WETLAND IDENTIFICATION AND DELINEATION

Parcel 14 at Pacific International Terminals, Inc. Property

Whatcom County, Washington

Prepared for:

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EXECUTIVE SUMMARY

AMEC Earth & Environmental, Inc. (AMEC) conducted a wetland determination and delineation at the request of Pacific International Terminals, Inc. on 29.66 acres of heavy-impact industrial zoned land in the vicinity of Cherry Point in Whatcom County, Washington. The study area is identified as Parcel 14 in previously published reports regarding the proposed Gateway Pacific Terminal project; such as, *Wetland Delineation and Determination, Gateway Pacific Terminal* (AMEC, 2008) and *Project Information Document, Gateway Pacific Terminal* (Pacific International Terminals, Inc, 2011). This comprehensive evaluation of wetland vegetation, hydrologic conditions, and soils was conducted from July 27 through 29, 2011.

This report summarizes the findings of the field effort; provides field data to support the delineated wetland boundaries; characterizes wetland areas and waters of the U.S.; and assesses the functions of the delineated wetlands. An 11 by 17 inch map of the Parcel 14 study area showing wetland boundaries and other study area details is included as Appendix A. The information in this report is provided to support jurisdictional determination under the Clean Water Act and boundary concurrence from the U.S. Army Corps of Engineers (USACE).

No new wetlands were identified on Parcel 14; however, the boundaries of two previously delineated wetlands (Wetlands 5A and 5C) on adjacent parcels were determined to continue onto Parcel 14. Wetland 5C connects to 5A, and is no longer described as a separate wetland because it has been incorporated into Wetland 5A.Total wetland area on Parcel 14 is 13.8 acres. All delineated wetland areas on Parcel 14 are classified as palustrine forested (PFO) according to the Cowardin classification system.

Wetlands 5A and 5C are already under the jurisdiction of the USACE in accordance with the 2009 Jurisdictional Determination issued for those properties that confirmed those wetlands' boundaries. Wetland 5A on Parcel 14 is therefore considered to be jurisdictional.

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1.0 INTRODUCTION

Pacific International Terminals, Inc. (Pacific International Terminals) owns approximately 1,200 acres at Cherry Point in Whatcom County, Washington. Wetland boundaries on the property were delineated in 2008, and confirmed under a Jurisdictional Determination issued by the US Army Corps of Engineers (USACE) in 2009 (Appendix B). The 2008 wetland delineation efforts excluded a 29.66-acre parcel located adjacent to the Pacific International Terminals, Inc. property and owned by others, identified as Parcel 14. Wetlands on Parcel 14 were not delineated previously because site access was not granted at that time. This wetland delineation report documents the wetland boundaries on Parcel 14.

1.1 SETTING

The Parcel 14 study area is located 18 miles northwest of Bellingham and 10 miles west of Ferndale (Figure 1). Parcel 14 is approximately 29.66 acres in size, and is located in Section 17 of Township 39 North, Range 1 East, all in unincorporated Whatcom County (Figure 2). Parcel 14 is accessible from I-5 via Highway 548 (Grandview Road) west, and south on Kickerville Road. Rectangular in shape, the study area is bounded by Henry Road to the south, and forested uplands and wetlands to the west, north, and south. A wet meadow abuts the southeast corner of the study area (Figure 3). Parcel 14 slopes gently from east to west (Figure 4). A linear access path from east to west was cleared for geotechnical investigation activities onsite, and currently bisects the study area.

1.2 SOILS

The Natural Resource Conservation Service (NRCS) mapped two unique soil series in the study area, including Birchbay silt loam (0 to 3 percent slopes) and Whitehorn silt loam (0 to 2 percent slopes). Almost all of the study area is mapped as Whitehorn silt loam except for the southeast corner, which is mapped as Birchbay silt loam (Figure 5). Descriptions of these two soil series are described below.

Birchbay silt loam (0 to 3 percent slopes and 3 to 8 percent slopes) – This soil generally has moderate to very rapid permeability in the sandy surface layer, and slow in the loamy lower part. In general, the soil is moderately well drained. The native vegetation consists primarily of conifers and shrubs. The surface layers are dark brown silt loam to a depth of 12 inches, increasing in yellow and becoming more gravelly to 24 inches. Below 24 inches, soil is dark yellowish brown, and becomes increasingly rocky.

