DEPARTMENT OF
ECOLOGY
State of Washington

PERIODIC REVIEW

Weyerhaeuser Everett East Site

Facility Site ID#: 11

515 East Marine View Drive

Everett, Washington

Northwest Regional Office

TOXICS CLEANUP PROGRAM

July 9, 2012

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Abbreviations

CPAH	Carcinogenic Polyaromatic Hydrocarbons
Ecology	Washington State Department of Ecology
ff.	Following
GCL	Geosynthetic Clay Liner
HDPE	High Density Polyethylene
MLLW	Mean Lower Low Water
MTCA	Model Toxics Control Act
PCB	Polychlorinated Biphenyls
PCP	Pentachlorophenol

Site	Weyerhaeuser Everett East Cleanup Site
TPH	Total Petroleum Hydrocarbons

Introduction

This document is a review by the Washington State Department of Ecology (Ecology) of the implementation of a Cleanup Action Plan (CAP) and monitoring data from the Weyerhaeuser Everett East (Site) to ensure that human health and the environment are being protected. Cleanup at this Site is being conducted under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC), and Consent Decree 97 2 02773 8, State of Washington, Department of Ecology v. Weyerhaeuser Company ([11]). A previous Periodic Review was conducted in 2003 ([18]).

The cleanup actions resulted in concentrations of total petroleum hydrocarbons (TPH), carcinogenic polyaromatic hydrocarbons (CPAH), polychlorinated biphenyls (PCB), and pentachlorophenol (PCP) remaining at the Site in excess of MTCA cleanup levels.

WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site at least every five years under the following conditions:

(a) Whenever the department conducts a cleanup action
(b) Whenever the department approves a cleanup action under an order, agreed order or consent decree
(c) Or, as resources permit, whenever the department issues a no further action opinion;
(d) and one of the following conditions exists:
    1. Institutional controls or financial assurance are required as part of the cleanup;
    2. Where the cleanup level is based on a practical quantitation limit;
    3. Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

Item 1 applies because Weyerhaeuser Everett East Site has a Restrictive Covenant, which is an institutional control.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

(a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site;
(b) New scientific information for individual hazardous substances of mixtures present at the site;
(c) New applicable state and federal laws for hazardous substances present at the Site;
(d) Current and projected site use;
(e) Availability and practicability of higher preference technologies; and
(f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the site register and provide an opportunity for public comment.

Scope of Review

Key site documents were reviewed to ascertain site history, site contamination, cleanup actions, and current site conditions. These documents are listed in the section titled *Key Site Documents*. The documents are numbered and will be referred to in the text by number.

The documents are available electronically on Ecology's web site for the Weyerhaeuser Everett East Cleanup Site. Link: https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=2495

Maps have been prepared that show remediation areas and sample locations. The locations of most of the information was obtained by georeferencing small hard-copy scale maps retained in Ecology files. The locations are approximate except for remediation areas that have survey data in the file. The remediation areas that have survey data, and the associated survey data, are in [12], Appendix C.

Background

Site History

The Weyerhaeuser Everett East Cleanup site is located at 515 East Marine View Drive, Everett, Washington 98201 (Figure 1). The site is one of three Weyerhaeuser cleanup sites in the area, and falls within the Everett Smelter Cleanup Site.

Everett was incorporated in 1893. One of the original industries was the Everett Smelter, constructed to smelt ores from the Monte Cristo and other mining districts. It operated from the mid 1892 until 1912. Stack emissions have contaminated a large area surrounding the historic plant boundary, including the area of the Weyerhaeuser Everett East site. The primary contaminant is arsenic, with associated heavy metals. The Everett Smelter site is the subject of a separate cleanup being conducted by Ecology. Contamination related to the Everett Smelter is not within the scope of this review.

Weyerhaeuser began operations in Everett in 1902, constructing their Mill A on Port Gardner Bay, on the west side of Everett. In 1914 Weyerhaeuser purchased the low area along the west bank of the Snohomish River. The area was raised with sand dredged from the Snohomish River and Mill B was constructed. Mill B was constructed in 1915 and was substantially dismantled by the mid-1980s. Mills and other major structures were supported on pilings. During demolition the pilings were sawed off to below ground level ([5], p. 7)

Weyerhaeuser Everett East is the area that was occupied by Mill B and its associated support facilities. It has an area of about 72 acres. It is zoned M-2, Heavy Manufacturing, by the City of Everett.

Over the years Weyerhaeuser's operations expanded to become a large wood products manufacturing facility. Mills C and D, and a Kraft mill were constructed in the area called Weyerhaeuser Everett West. Mill E was constructed in the area called Weyerhaeuser Mill E. Weyerhaeuser Everett West and Weyerhaeuser Mill E are also cleanup sites being addressed under consent decrees between Ecology and Weyerhaeuser. These two sites are not included in the scope of this periodic review.

The Site was purchased by the Port of Everett in 1998. The Port is placing additional dredge fill at the site to raise the grade above the 100-year flood plain elevation in association with planned redevelopment.

Figure 2 shows the relationship of the various cleanup sites in the area.

Figure 3 is an aerial photograph of the Site in 1959. Figure 4 shows the former facility layout. The Figure 4 original figure is an oversize figure from the *Operable Unit Summary Report* [3]. This figure is available on Ecology's Weyerhaeuser Everett East web site.

Site Geology and Hydrogeology

Site geology and hydrogeology is summarized from descriptions in the Consent Decree ([11], p. 7 ff.). Additional detail is available in the Consent Decree.

The Site is about two miles upstream from the mouth of the Snohomish River. The site is relatively level. Most of the Site is underlain by dredged sand fill overlying the former estuarine tide flat along the river. The dredge fill does not appear to be present in the south part of the site.

The river bank has been stabilized with a timber piling bulkhead.

The Site stratigraphy from surface to depth is as follows:

- Recently placed dredge fill, 0 – 3 ft. thick. (The Port plans to place additional dredge fill at the site to raise the grade above the 100-year flood plain elevation in association with planned redevelopment. This will provide a greater thickness of clean fill above the surface on which Weyerhaeuser operations were conducted.)
- Grade Fill and Mixed Fill, 1 – 4 ft. thick.
- Upper Sand Unit (dredge fill), 1 – 10 ft. thick.
- Upper Silt Unit, average thickness 8 ft.
- Lower Sand Unit, base not encountered in site explorations
- Wood Chip, Sawdust, and/or Lime Product Unit, up to 20 ft. thick. This material reportedly has been removed.
- Mixed Fill on South End, up to 8 ft. thick. This material has been removed.

Three hydrostratigraphic units have been identified:

- Shallow unconfined aquifer (Grade Fill and Upper Sand Units). Horizontal flow direction is towards the east to northeast with an average linear velocity of 1.8 ft./day. Hydraulic conductivity is estimated to be 0.05 cm/sec.

- Semi-confined unit (Upper Silt Unit). Hydraulic conductivity is estimated to be 2.2×10^{-7} cm./sec. This unit is saturated and transmits water from the shallow unconfined aquifer to the lower sand aquifer. Vertical flow velocity is estimated at 3.1×10^{-4} ft./day.
- Semi-confined aquifer (Lower Sand Unit). Horizontal flow velocity is tidally influenced and generally moves towards the east at an average linear velocity of 0.2 ft./day.

Ground water is approximately 4 feet below ground surface in most areas at an average elevation of 10 feet (MLLW survey datum). This elevation corresponds to the average high-tide level in the Snohomish River. Ground water fluctuates about 2.5 feet between seasonal and maximum elevations. A tidal study found that ground water elevations in the upper sand aquifer fluctuated less than 0.3 ft. in wells adjacent to the river. Ground water elevations in the Lower Sand Unit fluctuated 4 to 6 ft. with the tide. The Snohomish River water level fluctuates an average of 7 ft. over a tidal cycle.

Nature and Extent of Contamination

A review of the site's history identified fuels, wood treating solutions containing pentachlorophenol, and transformer liquids as the source of contaminants. Site remedial investigations identified impacts to soil and ground water by pentachlorophenol (PCP), polychlorinated biphenyls (PCB), carcinogenic polyaromatic hydrocarbons (CPAH), and total petroleum hydrocarbons (TPH). The contaminants were generally associated with specific operations conducted at the plant where the associated chemicals were uses. A discussion of the various operations is given in *Potential Remediation Areas, Weyerhaeuser East Site* ([5], p. 7 ff.).

Remedial investigations for soil consisted of shallow test pits dug to or just below the water table. The test pits were stopped at the Upper Silt Unit, if encountered.

Ground water quality data were collected from wells on the upgradient side of the site (west site boundary) and downgradient at the Snohomish River. The chemicals of concern identified for the ground water were the same as for soil, PCP, PCB, CPAH, and TPH.

Cleanup Standards

Cleanup and Remediation Levels

The Consent Decree specifies soil and ground water cleanup levels and soil remediation levels for the chemicals of concern at the Weyerhaeuser Everett East site. The terminology in the Consent Decree is dated, as it identified two soil cleanup levels. In current terminology, the higher cleanup levels would be called remediation levels. Table 1, reproduced from the Consent Decree, gives these levels and the associated remedial action.

Table 1: Cleanup Levels specified in the Consent Decree ([11], p. 13).

Medium	Chemical	Cleanup Level	Protection Basis	Remedial Action
Soil	PCP*	280 mg/kg	Method C Industrial	Excavate
		8.33 mg/kg	Method B	Restrictive Covenant
	PCB**	17 mg/kg	Method C Industrial	Excavate
		1.0 mg/kg	Method A	Restrictive Covenant
	CPAH***	20 mg/kg	Method C Industrial	Excavate
		1.0 mg/kg	Method A	Restrictive Covenant
	TPH****	2,500 mg/kg	Method C Industrial	Excavate
		200 mg/kg	Method A	Restrictive Covenant
Ground water	PCP	7.29 µg/L	Method C	Source Removal & Monitoring
	PCB	0.114 µg/L	Method C	Source Removal & Monitoring
	CPAH	0.12 µg/L	Method C	Source Removal & Monitoring
	TPH	10, 000 µg/L	Method C	Source Removal & Monitoring

* A soil cleanup level of 280 mg/kg was derived from soil leach study to ensure protection of ground water; MTCA Method B numbers are applicable for purposes of direct contact and restrictive covenant only.

** MTCA Method A numbers are applicable for purposes of direct contact and restrictive covenant only.

*** MTCA Method A numbers are applicable for purposes of direct contact and restrictive covenant only.

**** A soil cleanup action level of 2,500 mg/kg TPH (Method C) per WAC 173-340-745 (3) and (4) will be implemented based on soil leach studies to ensure protection of ground water. New soil sampling procedures available from Ecology (January 16, 1997, "Interim Interpretive and Policy Statement: Cleanup of Total Petroleum Hydrocarbons (TPH), ECY97-600) which allows a property owner to analyzes soils using a surrogate approach to establish new Method B direct contact numbers. In the event the new Method B direct contact numbers are greater than 200 mg/kg for TPH then Weyerhaeuser can request that the restrictive covenant be amended to reflect the new cleanup level.

