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# Wetlands/Waters Delineation Report

## Historic Columbia River Highway State Trail Segments A – D

OR DOT CRGNSA 100(1)  
Columbia River Gorge National Scenic Area  
Task Order No. T-13-001, Modification 004, Task 3.8  
Multi-Discipline IDIQ Contract No. DTFH70-10-D-00020



Prepared for  
U.S. Department of Transportation  
Federal Highway Administration

Office of Federal Lands Highway  
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## A) Landscape Setting and Land Use (Historical and Current)

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The Area of Potential Effect (APE) for the Historic Columbia River Highway State Trail (HCRHST) is located along the southern portion of the Columbia River Gorge between the cities of Cascade Locks and Hood River (Figure 1) and within the Mount Hood National Forest. Specifically, the APE lies between Wyeth on the west and Starvation Creek State Park on the east. The APE extends about four miles and varies in width depending on potential associated trail facilities. Elevation ranges from approximately 100 to 140 feet (WGS84).

The Project is located in the High Cascades physiographic province as described by Franklin and Dyrness (1973). The High Cascades province is essentially an area of rolling terrain interrupted at intervals by glaciated channels, some quite deep, carrying westward-flowing streams. It is an area dominated by immature soils developed in volcanic ejecta and soils showing more profile development, which are derived from glacially deposited materials. The Columbia River Gorge is an unusual physiographic feature at the northern end of the High Cascades province. It is the only nearly sea level break in the Cascade Range in Oregon and Washington, providing a major route for both plant and animal migration between the western and eastern halves of Washington and Oregon. At the same time, it contains many species that are endemic to the Gorge or constitute relict populations. Vegetation in the Gorge transitions from xerophytic *Pinus ponderosa-Quercus garryana* forests on the east to mesophytic *Pseudotsuga menzeisii-Tsuga heterophylla* types on the west (Franklin and Dyrness 1973).

Nine streams cross the APE. They include perennial, intermittent, or ephemeral drainages. All drain north through culverts under Interstate 84 to the Columbia River.

## B) Site Alterations

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Alterations to portions of the APE include historical agriculture, road construction, and rural residential development. Specific alterations that appear to have been made to the natural conditions along the project alignment include the following:

- Construction and eventual abandonment of the Historic Columbia River Highway
- Rural residential construction and associated services
- Construction of Interstate 84 immediately adjacent to the study area on the north. Construction staging and disposal of fill materials from the highway excavation may have occurred within the APE
- Development of pedestrian hiking trails through the area

## C) Precipitation Data and Analysis

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The WETS data from the Hood River Exp Station (OR4003) (NRCS, 2014) were used to compare actual precipitation amounts against normal ranges for the study area. Daily and monthly weather summary data were collected from the NOAA National Weather Service Forecast Office for the Troutdale, Oregon reporting station, the nearest station to the APE (NOAA, 2014).

The field investigation was conducted on March 10 – 12, 2014 and March 19, 2014. Precipitation during the two weeks prior to the field investigation was 2.3 – 2.51 inches, slightly drier than the normal precipitation range for the month of February and within the normal precipitation range for March. Overall, precipitation is generally within the normal range for this area and time of year. Table 1 presents the precipitation data on the dates of the site investigation and for the 2-week period preceding the field investigation.

TABLE 1

**Daily & Two Weeks Prior Precipitation: Troutdale, Or Station***Historic Columbia River Highway State Trail*

Date	Precipitation (inches)	Two Weeks Prior
March 10, 2014	0.04	2.39
March 11	0	2.3
March 12	0	2.3
March 19	0.03	2.51

Source: NOAA, 2014

Annual precipitation in the region averages approximately 31.75 inches of rain and 33.4 inches of snow for the water year (NRCS, 2014). Normal range of precipitation at the nearest reporting station (Troutdale, OR) is 18.44 – 38.35 inches. Precipitation for the water year beginning March 2013 through February 2014 was 29.82 inches (NRCS, 2014), so hydrologic conditions for the area of the APE are considered within the normal range. Table 2 provides a summary comparing actual precipitation against normal ranges for this area.

TABLE 2

**Monthly Precipitation Data for the Water Year (March 2013 – February 2014): Troutdale, OR Station***Historic Columbia River Highway State Trail*

Date	Actual Precipitation (inches)	Normal Range <sup>1</sup>	Precipitation Outside Average Range
March 2013	1.75	1.97 – 3.43	-0.22
April 2013	3.42	1.07 – 2.20	+1.22
May 2013	4.91	0.61 – 1.32	+3.59
June 2013	1.69	0.37 – 0.96	+0.73
July 2013	T	0.08 – 0.37	--
August 2013	0.3	0.07 – 0.58	--
September 2013	4.1	0.29 – 1.41	+2.69
October 2013	1.61	0.86 – 2.67	--
November 2013	3.61	3.29 – 6.47	--
December 2013	2.37	3.75 – 7.16	-1.38
January 2014	2.86	3.29 – 6.53	-0.43
February 2014	3.2	2.79 – 5.25	--
<b>Totals</b>	<b>29.82</b>	<b>18.44 - 38.35</b>	<b>-2.03</b>

Sources: NOAA, 2014; NRCS, 2014

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## D) Methods

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### D.1 Information Review

Prior to the field investigations, the following information was reviewed:

- National Wetlands Inventory Wetlands Mapper (USFWS, 2014)
- Mount Hood National Forest Soil Resource Inventory (Howe, 1979)
- United States Geological Survey (USGS) Topographic Map, Carson, WA-OR (USGS, 1994a)
- United States Geological Survey (USGS) Topographic Map, Mt. Defiance, OR-WA (USGS, 1994b)
- Pacific Northwest Hydrography Framework Maps (USGS, 2014)

NRCS soil mapping and hydric soils information is not available for this area.

### D.2 Field Surveys

A field survey documenting the potential of wetlands and other jurisdictional waters was conducted on March 10 – 12 and March 19, 2014.

Collection and analysis of the field data followed procedures in the *Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1* (U.S. Army Corps of Engineers [USACE] 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010). The field investigation used *The National Wetland Plant List: 2013 Wetland Ratings* (Lichvar 2013) to determine the wetland indicator status of vegetation.

The ordinary high water elevation (OHWE) was mapped for all perennial streams, where the edge of stream was accessible. The OHWE was determined based on conditions observed in the field including scour lines, sediment deposits, bank erosion, and drifted vegetation and debris. Where edge of stream was not accessible for one or both sides of a stream, either OHWE on one side of the stream or a stream centerline was mapped and estimated width of OHWE recorded. Stream centerlines were mapped, and stream width at OHWE recorded, for intermittent and ephemeral streams and ditches. Determination of flow duration was made using USGS topography maps, Pacific Northwest Hydrography maps, and observations in the field.

The investigation evaluated hydrology, soils, and vegetation at each sample plot to determine if wetland criteria were met. Sample plots were located to characterize representative conditions. Hydrology was assessed at test pits dug at each sample plot. Preliminary jurisdictional determinations were based on presence of hydrology, hydrophytic vegetation, and hydric soils.

## E) Description of Wetlands and Other Waters

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The Wetland & Waters Delineation Maps are shown in Figures 6-1 through 6-12A in Appendix A. Ground level photographs of the areas of investigation are provided in Appendix C.

### E.1 Wetlands

Two wetlands occur within the project APE, and three wetlands exist immediately adjacent to the APE.

#### E.1.1 Wetlands within the APE

##### **WL-2B POW Wetland**

Wetland WL-2B is an approximately 0.15-acre palustrine open water (POW) wetland in a basin at the base of the hillside slope just south of Interstate 84. Source of hydrology appears to be groundwater and seepage from the hillside to the south. Water depth was 4 – 6 inches at the time of the field visit. Adjacent vegetation consists of a

mature Douglas-fir (*Pseudotsuga menzeisii*)/western hemlock (*Thuja plicata*) forest with occasional big-leaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*), as well as some black cottonwood (*Populus balsamifera*) at the pond edge. Understory vegetation is dominated by sword fern (*Polystichum munitum*), oregongrape (*Mahonia nervosa*), and trailing blackberry (*Rubus ursinus*), with scattered occurrences of Himalayan blackberry (*Rubus armeniacus*).

#### **WL-2C PEM Wetland**

WL-2C is a palustrine emergent wetland in a drainage ditch between the Interstate 84 embankment on the north and a cut slope to the south. At the time of the field visit, standing water was observed, 1 – 2 inches deep, in the western half of the wetland. Vegetation was sparse in the inundated portion of the wetland. The western portion of the wetland as dominated by newly emergent, unidentified grass, with small patches of reed canarygrass (*Phalaris arundinacea*) and horsetail (*Equisetum arvense*). Soils were saturated to the surface in the eastern half of the wetland. No evidence of connection to other wetlands, waterbodies, ditches, or culverts was observed. The wetland appears to be imperfectly drained and isolated. The wetland is about 8 feet wide and 54 feet long.

### **E.1.2 Wetlands Adjacent to the APE**

Three additional wetlands were identified immediately adjacent to the project APE. Nearest boundaries of these wetlands were mapped for reference based on observations in the field for reference. Complete field data was not collected for these wetlands.

#### **WL-1 PFO Wetland**

Wetland WL-1 is a palustrine forested wetland that includes an intermittent stream, which was actively flowing at the time of the field visit. The stream ponds and spreads out at the base of a constructed berm. Source of hydrology for the wetland appears to be both the intermittent streamflow and groundwater. The area of the wetland immediately adjacent to the APE was inundated at the time of the field visit to a depth of 3 – 4 inches. Vegetative cover in the wetland is approximately 80 percent and consists predominantly of water parsley (*Oenathe sarmentosa*) and watercress (*Nasturtium officinale*). Total area of WL-1 is approximately 0.1 acre.

#### **WL-2A.1 & WL-2A.2 PFO/OW Wetlands**

Wetlands WL-2A.1 and WL-2A.2 are palustrine forested/open water wetlands that are part of an intermittent stream/wetland complex including stream ST-1A. WL-2A.2 is shallow depressional area that includes the seep headwaters of Stream ST-1A. Standing water was present to a depth of 2 – 3 inches. WL-2A.1 drains to the upper reach of ST-1A, which continues downslope to WL-2A.1. WL-2A.1 is a shallow, ponded depression on a low bench. Average water depth was 4 – 6 inches. WL2A.1 drains east and south to the downstream reach of stream ST-1A. The area of WL-2A.1 is approximately 0.018 acre; the area of WL-2A.2 is approximately 0.012 acre.

#### **WL-4 PFO Wetland**

WL-4 is a palustrine forested wetland located in a depressional area between Interstate 84 and a constructed berm. Vegetation in the wetland consists of mature red alder, stinging nettle (*Urtica dioica*), lady fern (*Athyrium filix-femina* ssp. *cyclosum*), and other emerging herbaceous vegetation. At the time of the field visit, standing water to a depth of 2 to 4 inches was present throughout. Total area of WL-4 is approximately 1.4 acres.

## **E.2 Other Waters**

Ten streams and one drainage ditch were mapped within the APE (Table 3, and Appendix A: Figures 6-1 through 6-12). Representative photos are provided in Appendix C.

#### **ST-1 Unnamed Stream**

Stream ST-1 originates from a seep approximately 30 feet upslope of Interstate 84. The stream flows in a broad, shallow channel, 6 feet wide at OHW, increasing to 15 feet wide at the base of the slope. It drains through a 12-inch metal culvert under Interstate 84 to the Columbia River. Average water depth was 3 to 4 inches. Stream ST-1

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appears to be an intermittent stream, fed by seasonal groundwater, snowmelt, and precipitation. Adjacent vegetation consists of a “doghair” forest of narrowly spaced, same-age Douglas-fir trees with little understory.

#### **ST-1A Unnamed Stream**

Stream ST-1A is part of a stream/wetland complex that includes WL-2A.1 and WL-2A.2. It originates as a broad seep in the hillslope approximately 175 feet south of Interstate 84. The stream has clear bed and banks, with a rock, cobble, gravel bed and flow 2-3 inches deep at the time of the field visit. The stream channel flows from wetland WL-2A.2 to the western end of wetland WL-2A.1, then from the eastern end of WL-2A.1 down to the base of the slope where it infiltrates into the ground. No outlet was observed. Stream ST-2 appears to be an intermittent stream, fed by seasonal groundwater and precipitation.

#### **ST-2 Summit Creek**

Summit Creek (ST-2) is a perennial stream (USGS, 1994b), approximately 6-feet-wide at OHW from its outlet at a culvert under Interstate 84 and for about 50 feet upstream. In this area, the stream has a rock and cobble substrate, with flow 6-8 inches deep. It drains north to the Columbia River through a 5-foot textured metal culvert under Interstate 84. Upstream, Summit Creek broadens to about 25 feet across as a series of braided channels tumbling down a rocky slope. Vegetation adjacent to the creek within the APE consists of mowed grasses with shrubs and small trees in a narrow band immediately adjacent to the highway, before giving way to steep basalt cliffs on either side of the channel.

#### **ST-3 Unnamed Stream**

Stream ST-3 is an intermittent drainage that flows down a steep slope in a mostly vegetated topographic draw. Clear evidence of bed and banks was not observed. The stream appears to flow in response to snowmelt and/or precipitation, braiding around and through sword fern and other herbaceous vegetation. Width at OHW of the braided system ranges from 10 to 25 feet, with flow 1-2 inches deep at the time of the field visit. The stream ponds slightly between the base of the hillslope and the toe of slope of a constructed berm. No outlet was readily apparent, nor was there any apparent downstream outlet on the north side of the berm. The stream likely either percolates through the rock under the berm or continues downslope in a buried culvert to a large pond just south of Interstate 84. No culvert or other point of discharge was observed at the southern end of the pond. Stream ST-3 appears to be an intermittent stream, fed by snowmelt and precipitation. The surface portion of stream ST-3 lies entirely outside the project APE.

#### **ST-4 Lindsey Creek**

Lindsey Creek (ST-4) is a perennial stream (USGS, 1994b) that flows through a steep, basalt canyon before draining to the Columbia River through an 8-foot-wide concrete box culvert under Interstate 84. Within the APE, Lindsey Creek averages 50 feet across at OHW and was 12-18 inches deep at the time of the field visit. The creek has a rock, cobble, and boulder bed with considerable large woody debris in the channel. Banks are steep and rocky.

Vegetation adjacent to Lindsey Creek within the APE is comprised of a mature coniferous-deciduous forest with a relatively sparse (approximately 20 percent cover) shrub layer. Dominant trees included Douglas-fir, grand fir (*Abies grandis*), with lesser amounts of bigleaf maple and red alder. Understory vegetation includes snowberry (*Symphoricarpos albus*), serviceberry (*Amelanchier alnifolia*), sword fern, Siberian spring beauty (*Claytonia siberica*), trailing blackberry, and Himalayan blackberry.

#### **ST-6 Wonder Creek**

Wonder Creek (ST-6) is an intermittent stream (USGS, 1994b) that flows from a large waterfall, approximately 400 feet south of Interstate 84. The stream braids down the slope in multiple channels before joining back into a single channel near the base of the slope. Three distinct channels are present in the area of the proposed trail crossing. ST-6A extends downslope to the northeast for approximately 40 feet before infiltrating into the ground. ST-6 and ST-6B meander down the slope before joining into one channel, which continues downslope for approximately 75 feet before it disappears as it infiltrates into the ground approximately 125 feet south of the east-west extension of Warren Creek. No surface connection between Wonder Creek and Warren Creek was

observed, nor was there any obvious surface connection between Wonder Creek and a large inundated wetland area (wetland WL-4) that begins approximately 100 feet northwest of the terminus of Wonder Creek.

Clear bed and banks were present within the stream channels, along with evidence of scouring, drifted vegetation, and sediment deposits. Stream substrate was predominantly rock and gravels, with some silt in areas of lower gradient. Stream width at OHW and depth varied down the slope. Stream width at OHW near the terminus of the creek was 2.5 feet and stream depth was 3-6 inches.

#### **ST-7 Warren Creek**

Warren Creek (ST-7) is a perennial stream (USGS, 1994b) averaging 20 feet across at OHW. The streambed consists of a rock and cobble substrate. Stream depth was 8-12 inches deep at the time of the field visit. Warren Creek flows southeast to northwest, then due west along the toe of roadway slope just south of Interstate 84. It drains to the Columbia River through a culvert under Interstate 84. Warren Creek flows through a mature coniferous forest dominated by Douglas-fir with occasional western and bigleaf maple. The understory in this area is dominated by English ivy (*Hedera helix*).

#### **ST-7A Ephemeral Drainage**

ST-7A is an unnamed ephemeral drainage carrying flow downslope to an 18-inch metal culvert under the existing trail. No flow was present at the time of the field visit, however clear bed and banks were observed upstream of the trail crossing. Scour marks and water-borne debris were also observed. The channel averages 2 feet across at OHW. The drainage continues downslope, north of the trail. However, clear evidence of bed and banks was less noticeable in this downstream reach and the channel area is approximately 80 percent vegetated with English ivy. This portion of the drainage drains to a second culvert under Interstate 84. Stream ST-7A is considered an ephemeral stream, carrying flow only in response to precipitation events.

#### **ST-8 Cabin Creek**

Cabin Creek (ST-8) is a robust, perennial stream (USGS, 1994b), averaging 15 feet across at OHW, with a rock and boulder substrate. At this location, it flows from Cabin Creek falls, approximately 40 feet north to a 24-inch metal culvert that drains under the trail and adjacent Interstate 84. Water depth varied from approximately 6 to 12 inches as it tumbles over rock and boulders on its way downstream.

#### **ST-9 Ephemeral Drainage**

ST-9 is a small drainage that drains down a steep hillslope north to a low swale between the toe of slope and the entry road for the Starvation Creek State Park Wayside. On the hillside, the drainage flows in a narrow channel averaging 12 inches across at OHW. The channel averages 6 inches deep, with rock bed and banks. Flow was present at the time of the field visit to a depth of approximately 0.5 inch. At the base of the slope, the channel broadens to about 3 feet across at OHW. Here the substrate consists primarily of fine gravels. Flow was present intermittently to a depth of 0.25-0.5 inch, with most infiltrating into the gravels. The drainage continues for about 125 feet to the west before disappearing entirely into the gravels. No readily apparent outlet was observed. Stream ST-9 is considered an ephemeral stream, carrying flow only in response to precipitation events.

#### **D1 Ditch**

D1 is an apparently excavated drainage ditch across a broad flat expanse adjacent to Interstate 84. No evidence of flow was observed. The channel was overgrown with Himalayan blackberry through much of its length.

TABLE 3

**Potentially Jurisdictional Waters***Historic Columbia River Highway State Trail*

Stream ID	Stream Name	Flow Regime			OHWE Width at Widest Point within APE (feet)	Preliminary Jurisdictional Determination <sup>1</sup> Clean Water Act Section 404	Preliminary Jurisdictional Determination <sup>1</sup> Oregon Removal- Fill Law
		USGS	PNWHF	OBSERVED IN FIELD AS			
ST-1	---	---		Intermittent	6 - 15	Yes	Yes
ST-1a	---	---		Intermittent	4	No	Yes
ST-2	Summit Creek	Perennial	Stream	Perennial	6	Yes	Yes
ST-3	---	---		Intermittent	10	No	Yes
ST-4	Lindsey Creek	Perennial	Stream	Perennial	50	Yes	Yes
ST-6	Wonder Creek	Intermittent	Stream	Intermittent	2.5	Yes	Yes
ST-7	Warren Creek	Perennial	Stream	Perennial	20	Yes	Yes
ST-7a	---	---		Ephemeral	2	Yes	No
ST-8	Cabin Creek	Perennial	Stream	Perennial	15	Yes	Yes
ST-9	---	---	Stream	Ephemeral	1	Yes	No
D1	---	---		Ephemeral	2	Yes	No

<sup>1</sup> Jurisdictional determinations are preliminary only. The regulatory agencies make the final determinations.

<sup>2</sup> *Stream Duration Field Assessment Form* provided in Appendix D.

## F) Deviation from Local Wetland Inventory or National Wetlands Inventory

The National Wetland Inventory Map (NWI) shows no mapped wetlands within the APE. A Local Wetland Inventory (LWI) is not available for this area.

## G) Mapping Method

Sample plot locations, wetland boundaries, and ordinary high water elevations of streams were mapped within and adjacent to the APE using a hand-held Trimble GeoXT global positioning system (GPS) unit with sub-meter accuracy capability. Data in the field were collected using World Geodetic System 1984 (WGS 84), then converted to North American Datum of 1983 (NAD83) (State plane Oregon South, International Feet).

Tax lot boundaries are from ORMAP (ORMAP 2011) Appendix A: Figures 2a through 2h).

## H) Additional Information

Additional information is presented in Appendix D; it includes Pacific Northwest Hydrography Framework Maps and USGS topography maps for the area of the APE. These maps provide information about mapped drainages within and adjacent to the APE.