Whitehorn silt loam (0 to 2 percent slopes) – Whitehorn silt loam is listed as hydric and is mapped over 95 percent of the study area. The permeability of the soil is low. Due to the high water table generally associated with the soil, rooting depth is limited. Native vegetation includes trees and shrubs, with red alder the dominant woodland species. The surface layer is typically very dark brown

loam to a depth of 10 inches. Below 10 inches, the subsoil is generally a slightly lighter brown/grayish brown, mottled loam and very fine sandy loam.

1.3 GROWING SEASON

The growing season is defined as the portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biological zero (41 °F) (Corps, 1987). The growing season can be approximated as the number of frost-free days from the last date in spring when air temperature drops to 28°F, to the first date in fall when it drops to 28°F. The beginning and ending dates for growing season in the study area were estimated based on the median dates (50 percent probability) for the first and last 28°F days, based on long-term temperature data (NRCS 2006d).

The start and end dates for the growing season in the study area are March 24 to November 5, in any year, for a total of 227 days. Areas with wetland hydrologic conditions present for 28 consecutive days during the growing season are considered wetlands, and areas with 11 consecutive days of wetland hydrologic conditions can be characterized as wetlands, depending on soil and plant community conditions. While the duration of wetland hydrologic conditions was not measured in the field, the range of duration was noted and visually interpreted in field efforts.