For soil the higher concentration is based on leaching studies and was set to protect ground water quality. Soil exceeding the higher concentration were excavated. The lower cleanup level is based on the soil direct contact exposure pathway for unrestricted land use. Since the direct contact cleanup level was exceeded in areas of the site a Restrictive Covenant was placed on the site to restrict land use.

Ground water cleanup levels are based on protection of the Snohomish River, ([6], p. 10). The reach of the Snohomish River adjacent to the site is tidally influenced and a salt water wedge extends approximately five miles upstream of the site ([6], p. 9).

The PCP ground water cleanup level is based on Ambient Water Quality Criteria (chronic). The PCP ground water cleanup level is given as 7.9 µg/L in [6]. The Consent Decree gives the PCP ground water cleanup level as 7.29 µg/L. The current National Recommended Water Quality Criteria (http://water.epa.gov/scitech/swguidance/standards/current/index.cfm) indicates the salt water Criterion Chronic Concentration is 7.9 µg/L for protection of aquatic life, 3.0 µg/L for protection of human health, consumption of organisms only, and 30 µg/L for organoleptic effects. (See [6], p. 10)

There were no standards in the Ambient Water Quality Criteria for TPH at the time of entry of the Consent Decree, and there are none in the current National Recommended Water Quality

Criteria. The Consent Decree establishes a TPH cleanup level of 10,000 µg/L based on a 1987 Ecology Guideline 9, *Discharges Containing Oil and Grease of Mineral Origin*. Efforts to locate this guideline were unsuccessful. (See [6], p. 10)

Ground water cleanup levels for PCBs and CPAHs were not presented in [6]. The bases for the cleanup levels presented in the Consent Decree were not found in the documents reviewed.

Arsenic contamination in ground water was not addressed in the Consent Decree as it was believed arsenic contamination originated in offsite. The Restrictive Covenant provides that no ground water may be taken for domestic purposes from any well at the East Site and notes that the restrictive covenant is required because the arsenic ground water contamination was not addressed by the remedial action.

Comparison of Consent Decree Cleanup Levels to Current Cleanup Levels

Two of the Periodic Review criteria are to consider new scientific information for individual hazardous substances or mixtures present at the site and to consider new applicable state and federal laws for hazardous substances present at the site. This section compares the cleanup levels in the Consent Decree with current cleanup levels, as changes in cleanup levels are new applicable state law that may have arisen from new scientific information. Table 2 presents this comparison for soil and Table 3 presents this comparison for ground water.

Table 2: Comparison of Consent Decree and Current Cleanup Levels for Soil.

Chemical	Consent Decree, Direct Contact and Restrictive Covenant (mg/kg)	Consent Decree, Protect Groundwater (mg/kg)	Current Direct Contact, Unrestricted Land Use† (mg/kg)	Current Direct Contact, Industrial Land Use (mg/kg)
PCP	8.33	280	2.5	330
PCB	1	17	0.5	66
CPAH	1	20	0.14	18
TPH	200	2500	> 2000‡	> 2000‡

† MTCA Method B unless otherwise noted.

‡ The 2000 mg/kg is based on preventing accumulation of free product on the ground water table. A direct contact concentration would be higher. The 2000 mg/kg concentrations are from the Soil Method A tables for Unrestricted Land Use and for Industrial Properties. See WAC 173-340-900, Tables 740-1 and 745-1.

Table 3: Comparison of Consent Decree and Current Cleanup Levels for Ground Water.

Chemical	Consent Decree, Protect Snohomish River (µg/L)	Current, Protect Aquatic Life in the Snohomish River† (µg/L)	Current, Protect Human Health based on Consumption of Organisms from the Snohomish River† (µg/L)
PCP	7.29	7.9	3.0
PCB	0.114	0.03	0.000064
CPAH	0.12	Not Listed	0.018
TPH	10,000	500‡	500‡

† National Recommended Water Quality Criteria, unless otherwise noted.

‡ WAC 173-340-730(3)(b)(iii)(C) provides that TPH cleanup levels to protect surface water may use the cleanup levels in WAC 173-340-900 Table 720-1.

Points of Compliance for Soil and Ground Water

The points of compliance for soil and ground water are specified in the Cleanup Action Plan, which states:

- "The point of compliance for Site soils will be the excavation of soil to the soil cleanup levels or to the surface of the Water Table Zone. Soils left on Site above the specified industrial soil cleanup levels, in accordance with WAC 173-340-440 will be noted in the Restrictive Covenant." ([11], Exhibit C, §4.3.2)

- "The ground water point of compliance for the Site is the property boundary adjacent to the Snohomish River." ([11], Exhibit C, §4.2)

Remedial Actions

Soil

Soil was remediated by excavating impacted soil to the cleanup level, to the water table or to concrete foundations where encountered. The excavations were backfilled with clean sand dredged from the Snohomish River ([12], p. 6). Excavated soil was disposed of at an approved landfill.

Confirmation samples were collected from the sidewalls of the excavation to ensure the lateral extent of the contamination was reached. Where the excavation was terminated at the water table or at concrete foundations bottom samples were not collected.

In 2000 and 2001 the Port of Everett excavated arsenic-contaminated soil during infrastructure development for the Riverside Business Park. These are excavation areas ESA-1 and ESA-2. The contaminated soil was contained on site beneath a geosynthetic clay liner (GCL) overlain by 1 foot of topsoil. In addition, High Density Polyethylene (HDPE) flexible membrane liners were placed beneath the storm water detention ponds immediately west of the GCL area to prevent

potentially contaminated ground water infiltration. This was an independent remedial action undertaken by the Port of Everett. See [17] This action was outside the scope of the remedial actions undertaken by Weyerhaeuser for cleanup of the Weyerhaeuser Everett East Site.

Table 4 lists the soil remediation areas. Areas that were excavated to clean soil, as evidenced by a clean bottom sample, are highlighted in the table. Table 5 shows the bottom sample results for remediation areas excavated to clean soil. Figure 5 and Figure 6 show the remediation area locations. A summary of the remediation of each area is given in [12], §3.1.

Table 4: Summary of Soil Remedial Action Areas.

Remediation Area	Chemicals of Concern	Estimated Volume Excavated (cubic yards)	Comment
EX-1	TPH	444	TPH-impacted soil excavated to the water table. The water table was encountered at a depth of 4 feet. No bottom sample. Residual soil contamination may remain below the water table. ([4], Attachment B)
EX-2	TPH	22	TPH-impacted soil excavated to a depth of 4 feet. Ground water not encountered. Clean Bottom Sample (TPH concentration in soil = 568 mg/kg)
7-1	TPH	370	Excavated to water table. Concrete slab removed. Oil booms and pads used to contain oily scums that floated on the surface. Piling left in place. Residual soil contamination may remain below the water table. ([12], Fig. 4)
7-2A	TPH, PCB, CPAH	1300	Removed soil exceeding cleanup level to concrete slab. In area not covered by concrete slab soil exceeding cleanup level removed to water table. Residual soil contamination may remain below the concrete slab and the water table. Drawing has survey reference points. ([12], Figure 5)
7-2B	TPH, PCB, CPAH	90	Residual soil contamination may remain below the concrete slab. ([12], Figure 5)
7-2C	TPH, CPAH	9	Excavated to clean soil. ([12], Figure 5)
8-1	TPH, CPAH	150	Excavated to concrete slab or water table where slab not present. Residual soil contamination may remain below the concrete slab and below the water table. ([12], Figure 6)
8-2	TPH	45	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 6)
8-3A	TPH, CPAH	1650	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 7)
8-3B	TPH	6	Excavated to clean soil. ([12], Figure 7)
8-4	CPAH, PCP	7	Excavated to clean soil. ([12], Figure 6)

Remediation Area	Chemicals of Concern	Estimated Volume Excavated (cubic yards)	Comment
9-1	TPH	30	Excavated to clean soil. ([12], Figure 8)
10-1	TPH	310	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 8)
10-2	PCB	9	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 8)
10-3A	TPH	230	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 9)
10-3B	TPH	40	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 9)
10-3C	TPH	Confirmation Trenches – backfilled	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 9)
10-4A	TPH	160	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 10)
1**0-4B**	TPH	Confirmation Trenches – backfilled	Excavated to concrete slab and water table where slab not present. Residual soil contamination may remain below concrete slab and the water table. ([12], Figure 10)
10-4C	TPH	80	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 10)
10-4D	TPH	20	Excavated to water table. Residual soil contamination may remain below the water table. ([12], Figure 10)
TP-16	TPH	Confirmation Trenches – backfilled	A sample taken from the excavation in the TP-16 area indicated TPH levels below soil action/cleanup levels. No soils were removed in this area. ([12], p. 10.)
ESA-1†	Arsenic		Soil with arsenic concentrations exceeding 200 mg/kg excavated and placed beneath GCL cover. Excavation about 10’ wide and 4’ deep. Residual contamination may remain below the bottom of the excavation.
ESA-2†	Arsenic	1300	Soil with arsenic concentrations exceeding 200 mg/kg excavated and placed beneath GCL cover. Excavation about 10’ wide and 4’ deep. Residual contamination may remain below the bottom of the excavation.
GCL†	Arsenic	1300	Geosynthetic Clay Liner (GCL) containing arsenic contaminated soil. GCL overlain by 1’ of topsoil

Remediation Area	Chemicals of Concern	Estimated Volume Excavated (cubic yards)	Comment
HDPE Liner†	---	---	High Density Polyethylene (HDPE) flexible membrane liner placed beneath storm water detention ponds to prevent potentially contaminated ground water infiltration.

1. First three columns from [12], Table 2-1.
2. See [12], §3 for more detailed discussion of confirmation sampling of the remediation areas.
3. References in the comment column refer to drawings that show diagrams of the remediation areas.
4. Survey information for bolded remediation area is in [12]. Appendix C0#Homotherium#0.

† These remedial actions were performed by the Port of Everett in 2000 and 2001. See [16]

Table 5: Bottom Sample Results for Remediation Areas Excavated to Clean Soil.

Location	Sample No.	CPAH (mg/kg)	TPH (mg/kg)	PCP (mg/kg)
RA7-2C	7-2CB-1	0.84	419	Not Analyzed
4A8-3B	8-3B-CB-1	Not Analyzed	90	Not Analyzed
RS8-4	8-4-CB-1	0.16	Not Analyzed	0.16
RA9-1	9-1-CB-1	Not Analyzed	49	Not Analyzed
TP-16	TP-16cf-c1	Not Analyzed	252	Not Analyzed
EX-2	EX-2B	Not Analyzed	568	Not Analyzed

Conditions on the south end of the site were reported in *Environmental Assessment of South End Residual Wood Storage Operable Unit Site and Ferry Baker Island Site - Survey Parcels 4 and 5* ([8]). This area is the narrow area south of the paved area that is currently being used as an intermodal facility. See Figure 6.

The south end of the site was used for residual wood storage. It had sawdust, wood chips, mixed fill, and lime waste overlying the upper silt unit. This material was removed in accordance with the Snohomish Health District Sanitary Code. The removal was overseen by the Snohomish Health District. Weyerhaeuser removed all but 1,400 cubic yards of the wood waste by October 1998. The remaining volume was below the 2,000 cubic yard standard of the Snohomish Health District Sanitary Code which would require a woodwaste landfill permit. The Snohomish Health District acknowledged this in a letter dated November 6, 1998.[1]

The Corp of Engineers placed river dredge spoils on the South End in late 1998. A recent site tour by Weyerhaeuser confirmed the South End site has a sand cover. It is Ecology's understanding the South End area continues to be used for storage of material dredged from the Snohomish River as part of channel maintenance.

