.90
January 2010	5.14	-0.62	18.14	-2.52
February 2010	4.06	-0.66	22.20	-3.18
March 2010	3.76	-0.17	25.96	-3.35
April 2010	3.22	+0.76	29.18	-2.59
May 2010	3.28	+1.38	32.46	-1.21
June 2010 *	3.52	+2.44	35.98	+1.23
TOTALS			35.98	+1.23

* Through June 19

Rainfall for the water year prior to the initial site visit on April 8 had been 27.44 inches, or 2.53 inches below average, which was 91.6% of average for that period. According to the WETS table for the Hillsboro weather station there is a 30 percent chance that the period from October 1 through April 8 would receive less than 20.23 inches of rain. Thus, total rainfall for the water year prior to the initial site visit had been well within the “normal range”. The rainfall for the three months prior to the site visit had been 3.76 inches for March (95.7% of normal), 4.06 inches for February (86% of normal), and 5.14 inches for January (89.2% of normal). Rainfall for the previous 14 days had been 3.42 inches. Rainfall on April 8 was 0.07 inch.

We made additional site visits on April 21, May 4 and June 19 to supplement our data. During April, May and June, rainfall was well above average (cumulatively 4.58 inches above average, or 184% of average, i.e. above the “normal range”).

While rainfall had been below average for the water year prior to the initial site visit, recent rainfall had been above average. Hydrologic conditions on the site were still within the normal range for the time of year. Recent rainfall was well above average when the additional site visits were made.

D METHODS

We examined existing information prior to performing field investigations. See Appendix 1 for figures.

- The Washington County soil survey map (Figure 4),
- USGS topographic map (Linnton quadrangle),
- The National Wetland Inventory map (Figure 3),
- A recent aerial photograph (Figure 5), and
- A drawing showing the project limits in relation to property ownership.

The delineation investigation was conducted on April 8 and 21, and May 4, 2010. Plots and boundaries were established during this time.

Data collected on-site at sample plots by WHPacific were recorded on the Oregon Department of State Lands Wetland Determination Data Form for the Western Mountains, Valleys and Coast Region. A total of 14 sample plots were examined within the study area (see Figure 6). See Appendix B for copies of the field data sheets.

Based on our knowledge of the study area from the previous reconnaissance, we focused our investigation on the area of the Bronson Creek floodplain, where NW West Union Road crosses NW Bethany Boulevard. We established plots within this feature, and where wetland conditions were found, we established additional plots to characterize adjacent uplands. We marked the plot locations with wire flags.

We made the following observations at the plots.

- Where there was standing water, we noted the depth.
- Where standing water was absent, we dug soil pits to a depth of 18 inches to look for direct and indirect indicators of a water table or soil saturation, such as oxidized rhizospheres.
- We performed a visual observation of the soil surface to determine the presence of other primary and secondary indicators of wetland hydrology.

This information was recorded on the field sheets.

At each plot, we also observed soil characteristics. Soil color and texture characteristics were observed to a depth of 18 inches by removing and opening a slice of soil representing the soil profile

We established vegetation sample plots around each soil pit. Plot sizes were the standard sizes: 15-foot radius for the tree and shrub/sapling layers, and 5-foot radius for the herbaceous layer.

We marked the wetland boundary with wire flags, based on the findings in the plots. We also investigated culverts and direction of water flow under the roadways. Finally, we documented the main features with photographs (Appendix C). The wetland boundaries were surveyed by a Washington County survey crew, and a map of wetlands was prepared. See Figure 6, Wetland Map.

E DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

The field investigation identified four areas that met wetland criteria in the study area totaling 3.12 acres, see Table 2. These areas are all part of the Bronson Creek floodplain, and are located in all four quadrants of the intersection of NW West Union Road and NW

Bethany Boulevard. Bronson Creek flows from northeast to southwest under the roadways. A small tributary of the creek flows through Wetland 1. The total area of streams within the study area is 0.09 acre. The wetland boundary and sample plot locations are shown on Figure 6, Wetland Map. Descriptions of both areas and the basis of delineation are given below.

Wetland 1: This wetland is located in the southwest quadrant and is characterized by Plots A1 and B2. It is part of Tokola Wetlands Park, owned and managed by Tualatin Hills Parks and Recreation District (THPRD). Parts of the wetland are forested, and dominated by Oregon ash (*Fraxinus latifolia*, FACW), Scouler willow (*Salix scouleriana*, FAC), and red alder (*Alnus rubra*, FAC).