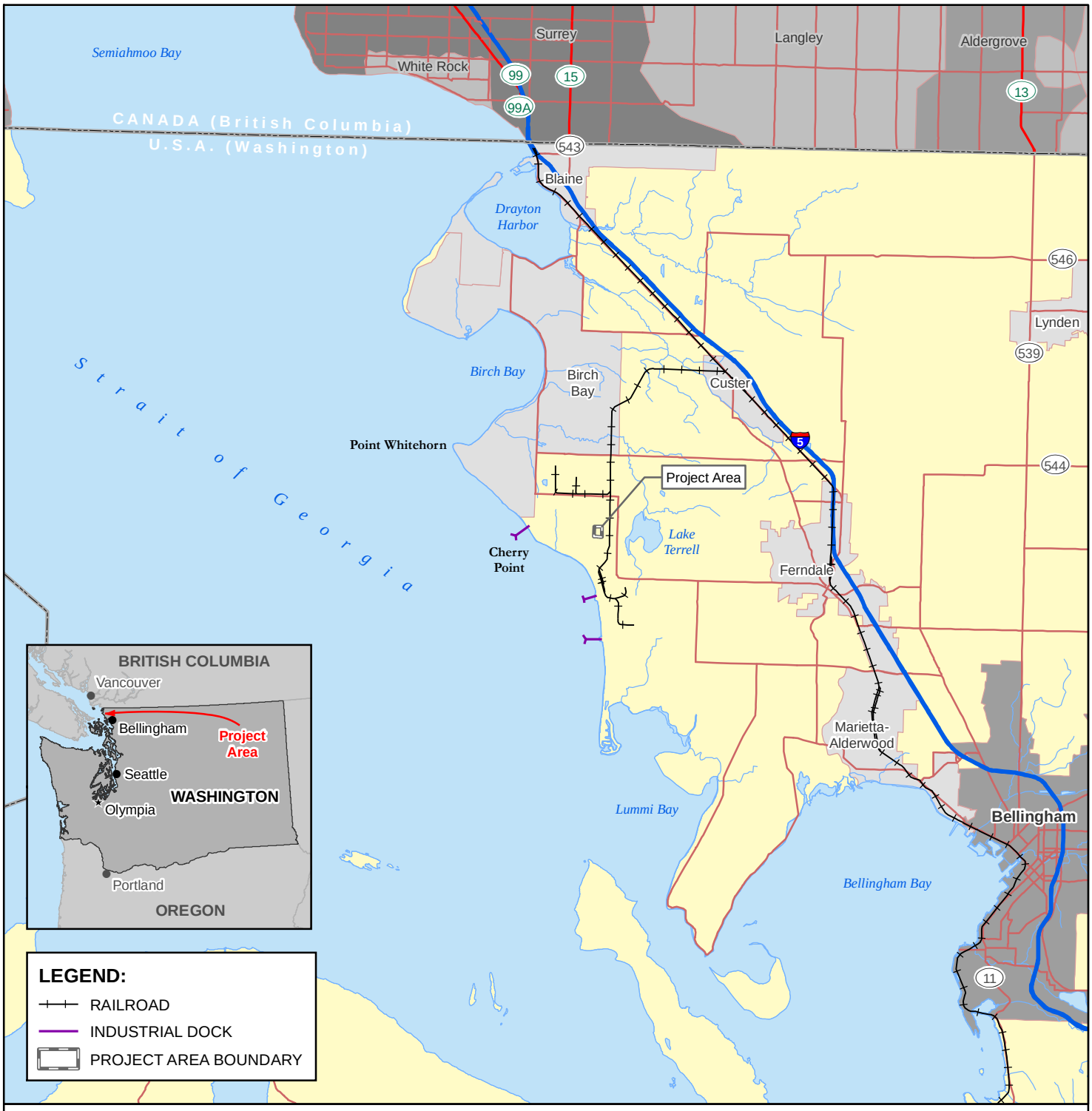
2.0 METHODS

A field investigation was performed by AMEC staff from July 27 through 29, 2011 to delineate wetland boundaries in the study area. Existing published information and the 2009 Jurisdictional Determination was reviewed prior to the field investigation.

2.1 REVIEW OF AVAILABLE PUBLISHED INFORMATION

Available site information was reviewed to identify any documented wetlands, streams, or other site characteristics (e.g., vegetation patterns, topography, soils, or water courses) that would indicate the presence of wetlands within the study area. Documents reviewed include the following:

- National Wetlands Inventory (USFWS 2007);
- Aerial photo of the vicinity (Google 2010); and,
- Federal Emergency Management Agency National Flood Insurance Program Flood Insurance Rate Map (FEMA 2005).



AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011			CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL		DWN BY: SD	DATUM: NAD83	DATE: SEPTEMBER 2011
TITLE: VICINITY MAP PARCEL 14 WETLAND DELINEATION, JULY 2011		CHK'D BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-01-06
		PROJECTION: WA SP North, Ft.	SCALE: 1 inch=3 miles	FIGURE No.: FIGURE 1

K:\AMEC US OFFICES\KIRKLAND\15338-0\15338C\T-01-06 - Parcel 14 Wetland Delineation Report\dwg\Figure 1 - Vicinity Map.mxd

0 150 300 600
Feet

AMEC Earth & Environmental
11810 North Creek Parkway N
Bothell, WA 98011

CLIENT:
PACIFIC INTERNATIONAL TERMINALS, INC.

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DWN BY: SD	DATUM: NAD83	DATE: SEPTEMBER 2011
TITLE: PARCEL 14 STUDY AREA PARCEL 14 WETLAND DELINEATION, JULY 2011	CHK'D BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-01-06
	PROJECTION: WA SP North, Ft.	SCALE: 1 inch=300 feet	FIGURE No.: FIGURE 2

K:\AMEC US OFFICES\KIRKLAND\15338-0\15338C\T-01-06 - Parcel 14 Wetland Delineation Report\dwg\Figure 2 - Parcel 14 Study Area.mxd

LEGEND:

- APPROXIMATE DRAINAGE
- SURVEYED DRAINAGE
- APPROXIMATE STREAM COURSE
- SURVEYED STREAM COURSE
- STREAM AND DRAINAGE FLOW DIRECTION
- WETLAND FLOW DIRECTION
- 05A — EXISTING WETLAND AREA *(Wetland boundaries on Parcel 14 to be verified)*
- PROJECT AREA BOUNDARY

STREAM 3
STREAM 1
01
02
03
STREAM 1
DRAINAGE 5
STREAM 6
STREAM 7
DRAINAGE 9
STREAM 4
08B
DRAINAGE 8
DRAINAGE 1
STREAM 6
08A
07B
06
05A
04A
DRAINAGE 6
07A
DRAINAGE 5
09A
04B
DRAINAGE 7
09C
04F
05C
05B
STREAM 5
DRAINAGE 4
DRAINAGE 3
DRAINAGE 2
04C
04E
04D
14
10B
10A
10A
11A
11B
13D
13A
13C
13E
13G
13F
12
STREAM 2
Strait of Georgia
0 500 1,000 2,000 Feet