The south end environmental assessment report summarizes sample results from the upper silt unit ([8], p. 11). Fifteen soil samples were obtained from organic clayey silt and two obtained from sand encountered one to two feet beneath the fill units. The results were as follows:

[1] See correspondence in Ecology files at Weyerhaeuser Everett East/SIT5.4.2.1.

- PCP: Concentrations up to 0.017 mg/kg.
- PCB: Concentrations up to 0.036 mg/kg.
- CPAH: Not analyzed.
- Diesel: 54 mg/kg in one sample (SE-2-13'); otherwise below reporting limits that varied from 80 to 190 mg/kg.
- Oil: Up to 54 mg/kg
- Arsenic: Concentrations ranged from <7 to 29.7 mg/kg.
- Chromium: Concentrations ranged from 10 to 87 mg/kg.
- Copper: Concentrations ranged from 7 to 64 mg/kg.
- Lead: Concentrations ranged from <10 to 30 mg/kg.
- Zinc: Concentrations ranged from 12 to 89 mg/kg.

Ground Water

Ground water was remediated by source removal from the soil remediation areas, followed by monitoring to assess compliance with the ground water cleanup levels. The Confirmational Ground-Water Monitoring Plan is Exhibit I of the Consent Decree. See ([11, Exhibit I). Ground water monitoring well locations are shown on Figure 7 and Figure 8.

The Confirmational Ground-Water Monitoring Plan provided for five years of quarterly monitoring of wells on the north part of the site and for one year of quarterly monitoring on the south part of the site. Wells on the east site boundary were compliance wells. Wells on the west site boundary were upgradient wells. There is a gradient reversal at high tide for the south end wells.

Ground water data was collected from wells on the north part of the site from 1997 to 2002. The results were evaluated in the Five Year Data Review Report ([17]). For the contaminants of concern the report found:

- **PCP:** PCP exceedances were found in two of the ten compliance wells, MW-101S and MW-RA-8-3. MW-101S had exceedances of samples collected on June 19 and July 30, 1997. Remaining concentrations were all below the Consent Decree cleanup level of 7.29 µg/L.

  PCP concentrations in MW-RA-8-3 exceeded the cleanup level from the beginning of the five year monitoring period on June 19, 1997 until September 25, 2001. On December 12, 2001 the concentrations had dropped to <4 µg/L. The PCP concentration in last sample of the monitoring period, collected on March 29, 2002, was 5 µg/L. Monitoring was continued until eleven consecutive samples collected between September 14, 2006 and March 22, 2011, had PCP concentrations below the Consent Decree cleanup level of 7.29 µg/L. The concentration measured on March 14, 2006 had an estimated concentration of 3 µg/L. The remainder were reported as <5 µg/L. This compares to the current PCP concentration for the protection of human health, organism consumption only, of 3 µg/L (Table 3). See ([23])

- **PCB:** PCB analyses of ground water collected from the compliance wells found no detectable concentrations of PCB compounds above laboratory reporting limits during the five year monitoring period. Reporting limits for PCB ranged from 0.035 µg/L to 0.08 µg/L, below the Consent Decree cleanup level of 0.114 µg/L, and slightly above the current National Recommended Water Quality Criteria to protect aquatic life of 0.03 µg/L. The reporting limits are well above the National Recommended Water Quality Criteria to protect human health for consumption of organisms of 0.000064 µg/L. Per the regulation, if current cleanup levels were being used, the laboratory reporting limit would be the cleanup level, as it is above the current relevant cleanup concentrations.
- **CPAH:** CPAH concentrations were below the Consent Decree cleanup level of 0.12 µg/L in six of the ten compliance wells. In four of the wells, (MW-102S, MW-103D, MW-105S, and MW-RA-8-3)[2] there was an exceedance during one of the sampling events. Statistical analyses showed found the upper 95% confidence limit on the mean concentration to be less than the Consent Decree cleanup level.

  In well MW-102S a minimum of three additional sampling events were necessary to further evaluate compliance with the CPAH cleanup level. Samples collected in June 2002, June 2003, and September 2003 reported CPAH concentrations were below detection limits.[3]

  CPAH reporting limits ranged from 0.008 µg/L to 0.04 µg/L. This is below the consent decree cleanup levels of 0.12 µg/L. The reporting limit range includes the current cleanup level of 0.018 µg/L, which is based on National Recommended Water Quality Criteria for protection of human health for the fish consumption pathway. There is no CPAH National Recommended Water Quality Criteria for protection of aquatic life.

- **TPH:** The report indicates the highest concentration of diesel detected during the monitoring period was 1,500 µg/L and the highest concentration of oil was 700 µg/L. These samples were both collected from well MW-RA-8-3. The report compared these individual values to the ground water TPH cleanup level of 10,000 µg/L individually, whereas the diesel and oil should have been summed before the comparison was made. The 1,500 µg/L diesel was measured on 9/15/2000, with a corresponding oil concentration of 480 µg/L. The TPH concentration is thus 1980 µg/L. This is well below the TPH cleanup set in the Consent Decree of 10,000 cleanup level. It does exceed the current Method A cleanup level of 500 µg/L. The last sample analyzed for diesel and oil in MW-RA-8-3, collected March 29, 2002, had values of 830 µg/L diesel and 280 µg/L oil, or a total of 1,110 µg/L for TPH.

  TPH-contaminated ground water was encountered at a depth of 4 feet in the EX-1 excavation at a concentration of 32,000 µg/L, as measured on July 1, 1993. On July 23, 1993, approximately 7,000 gallons of ground water were removed from the excavation, treated, and discharged. The TPH concentration of the ground water measured after the

[2] The *Five Year Data Review Report* says three of the wells (MW-102S, MW-103D, and MW-RA-8-3) had statistical analysis show CPAH below the cleanup level. Review of the individual well discussions found MW-105S results also showed statistical compliance with the cleanup level for CPAH. ([18], §4.2.10)

[3] See Ecology file for Weyerhaeuser Everett East/SIT6.2.3, 24th, 25th, and 26th ground water monitoring rounds.

contaminated ground water was removed was < 1000 µg/L. This is less than the Consent Decree cleanup level of 10,000 µg/L but greater than the current cleanup level of 500 µg/L.

Ground water samples were collected in August 1996 from three wells on the south part of the site at the locations show on Figure 8. The wells were screened in the upper portion of the Lower Sand Unit. The results were reported in *Results of Ground-Water Sampling and Analyses, Weyerhaeuser South End Residual Wood Storage Site, Everett, Washington* ([10], Table 3]). The samples were analyzed for TPH and total metals (arsenic, cadmium, chromium, copper, lead, mercury, and zinc. Concentrations were all below MTCA Method A or B drinking water cleanup levels.

In April 2005 Ecology determined that all but two of the ground water compliance wells were in compliance. The upgradient wells on the north part of the site (MW-107S(2), MW-108D, MW-108S, AND MW-109S) were abandoned with Ecology approval in 2000. ([18], p. 5-2). The Five Year Data Review Report recommended abandonment of all remaining north end wells except MW-102S and MW-RA-8-3. Monitoring in MW-102S was recommended to be continued for CPAH only for at least three additional events after September 2001. Monitoring in MW-RA-8-3 was recommended to be continued for PCP only. MW-102S came into compliance after the three additional events. MW-RA-3 came into compliance in 2011.

North end wells MW-100S, MW-100D, MW-102S, MW-103S, MW-103D, MW-104S, MW-105S, and MW-105D were abandoned in 2005. Well MW-101S could not be located. ([15], memorandum from North to Bariska, August 9, 2005). MW-RA-8-3 remains in service, but is not being sampled.

Abandonment documentation was not found for South End wells MW-SE-101, MW-SE-102, and MW-SE-103. A field tour of the site by Weyerhaeuser of January 26, 2012, was unable to find visible evidence of installed wells, such as a monument riser or concrete base at the mapped locations of the wells shown in [10]. The area is overgrown with vegetation.

Restrictive Covenant

A Restrictive Covenant was required for the Weyerhaeuser Everett East site because soil contamination was contained on site, because there is a condition point of compliance for ground water, and because arsenic ground water contamination is not addressed in the remedial action. (See [11], Exhibit G) The Restrictive Covenant declares limitations, restrictions, and uses to which the Weyerhaeuser Everett East Site may be put. It specified that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the site. The Restrictive Covenant specifies:

1. No ground water may be taken for domestic purposes from any well at the East site.
2. No residential development may take place on the site.
3. Any activity on the East Site that may interfere with the viability of the containment of the hazardous substances on the site is prohibited. Any activity on the East Site that may

result in the release of a hazardous substance that was contained as part of the Cleanup or Interim Cleanup Actions(s) is prohibited.

4. Any development of the East Site shall ensure the containment of the hazardous substances that are exposed or ensure proper management and disposal. Ecology will receive notice of any development that may impact the contained hazardous substances at least 30 days prior to such development.
5. The owner of the East Site must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the East Site. No conveyance of title, easement, lease or other interest in the East site shall be consummated by the owner without adequate and complete provision for the continues operation, maintenance and monitoring of the Cleanup Action.
6. The owner of the East Site must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the East Site that is inconsistent with the terms of this Restrictive Covenant. The Department of Ecology or its successor agency may approve such a use only after public notice and comment.
7. The owner shall allow authorized representatives of the Department of Ecology, or of a successor agency, the right to enter the East Site at reasonable times for the purpose of evaluation of compliance with the Cleanup Action and the Consent Decree, to take samples, to inspect Cleanup Actions conducted at the East Site, and to inspect records that are related to the Cleanup Action.
8. The owner of the East Site and the owner's assigns and successors in interest reserve the right under WAC 173-340-740 and WAC 173-340-440 (1991 ed.) to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the East Site or be of any further force and effect. However, such an instrument may be recorded only with the consent of the Department of Ecology, or successor agency. The Department of Ecology, or a successor agency may consent to the recording of such an instrument only after public notice and comment.

Current Site Conditions

The current site conditions are summarized in this section. Current site conditions are pertinent to assessing what is necessary to comply with the provisions of the Restrictive Covenant.