# I) Results and Conclusions

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## I.1 Wetlands

Two wetlands were identified within the APE. Wetland WL-2B is potentially jurisdictional under federal and state wetlands regulations. Wetland WL-2C is not federally jurisdictional because it is isolated hydrologically, and is not state jurisdictional because it is less than 10 feet wide and constructed in former uplands.

## I.2 Waters of the U.S.

Nine streams and one ditch were mapped within the APE. Four of the streams are perennial, three are intermittent, and two ephemeral. Ditch D1 is also an ephemeral drainage. In addition, one intermittent stream, stream ST-3, was mapped adjacent to the APE. There is no surface continuation of ST-3 across the APE and no apparent downstream surface segment. It appears likely there is a subsurface connection between ST-3 and the POW wetland WL-2B approximately 175 feet to the north. All of the streams, except ST-1A and ST-3, are potentially jurisdictional under federal regulations because they drain to the Columbia River, a navigable water, through culverts under Interstate 84. Streams ST-1A and ST-3 have no apparent surface connection with other waters. Ditch D1 is also potentially jurisdictional under federal regulation because it also drains to the Columbia River. Streams ST-9 and ST-7A are not likely jurisdictional under state regulations as the state does not regulate ephemeral streams. Ditch D1 is not state jurisdictional, as it does not contain food or game fish. The remaining streams are potentially jurisdictional under state regulations.

## J) Disclaimer

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

The Oregon Department of State Lands and the USACE make jurisdictional determinations, including the applicability of exemptions, on a case-by-case basis.

# Appendix A Maps

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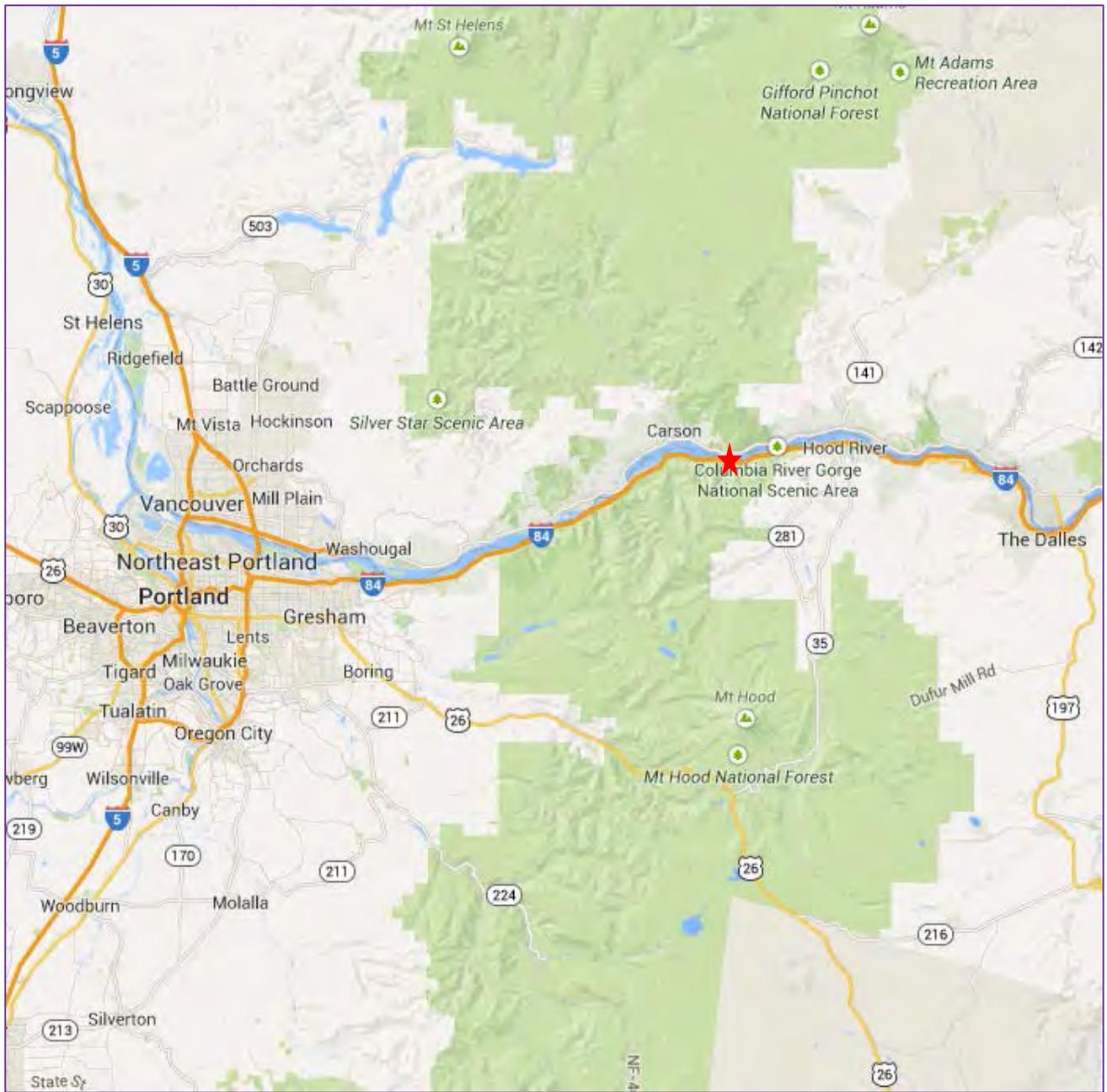
# Maps

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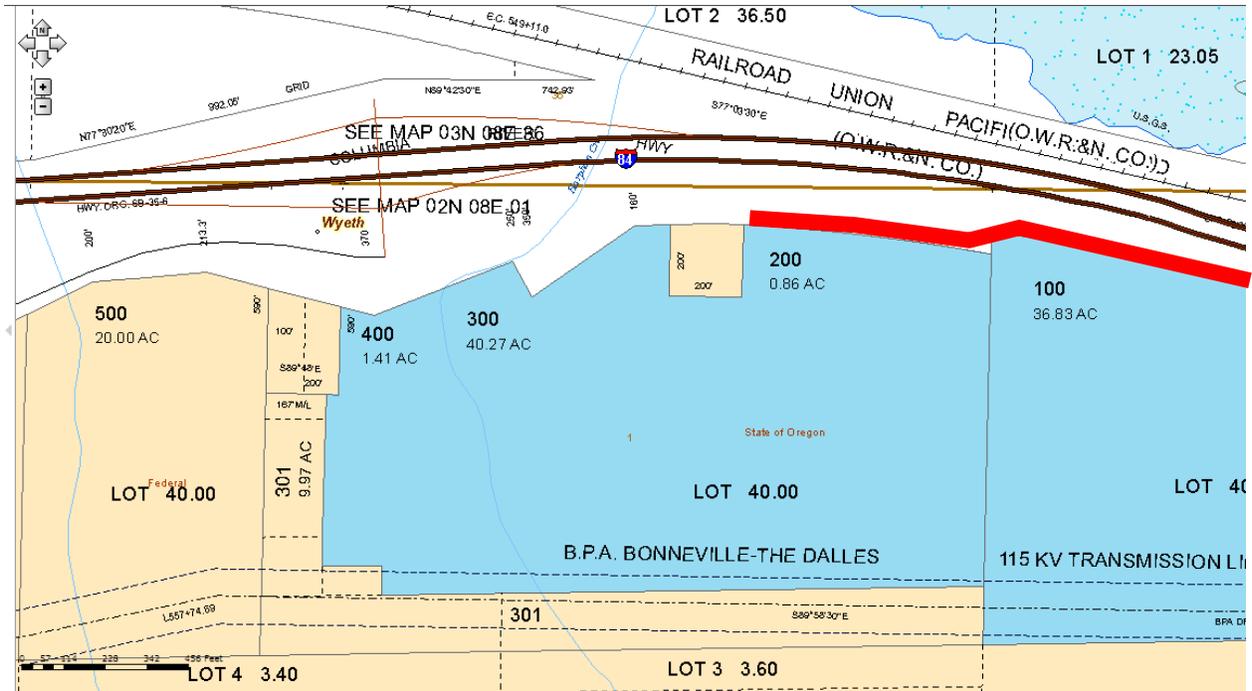
<b>Figure</b>	<b>Title</b>
1	Location Map
2	Tax Lots
3	National Wetland Inventory
4	Hood River County Soil Survey Map (Not Provided <sup>1</sup> )
5	Aerial Photos (Not Provided <sup>2</sup> )
6	Wetland & Waters Delineation Map

<sup>1</sup>No NRCS mapping has been performed in the study area.

<sup>2</sup>Due to heavy forest cover throughout most of the project area, aerial photos provide minimal additional information.

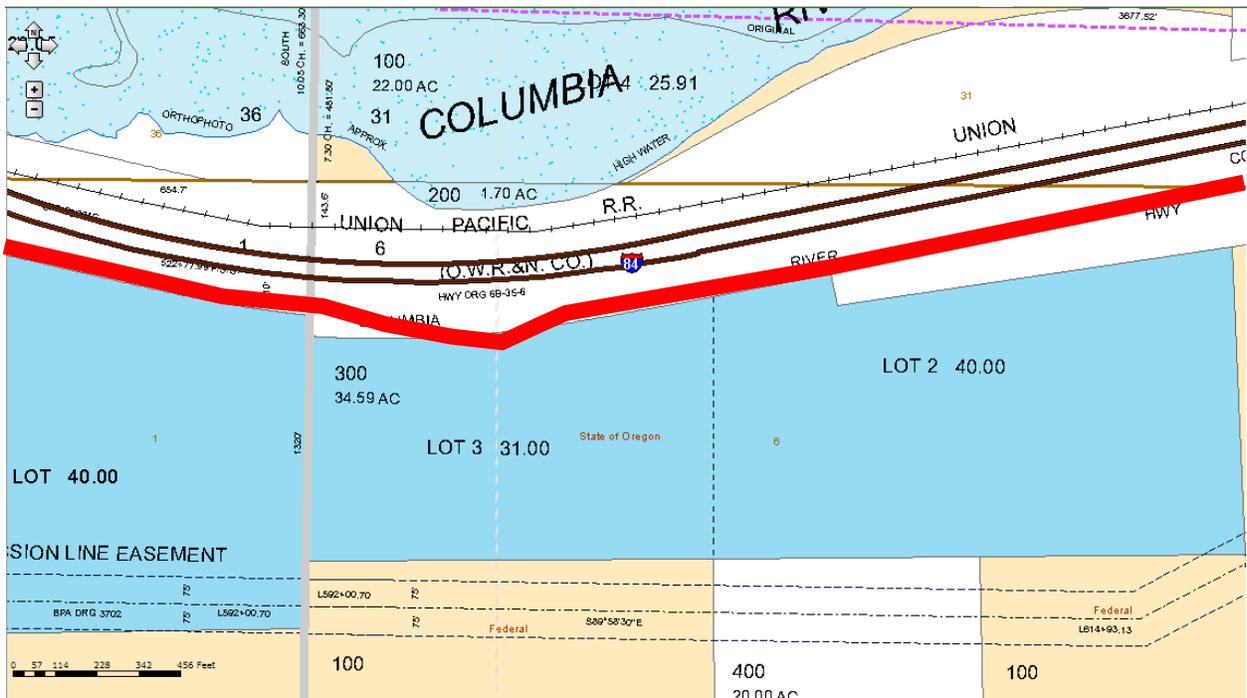


**Figure 1 Vicinity Map**  
Historic Columbia River Highway State Trail  
Hood River County, Oregon



 HCRHST Project

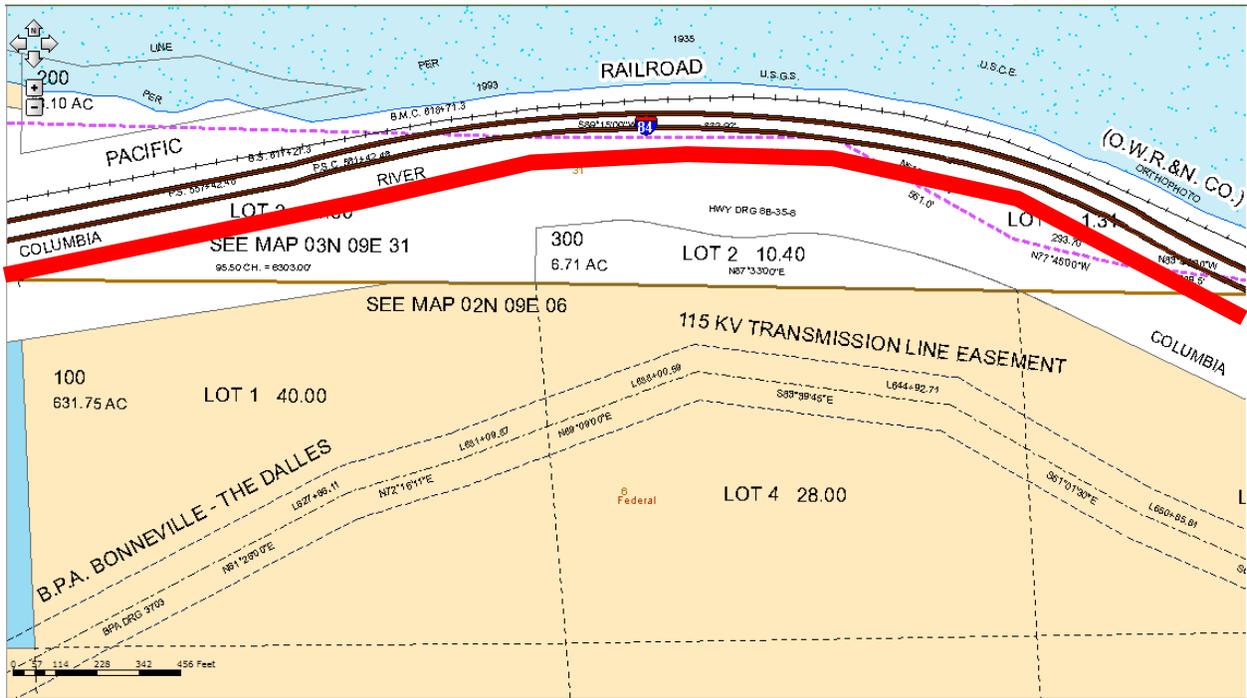
**Figure 2a Tax Lot Map**  
 Historic Columbia River Highway State Trail  
 Hood River County, Oregon



 HCRHST Project

### Figure 2b Tax Lot Map

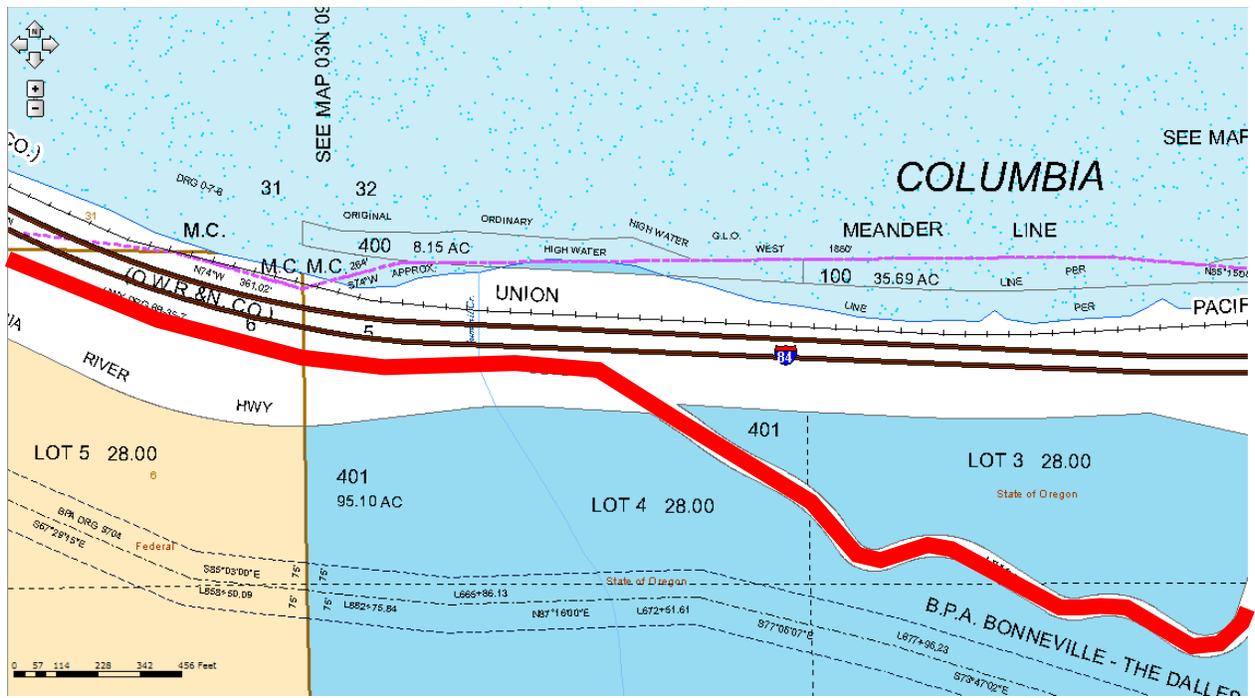
Historic Columbia River Highway State Trail  
Hood River County, Oregon



 HCRHST Project

**Figure 2c Tax Lot Map**

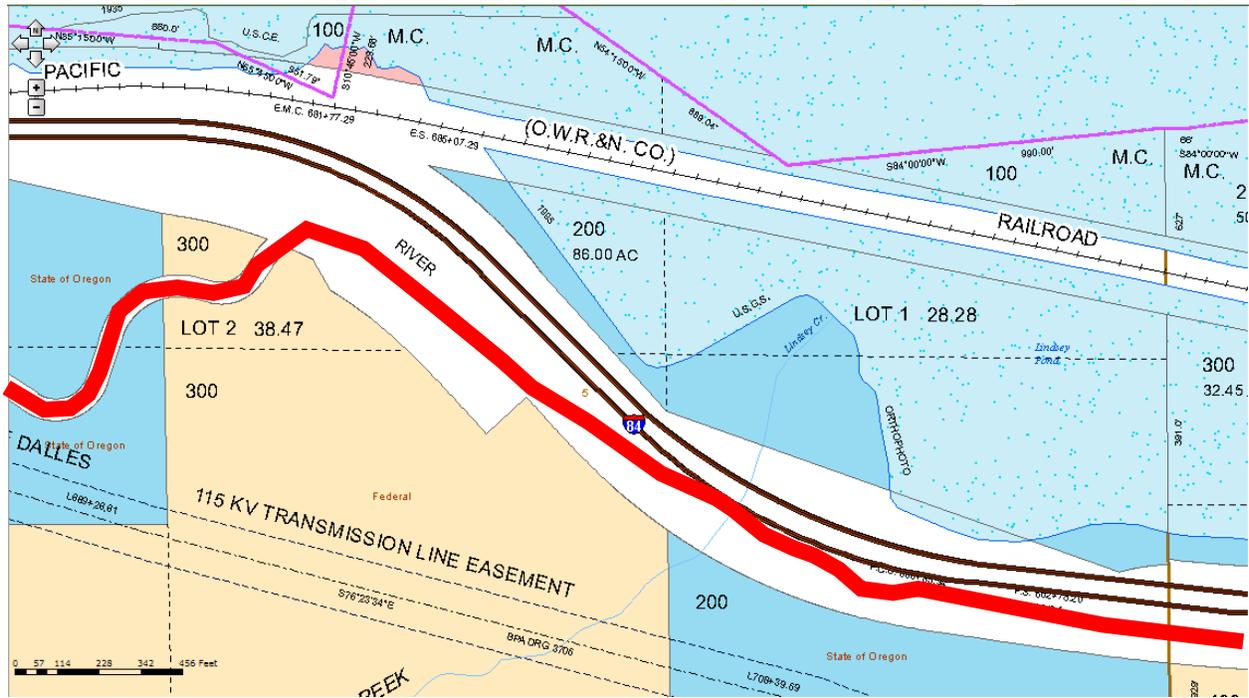
Historic Columbia River Highway State Trail  
Hood River County, Oregon