Table 2 – Wetlands and Waters Within Study Area				
Resource	Description	Area (acres)	HGM Class	Cowardin Class
Area 1:	Forested/emergent wetland. Oregon ash, Scouler willow, red alder, reed canarygrass	1.54	Riverine Flow-Through	PFO/EM
Area 2:	Forested/emergent wetland. Oregon ash, Scouler willow, red alder, reed canarygrass	0.59	Riverine Flow-Through	PFO/EM
Area 3:	Forested wetland. Pacific willow, red alder, reed canarygrass, slough sedge	0.32	Riverine Flow-Through	PFO
Area 4:	Emergent wetland. Reed canarygrass	0.68	Riverine Flow-Through	PEM
Bronson Cr.	Four stream reaches near culverts	0.07	N/A	R
Tributary	Small channel (3 ft. wide)	0.02	N/A	R
TOTAL		3.21 Ac.		

There is also an area of emergent wetland dominated by reed canarygrass (*Phalaris arundinacea*, FACW). The shrub/sapling layer is dominated by willow and Oregon ash saplings, red osier dogwood (*Cornus sericea*, FACW), and Douglas spiraea (*Spiraea douglasii*, FACW).

The main channel of Bronson Creek passes under NW West Union Road about 200 feet to the west of the intersection. A small tributary, originating in Wetland 3, passes under NW Bethany Boulevard and follows the eastern and southern edge of Wetland 1 before joining the main channel outside the study area. Flow appears to be perennial in this tributary, or nearly so. Hydrologic conditions in the wetland are mainly saturation at or close to the surface, with small areas of shallow seasonal inundation. Soils are typically a silty clay loam with low chroma matrix and distinct to prominent redox concentrations, meeting the Redox Dark Surface (F6) or Depleted Matrix (F3) hydric soil indicators.

The wetland is bounded on three sides by steep roadway embankments. On the south side, it is bounded by a steep slope next to a residential subdivision.

We based the wetland boundary on a clear break between wetland hydrology and non-wetland hydrology (depth to saturation >12 inches), generally near the base of the slopes. There was one area where wetland hydrology was found further up the slope in an area of seepage.

Wetland 2: This wetland is located in the northwest quadrant, and is characterized by Plot C1. This wetland is partially forested and partially emergent, similar in plant community composition to Wetland 1, but with a larger open area dominated by reed canarygrass.

The main channel of Bronson Creek passes through this wetland from the northeastern corner to the southwestern corner. Parts of this wetland experience shallow seasonal inundation.

Soils are typically a silty clay loam with high value/low chroma matrix and distinct to prominent redox concentrations meeting the Depleted Matrix (F3) hydric soil indicator.

We based the wetland boundary on a clear break between wetland hydrology and non-wetland hydrology (depth to saturation >12 inches), near the base of the roadway embankments.

Wetland 3: This wetland is located in the southeast quadrant, and is characterized by Plots D1 and D4. This wetland is primarily forested, the dominant tree species being Pacific willow (*Salix lasiandra*, FACW). As well as reed canarygrass, there is a substantial component of slough sedge (*Carex obnupta*, OBL) in the herbaceous layer.

A small tributary of Bronson Creek originates at a culvert in the southwest corner next to the road embankment. Hydrologic conditions in the wetland vary from seasonal shallow inundation to saturation at the surface.

Soils are typically a silty clay loam with high value/low chroma matrix and prominent redox concentrations and depletions, meeting the Depleted Matrix (F3) hydric soil indicator.

We based the wetland boundary on a clear break between wetland hydrology and non-wetland hydrology (depth to saturation >12 inches), near the base of the roadway embankments and adjacent abrupt natural slopes. The adjacent uplands support a well-developed Douglas fir (*Pseudotsuga menziesii*, FACU) stand.

Wetland 4: This wetland is located in the northeast quadrant, and is characterized by Plots E2 and F2. It is part of Bethany Wetlands Park, owned and managed by THPRD.

This wetland is primarily palustrine emergent, dominated by reed canarygrass, with some Oregon ash and red alder.

The main channel of Bronson Creek passes through the northern edge of this wetland. Hydrologic conditions are primarily shallow seasonal inundation or near-surface saturation.

Soils typically consist of gleyed silty clay loam with prominent redox concentrations, meeting the Loamy Gleyed Matrix (F2) hydric soil indicator.

We based the wetland boundary on a clear break between wetland hydrology and non-wetland hydrology (depth to saturation >12 inches), near the base of the roadway embankments and adjacent abrupt natural slopes. The adjacent uplands to the east support a well-developed Douglas fir (*Pseudotsuga menziesii*, FACU) stand.