Soil

Figures 9 through 16 show concentrations of the chemicals of concern remaining in soil at the Site. These figures were prepared by compiling the soil data collected at the site and mapping them according to the following categories (except for TPH):

- Less than the current direct contact cleanup level for unrestricted land use,
- Between the current direct contact cleanup level unrestricted land use and the consent decree cleanup level set for unrestricted land use, and
- The consent decree cleanup level set for unrestricted land use and the maximum concentration remaining on site. The maximum concentration remaining on site was obtained from the *Soil Remediation Completion Report*, which contains a table of direct contact exceedance remaining at the site. ([12], Appendix E)

TPH is an exception. At the time of entry of the consent decree the TPH cleanup level for unrestricted land use was 200 mg/kg. The current MTCA soil unrestricted land use cleanup level for TPH requires computation from data which are not available for the site. However, the Method A concentrations is 2000 mg/kg, to prevent accumulation of free product on the ground water table. The unrestricted land use concentration would be higher than this. The maximum concentration remaining on site is 2612 mg/kg. This concentration was measured in 2011 for work performed in connection with the Tulalip Water Pipeline project [25]. This sample is at the north tip of the site, on the west site boundary. It is not clear that this TPH occurrence is associated with the site.[4]

The highest TPH soil concentration reported remaining on site is 2310 mg/kg. ([12], Appendix E)

From experience at other sites, it is likely TPH concentrations are below direct contact cleanup level that would be calculated for soil for unrestricted land use.[5]

It is instructive to compare the maximum soil concentrations left on site to the current soil direct contact industrial cleanup levels presented in Table 2.

Table 6: Comparison of Maximum Soil Concentration Remaining On Site and Industrial Soil Cleanup Levels.

Chemical	Maximum Soil Concentration Remaining On Site (mg/kg)	Current Industrial Soil Direct Contact Cleanup Level (mg/kg)
PCP	32.4	330
PCB	11	66
CPAH	5.9	18
TPH	2310	> 2310

The information in Table 6 indicates most of the site does not have soil concentrations exceeding the soil direct contact level for industrial land use. This is important when considering complying with the Restrictive Covenant requirements to not interfere with the viability of the containment of the hazardous substances on the site is prohibited, to not perform any activity on the East Site that may result in the release of a hazardous substance, and to shall ensure the containment of the hazardous substances that are exposed and to ensure proper management and disposal. Practically this means:

- Arsenic-contaminated soil is contained beneath a GCL cover on the north part of the site, as shown on Figure 5 and Figure 7. This is the only engineered cover on site. Work in the subsurface should avoid this area. If work in the subsurface needs to be performed in this area it will have to properly manage the underlying soils and reconstruct the GCL cover.

[4] Ground water TPH concentrations measured in this work ranged up to 960 µg/L. This is less than the consent decree cleanup level of 10,000 µg/L, but greater than the current Method A cleanup level of 500 µg/L.
[5] The Consent Decree anticipated changes in the regulation, stating, "In the event the new Method B direct contact numbers are greater than 200 mg/kg for TPH then Weyerhaeuser can request that the restrictive covenant be amended to reflect the new cleanup level." ([11], §VI, footnote **** to MTCA Soil Cleanup Levels and Standards table) To date, no such request has been made.

- Table 4 summarizes the status of the remedial action areas. Many of the areas may have contamination remaining below the water table or concrete foundations. This potential contamination is covered with sand dredged from the Snohomish River. Subsurface work in this area that will extend below the water table should first characterize the soil and take appropriate steps to manage it. Excavations should be backfilled with clean sand.
- Subsurface work in the remainder of the site should bear in mind that it is an industrial site. Any soil hauled off-site should be properly characterized and manifested. It is best to manage soil on-site. There is no engineered cover over most of the site. The best practice is to replace soil in excavations in the order in which the soil was removed.

There are some further considerations for site activities under current site conditions. The first is that clean material has been placed on the property since the remedial actions were completed and additional clean fill is to be placed on the property in the near future to bring the grade above the 100-year flood plan. The grading activities completed to date are reported in the *Riverside Business Park Fill Thickness Evaluation* [25].

The second consideration is that the upper silt unit forms a low permeability barrier between the Upper and the Lower Sand Units. Any construction that penetrates the upper silt must include measures to maintain the hydraulic separation between the ground water in the two sand units.

The third consideration is that soil arsenic concentrations may be elevated in the subsurface. This is commonly attributed to contamination from the Everett Smelter Site to the west. It has not been documented that all arsenic contamination in the area is from the Everett smelter. Stack emissions have impacted the area. Slag may have been transported to the Site for various purposes. However, arsenic may be present on site due to mill activities. Weyerhaeuser Everett Mill E had a chromated copper arsenate treatment plant at one time.

The smelter ceased operation in 1912. Weyerhaeuser began filling the East Site in 1914. Hence, arsenic from stack emissions was covered when Weyerhaeuser placed the initial dredge fill to bring the site up to grade. Ecology is currently working to assess soil arsenic concentrations on the Weyerhaeuser Everett East site. Contact Ecology for updated information in this aspect of the site.

The Restrictive Covenant requires that Ecology be notified at least 30 days before any activity that may impact hazardous substances contained on site. Practically this means notification of Ecology prior to any subsurface work. Ecology will want to know the general plan of excavation and how excavated soil will be handled and returned to the excavation or disposed of. Subsurface utility installation should consider lining the utility trenches with a geofabric and backfilling with clean material so that future maintenance will be in clean material.

Ground Water

Ground water quality information from the compliance wells installed as part of the cleanup actions was discussed above in the Remedial Actions – Ground Water section. All compliance wells have come into compliance.

Subsequent data have been collected in 2005 and 2011. In 2005 Sierra Pacific collected information on soil, ground water, sediment, and outfall water quality as part of an assessment of the property for potential purchase.[6] The principle analytes were metals. Limited data for organic chemicals were collected. See [19].

Pentachlorophenol ground water data were collected in four locations. The results are presented in ([19], Table 3).

Table 7: PCP in Ground Water, May 2005. [19]

Sample Point	Approximate Location	Sample Depth (ft.)	Result (µg/L)	Consent Decree Cleanup Level (µg/L)
GP-10S	Immediately north of Remediation Area RA-8-3A	5 to 9	14,000	7.29
GP-10D		18 to 21	15	7.29
GP-11S	Near the east Site boundary just north of Mill E	4 to 7	<5	7.29
GP-11D		12 to 15	<5	7.29
MW-102S	MW-102S		<5	7.29
MW-RA-8-3	MW-RA-8-3		5.6	7.29

Pentachlorophenol was measured in soil at 43 mg/kg in GP-10 (7 to 9 ft.) and at <0.042 mg/kg in GP-11 (4 to 7 ft.). ([19], Table 2)

The Sierra Pacific data from GP-10S and GP-10D indicate the presence of pentachlorophenol in the Upper Sand aquifer at 14,000 µg/L and in the Lower Sand Aquifer at 15 µg/L. Both exceed the Consent Decree ground water cleanup level of 7.29 µg/L and the National Recommended Water Quality Criteria of 7.9 µg/L for the protection of aquatic life and 3 µg/L for protection of human health for the consumption of organisms.

The boring log for GP-10 noted:

- 0 - 7 feet: Poorly graded sand with silt (SP-SM); brown (10YR5/3), moist, 90% fine sand, 10% non-plastic fines.
- 7 - 9 feet: Poorly graded sand (SP); gray (N5/), wet, 95% medium sand, 5% non-plastic fines, **strong odor**. *(emphasis added)*
- 9 – 13 feet: Lean clay (CL); gray (N 5/), wet, 95% fines, 5% fine sand, medium plasticity, soft, rootlets.
- 13 – 21 feet: Poorly graded sand with silt (SP-SM; gray (N 5/), wet, 90% fine sand, 10% non-plastic fines, wood layers.
- Bottom of boring at 21 feet.

The log had the following notes for the shallow and deep ground water samples:

[6] The purchase was not made.

- Grab groundwater sample GP-10S collected through 1-inch OD PVC temporary well casing; 3 feet of well screen (0.010-inch slot size) placed in borehole from 6 to 9 feet below ground surface. **Sheen on purge water.** *(emphasis added)*
- Grab groundwater sample GP-10D collected through 1-inch OD PVC temporary well casing; 3 feet of well screen (0.010-inch slot size) placed in borehole from 18 to 21 feet below ground surface.

Nearby compliance well MW-RA-8-3 had an estimated PCP concentration of 3 µg/L on September 28, 2005. Ten samples collected from MW-RA-3 between September 14, 2006 and March 22, 2011, all had PCP concentrations <5 µg/L. MW-RA-8-3 is screened in the Upper Sand.

PCP concentrations were measured in nearby compliance well MW-101S nine times between September 1997 and March 2002. All were below the Consent Decree cleanup level of 7.29 µg/L. PCP concentrations of 120 and 55 µg/L were measured in this well in June and July 1997, respectively.

Currently ground water samples collected at the compliance wells indicates ground water quality as measured in each compliance well is in compliance with the requirements of the consent decree. That is, as measured by the methods of the compliance monitoring plan, ground water quality is in compliance at the conditional point of compliance for PCP, PCB, CPAH, and TPH.

Arsenic concentrations in ground water are being assessed by Ecology as part of the Everett Smelter Lowland work.

The Sierra Pacific data at GP-10 indicates ground water contamination may remain at the site upgradient of the conditional point of compliance.

The practical implications of ground water quality conditions at the site in relation to the requirements of the restrictive covenant are:

- Arsenic concentrations remain to be evaluated
- As stated in the Restrictive Covenant, no ground water may not be taken for domestic purposes from any well at the site.
- Contaminated ground water may occur beneath the site upgradient from the conditional point of compliance at the Snohomish River. This containment may be impacted by changes in ground water conditions. If ground water is extracted for dewatering during site development activities it should be discharged to the City of Everett sanitary sewer under City Permit, discharged to the Snohomish River under a National Pollutant Discharge Elimination System permit, or contained in temporary aboveground tanks and disposed of offsite at an appropriate treatment facility. Dewatering water should not be re-infiltrated within the site.

Periodic Review

Periodic reviews of post-cleanup site conditions and monitoring data are conducted to assure that human health and the environment are being protected. Periodic reviews are required whenever

an institutional control is required as part of a cleanup action. WAC 173-340-420(1) and (2). The Restrictive Covenant is an institutional control. In addition, the Consent Decree specifies ([11], §XXIV PERIODIC REVIEW):

> "If Weyerhaeuser leaves hazardous substances on site which require a restrictive covenant, Ecology shall review the cleanup action no less than every five years after initiation of such cleanup to assure that human health and the environment are being protected pursuant to WAC 173-340-420."

Effectiveness of completed cleanup actions

- The physical cleanup actions completed to date are largely effective in protecting human health and the environment so long as the Restrictive Covenants are in place and its provisions are followed. Items which need attention are summarized below:
- Abandonment documentation was not found for South End wells MW-SE-101, MW-SE-102, and MW-SE-103. A field tour of the site by Weyerhaeuser of January 26, 2012, was unable to find visible evidence of installed wells, such as a monument riser or concrete base at the mapped locations of the wells shown in [10]. The area is overgrown with vegetation. Should these wells be encountered on the South End of the site by future property users, their condition should be ascertained. They should be properly abandoned if necessary.
- The PCP concentrations measured during the Sierra Pacific investigations at GP-10 are of concern. While compliance wells at the conditional point of compliance are all below cleanup levels, the pentachlorophenol concentration of 14,000 µg/L in the Upper Sand aquifer indicates any future work in this area may encounter contaminated ground water and possibly contaminated soil.
- Of more concern is the 15 µg/L pentachlorophenol concentration measured in the Lower Sand aquifer. This exceeds the Consent Decree cleanup level for pentachlorophenol of 7.29 µg/L and may be indicative contamination in the Lower aquifer resulting from leakage through the silt confining unit from the Upper Sand aquifer. There were no compliance wells in the Lower Sand aquifer at the conditional point of compliance at appropriate locations to monitor ground water in the Lower Sand entering the river from this area. Hence, it is unknown whether contamination is reaching the Snohomish River by discharge from the Lower Sand aquifer. The 2003 *Five Year Data Review Report* states that the Upper Sand aquifer does transmit water to the Lower Sand aquifer ([18], p. 1-4). Additional ground water quality data should be obtained from the Lower Sand aquifer in this area to ascertain current conditions.