 HCRHST Project

### Figure 2d Tax Lot Map

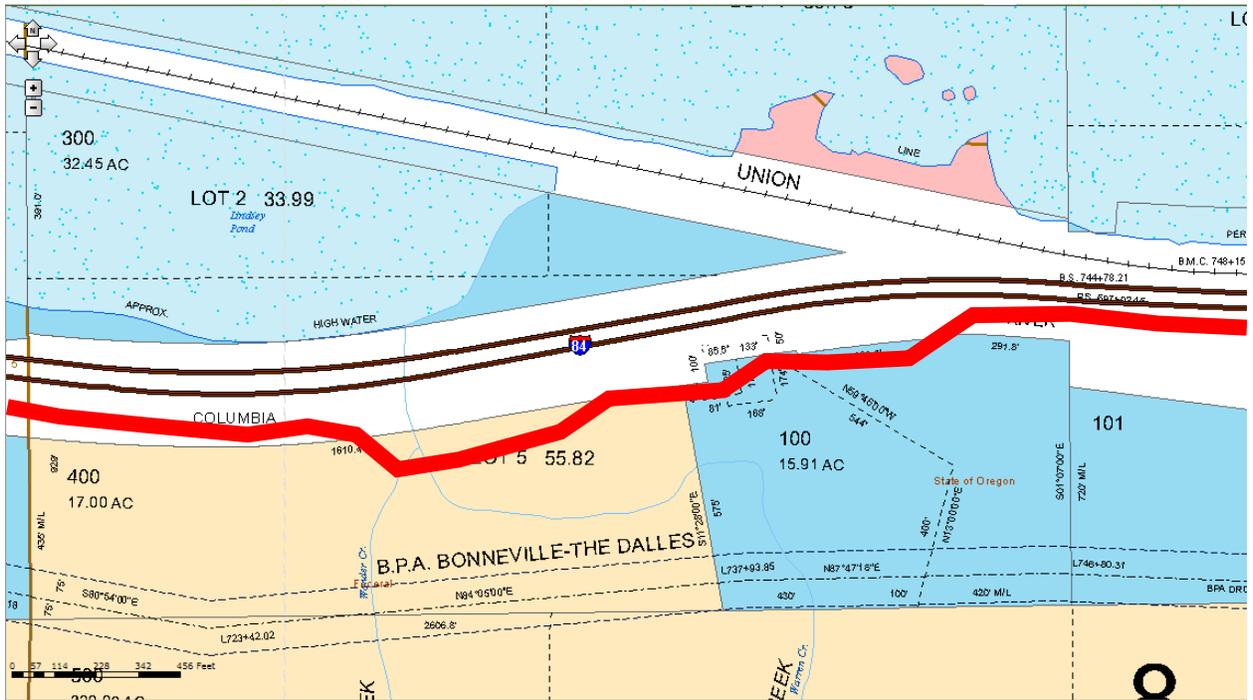
Historic Columbia River Highway State Trail  
Hood River County, Oregon



 HCRHST Project

**Figure 2e Tax Lot Map**

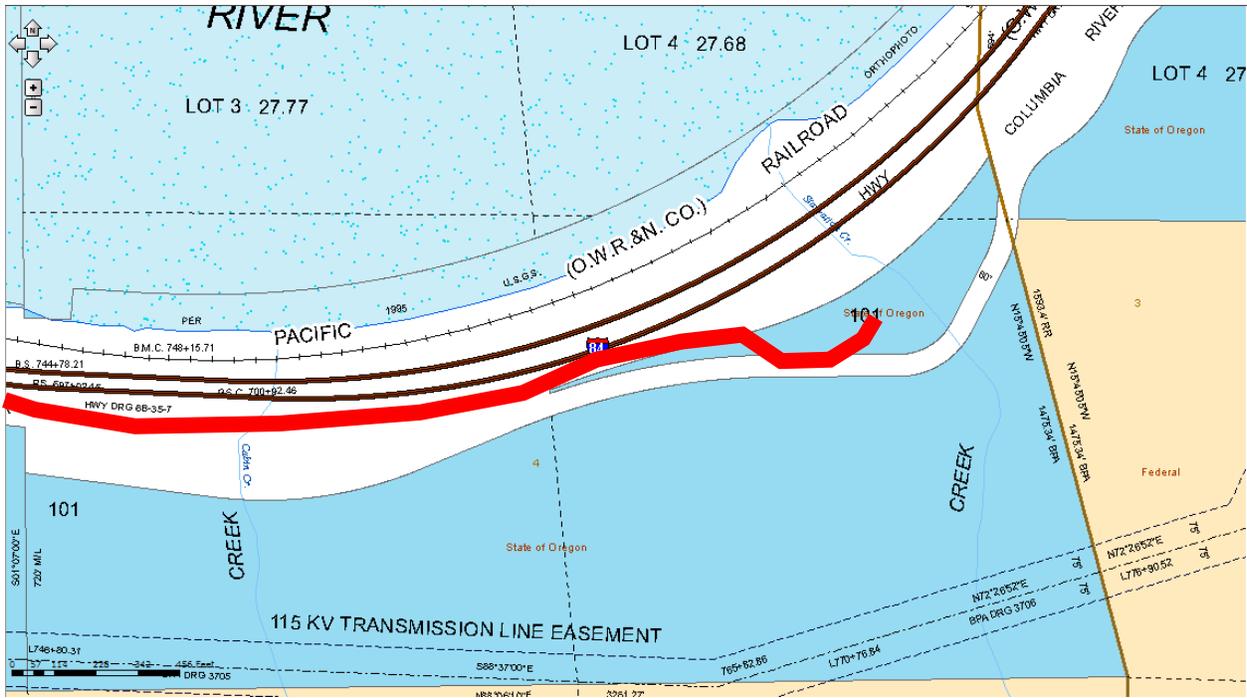
Historic Columbia River Highway State Trail  
Hood River County, Oregon



 HCRHST Project

### Figure 2f Tax Lot Map

Historic Columbia River Highway State Trail  
Hood River County, Oregon



 HCRHST Project

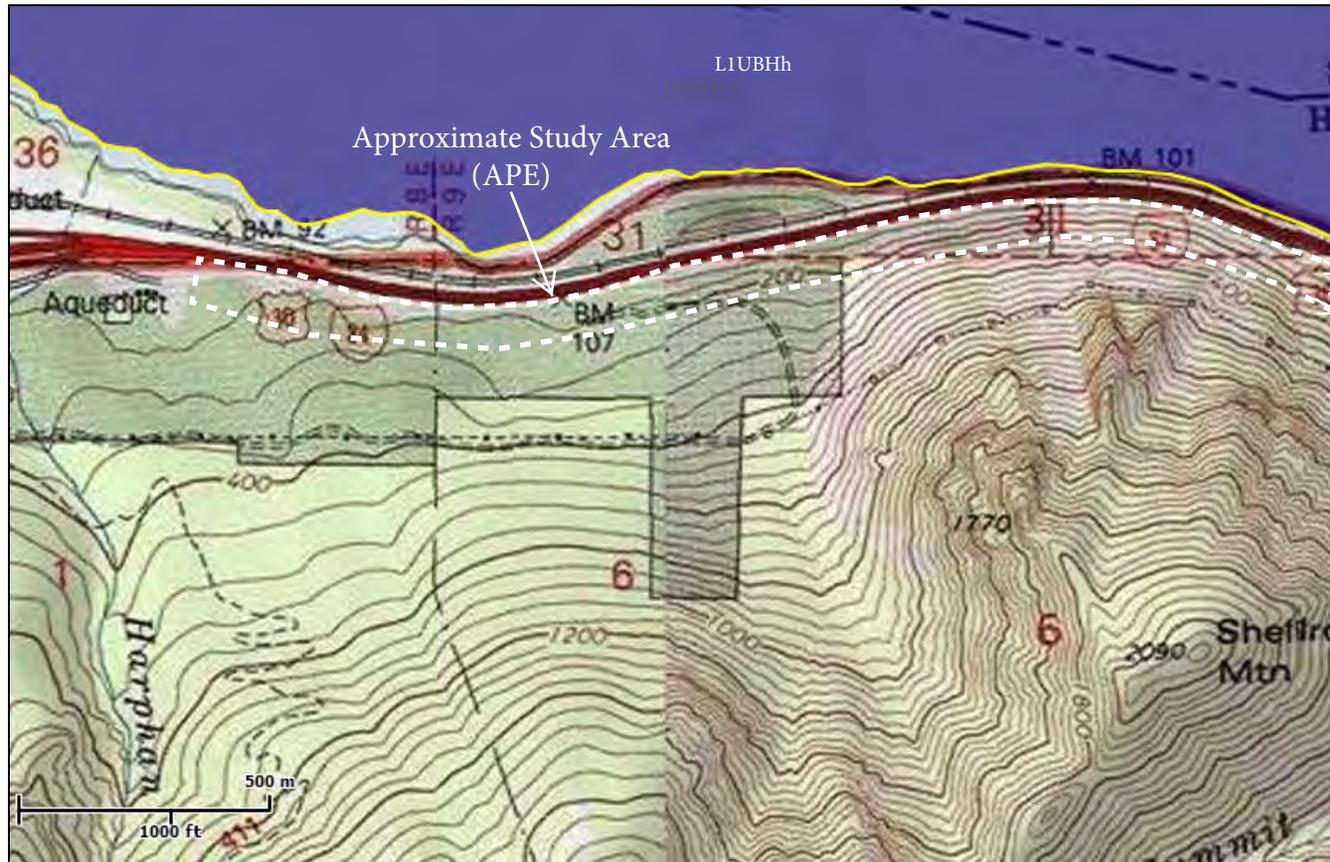
**Figure 2g Tax Lot Map**  
 Historic Columbia River Highway State Trail  
 Hood River County, Oregon



# U.S. Fish and Wildlife Service National Wetlands Inventory

**Figure 3a NWI Map  
Historic Columbia River  
Highway State Trail**

Apr 8, 2014



## Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

L1UBHh Lacustrine limnetic unconsolidated bottom permanently flooded diked/impounded

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

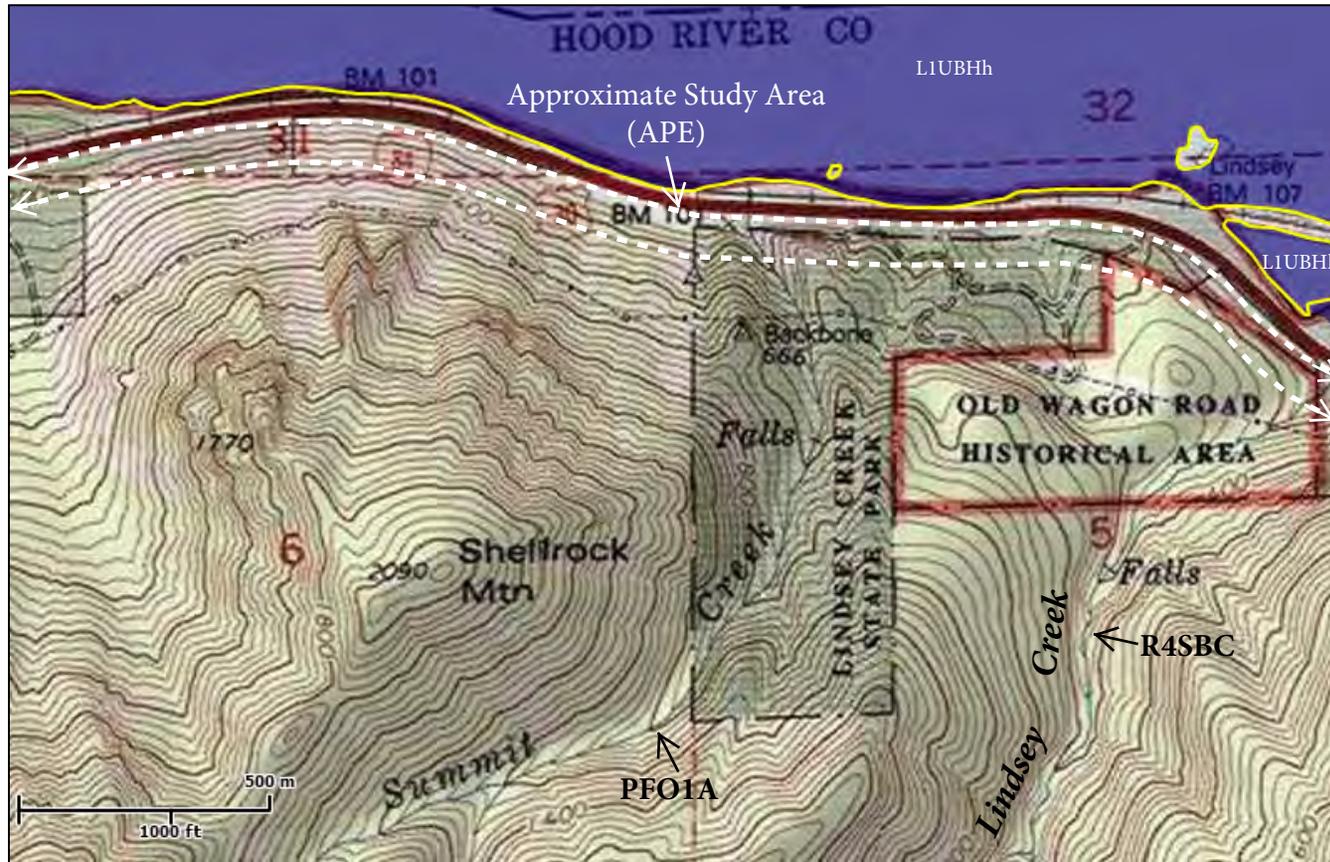
**User Remarks:**



U.S. Fish and Wildlife Service  
**National Wetlands Inventory**

**Figure 3b NWI Map**  
**Historic Columbia River**  
**Highway State Trail**

Apr 8, 2014



**Wetlands**

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

- L1UBHh Lacustrine limnetic unconsolidated bottom permanently flooded diked/imponded
- PFO1A Palustrine forested broad-leaved deciduous temporarily flooded
- R4SBC Riverine intermittent streambed seasonally flooded

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

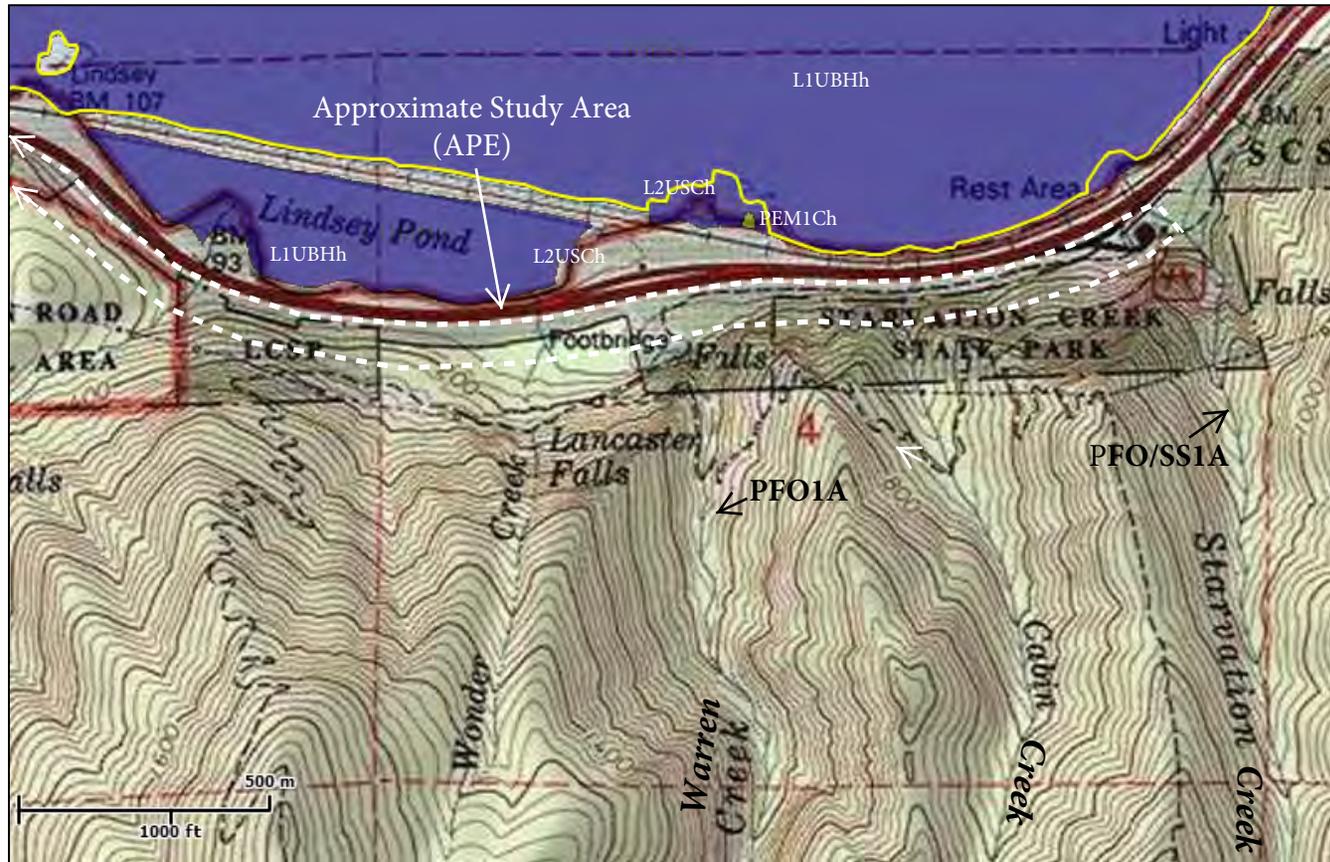
**User Remarks:**



# U.S. Fish and Wildlife Service National Wetlands Inventory

**Figure 3c NWI Map  
Historic Columbia River  
Highway State Trail**

Apr 8, 2014



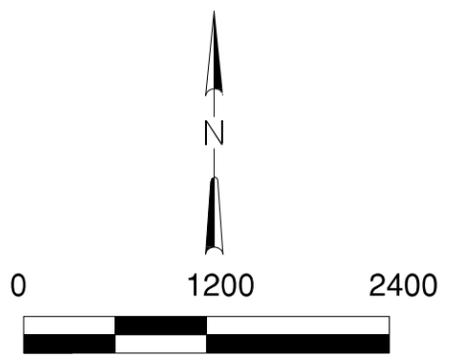
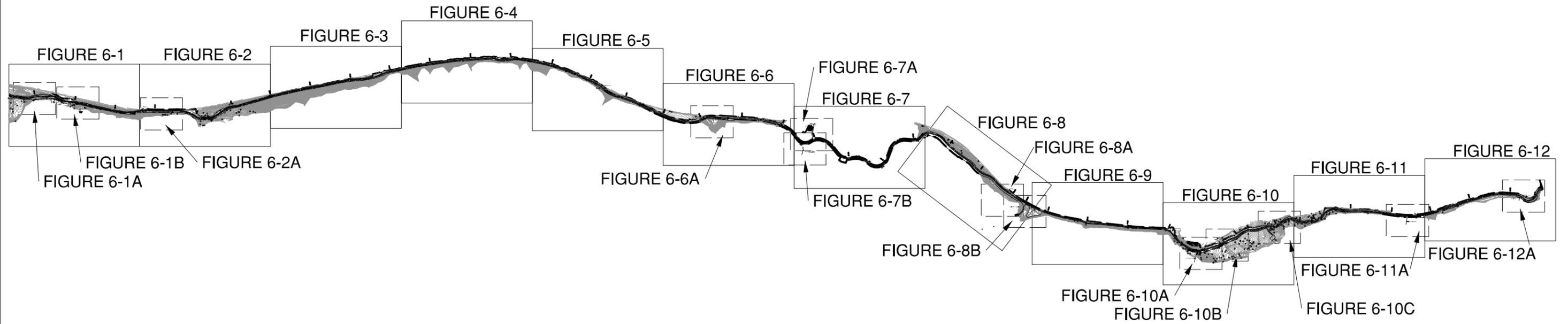
## Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

- L1UBHh Lacustrine limnetic unconsolidated bottom permanently flooded diked/impounded
- L2USCh Lacustrine littoral unconsolidated shore seasonally flooded diked/impounded
- PEM1Ch Palustrine emergent persistent seasonally flooded diked/impounded
- PFO1A Palustrine forested broad-leaved deciduous temporarily flooded
- PFO/SS1A Palustrine forested/scrub-shrub broad-leaved deciduous temporarily flooded