	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: SEPTEMBER 2011	
		CHK'D BY: JG		PROJECT NO.: 091515338C-01-06	
Pacific International Terminals. A Cermix Enterprise		DATUM: NAD83	TITLE: EXISTING WETLANDS AND DRAINAGES PARCEL 14 WETLAND DELINEATION, JULY 2011	REV. NO.: 1	
	AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011	PROJECTION: WA SP North, Ft.		FIGURE NO.: FIGURE 3	
		SCALE: 1 inch = 1,000 feet			

K:\AMEC US OFFICES\KIRKLAND\15338-0\15338C\T-01-06 - Parcel 14 Wetland Delineation Report\dwg\Figure 3 - Existing Wetlands and Drainages.mxd

2.2 FIELD INVESTIGATION

AMEC staff conducted a wetland delineation at the study area using the three-parameter approach detailed in the *Corps of Engineers Wetlands Delineation Manual* (1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (2008). The Regional Supplement provides detailed regional guidance on how to identify and interpret field indicators for wetland hydrology, soils, and vegetation.

Wetland Data Sheets documenting the field investigation on Parcel 14 are presented in Appendix C.

In general, to qualify as a wetland, specific vegetation, soil features, and hydrologic characteristics must be present. If an area exhibits characteristics for all three wetland parameters, or normally would exhibit those characteristics, a positive wetland determination can be made for the area. Definitions for each of these three parameters are provided in Table 1. Wetland boundaries were flagged in the field with sequentially numbered, pink flagging marked "WETLAND BOUNDARY."

Table 1 Definitions and Indicators of the Three Wetland Parameters

Parameter	Definition and Indicators
Wetland Vegetation	Dominant vegetation consists of wetland-adapted plant species, based on one or more of the following indicators: • Dominance Test: more than 50 percent of dominant vegetation is of facultative, facultative wetland, or obligate status as determined from the National List of Plant Species Occurring in Wetlands (Reed, Jr. 1988; Reed, Jr., et al. 1993). • Prevalence Index: Prevalence index is 3.0 or less. The prevalence index is a weighted average that takes into account plant abundance and indicator status. • Plant morphological conditions are evident. • More than 50 percent of the total coverage of bryophytes consists of wetland-associated species.
Hydric Soils	A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding that persist long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils generally exhibit one or more of the following characteristics: • Histosol (highly organic soil); • Histic epipedon (organic soil surface layer); • Sulfidic material (rotten-egg odor); • Aquic or peraquic moisture regime (saturation during the growing season); • Soil matrix colors that indicate a loss or movement of organic matter, iron, or manganese; • The presence of redoxymorphic features, which are locations within the soil structure of iron and manganese depositions and depletions; and • The presence of oxidized iron and manganese in specific abundance and distribution.
Wetland Hydrologic	Wetland hydrologic conditions, indicated by one or more of the following: • Surface inundation visible on ground or aerial imagery;

Parameter	Definition and Indicators
Conditions	• Standing water or saturated soils in a soil pit at or above a depth of 12 inches for fine textured soil; • Oxidized rhizospheres along living roots; • Presence of reduced iron; • Dry season water table between 12 and 24 inches, or shallow aquitard; • Iron deposits; • Surface soil cracks; • Water marks on vegetation; • Drift lines; • Waterborne sediment deposits; • Water-stained or surface scoured leaves; • Algal mats; • Sparsely vegetated concave surface; • Geomorphic position; • FAC-neutral test; • Salt crust; • Hydrogen sulfide odor; • Aquatic invertebrates; • Raised ant mounds; • Wetland drainage patterns; and • Stunted or stressed plants.

2.2.1 Vegetation

Vegetation was evaluated at sample point locations that were representative of the vegetated community. At each sample plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and non-woody herbaceous plants—including forbs, grasses, sedges and rushes within a 5-foot radius of plot center—were identified and the percent cover for each species was recorded on a wetland field data form. The indicator status and 50/20 rule was used to determine the presence of wetland vegetation, and the dominant species for each stratum. A sampling point is considered to have wetland vegetation if more than 50 percent of the dominant species have an indicator status of FAC, FACW, or OBL. Definitions of indicator status is presented in Table 2. To determine dominant species, the 50/20 rule states that dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total (USACE, 2008).