New scientific information for individual hazards substances or mixtures present at the Site

There is no new scientific information for the contaminants related to the Site beyond that used to update cleanup levels for the contaminants of concern.

New applicable state and federal laws for hazardous substances present at the Site

The cleanup at the site was governed by Chapter 173-350 WAC (1991 ed.). WAC 17303490702(12)(c) [2001 ed.] provides that,

"A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provisions in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment."

Although cleanup levels have changed as discussed above due to modifications to MTCA in 2001, these changes do not result in a change in the conclusions that the site will be sufficiently protective of human health and the environment using the Consent Decree cleanup levels provided the actions in the *Effectiveness of Completed Cleanup Actions* are satisfactorily completed.

Current and projected site use

The site is currently zoned M-2, Heavy Manufacturing, by the City of Everett and is intended to continue in that use for the foreseeable future.

Availability and practicability of higher preference technologies

There are no higher preference technologies that are available and practicable for the Site.

Availability of improved analytical techniques to evaluate compliance with cleanup levels

Analytical techniques available at the time of cleanup were sufficient to evaluate compliance with cleanup levels.

Conclusions and Recommendations

The physical cleanup actions completed to date are largely effective in protecting human health and the environment so long as the Restrictive Covenants are in place and its provisions are followed. Items which need attention are summarized below:

- Ascertain the condition of South End ground water wells if encountered. Properly abandon the wells if necessary.
- Assess PCP concentration distribution in ground water in the Lower Sand aquifer in the vicinity of Sierra Pacific location GP-10 and report the results to Ecology. This is in the vicinity of Remediation Area RA-8-3A.

- Perform the next Periodic Review by 2017. When performing this review, Ecology may require Weyerhaeuser to collect ground water quality data to evaluate whether protectiveness continues to be achieved at the ground water conditional point of compliance.

Key Site Documents

No.	Document Date	Document Title
1	12/1/1994	Operable Unit Summary Report, Weyerhaeuser Everett East Site, Attachment A, Phase 1 Assessment For Areas 3 through 10 Weyerhaeuser Everett East Site
2	3/17/1995	Operable Unit Summary Report, Weyerhaeuser Everett East Site
3	3/17/1995	Operable Unit Summary Report, Weyerhaeuser Everett East Site, Figure 6-1 (oversize)
4	3/17/1995	Operable Unit Summary Report, Weyerhaeuser Everett East Site, Attachment A, Phase 1 Assessment, Drawing 1 (oversize)
5	8/9/1995	Potential Remediation Areas, Weyerhaeuser East Site
6	11/1/1995	Remediation Alternatives and Estimated Costs, Weyerhaeuser East Site
7	11/22/1995	Results of Soil Sampling, Remediation Areas RA10-2 and RA8-3, Weyerhaeuser East Site, Everett, Washington
8	5/17/1996	Environmental Assessment of South End Residual Wood Storage Operable Unit Site and Ferry Baker Island Site - Survey Parcels 4 and 5 Weyerhaeuser Everett East Site, Everett, Washington
9	5/17/1996	Environmental Assessment of South End Residual Wood Storage Operable Unit Site and Ferry Baker Island Site, Fig2, Site Plan
10	9/17/1996	Results of Ground-Water Sampling and Analyses, Weyerhaeuser South End Residual Wood Storage Site, Everett, Washington
11	4/11/1997	Weyerhaeuser East Consent Decree (#972027738)
12	6/1/1997	Soil Remediation Completion Report For Weyerhaeuser Everett East Site
13	6/17/1997	Weyerhaeuser East Consent Decree (#972027738), Executed Restrictive Covenant
14	7/11/1997	Construction Complete Letter
15	3/20/2000	Plans for Addressing Arsenic Contamination, Riverside Business Park
16	8/24/2005	Weyerhaeuser Everett East Site, Mill B, Well Abandonment (also included is general correspondence between ASARCO, Port, and Ecology going back to 2000)
17	8/22/2002	Report: Independent Clean Up Action, Riverside Business Park, Everett, Washington
18	9/9/2003	Five Year Data Review Report, Weyerhaeuser Everett East Site, Parcel 1

No.	Document Date	Document Title
19	5/1/2005	Sierra Pacific Industries Document Submittal to Ecology (figures and tables)
20	5/5/2008	Groundwater Monitoring Results, Riverside Business Park, Everett, Washington
21	4/15/2009	Approval of Ground Water Monitoring, Consent Decree 97-2027738, Weyerhaeuser East Site, Everett, WA
22	4/28/2010	Groundwater Sampling Results - March 2010, Weyerhaeuser Everett East Site, Everett, Washington
23	6/6/2011	Groundwater Sampling Results - December 2010 & March 2011
24	6/7/2011	Duplicate Metals Results for Groundwater - March 2011
25	7/21/2011	Riverside Business Park Fill Thickness Evaluation
26	8/11/2011	Tulalip Water Pipeline Segment 2 and 3 Connection - Summary of Sampling Results

Figures

Figure 1: Location of the Weyerhaeuser Everett East Cleanup Site.

Figure 2: Weyerhaeuser Everett East Site Boundary and other cleanup sites in the vicinity.

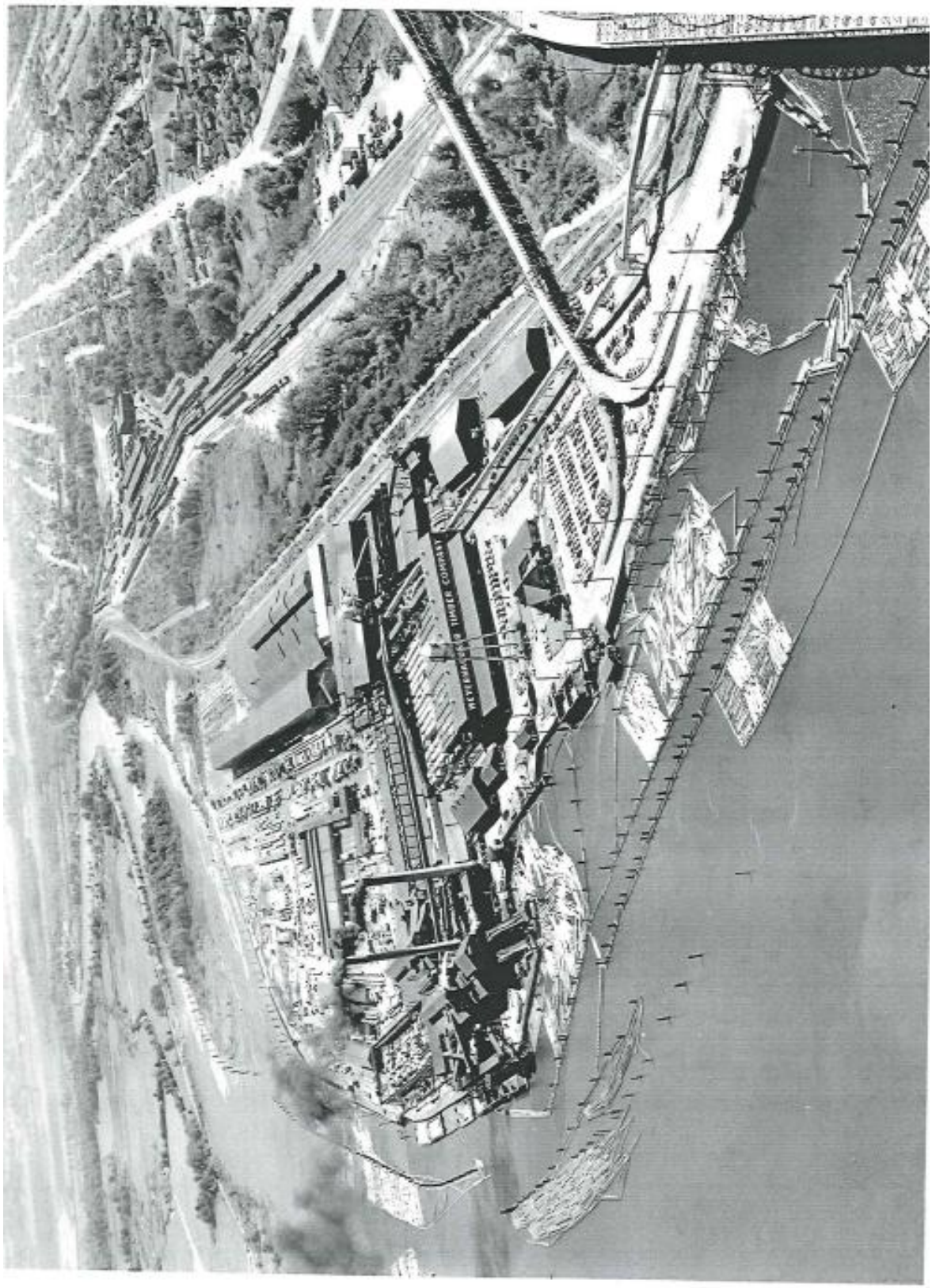
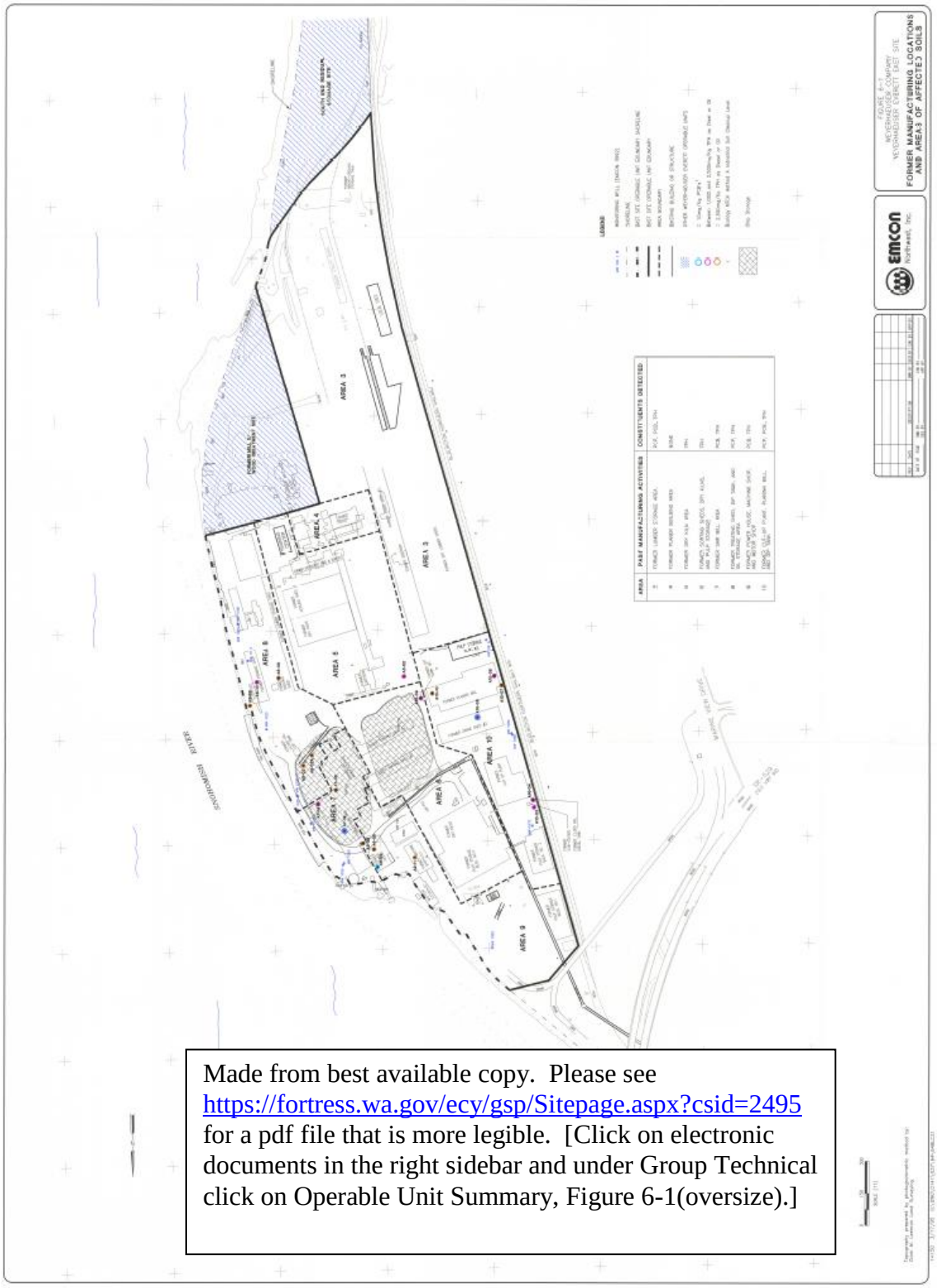