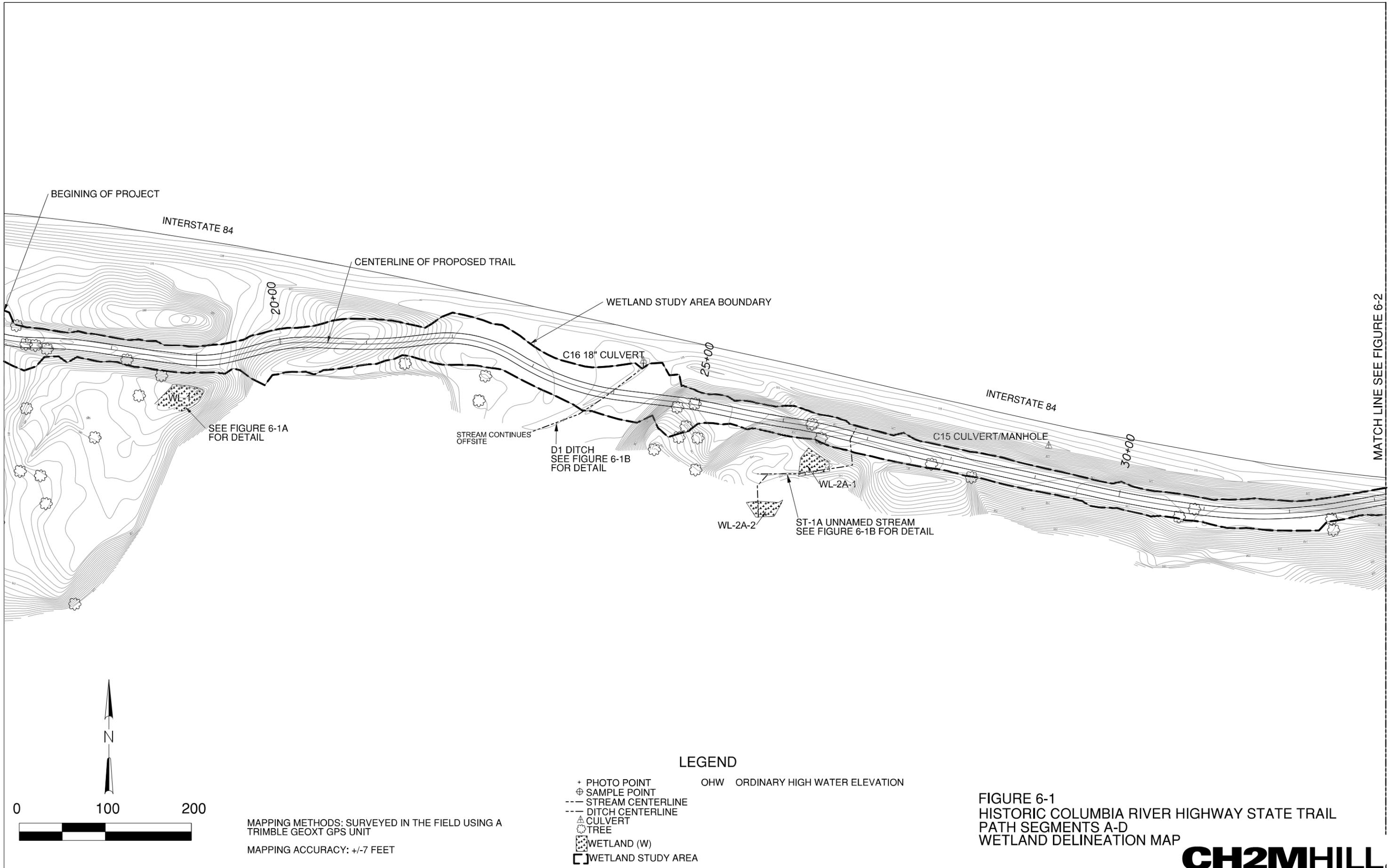
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:



WETLAND DELINEATION FIGURES KEY  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP





BEGINING OF PROJECT

INTERSTATE 84

CENTERLINE OF PROPOSED TRAIL

WETLAND STUDY AREA BOUNDARY

20+00

C16 18" CULVERT

25+00

INTERSTATE 84

C15 CULVERT/MANHOLE

30+00

SEE FIGURE 6-1A FOR DETAIL

STREAM CONTINUES OFFSITE

D1 DITCH SEE FIGURE 6-1B FOR DETAIL

WL-2A-2

WL-2A-1

ST-1A UNNAMED STREAM SEE FIGURE 6-1B FOR DETAIL

MATCH LINE SEE FIGURE 6-2



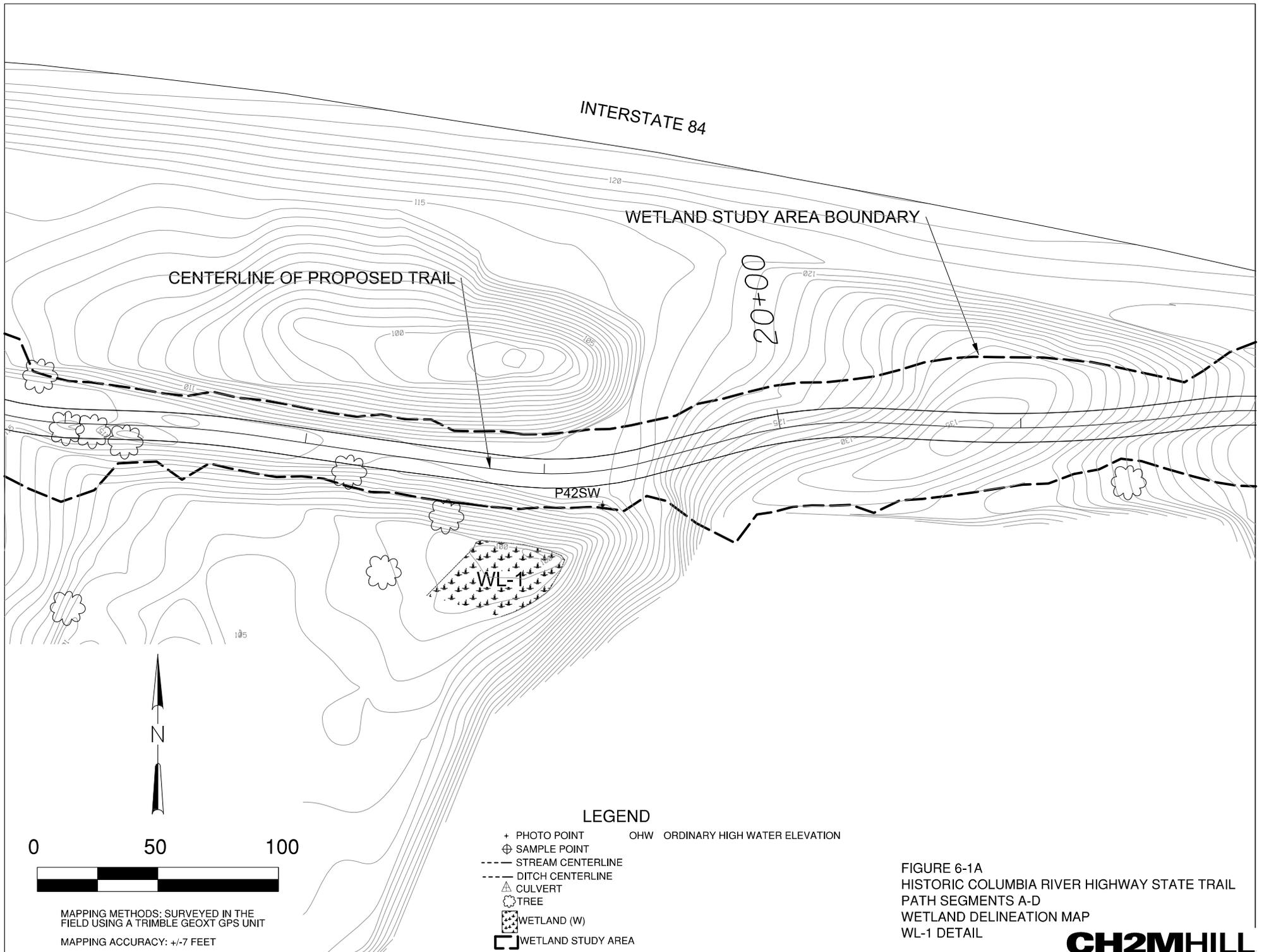
MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-1  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP

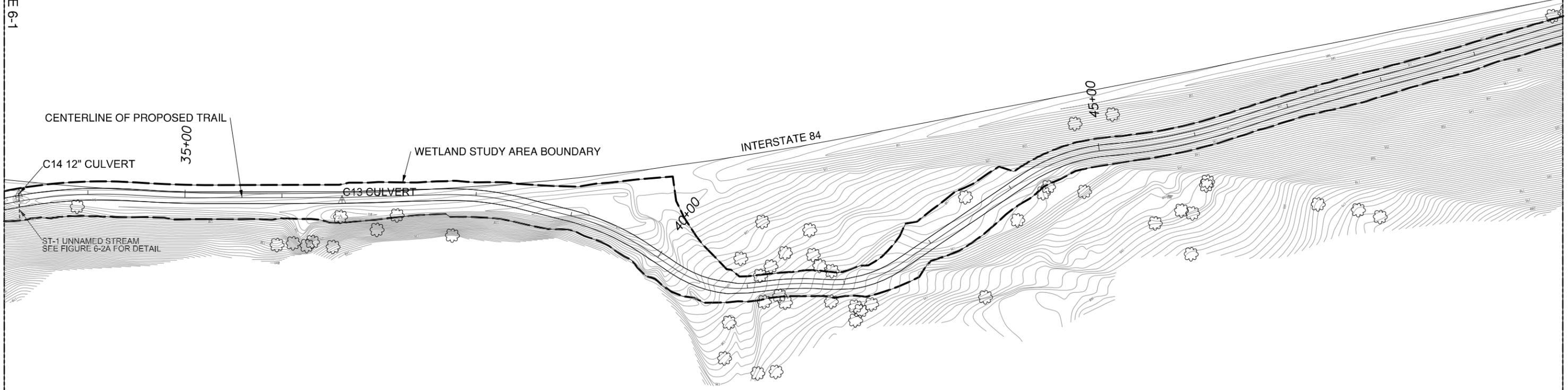






MATCH LINE SEE FIGURE 6-1

MATCH LINE SEE FIGURE 6-3



CENTERLINE OF PROPOSED TRAIL

C14 12" CULVERT

35+00

WETLAND STUDY AREA BOUNDARY

C13 CULVERT

ST-1 UNNAMED STREAM  
SEE FIGURE 6-2A FOR DETAIL

INTERSTATE 84

40+00

45+00

50+00



0 100 200



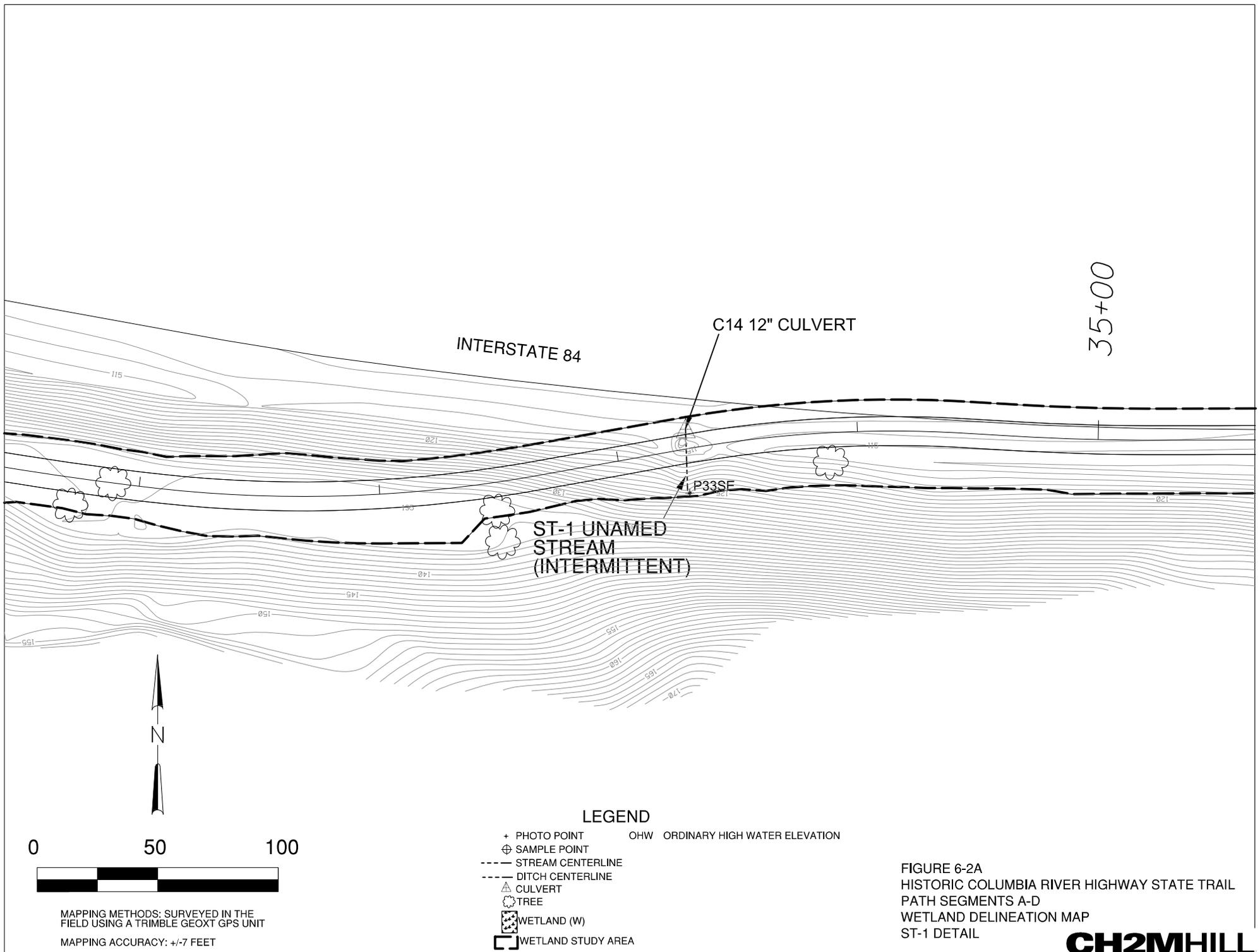
MAPPING METHODS: SURVEYED IN THE FIELD USING A  
TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/-7 FEET

### LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-2  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP





INTERSTATE 84

C14 12" CULVERT

35+00

ST-1 UNAMED  
STREAM  
(INTERMITTENT)

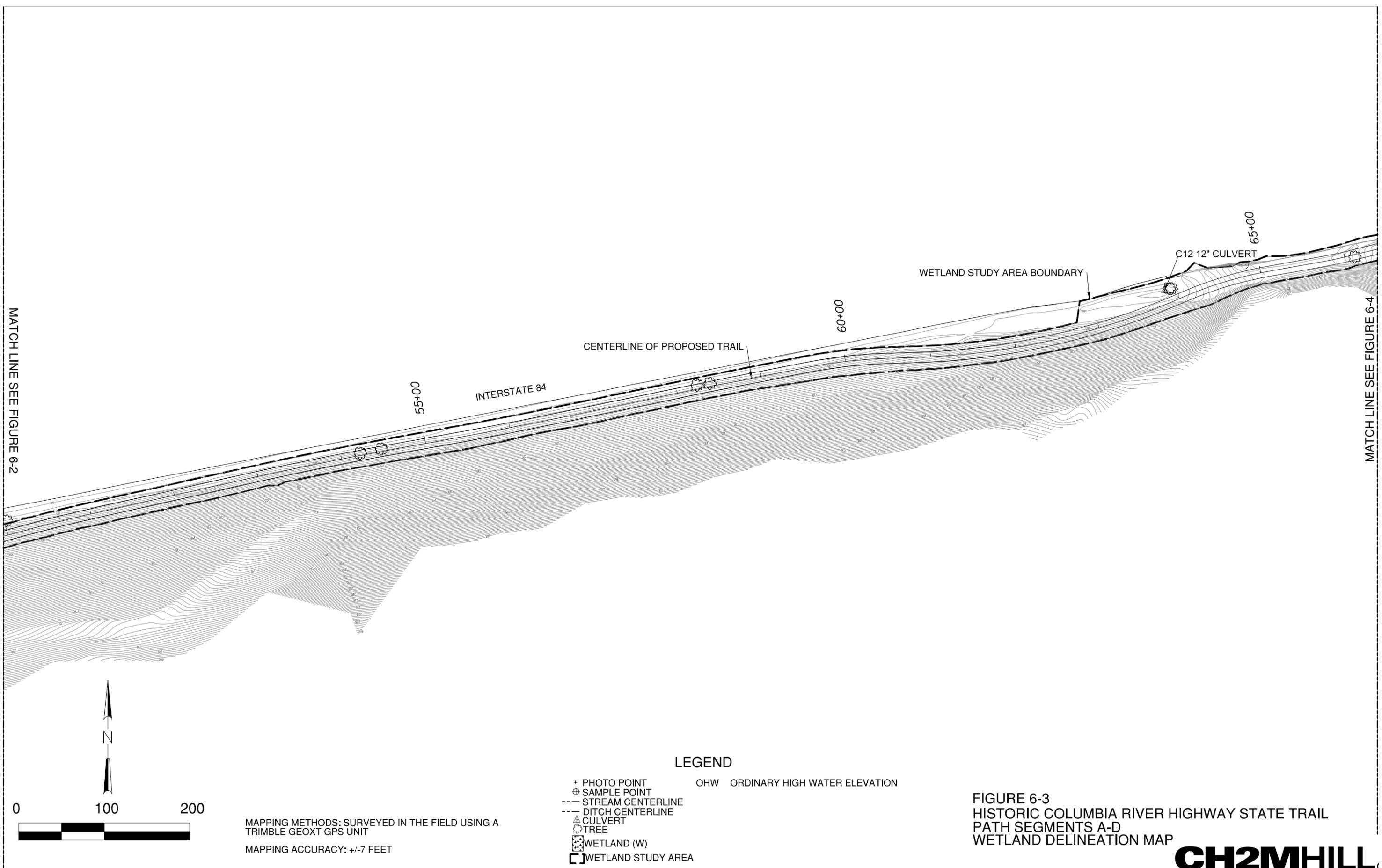
P33SE

LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- DITCH CENTERLINE
- △ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

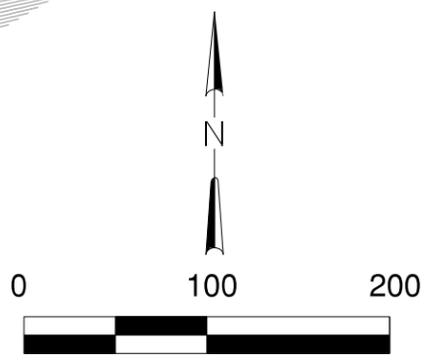
FIGURE 6-2A  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP  
ST-1 DETAIL

MAPPING METHODS: SURVEYED IN THE  
FIELD USING A TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/-7 FEET



MATCH LINE SEE FIGURE 6-2

MATCH LINE SEE FIGURE 6-4



MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

**LEGEND**

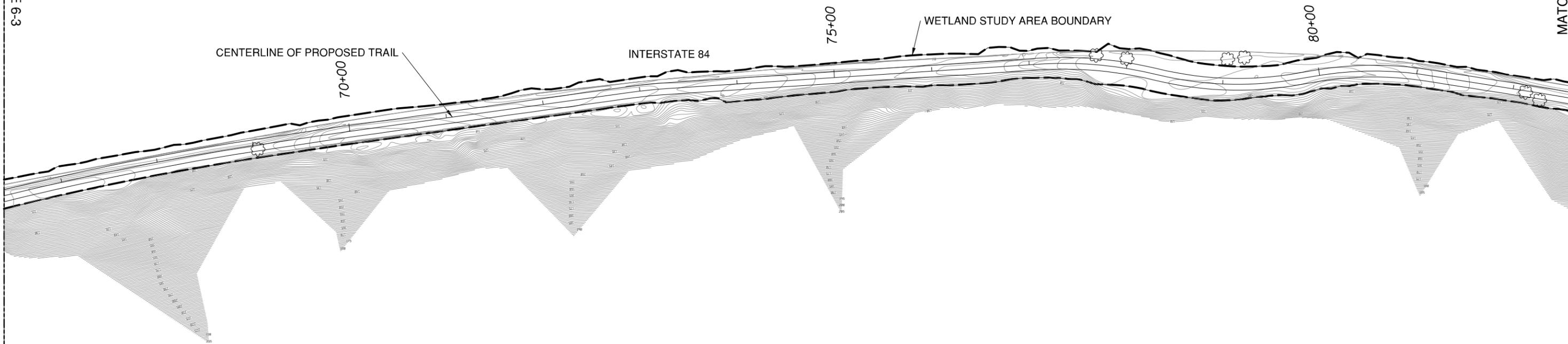
- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