On the north side of the wetland, we located the jurisdictional boundary at the Ordinary High Water Mark on Bronson Creek. North of the creek, there is a forested floodplain area characterized by Plot F2 that is dominated by red alder, Oregon ash, snowberry (*Symphoricarpos albus*, FACU) and Himalayan blackberry (*Rubus procerus*, FACU). This area lacks wetland hydrology and has soils lacking hydric soil indicators, consisting of alluvial silt loam deposits.

Roadside Swales and Ditches: We also investigated drainage swales and ditches along NW Bethany Boulevard. Some sections of ditch are rock-lined and lack vegetation. In one rock-lined ditch (see Photopoint 7), we observed flow on June 19, after a period of above average rainfall. The flow in the ditch originates from a combination of roadway runoff and a stormwater detention/treatment basin that serves the adjacent subdivision. It drains only uplands, and was constructed exclusively in uplands. The ditch ends at a culvert, and the flow enters the stormwater drainage system. In our judgment, flow only occurs in this ditch during or for a few days following rain events, and is not continuous seasonally (i.e. intermittent).

Other swales lack soils, and are part of the roadway rock sub-base. While water collects in them after rain events, we observed that the water drains away or percolates without remaining more than a few days. One short section of drainage ditch in the southeast quadrant adjacent to Wetland 3 lacks hydrophytic vegetation and wetland hydrology. Flow only occurs during major rain events.

Therefore, none of the roadside ditches or swales meets wetland criteria, or has more than ephemeral flow.

F MAPPING METHOD AND ACCURACY STATEMENT

Wetland boundary and sample plot flags were tied by a Washington County survey crew using total station equipment. The level of accuracy was to within 0.1 foot.

G DEVIATION FROM NATIONAL WETLAND INVENTORY

The wetlands are identified on the National Wetland Inventory as Palustrine Shrub Scrub (PSSA) (see Figure 3). Bronson Creek is also identified. There is currently no Local Wetland Inventory for this area.

H ADDITIONAL INFORMATION USED TO ESTABLISH JURISDICTION

A. Oregon Department of State Lands (DSL):

The DSL regulates *waters of the state*. There are three categories of waters found within the study area that are regulated by the DSL:

1) Waters, Including Rivers, Intermittent and Perennial Streams, Lakes and Ponds. These waters are jurisdictional to the ordinary high water line (OHWL) or, absent readily identifiable field indicators, to the bank-full stage (OAR 141-085-0515 (3)).

“Intermittent stream” is defined as “any stream which flows during a portion of every year and which provides spawning, rearing or food-producing areas for food and game fish”. “Food and Game Fish” are defined as those species identified under ORS 506.011, 506.036, or 496.009 (state statutes governing Oregon Department of Fish and Wildlife). (OAR 141-085-0510 (34) and (41)).

(2) Wetlands. Wetlands are jurisdictional within the wetland boundary (OAR 141-085-0515 (4)).

(3) Jurisdictional Ditches. Except as listed below, ditches (meeting wetland criteria that are) artificially created from upland are jurisdictional if they:

(a) Contain food and game fish; and

(b) Have a free and open connection to waters of this state. A "free and open connection" means a connection by any means, including but not limited to culverts, to or between natural waterways and other navigable and non-navigable bodies of water that allows the interchange of surface flow at bank-full stage or ordinary high water, or at or below mean higher high tide between tidal waterways (OAR 141-085-0515 (8)).

Roadside and railroad ditches (meeting wetland criteria) that meet the following tests are not jurisdictional:

- (a) Ten feet wide or less at the ordinary high water line;
- (b) Artificially created from upland or from wetlands;
- (c) Not adjacent and connected or contiguous with other wetlands; and
- (d) Do not contain food or game fish (OAR 141-085-0515 (10)).

B. U.S. Army Corps of Engineers:

The Corps of Engineers regulates activities in *waters of the United States*, which include those waters listed below (33 CFR 328).

Terms are defined as follows. The term *waters of the United States* means:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: which are or could be used by interstate or foreign travelers for recreational or other purposes; or, from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or, which are used or could be used for industrial purpose by industries in interstate commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters;
- The territorial seas; and,
- Wetlands adjacent to waters.

The term *adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers such as natural river berms and the like are *adjacent wetlands*.

The limits of jurisdiction are:

- In the absence of adjacent wetlands, jurisdiction extends to the ordinary high water line.
- When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water line to the limit of the adjacent wetlands (wetland boundary).

- When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland (wetland boundary).