Scientific nomenclature of all plant species follows that of the PLANTS database (NRCS 2007b) and Hitchcock and Cronquist (1976).

Table 2 Definitions of Indicator Status

Indicator Symbol	Definition
OBL	*Obligate*. Species that almost always occur in wetlands (estimated probability >99%) under natural conditions.
FACW	*Facultative wetland*. Species that usually occur in wetlands (estimated probability 67 to 99%), but occasionally are found in uplands.
FAC	*Facultative*. Species that are equally likely to occur in wetlands or uplands (estimated probability 34 to 66%).
FACU	*Facultative upland*. Species that usually occur in uplands (estimated probability 67 to 99%), but occasionally are found in wetlands.
UPL	*Upland*. Species that almost always occur in uplands under normal conditions (estimated probability >99%).
NL	*Not Listed*. Species was not included in evaluation and does not have an indicator status. More often occurs with plant species that would be categorized as UPL if they had been included in the evaluation.
NI	*No indicator*. Species for which insufficient information was available to determine an indicator status.

Source: Reed, Jr. 1988; Reed, Jr., et al. 1993.

2.2.2 Hydric Soil

Hydric soils are defined as being saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Corps 2008). Hydric soils exhibit certain characteristics that can be observed in the field. Such characteristics or indicators include high organic content, accumulation of sulfidic material, greenish or bluish-gray color (gley formation), and development of redoxymorphic features. Hydric soil indicators as discussed in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (Corps 2008) were evaluated in the field.

Soil samples were obtained at representative sampling points by digging a pit to a depth of at least 18 inches. Soil samples were then examined for hydric indicators. Soil colors were evaluated against a Munsell® soil color chart (Gretag Macbeth LLC 2000).

2.2.3 Wetland Hydrologic Conditions

While wetlands are defined in part by the presence of water, water does not need to be present throughout the entire year for an area to be considered a wetland. Wetland hydrologic conditions are present when an area is either permanently or temporarily inundated, or when the soil is saturated for a significant period (usually a week or more) during the growing season under normal conditions (Corps 1987 and 2008).

The presence of wetland hydrologic indicators was determined at each sampling point. Primary indicators of wetland hydrology generally include areas of ponding or soil saturation, and evidence of previous water inundation or saturation (i.e., watermarks drift lines, sediment deposits, and oxidized root channels). Secondary indicators include, but are not limited to, wetland drainage patterns geomorphic position, and raised ant mounds. Where positive indicators were observed, wetland hydrology was assumed to occur during the growing season long enough to result in wetland conditions.

2.3 WETLAND CLASSIFICATION AND RATINGS

Wetland vegetation community classification follows that developed by Cowardin, et al. (1979), and hydrogeomorphic classification follows Brinson (1993). *The Washington State Wetlands Rating System for Western Washington* (Hruby 2004) was used to rate wetlands.

3.0 RESULTS

Boundaries of existing Wetlands 5A and 5C were determined to extend onto Parcel 14. Extending the wetland boundary of Wetland 5A to Wetland 5C through Parcel 14 resulted in a single connected wetland. As such, Wetland 5C is now incorporated Wetland 5A. A total of 13.8 acres of PFO wetlands were delineated in the study area. Revisions to Wetland 5A and the total amount of wetlands on the Pacific International Terminals property are highlighted in Table 3.

No wetlands on Parcel 14 are located within a FEMA 100-year floodplain (Figure 6). No wetlands were identified on the property by the NWI maps (see Figure 7).

3.1 WETLANDS AND DRAINAGES

A total of 530.6 acres have been delineated on the Pacific International Terminals, property, including seven streams and 9 drainages (Figure 3). Most of the streams and drainages occur in roadside ditches. Stream 5 abuts the southern edge of Parcel 14, and flows along the northern side of Henry Road. Stream 5 is a relatively permanent waterway (RPW) with seasonal flows, and drains to Stream 1 and eventually to the Strait of Georgia.

Wetland 5 was partially delineated in 2008 with the portion on Parcel 14 not delineated. As a result Wetland 5 was identified in three distinct sections: 5A, 5B and 5C. Wetland 5A and 5C are now continuous and will be called Wetland 5A (See Appendix A for boundary locations). Wetland 5B is located in an isolated depression, and is only connected to Wetland 5A by sheet flow during storm events.