**FIGURE 6-3**  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP



MATCH LINE SEE FIGURE 6-3

MATCH LINE SEE FIGURE 6-5



CENTERLINE OF PROPOSED TRAIL

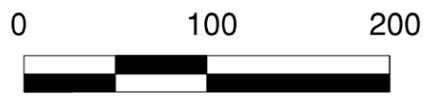
INTERSTATE 84

WETLAND STUDY AREA BOUNDARY

70+00

75+00

80+00



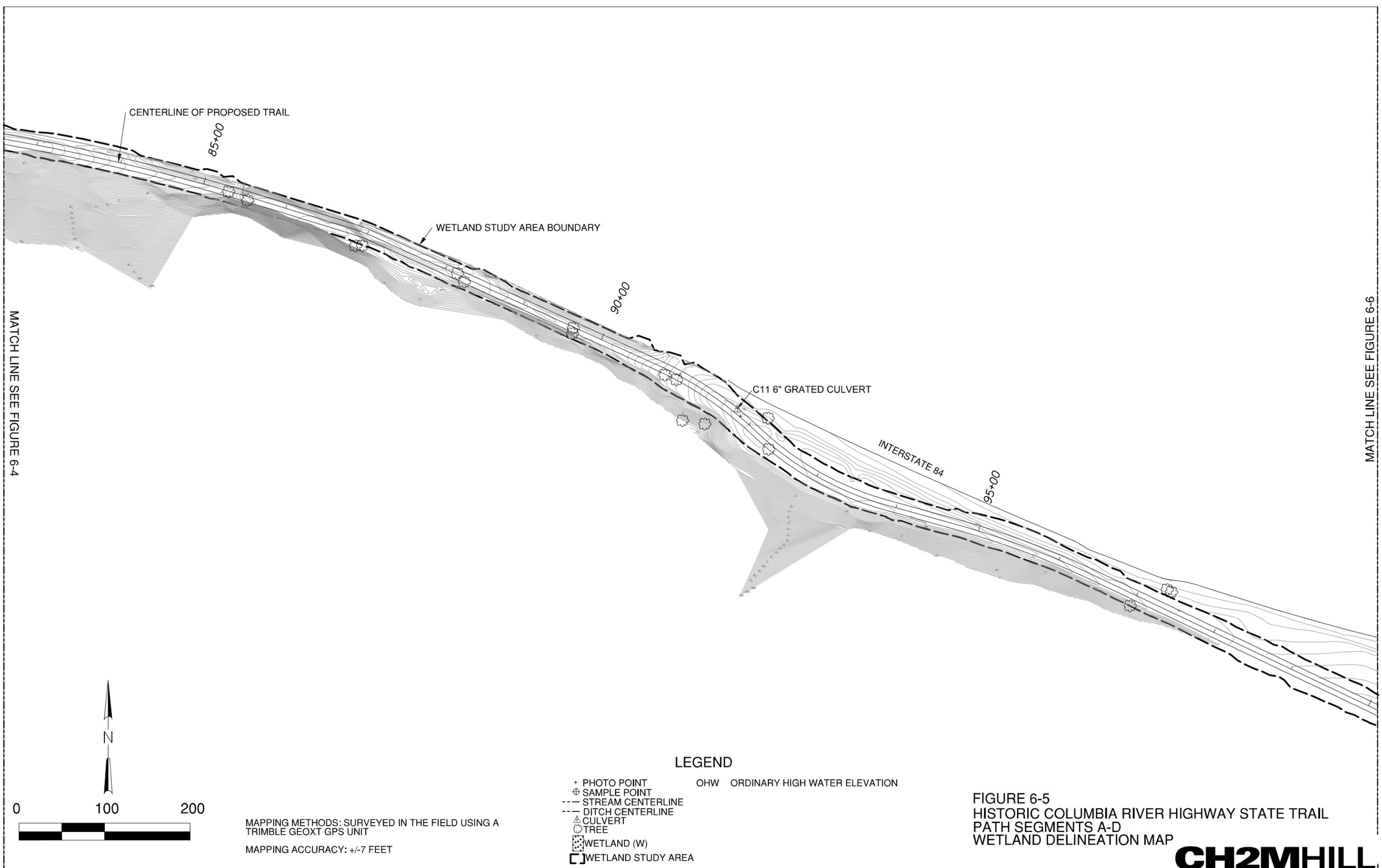
MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊙ TREE
- ▨ WETLAND (W)
- WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-4  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP





MATCH LINE SEE FIGURE 6-4

MATCH LINE SEE FIGURE 6-6

CENTERLINE OF PROPOSED TRAIL

85+00

WETLAND STUDY AREA BOUNDARY

90+00

C11 6" GRATED CULVERT

INTERSTATE 84

95+00

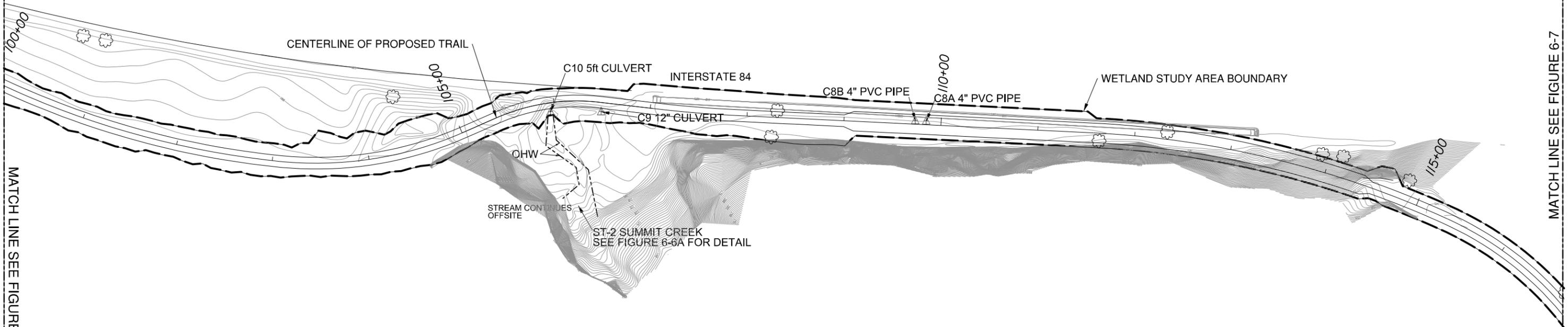
LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

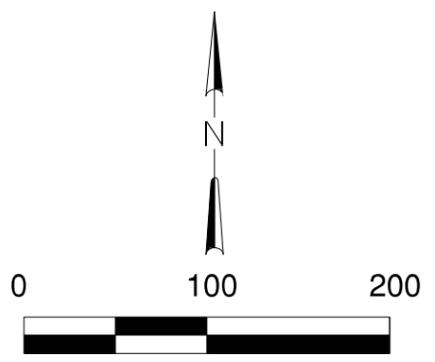
FIGURE 6-5  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP





MATCH LINE SEE FIGURE 6-5

MATCH LINE SEE FIGURE 6-7

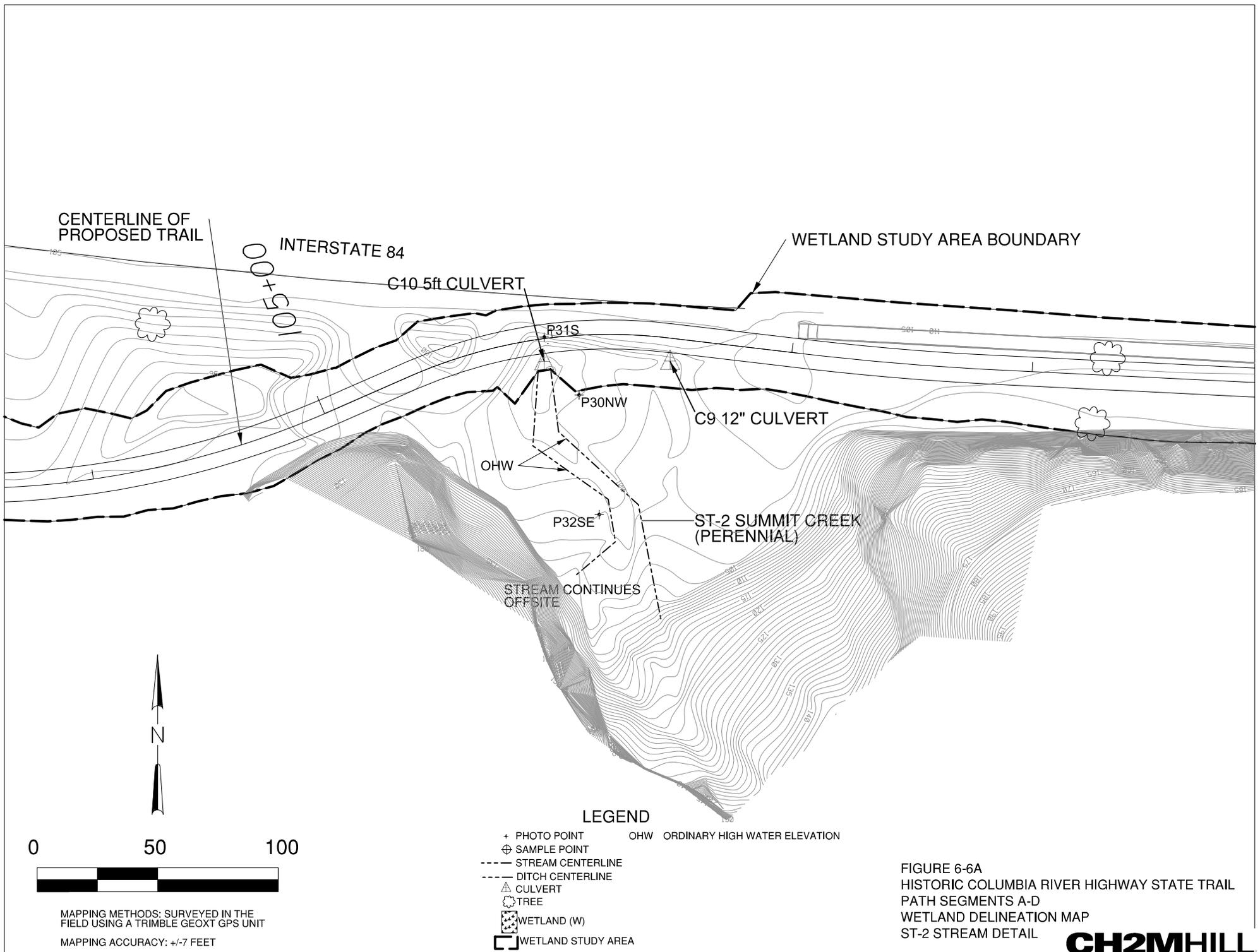


MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

**LEGEND**

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

**FIGURE 6-6**  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP



CENTERLINE OF PROPOSED TRAIL

105+00  
105+50  
INTERSTATE 84

C10 5ft CULVERT

WETLAND STUDY AREA BOUNDARY

P31S

P30NW

C9 12" CULVERT

OHW

P32SE

ST-2 SUMMIT CREEK (PERENNIAL)

STREAM CONTINUES OFFSITE



0 50 100



MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/-7 FEET

LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- DITCH CENTERLINE
- △ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-6A  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP  
ST-2 STREAM DETAIL



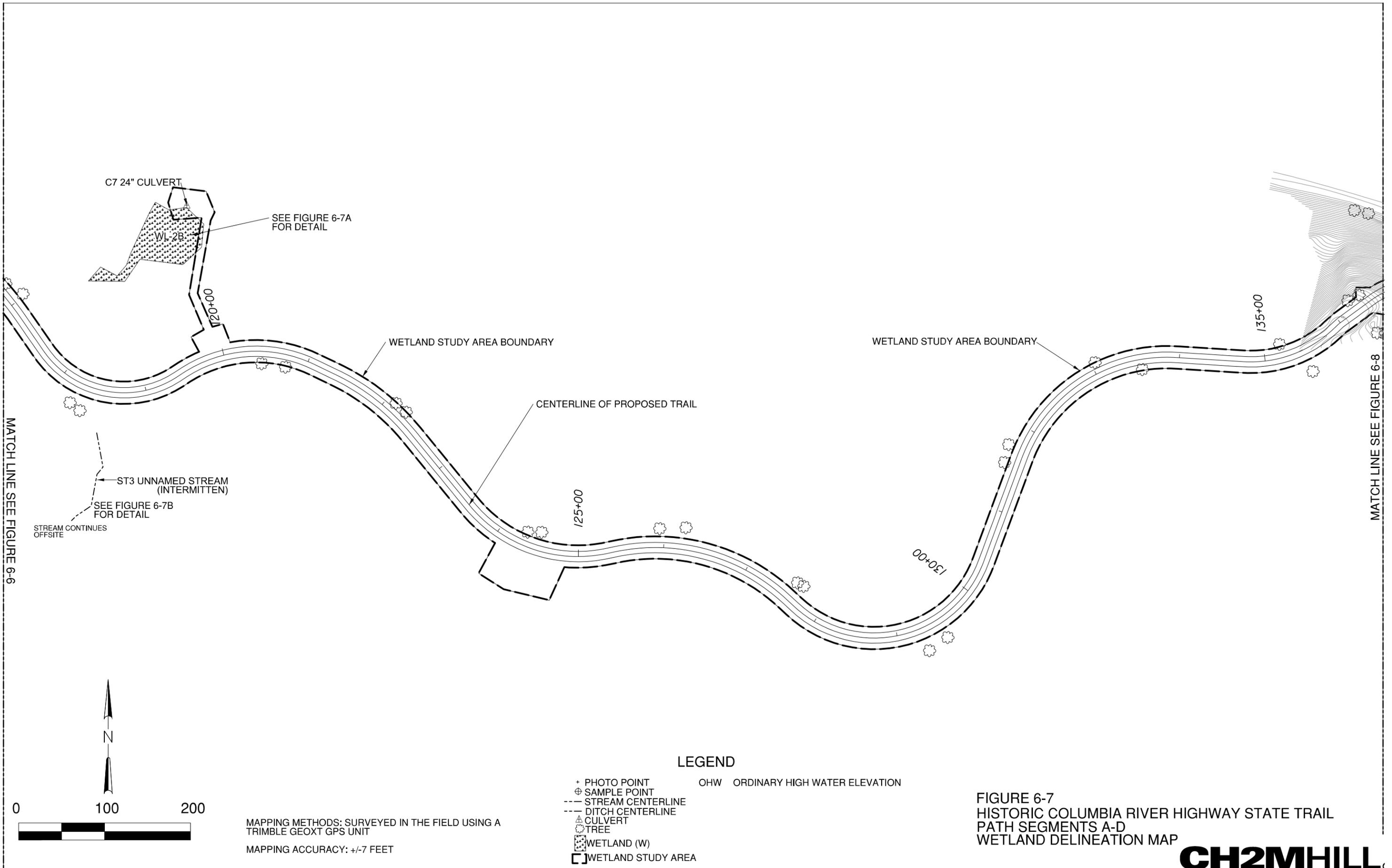


FIGURE 6-7  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP

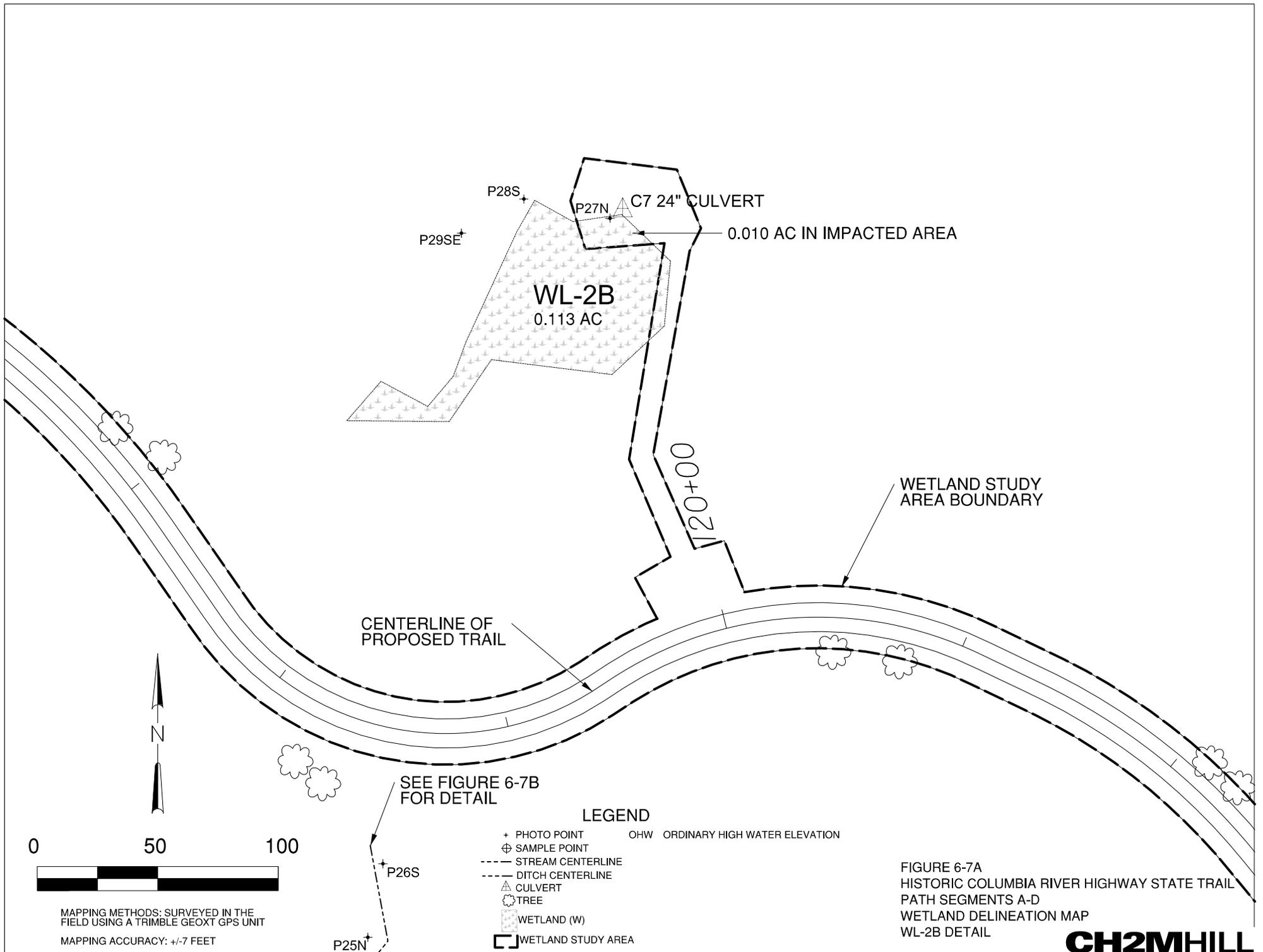
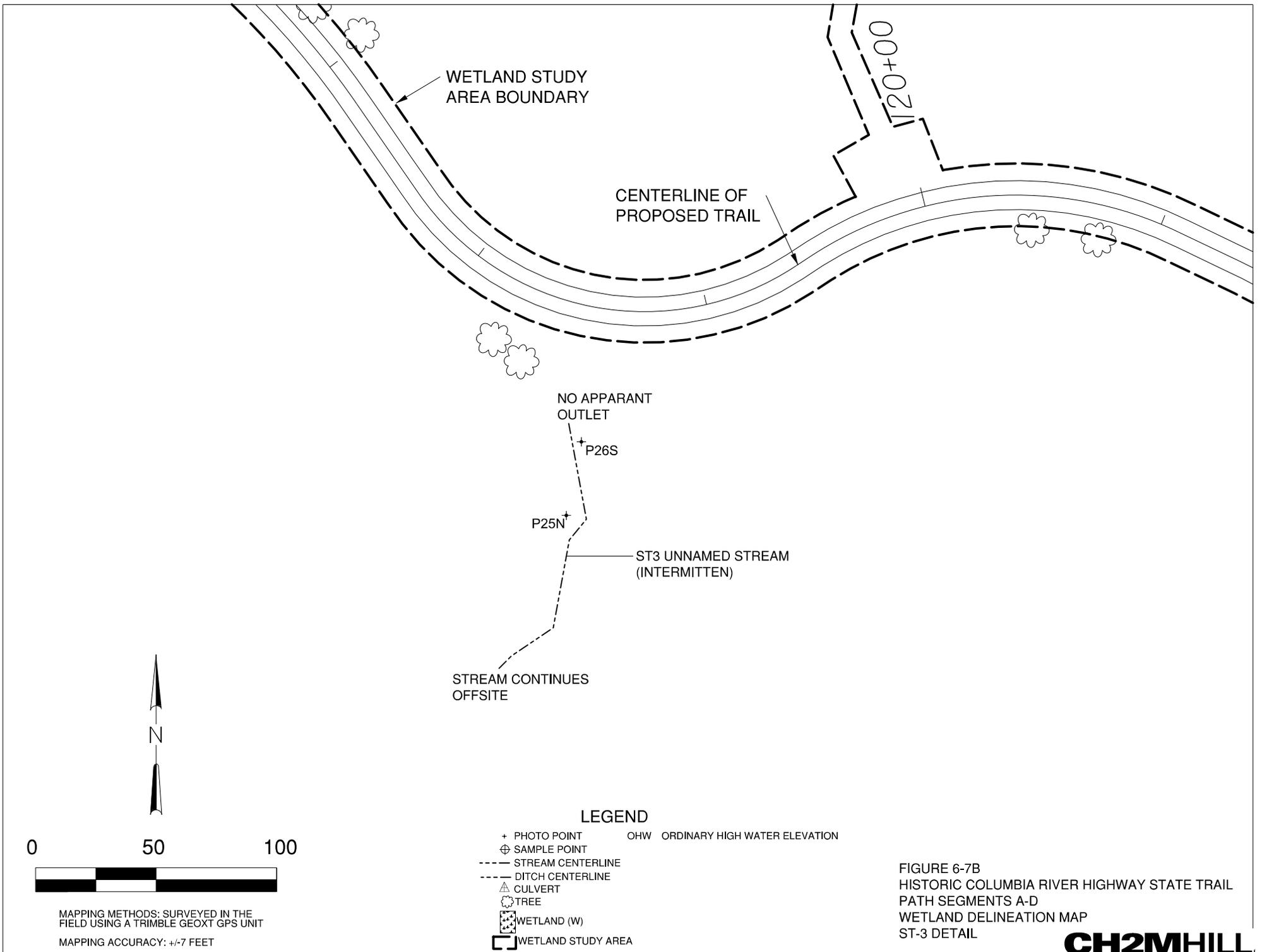