Figure 3: Weyerhaeuser Everett East in 1959, Weyerhaeuser Archives, RG#9 Western Ways Inc. album, Everett, Washington Sawmill [Mill B], Courtesy of Weyerhaeuser.



Made from best available copy. Please see https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=2495 for a pdf file that is more legible. [Click on electronic documents in the right sidebar and under Group Technical click on Operable Unit Summary, Figure 6-1(oversize).]

Figure 4: Former Facility Layout [3].

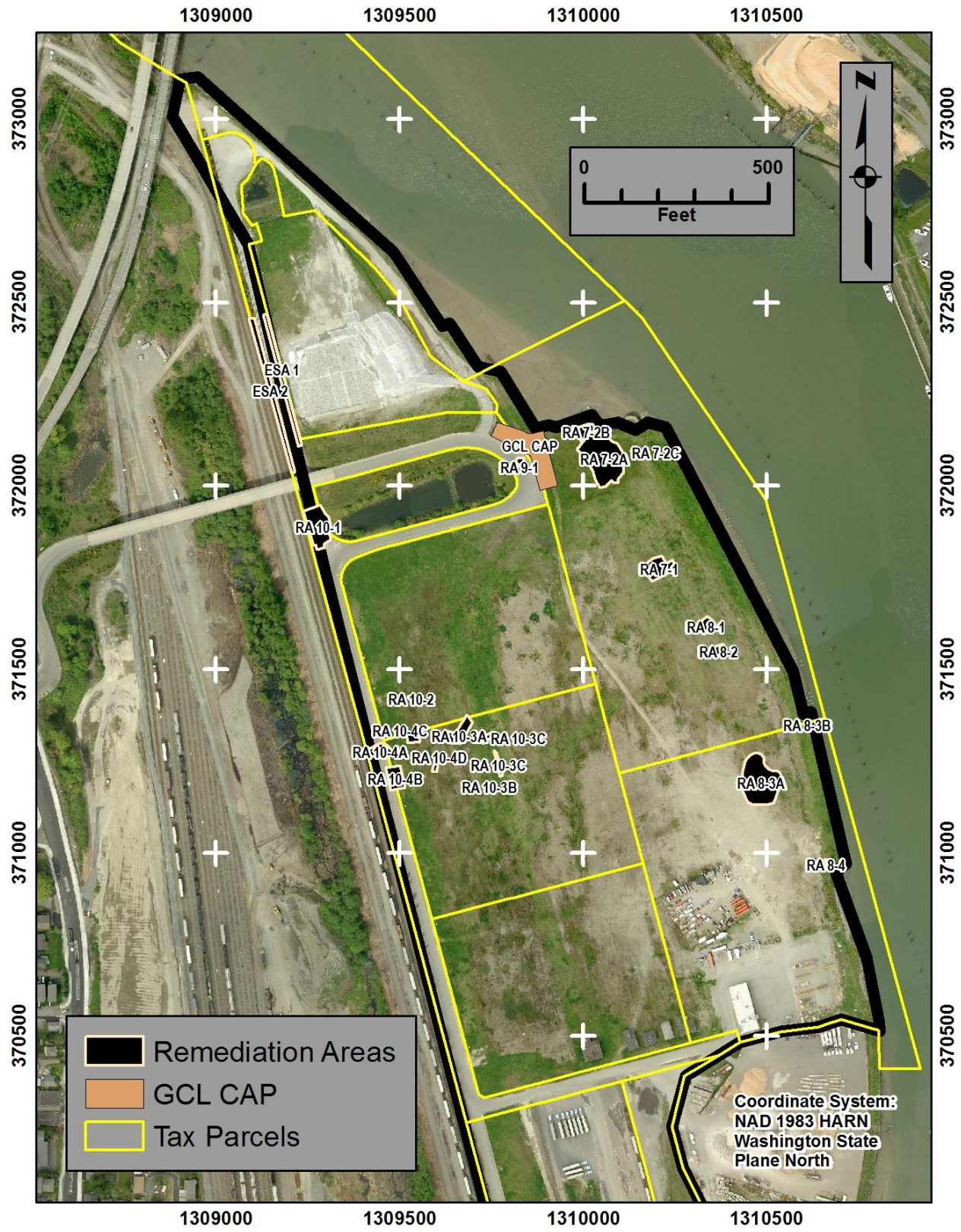


Figure 5: Remediation Areas, North

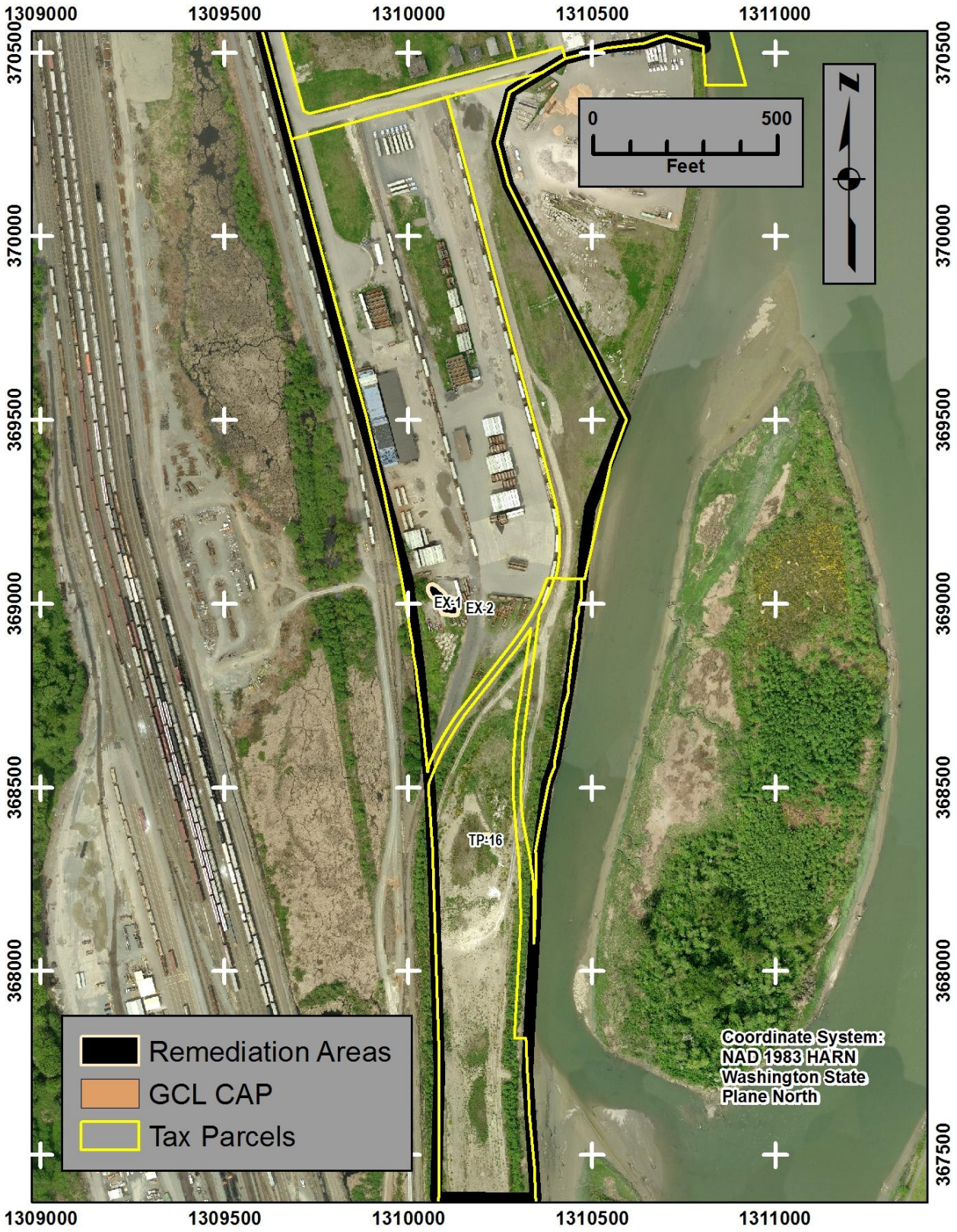


Figure 6: Remediation Areas, South

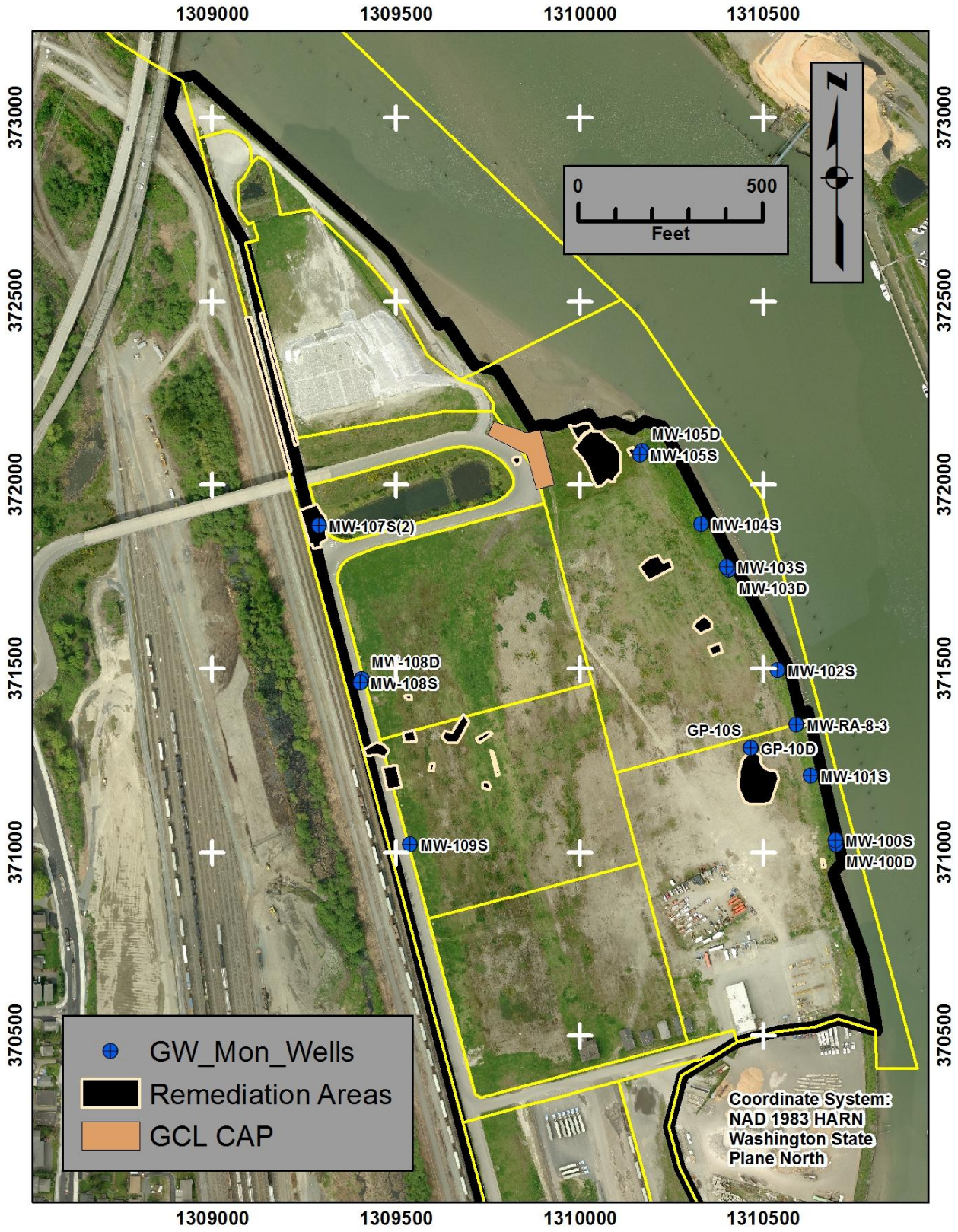


Figure 7: Ground Water Monitoring Well Locations, North.

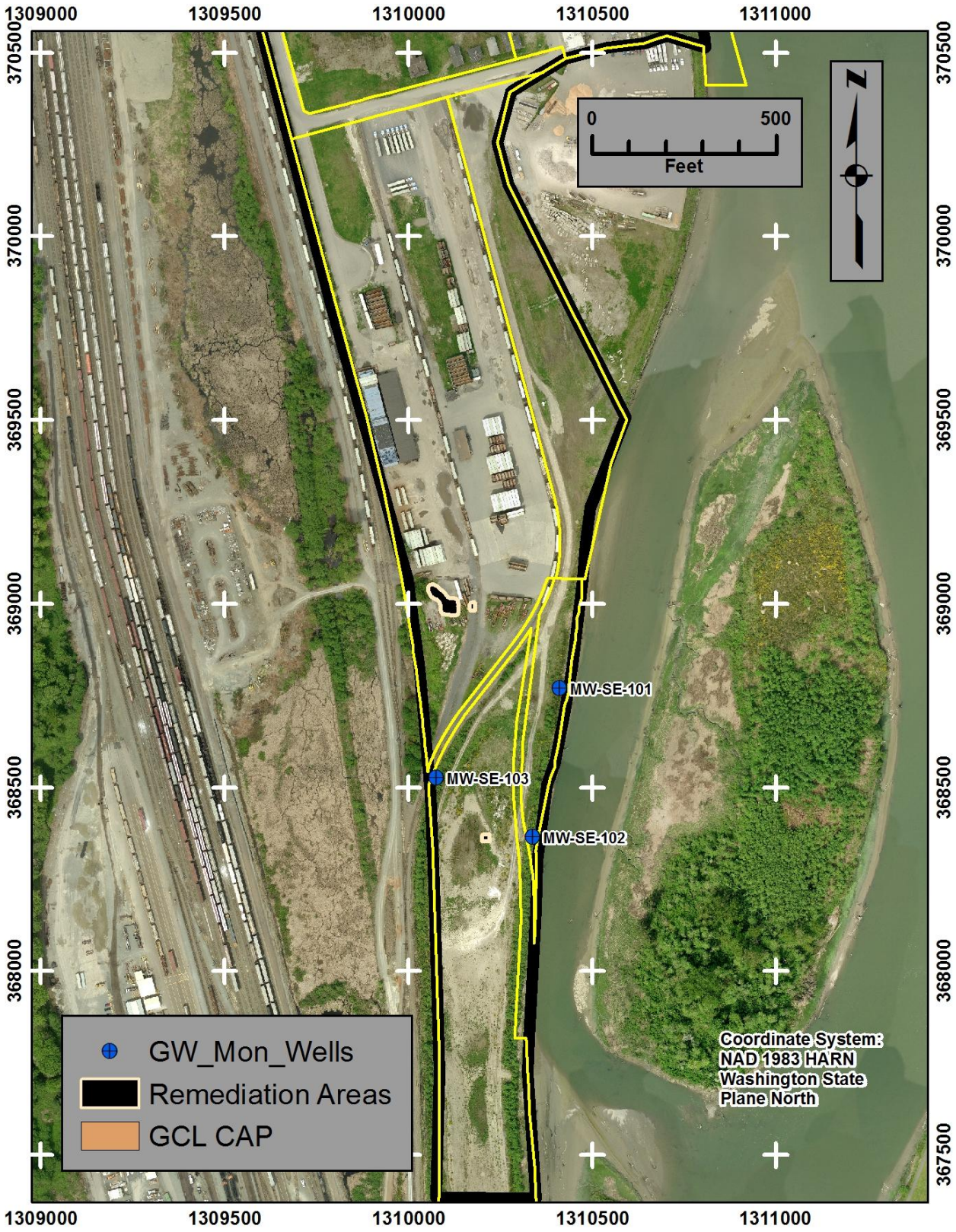


Figure 8: Ground Water Monitoring Well Locations, South.

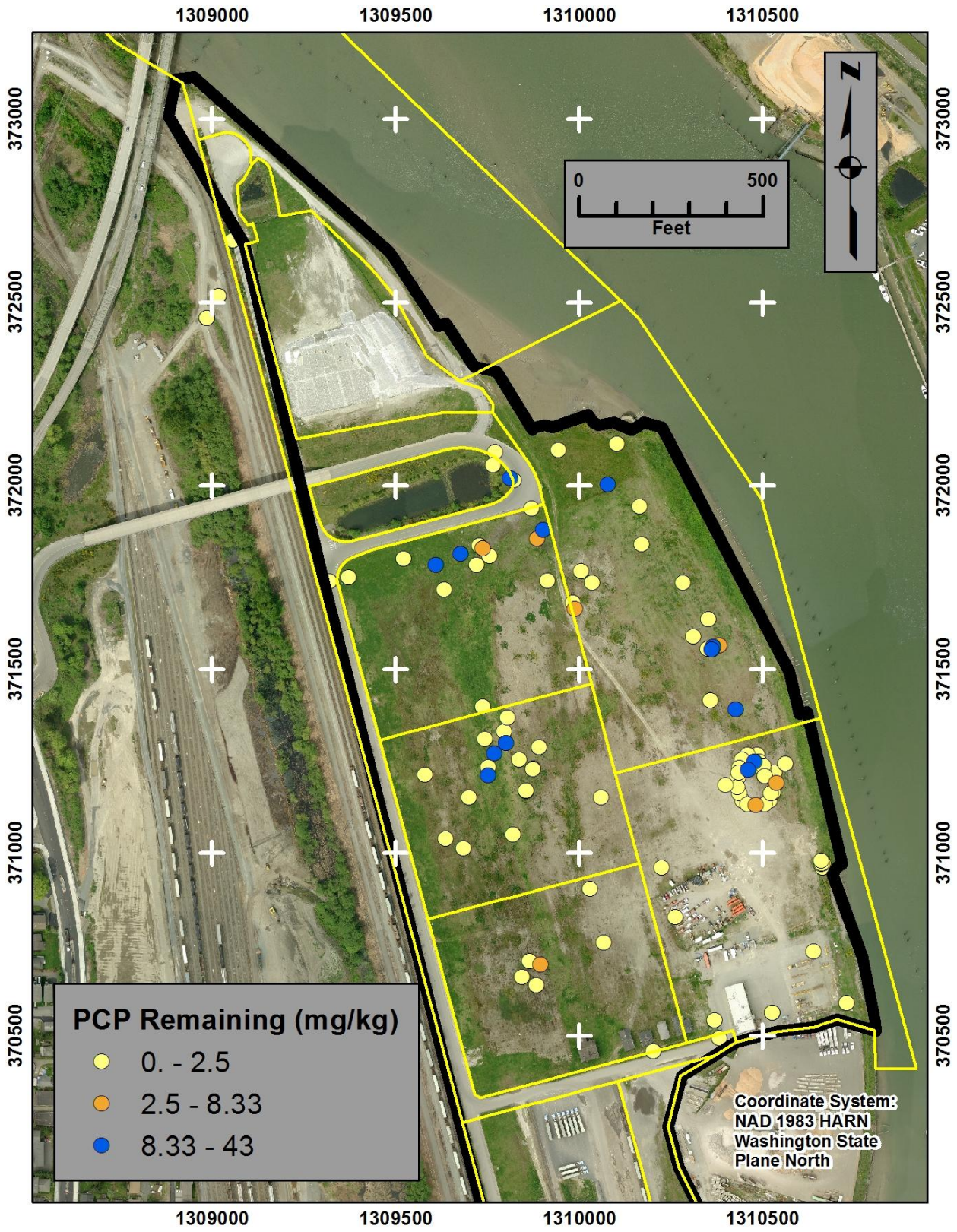


Figure 9: PCP Remaining in Soil, North.