Table 3 Revised Characteristics and Ratings of Wetlands on the Pacific International Terminals Property

Wetland Name	Hydrogeomorphic Class	Area by Cowardin[1] Classification			Rating[2]	Total Area (acres)
		Palustrine Scrub-Shrub (acres)	Palustrine Emergent (acres)	Palustrine Forested (acres)		
1	Flats/Depressional	1.3	5.1	37.8	III	44.2
2	Slope	5.0	11.3	37.0	III	53.2
3	Slope	15.1	72.3	63.2	III	150.7
4A	Slope	2.2	5.0	19.5	III	26.6
4B	Depressional	0.7	0	3.7	III	4.4
4C	Depressional	0.1	0	0.1	III	0.2
4D	Slope	0	0	1.3	III	1.3
4E	Slope	0	0.2	0	III	0.2
4F	Slope	0.3	0.8	0	IV	1.1
5A	Slope	8.6	3.2	97.4	III	109.2
5B	Depressional	0	0	0.1	III	0.1
6	Slope	0	0	36.9	III	36.9
7A	Slope	2.1	3.5	34.5	III	40.1
7B	Depressional	0	0	0.6	III	0.6
8A	Slope	9.8	5.9	9.1	III	24.8
8B	Depressional	0.1	0	0	III	0.1
9A	Slope	6.9	8.6	12.7	III	28.2
10A	Slope	0.5	0.2	3.1	III	3.7
10B	Depressional	0.6	0.3	0.3	III	1.1
11A	Riverine	0	0	3.5	I	3.5
11B	Depressional	<0.1	0	0	III	<0.1
12	Depressional[3]	4.7	0.7	5.8	I	11.2
13A	Riverine	0	0	0.6	I	0.6
13C	Depressional	0	0	<0.1	III	<0.1
13D	Slope	0	0	0.4	III	0.4
13E	Riverine	0	0	0.1	I	0.1
13F	Depressional	0	0	0.6	III	0.6
13G	Depressional	0	0	0.4	III	0.4
14	Depressional	0	0	0.7	III	0.7
Total Wetland		57.9	117.1	369.4		544.4

1 Cowardin et al. (1979)

2 Hruby (2004)

3 Estuarine, not palustrine wetland

The wetlands on Parcel 14 were determined to be continuous with previously delineated Wetland 5A and 5C. These existing wetland boundaries were confirmed in the 2009 Jurisdictional Determination from the USACE. Wetlands 5A and 5C are now incorporated into a single wetland, identified as Wetland 5A. With the addition of the area contained on Parcel 14, this Wetland 5A now covers 109.2 acres.

3.1.1 Wetland 5A

As documented in the previously submitted *Wetland Delineation and Determination, Gateway Pacific Terminal,* AMEC, 2008, Wetland 5A is primarily a forested slope wetland that abuts the roadside ditch on the south side of Lonseth Road to the north and lies adjacent to Stream 5 to the south at Henry Road. The wetland is bounded on the north by Lonseth Road, on the south and west by forested uplands on slopes, and on the east by a BNSF Railway embankment. Old logging roads and skid trails are common, and result in linear areas of ponding throughout the area. Wetland 5A receives small amounts of surface flow from the roadside ditch on the north side of Henry Road, which empties into the wetland via a culvert under the railroad tracks. Much of the central portion of Wetland 5A has very low gradient topography with slightly steeper slopes on the south (north aspects) and east (west aspects) perimeters.

Vegetation is the typical forest community for almost all of the area, and is dominated by red alder (*Alnus rubra*, FAC). A 100-foot-wide easement for a pipeline lies adjacent to the rail embankment, and is vegetated mainly with reed canarygrass that is mowed annually. A wet meadow is located in the southeast corner of Wetland 5A, and is dominated by reed canary grass (*Phalaris arundinacea*, FACW), meadow foxtail (*Alopecurus pratensis*, FACW), and bentgrass (*Agrostis spp.*).

Soils are mapped as Whitehorn silt loam. Soils were very dark brown (10 Y/R 2/2) or black (10 YR 2/1) in the upper 5 to 6 inches. In some areas, depth below 6 inches had a depleted matrix (10 YR 4/1) with distinct redoximorphic (redox) features. Most areas had redox features within 6 inches of the surface, and some small depressional features showed increased organic matter at the surface.