FIGURE 6-7A  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP  
WL-2B DETAIL



WETLAND STUDY  
AREA BOUNDARY

CENTERLINE OF  
PROPOSED TRAIL

120+00

NO APPARANT  
OUTLET

P26S

P25N

ST3 UNNAMED STREAM  
(INTERMITTENT)

STREAM CONTINUES  
OFFSITE

LEGEND

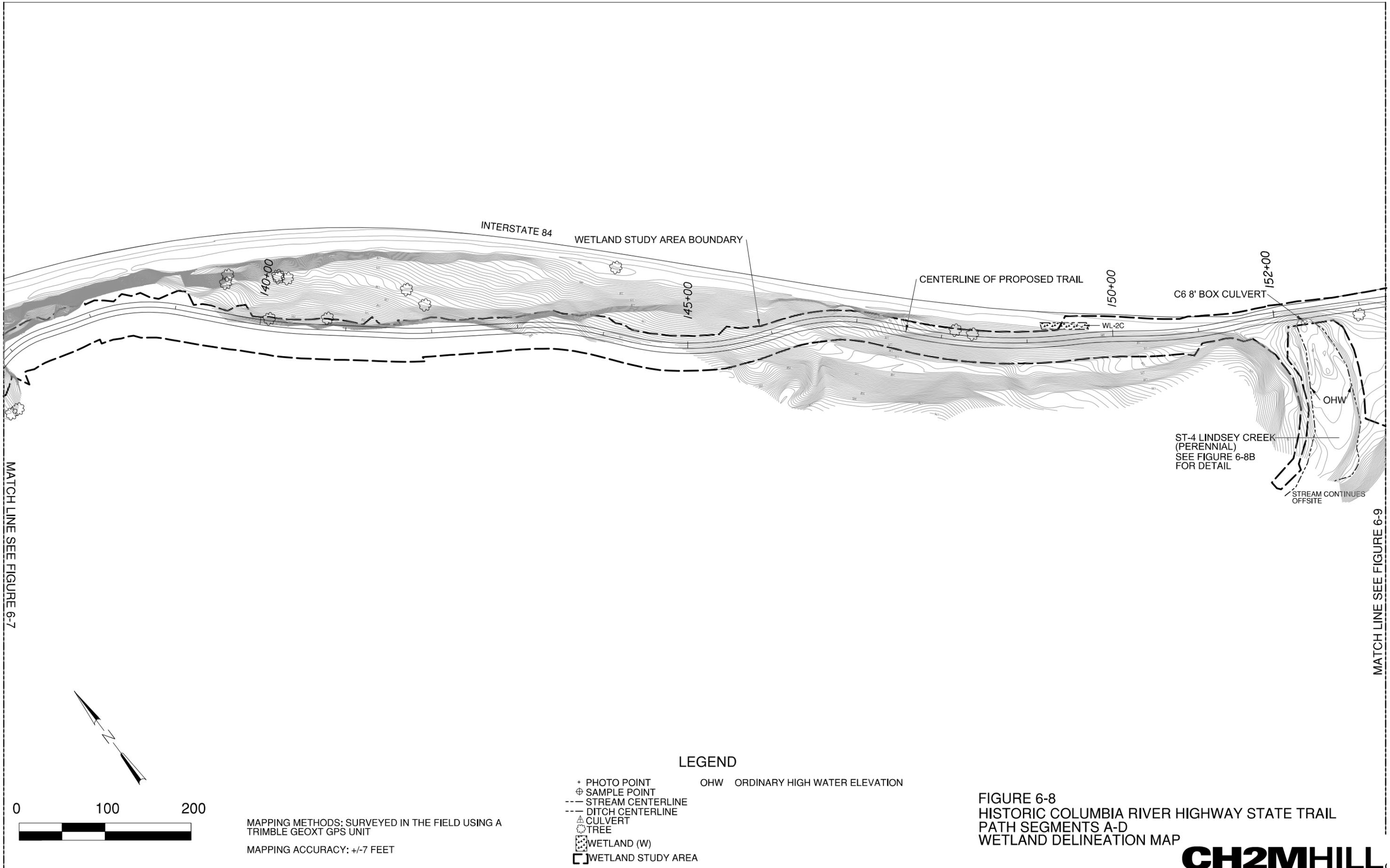
- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- DITCH CENTERLINE
- △ CULVERT
- ☼ TREE
- ☼ WETLAND (W)
- ☼ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

0 50 100



MAPPING METHODS: SURVEYED IN THE  
FIELD USING A TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/-7 FEET

FIGURE 6-7B  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP  
ST-3 DETAIL



MATCH LINE SEE FIGURE 6-7

MATCH LINE SEE FIGURE 6-9

INTERSTATE 84

WETLAND STUDY AREA BOUNDARY

CENTERLINE OF PROPOSED TRAIL

C6 8' BOX CULVERT

140+00

145+00

150+00

152+00

WL-2C

OHW

ST-4 LINDSEY CREEK  
(PERENNIAL)  
SEE FIGURE 6-8B  
FOR DETAIL

STREAM CONTINUES  
OFFSITE

**LEGEND**

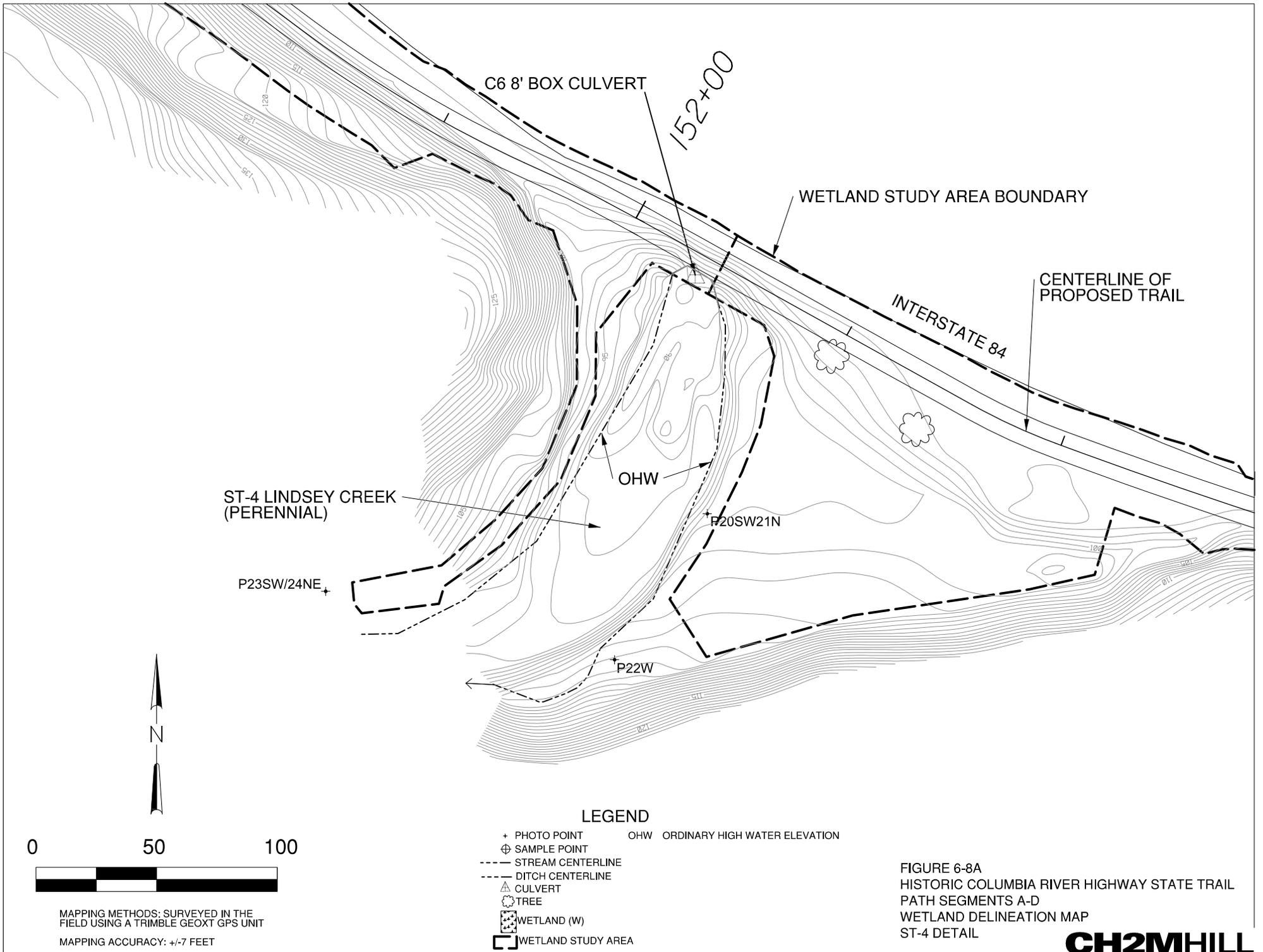
- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION



MAPPING METHODS: SURVEYED IN THE FIELD USING A  
TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/-7 FEET

**FIGURE 6-8**  
**HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL**  
**PATH SEGMENTS A-D**  
**WETLAND DELINEATION MAP**





C6 8' BOX CULVERT

152+00

WETLAND STUDY AREA BOUNDARY

INTERSTATE 84

CENTERLINE OF PROPOSED TRAIL

ST-4 LINDSEY CREEK (PERENNIAL)

OHW

P20SW21N

P23SW/24NE

P22W

LEGEND

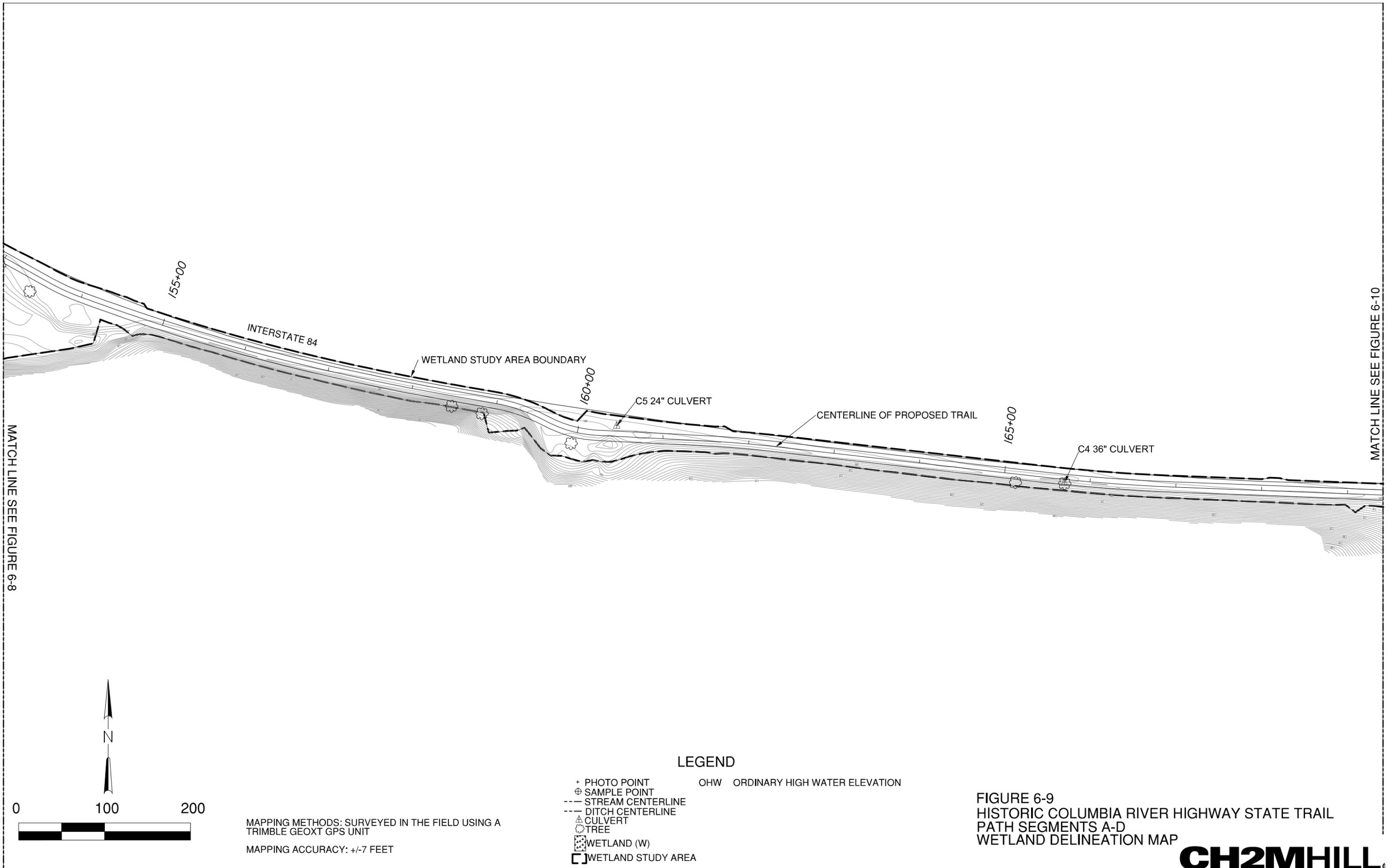
- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- - - DITCH CENTERLINE
- △ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

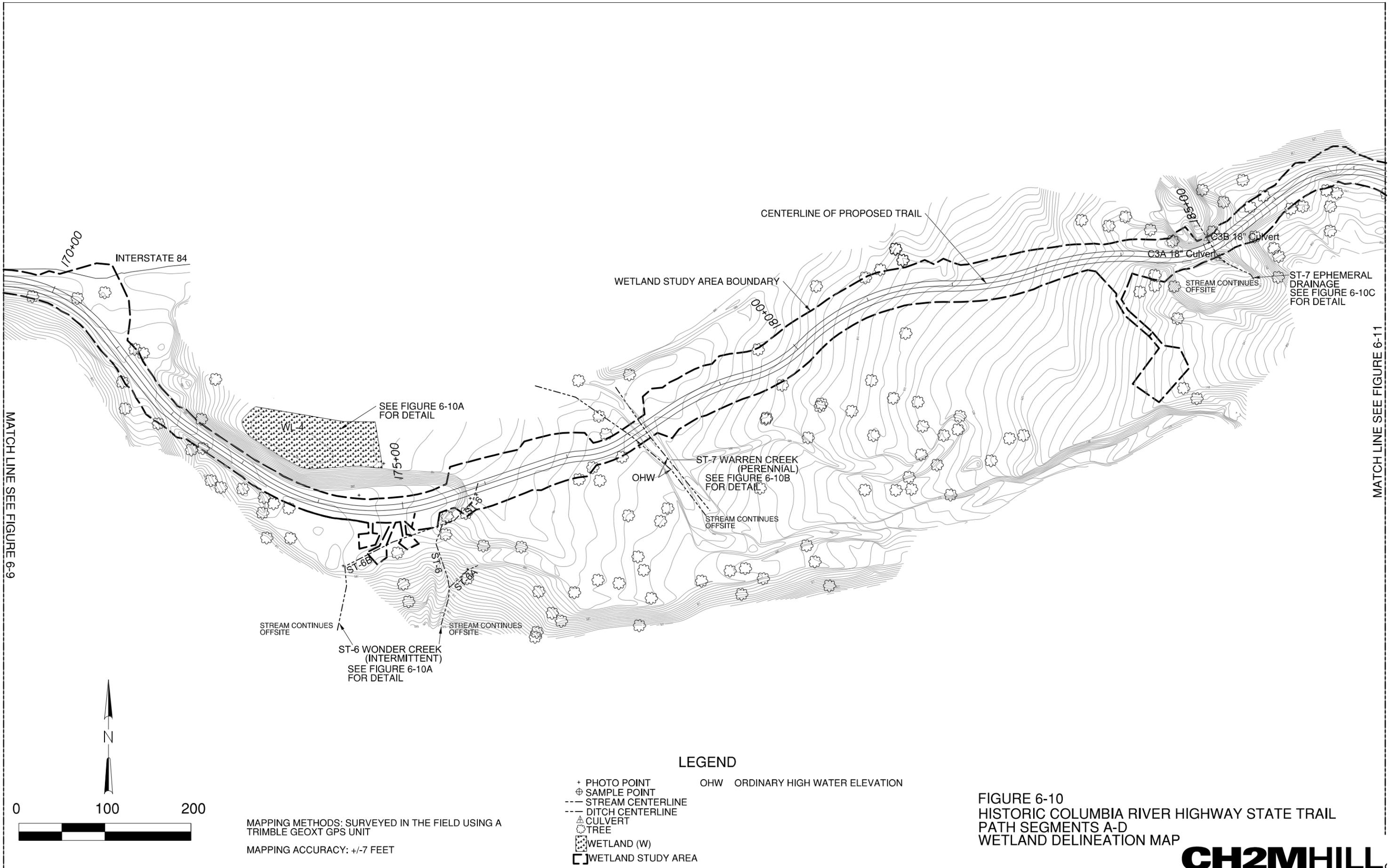
0 50 100



MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/- 7 FEET

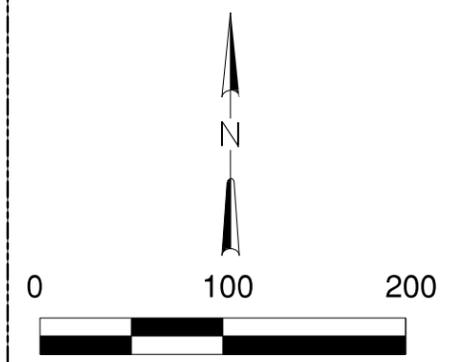
FIGURE 6-8A  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP  
ST-4 DETAIL





MATCH LINE SEE FIGURE 6-9

MATCH LINE SEE FIGURE 6-11



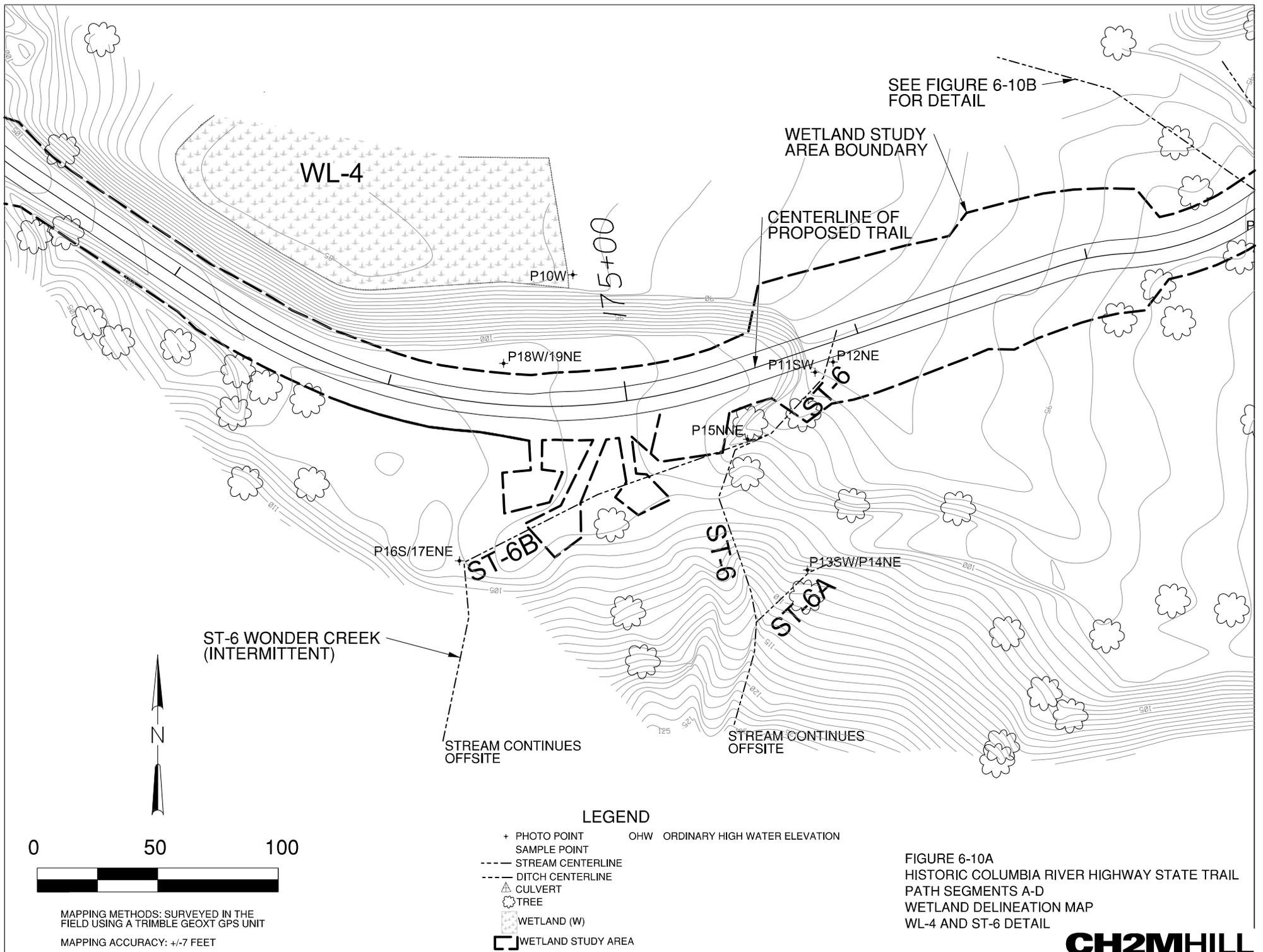
MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