“Adjacent” and “Isolated” Wetlands: Since the 2001 decision by the US Supreme Court in *Solid Waste Authority of Cook County (SWANCC) vs. Army Corps of Engineers*, the reach of federal jurisdiction over wetlands under the Clean Water Act has been reduced. Under the SWANCC decision, waters of the United States, including tributaries, and wetlands adjacent to these waters are regulated by the Corps. However, intra-state *isolated* wetlands are not normally regulated. *Isolation* or *adjacency* is determined based on whether or not there is a strong relationship to regulated waters, based on four factors: historical, physical, biological, and chemical. A wetland can be considered adjacent on the basis of contiguity or on a surface or close sub-surface connection, such as a channel or swale that connects to a regulated water, or clear evidence of a groundwater connection.

In addition, two more recent US Supreme Court cases (*Rapanos* and *Carabell*) have changed the way the federal government looks at jurisdiction over wetlands and waters. Recently, the Corps and EPA issued guidance based on these decisions, summarized as follows:

“The agencies will assert jurisdiction over the following waters:

- Traditional navigable waters
- Wetlands adjacent to traditional navigable waters
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally
- Wetlands that directly abut such tributaries.

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a “significant nexus” with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g. gullies, small washes characterized by low volume, infrequent, or short duration flow)
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water (unless

they otherwise have wetland characteristics, in which case they are categorized as wetlands).

The agencies will apply the “significant nexus” standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters
- Significant nexus includes consideration of hydrologic and ecologic factors.”

C. Preliminary Determination of Jurisdiction:

We base our preliminary determination of jurisdiction on DSL administrative rules and current Corps guidance. This preliminary determination is based on our interpretation of the criteria and is our professional opinion.

All four wetlands identified in the study area, in addition to the main channel of Bronson Creek and its small tributary, are under both state and federal jurisdiction. All are “directly abutting” either Bronson Creek or its small tributary. Bronson Creek is a non-navigable tributary of Beaverton Creek, which is itself ultimately tributary to the Willamette River, a navigable waterway.

Roadside ditches and swales in the study area do not have wetland characteristics, were constructed in, and drain only uplands, and do not have “relatively permanent” (i.e. intermittent) flow, and thus are under neither state nor federal jurisdiction.

I RESULTS AND CONCLUSIONS

There are four wetlands within the study area totaling 3.12 acres, and four reaches of Bronson Creek and a small tributary of Bronson Creek, totaling 0.09 acre. According to our preliminary determination, all wetlands and waters are under both DSL and Corps jurisdiction.

J DISCLAIMER

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

APPENDIX A

MAPS

APPENDIX B

DATA FORMS

APPENDIX C

SITE PHOTOGRAPHS



Photopoint 1: Wetland 1. NW Bethany Boulevard to right.



Photopoint 2: Wetland 1. NW Bethany Boulevard to left



Photopoint 3: Wetland 2. NW Bethany Boulevard to right



Photopoint 4: Wetland 3, looking east



Photopoint 5: View of NW Bethany Boulevard looking north



Photopoint 6: Wetland 4. NW Bethany Boulevard to left



Photopoint 7: Rock lined roadside ditch with ephemeral flow (taken 6/19/10)



Photopoint 8: Rock lined roadside ditch terminates at culvert (taken 6/19/10)

APPENDIX D

ADDITIONAL INFORMATION: TAX LOT LIST

All or portions of the following tax lots comprise the study area (see Figure 2, Tax Lot Maps):

Township 1N, Range 1W:

Section 29:	TL 304, 1103, 1105, 1113
Section 29BA:	TL 8700, 9300
Section 29BC:	TL 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 11500
Section 29BD:	TL 201, 290, 3600, 3700, 3800, 6400, 6500, 8300, 8400, 8500, 8600, 8700, 8800, 14300, 14900, 15000, 15100, 15200, 15400, 15500
Section CA:	TL 4600, 4700, 4800, 4900, 5300, 5400, 5500, 5600, 5700, 5800, 5900, 6000, 10100, 10200, 10300, 10400
Section CB:	TL 200, 2200, 8000, 8100, 8200, 9700, 9900, 10000, 10100, 14700, 14800, 14900, 19800, 19900, 20100, 23800
Section 29CC:	TL 600, 700, 800, 900, 1000, 2400, 2501, 2601, 2700, 10600, 10700, 10800, 10900, 11000, 12300
Section 29CD:	TL 2700, 2800, 2900, 3000, 3800, 3900

APPENDIX E

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APPENDIX F

WETS TABLE FOR HILLSBORO WEATHER STATION