A total of 13.8 acres of wetlands were delineated in the Parcel 14 study area. Clearing for access for the ongoing geotechnical investigation occurred within wetland areas on Parcel 14. As described in the *Critical Areas Study and Mitigation Plan*, AMEC, 2011, these impacted wetland areas will be restored to pre-existing conditions by re-planting native forest vegetation, re-grading displaced soil mounds, and replacing divots caused by pushing over mature trees.

Wetland 5A was rated as a Category III wetland according to the Washington State Wetland Rating System for Washington State (Hruby, 2004). Wetland 5A, located on a shallow slope, has dense, rigid vegetation throughout most of its area, and many small surface depressions that can trap water. Wetland 5A may function to improve downstream water quality by trapping nutrients and sediments, and to decrease downstream erosion by attenuating overland flow velocity. Multiple Cowardin classes and hydroperiods, plant diversity, and habitat interspersion and features contribute to the habitat value of Wetland 5A.

3.1.2 Vegetation on Parcel 14

Delineated wetland areas on Parcel 14 are mainly forested. The dominant wetland vegetation included red alder and cottonwood (*Populus balsamifera*, FAC) in the canopy, salmonberry (*Rubus spectabilis*, FAC) and twinberry (*Lonicera involucrata*, FAC+) in the shrub understory, and mannagrass (*Glyceria grandis*, OBL) and slough sedge (*Carex obnupta*, OBL) in the herbaceous understory.

Dominant vegetation in the upland areas included red alder and big leaf maple (*Acer macrophyllum*, FACU) in the canopy, vine maple (*Acer circanatum*, FAC-), red elderberry (Sambucus racemosa, FACU), and Indian plum (*Oemleria cerasiformis*, FACU) in the shrub understory, and false lily-of-the-valley (*Maianthemum dilatatum*, FAC), lady fern (*Athyrium filix-femina*, FAC), and sword fern (*Polystichum munitum*, FACU) in the herbaceous understory.

3.1.3 Hydrology on Parcel 14

Hydrology in the forested wetland areas in the study area is influenced by shallow groundwater, ponding during precipitation events, and shallow rivulets that direct surface flow.

Primary wetland hydrologic indicators observed include algal mat or crust (B4). Secondary wetland hydrologic indicators observed include water-stained leaves (B9), drainage patterns (B10), and geomorphic position (D2).

3.1.4 Soils on Parcel 14

Soils within the study area generally consisted of a low chroma matrix with common, faint to prominent redox features. Matrix colors documented within the study area included dark gray (10YR 2/1) and very dark grayish brown (10YR 3/2, 2.5Y 3/2). Redox features consisted of faint, common, dark yellowish brown (10YR 4/6) concentrations in pore linings. Soil textures consisted of loam, silt loam, sandy loam, and clay loam. Mixed matrixes were also observed.

Soils meet the criteria for Depleted Matrix (F3), which is defined as a layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, and a minimum thickness of 2 inches if it is entirely within the upper 6 inches of the soil, or 6 inches and starts within 10 inches of the soil surface.

Some soils in the study area also meet hydric soil indicator F6 (Redox Dark Surface), which is defined as a layer occurring entirely within the upper 12”, is at least 4” thick, has a matrix value of 3 and a chroma of 2, and has greater than 5 percent prominent redoximorphic features.

4.0 CONCLUSIONS

In the Parcel 14 study area, 13.8 acres of PFO wetlands were delineated. Wetlands on Parcel 14 connect the previously delineated Wetlands 5A and 5C, and have thus become a single wetland area identified as Wetland 5A. Wetland 5A totals 109.2 acres in size including the Pacific International Terminals property and Parcel 14.

5.0 STATEMENT OF LIMITATION

The wetland boundaries, classification, ratings, and jurisdictional assessments described herein are the professional opinion of AMEC staff based on the circumstances and site conditions at the time of this study. These professional opinions have been developed in a manner consistent with the level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our signed proposal. These findings are considered preliminary until local, state, or federal jurisdictions make verification of jurisdiction and confirm the wetland determination, boundary locations, and classifications.

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APPENDIX A

Parcel 14 Wetland Delineation Map

APPENDIX B

Correspondence

APPENDIX C

Wetland Field Data Sheets

APPENDIX D

Wetland Rating Forms