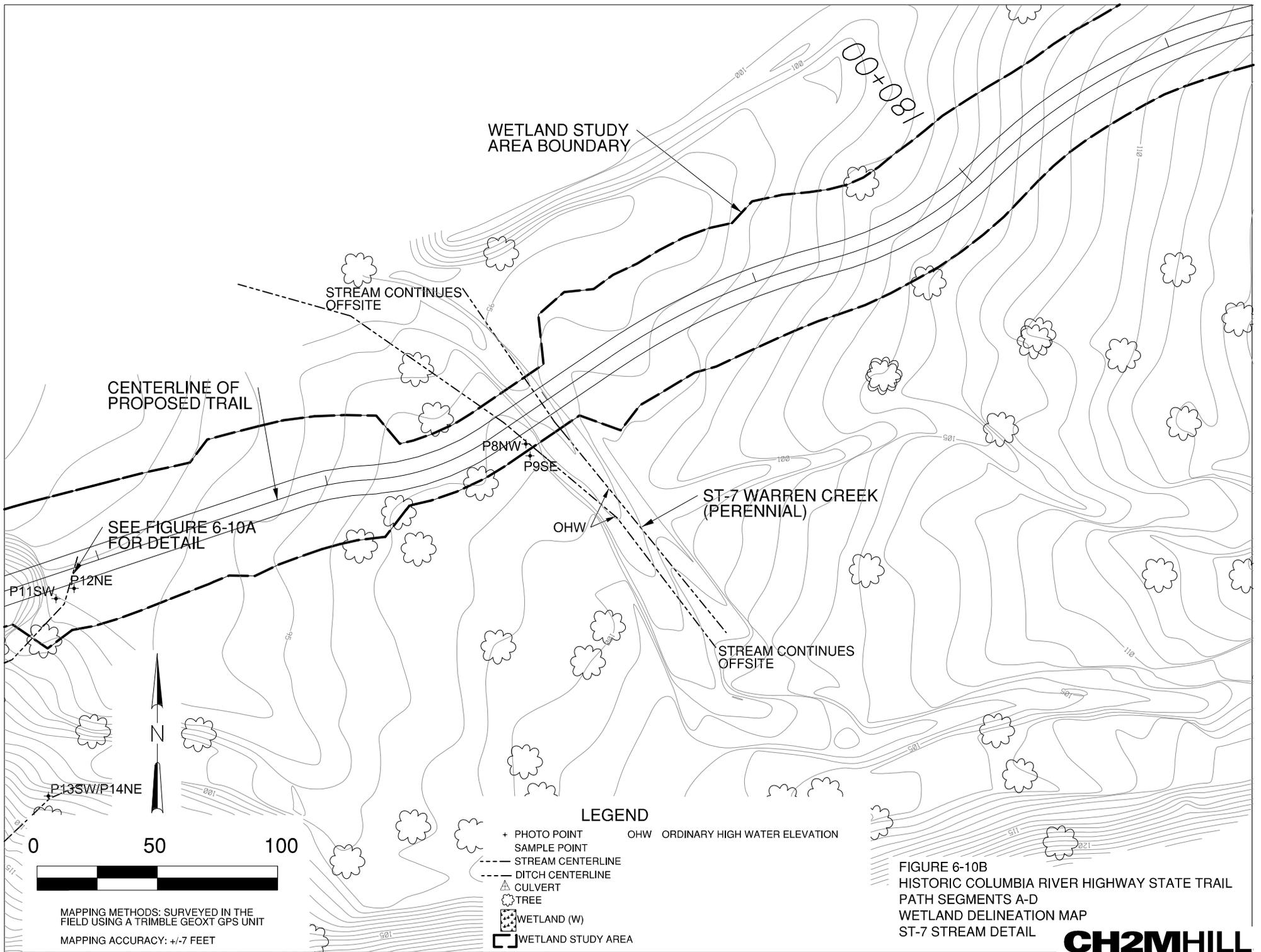
**LEGEND**

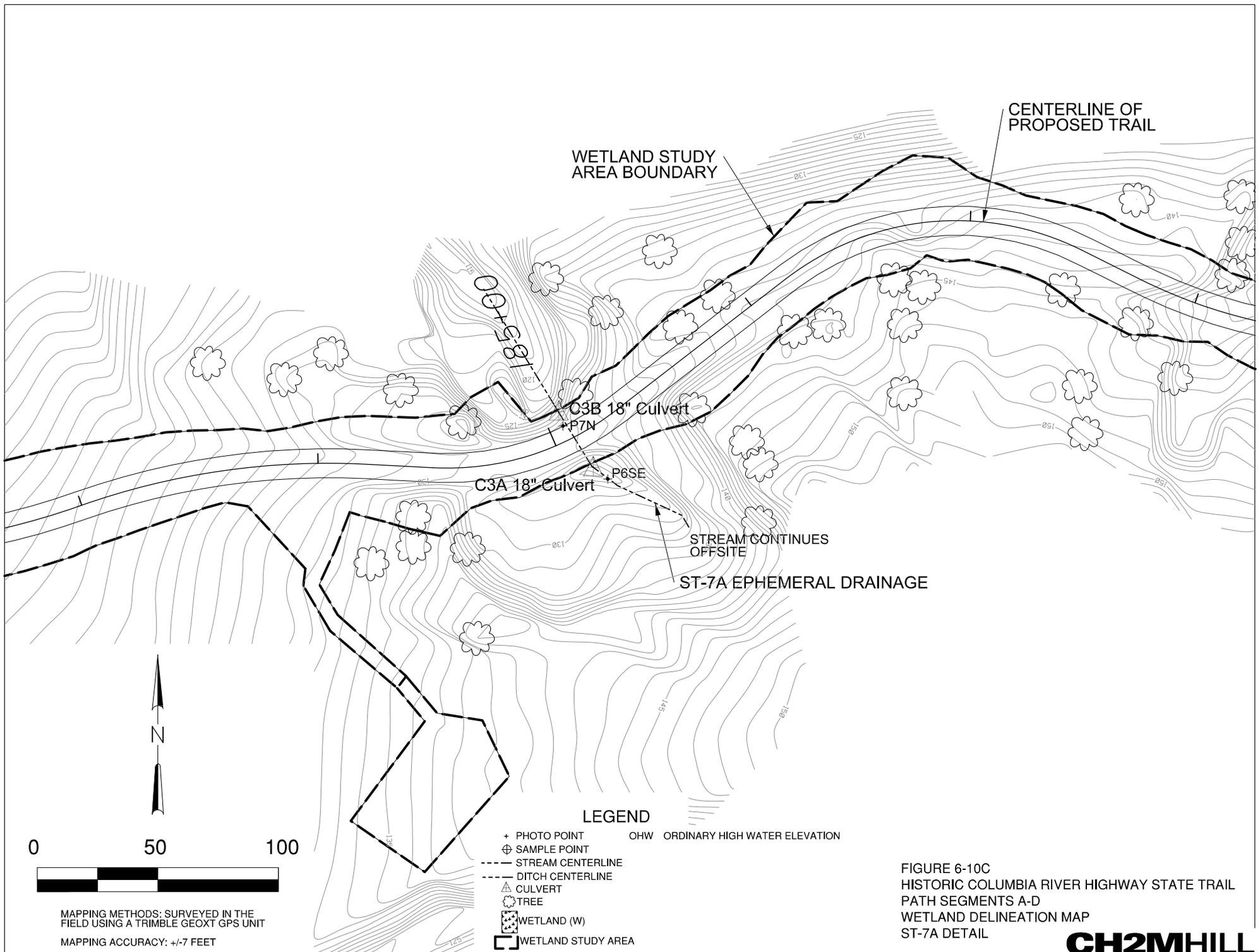
- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

**FIGURE 6-10**  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP









WETLAND STUDY AREA BOUNDARY

CENTERLINE OF PROPOSED TRAIL

C3B 18" Culvert  
+P7N

C3A 18" Culvert  
+P6SE

STREAM CONTINUES OFFSITE

ST-7A EPHEMERAL DRAINAGE

LEGEND

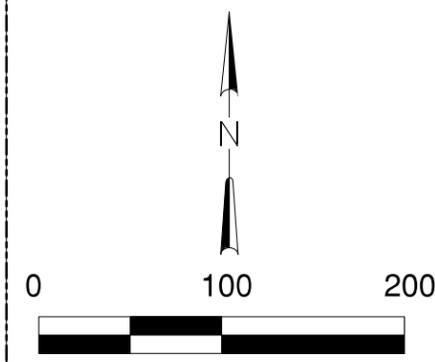
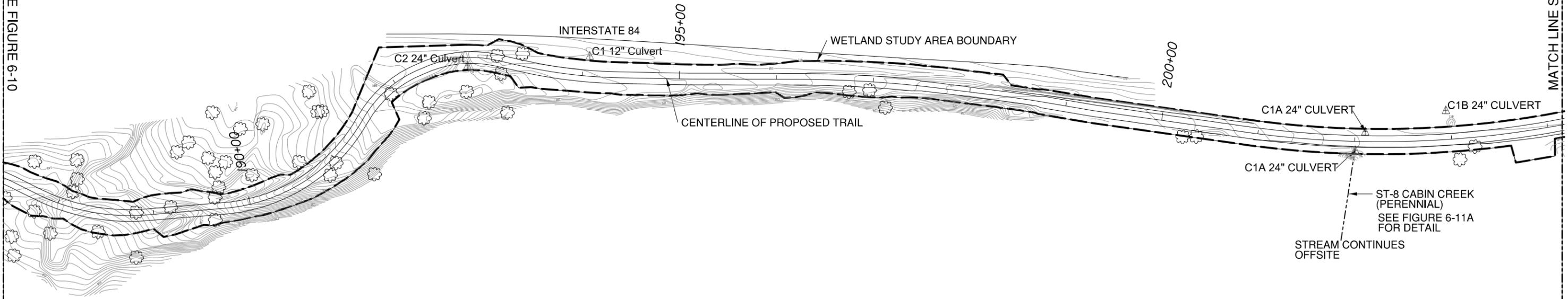
- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-10C  
HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
PATH SEGMENTS A-D  
WETLAND DELINEATION MAP  
ST-7A DETAIL

MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
MAPPING ACCURACY: +/-7 FEET

MATCH LINE SEE FIGURE 6-10

MATCH LINE SEE FIGURE 6-12



MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

**LEGEND**

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-11  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP



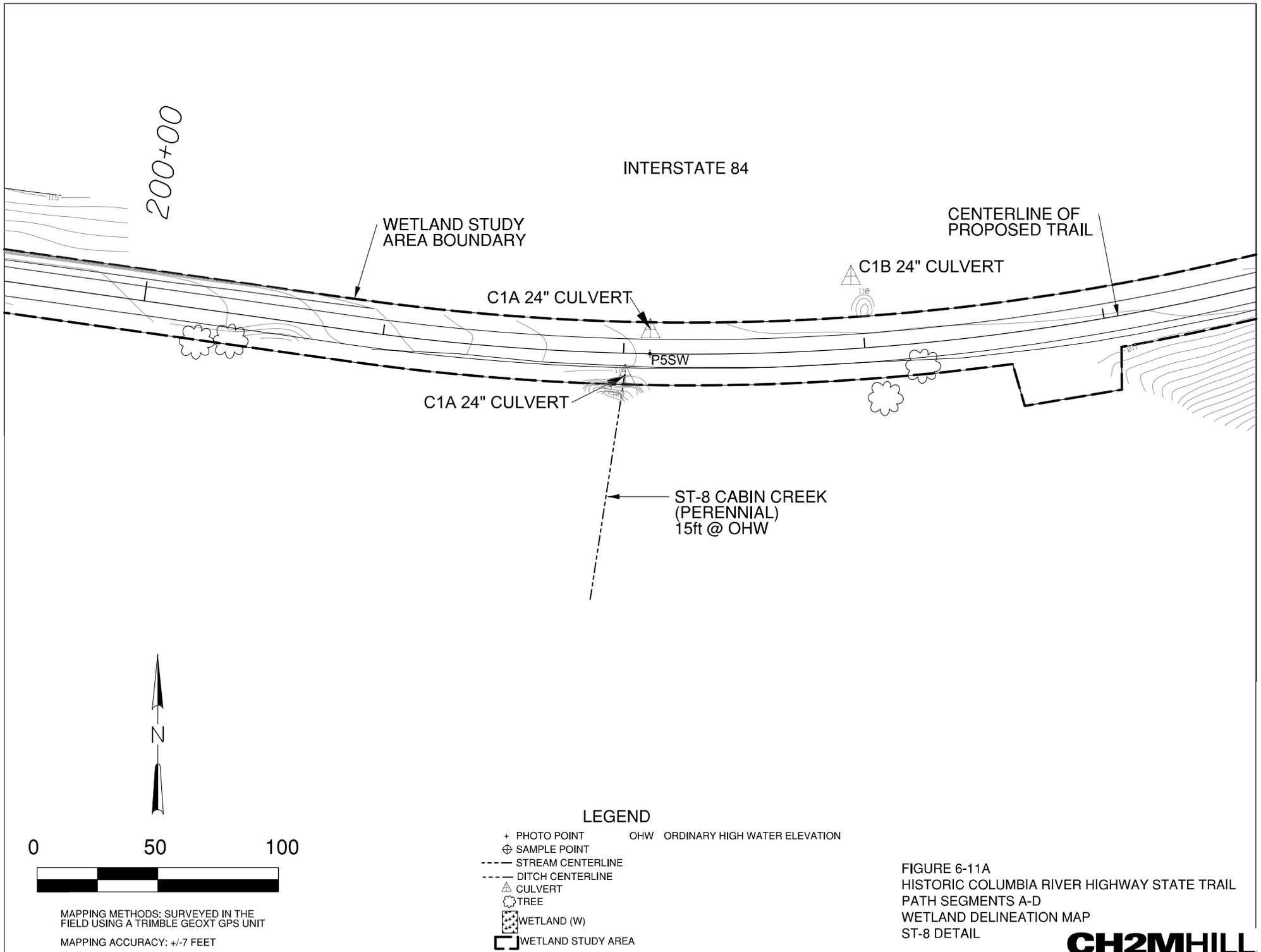
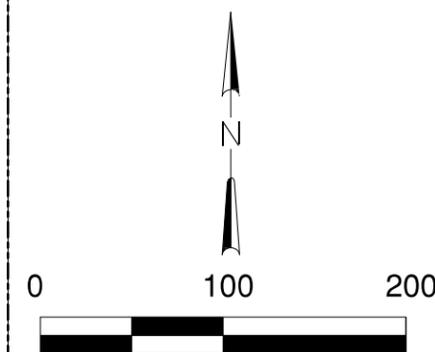
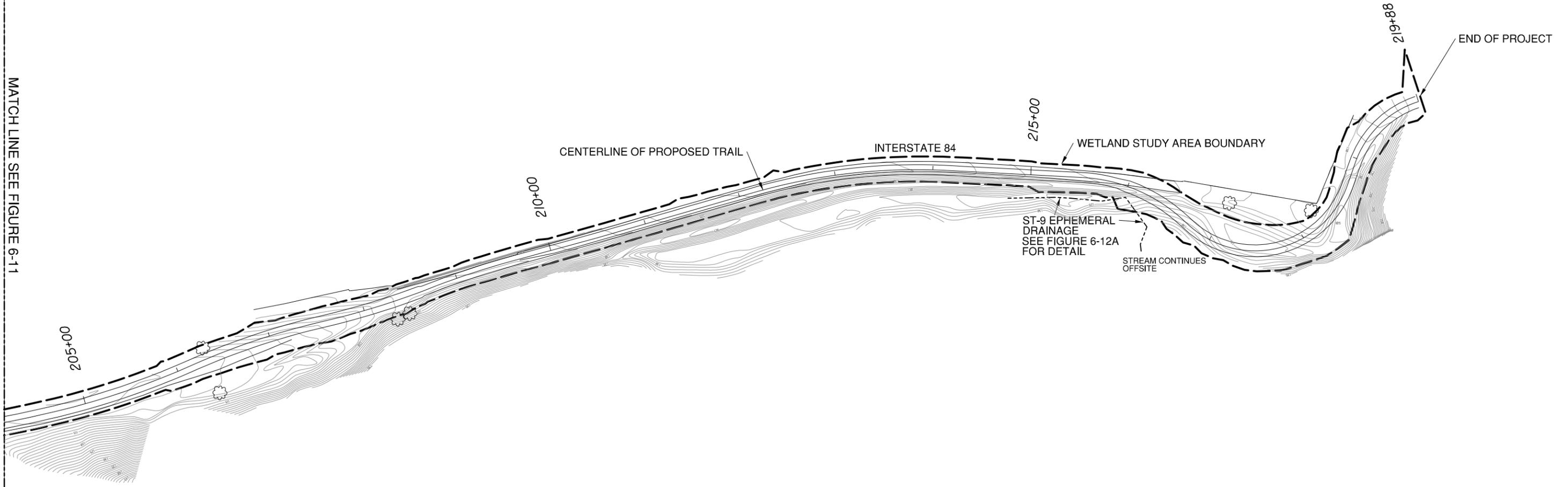


FIGURE 6-11A  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP  
 ST-8 DETAIL

MATCH LINE SEE FIGURE 6-11

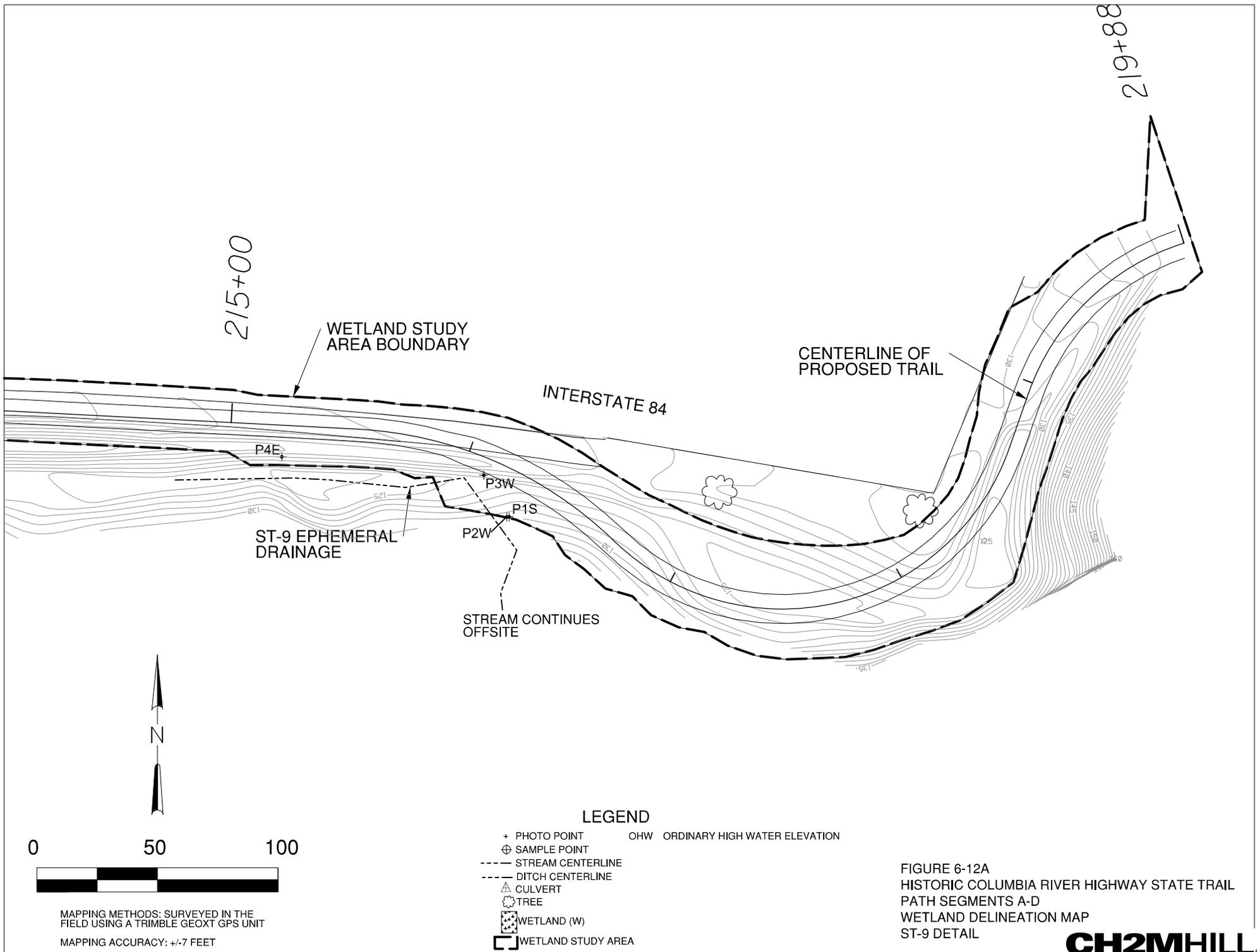


MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

**LEGEND**

- + PHOTO POINT
- ⊕ SAMPLE POINT
- - - STREAM CENTERLINE
- - - DITCH CENTERLINE
- ▲ CULVERT
- ⊗ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-12  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP



215+00

219+88

WETLAND STUDY AREA BOUNDARY

INTERSTATE 84

CENTERLINE OF PROPOSED TRAIL

ST-9 EPHEMERAL DRAINAGE

STREAM CONTINUES OFFSITE

P4E

P3W

P1S

P2W



0 50 100



MAPPING METHODS: SURVEYED IN THE FIELD USING A TRIMBLE GEOXT GPS UNIT  
 MAPPING ACCURACY: +/-7 FEET

LEGEND

- + PHOTO POINT
- ⊕ SAMPLE POINT
- STREAM CENTERLINE
- DITCH CENTERLINE
- △ CULVERT
- ☼ TREE
- ▨ WETLAND (W)
- ▭ WETLAND STUDY AREA
- OHW ORDINARY HIGH WATER ELEVATION

FIGURE 6-12A  
 HISTORIC COLUMBIA RIVER HIGHWAY STATE TRAIL  
 PATH SEGMENTS A-D  
 WETLAND DELINEATION MAP  
 ST-9 DETAIL

## **Appendix B Data Forms**

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## Appendix C

# Ground-Level Color Photographs

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*Photo 1 View south up ephemeral drainage (ST-9).*



*Photo 2 View southwest showing ephemeral drainage ST-9 at base of slope.*



*Photo 3 View west showing downstream extent of ephemeral drainage ST-9. Drainage disappears into ground about 20 feet beyond end of photo. No apparent outlet.*



*Photo 4 View east from westernmost portion of ephemeral drainage ST-9.*



*Photo 5 View southwest from top of 24" culvert under trail showing Cabin Creek (ST-8) and falls.*



*Photo 6 View southeast showing ephemeral drainage ST-7A. No flow present at time of field visit.*



*Photo 7 View north showing ephemeral drainage ST-7A. No flow present at time of field visit.*



*Photo 8 View northwest, downstream, of Warren Creek (ST-7).*



*Photo 9 View southeast, upstream, of Warren Creek (ST-7)*



*Photo 10 View west, at base of slope, showing wetland WL-4.*



*Photo 11 View southwest showing main channel of Wonder Creek (ST-6).*



*Photo 12 View northeast showing downstream extent of Wonder Creek (ST-6). Stream disappears into ground at this point. No apparent surface connect between Warren Creek (ST-7) to the north or to wetland WL-4 to the west.*



*Photo 13 View south, upstream, of tributary to east branch of Wonder Creek (ST-6)*



*Photo 14 View northeast, downstream, of tributary to east branch of Wonder Creek (ST-6). Channel disappears into ground at this location.*



*Photo 15 View north northeast, downstream, showing main channel of Wonder Creek (ST-6) just downstream of confluence of east and west branches.*



*Photo 16 View south, upstream, showing west branch of Wonder Creek (ST-6).*



*Photo 17 View east northeast, downstream, showing west branch of Wonder Creek (ST-6).*



*Photo 18 View west from top of slope showing palustrine forested wetland WL-4.*



*Photo 19 View northeast from top of slope showing palustrine forested wetland WL-4.*



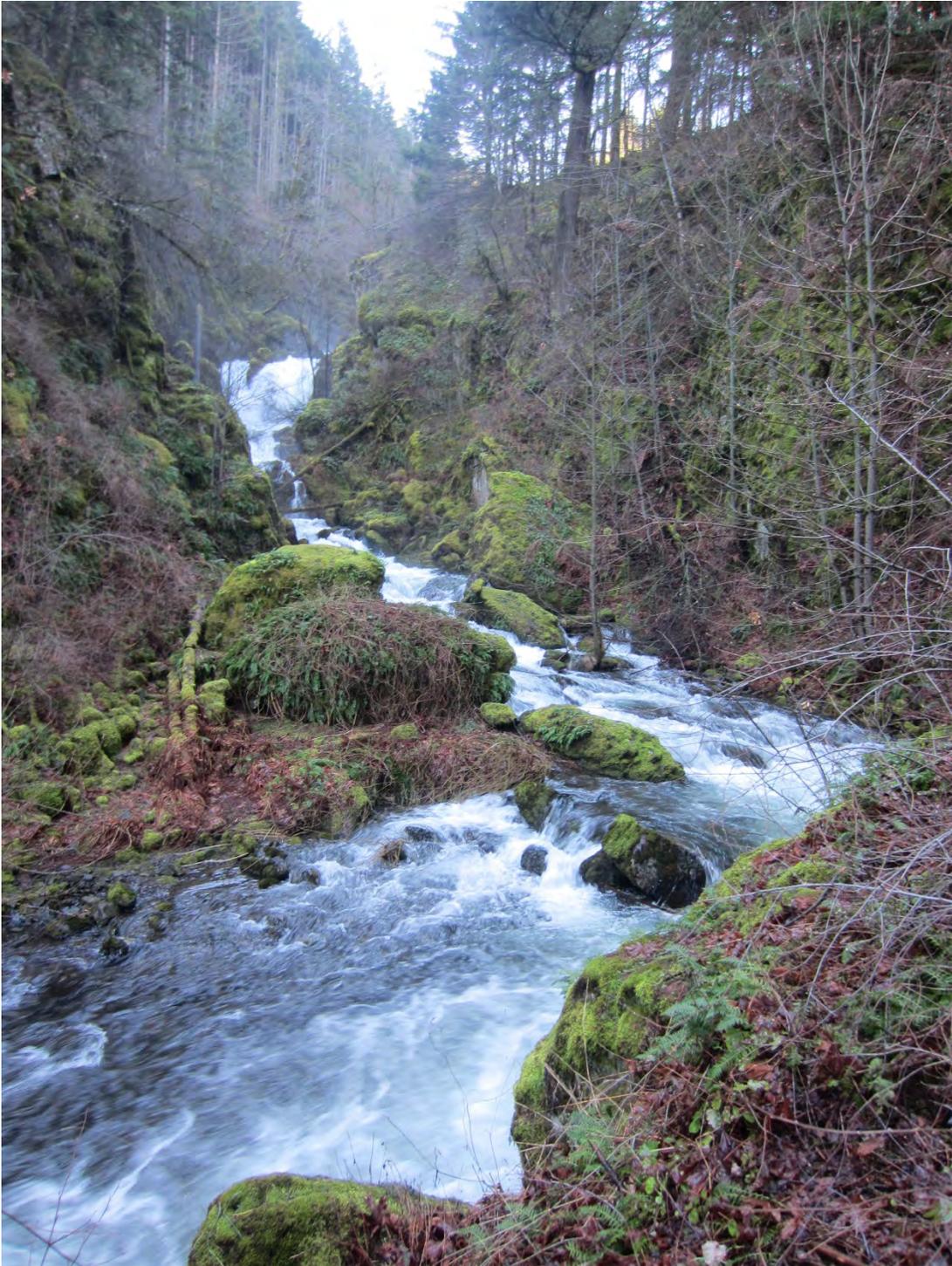
*Photo 20 View southwest, upstream, of Lindsey Creek (ST-4).*



*Photo 21 View north, downstream, of Lindsey Creek (ST-4).*



*Photo 22 View west, upstream, from east bank of Lindsey Creek (ST-4) approximately 75 feet further upstream from Photo 20.*



*Photo 23 View southwest, upstream, from west bank of Lindsey Creek (ST-4) near southern extent of study area (APE).*



*Photo 24 View northeast, downstream, from west bank of Lindsey Creek (ST-4) near southern extent of study area (APE).*



*Photo 25 View north, showing downstream extent of unnamed stream ST-3. Stream ponds slightly at toe of berm. No apparent outlet; no evidence of stream north of berm downslope. Large pond present approximately 125 ft north of berm, but no obvious connection with ST-3 observed.*



*Photo 26 View south, upstream, of unnamed stream ST-3. ST-3 presumed intermittent.*



*Photo 27 View north showing outlet, 24-inch culvert, to pond (palustrine open water) wetland WL-2B.*



*Photo 28 View south of palustrine open water wetland WL-2B. Pond sits in a closed basin at the base of the slope.*



*Photo 29 View southeast from top of western slope of palustrine open water wetland WL-2B.*



*Photo 30 View northwest showing outlet of Summit Creek (ST-2) at Interstate 84. Culvert is 5 feet in diameter with a textured bottom.*



*Photo 31 View south, upstream from culvert at Interstate 84 showing Summit Creek (ST-2).*



*Photo 32 View southeast, upstream, from west bank of Summit Creek (ST-2).*



*Photo 33 View southeast showing origin of unnamed stream ST-1. Stream flows north approximately 30 feet to a 12-inch metal culvert under Interstate 84.*



*Photo 34 View south showing seep area that is the headwaters of unnamed stream ST-1A.*



*Photo 35 View northeast showing stream/wetland complex ST-1A and WL-2A.2 (palustrine forested).*



*Photo 36 View east showing channel of unnamed stream ST-1A connecting wetlands WL-2A.1 and WL-2A.2.*



*Photo 37 View east showing palustrine forested/open water wetland WL-2A.1.*



*Photo 38 View west showing outlet of wetland WL-2A.1 into unnamed stream ST-1A.*



*Photo 39 View north showing lower reach of unnamed stream ST-1A. Stream drains to low area at base of slope; no readily apparent outlet.*



*Photo 40 View southwest showing blackberry-covered drainage ditch D1.*



*Photo 41 View north showing downstream end of drainage ditch D1. Ditch drains through 18-inch metal culvert under Interstate 84.*



*Photo 42 View south showing wetland WL-1, palustrine forested wetland. Wetland is associated with an actively flowing stream that spreads out and ponds at the base of a tall berm. No readily apparent outlet.*



*Photo 43 View west showing potential PEM wetland WL-2C in ditch area between HWY 84 and toe of adjacent slope.. No apparent connection to other wetland or waters*



*Photo 44 View east showing wetland WL-2C.*

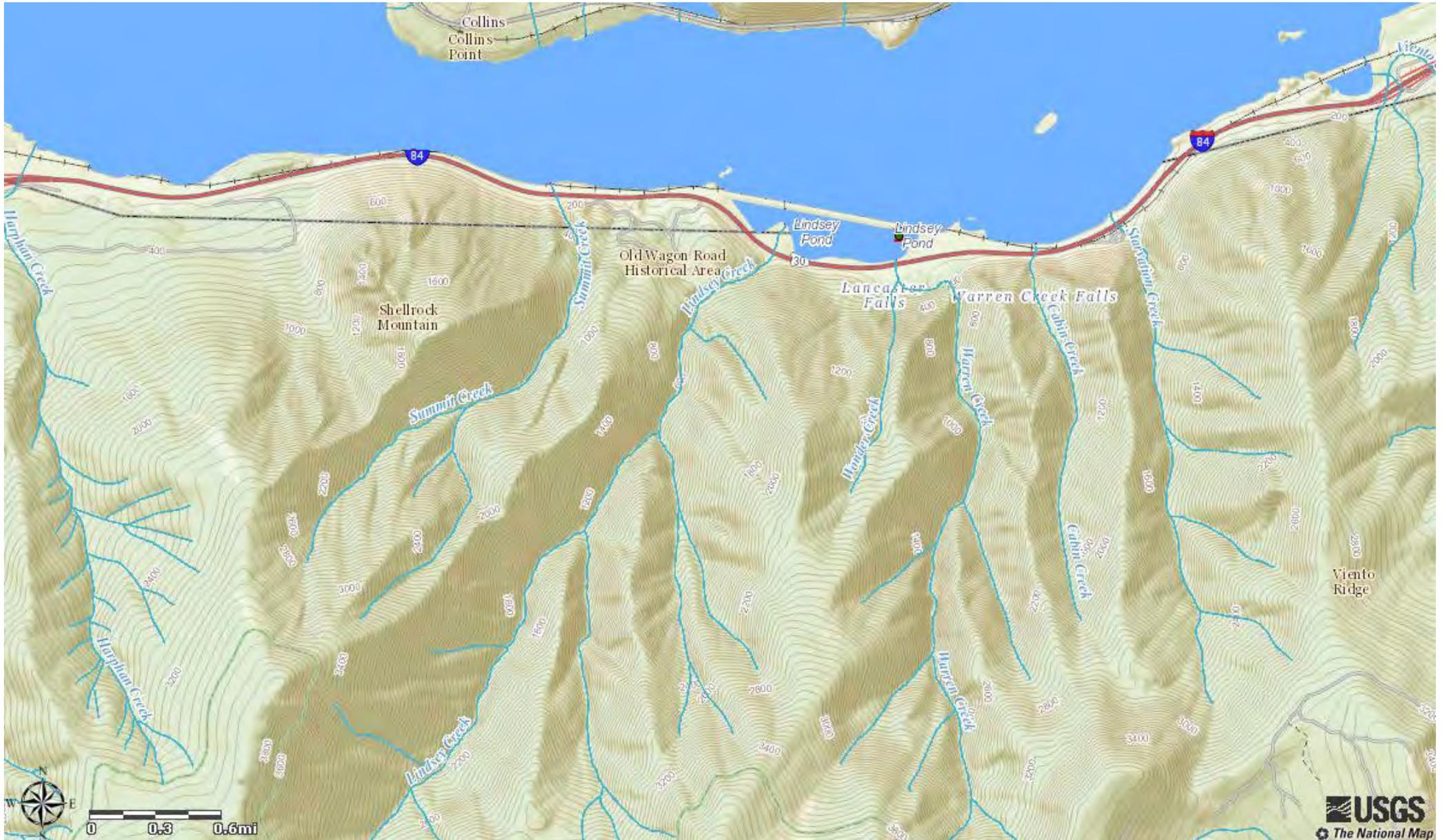
## **Appendix D**

### **Additional Information**

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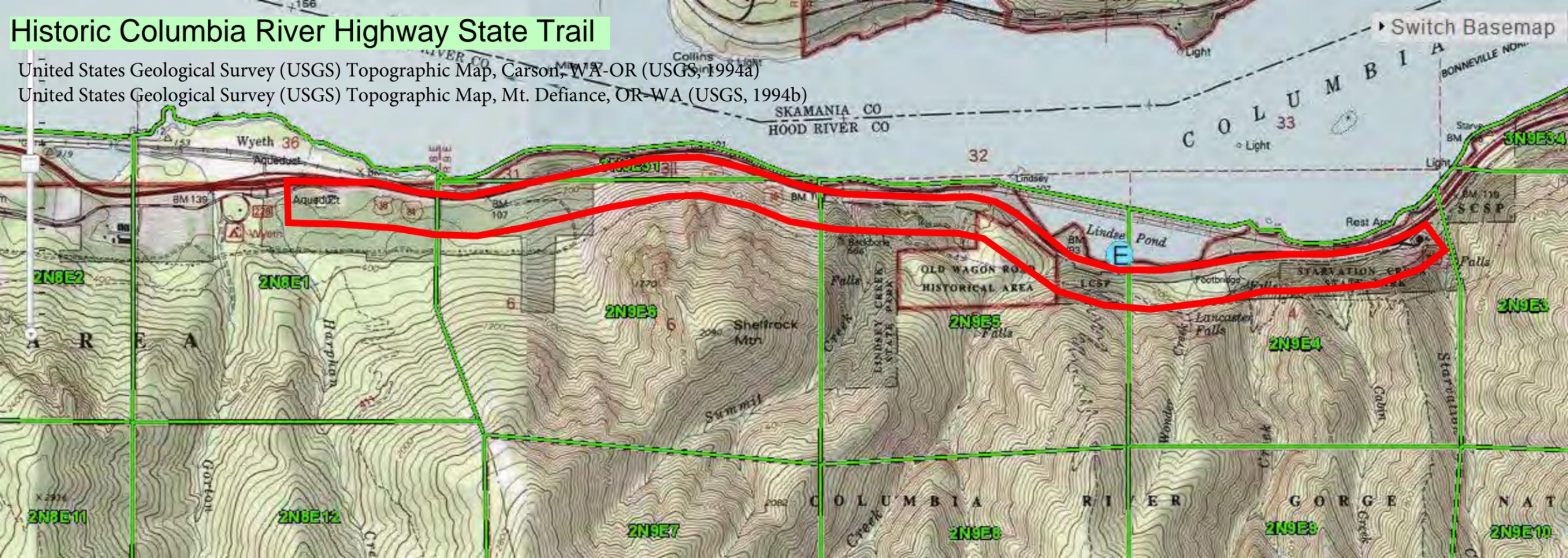
# Pacific Northwest Hydrography Framework Map

NOTES: Data available from U.S. Geological Survey, National Geospatial Program.



# Historic Columbia River Highway State Trail

United States Geological Survey (USGS) Topographic Map, Carson, WA-OR (USGS, 1994a)  
United States Geological Survey (USGS) Topographic Map, Mt. Defiance, OR-WA (USGS, 1994b)



## **Appendix E**

### **Literature Citations**

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# Literature Citations

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- Adamus, P.R. 2001. *Guidebook for Hydrogeomorphic (HGM) -Based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles*. Oregon Department of State Lands, Salem, Oregon.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, FWS/OBS-79/31.
- Franklin, J. F. and C. T. Dyrness. 1973. *Natural Vegetation of Oregon and Washington*. Oregon State University Press, Corvallis.
- Hitchcock, C.L. and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press. Seattle, Washington.
- Lichvar, R.W. 2013. "The National Wetland Plant List: 2013 Wetland Ratings." *Phytoneuron* 2013-49: 1-241.
- Munsell Soil Color Charts. 1990. *Munsell Soil Color Charts*. Kollmorgen Instruments Corporation, Macbeth Division, Baltimore, Maryland.
- National Oceanic and Atmospheric Administration (NOAA)/National Weather Service Forecast Office. 2014. <http://www.nws.noaa.gov/climate/index.php>
- ORMAP. 2014. *Oregon Tax Lot Maps*. <http://www.ormap.net/index.cfm?opt=home>
- U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1*. Environmental Laboratory, U.S. Army Corps of Engineers, Waterways Experiment Station 3909 Halls Ferry Road, Vicksburg, MS 39180-6199.
- 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)*. ERDC/EL TR-10-3. Vicksburg, MS 39180-6199 U.S. Army Engineer Research and Development Center Environmental Laboratory. May.
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2014. Hood River Exp Station, OR4003, WETS table. Hood River County, Oregon.
- U.S. Fish and Wildlife Service (USFWS). 2014. National Wetlands Inventory Wetlands Mapper. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. <http://www.fws.gov/wetlands/Data/Mapper.html>
- U.S. Geological Survey (USGS). 1994a. *7.5-minute Topographic Quadrangle Map: Carson, WA-OR*. U.S. Geological Survey, Washington, DC.
- U.S. Geological Survey (USGS). 1994b. *7.5-minute Topographic Quadrangle Map: Mt. Defiance, OR-WA*. U.S. Geological Survey, Washington, DC.
- U.S. Geological Survey (USGS). 2014. *Pacific Northwest Hydrography Framework Maps: National Map Viewer*. National Geospatial Program. <http://viewer.nationalmap.gov/viewer/>
- Wetland Training Institute, Inc. 1995. *Field Guide for Wetland Delineation; 1987 Corps of Engineers Manual*. Glenwood, New Mexico. WTI 02-1. 143 pp.