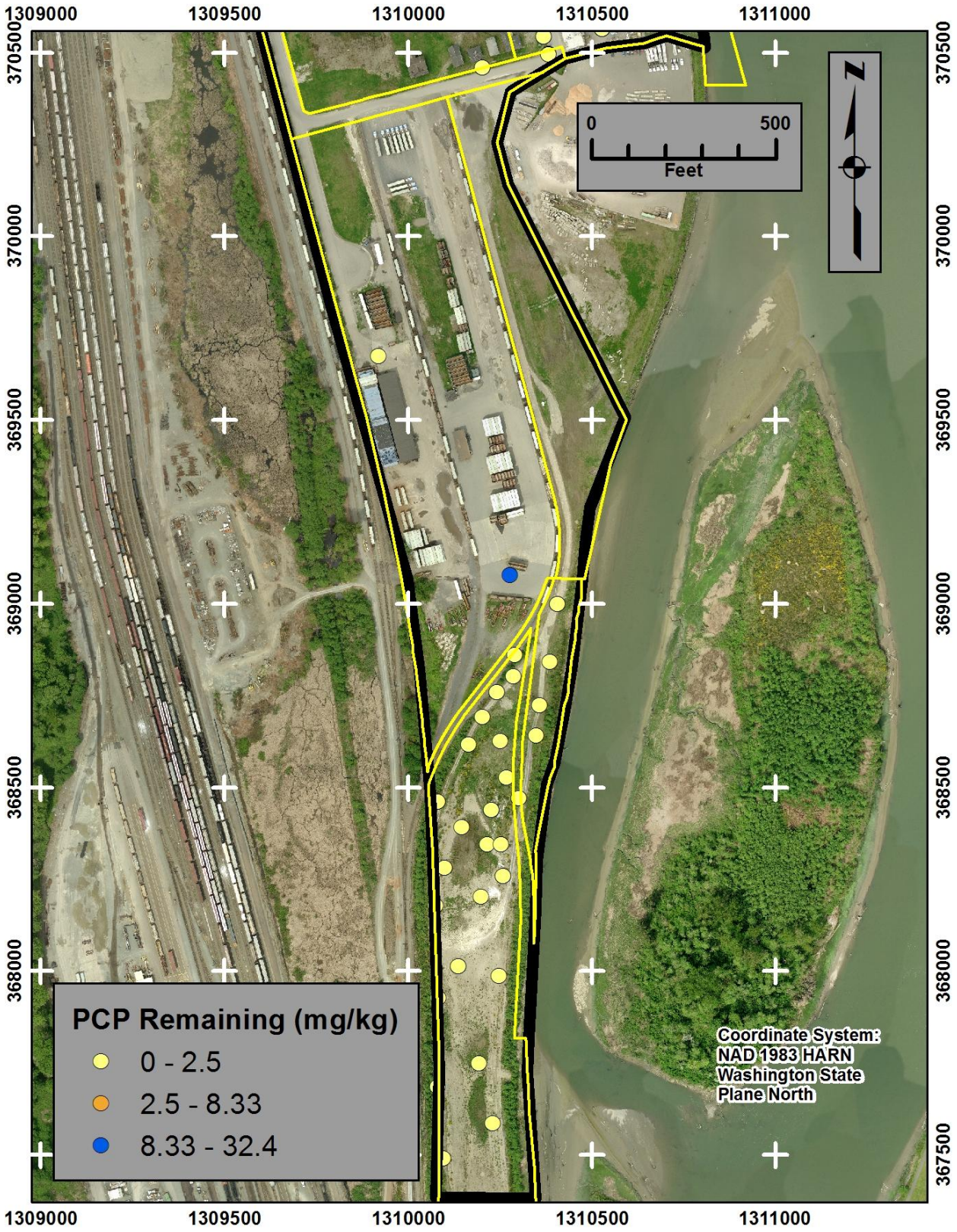


Figure 10: PCP Remaining in Soil, South.

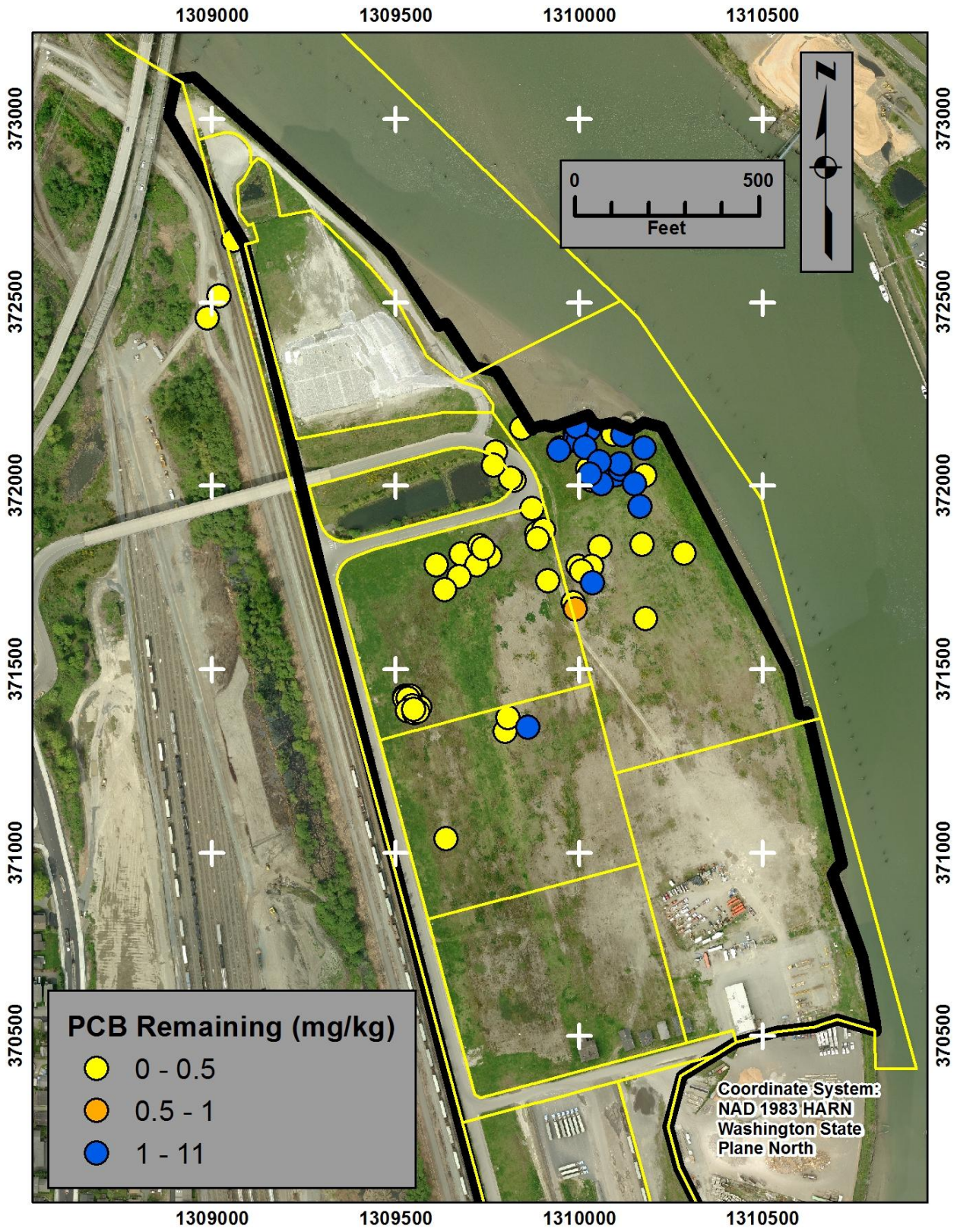


Figure 11: PCB Remaining in Soil, North.

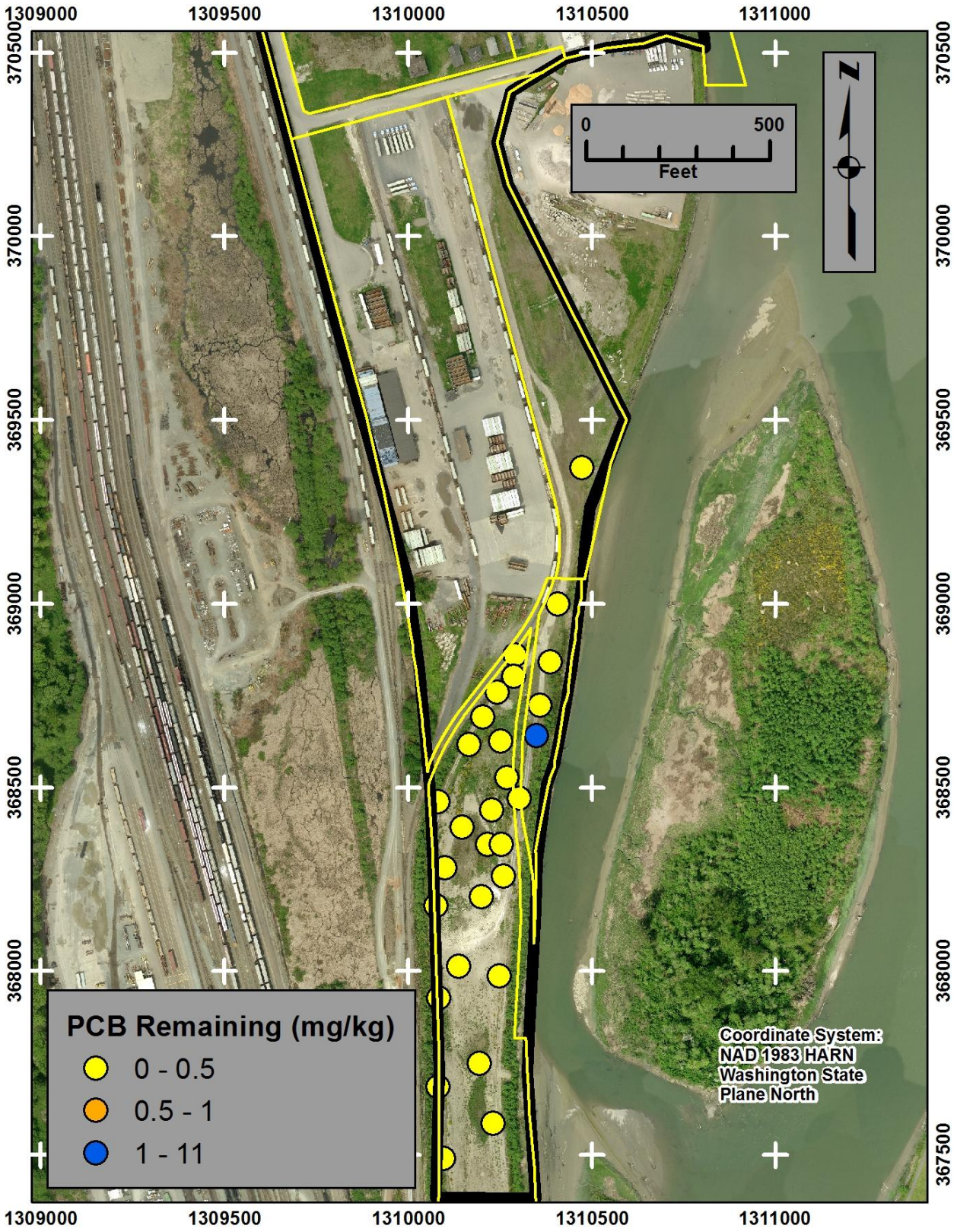


Figure 12: PCB Remaining in Soil, South.

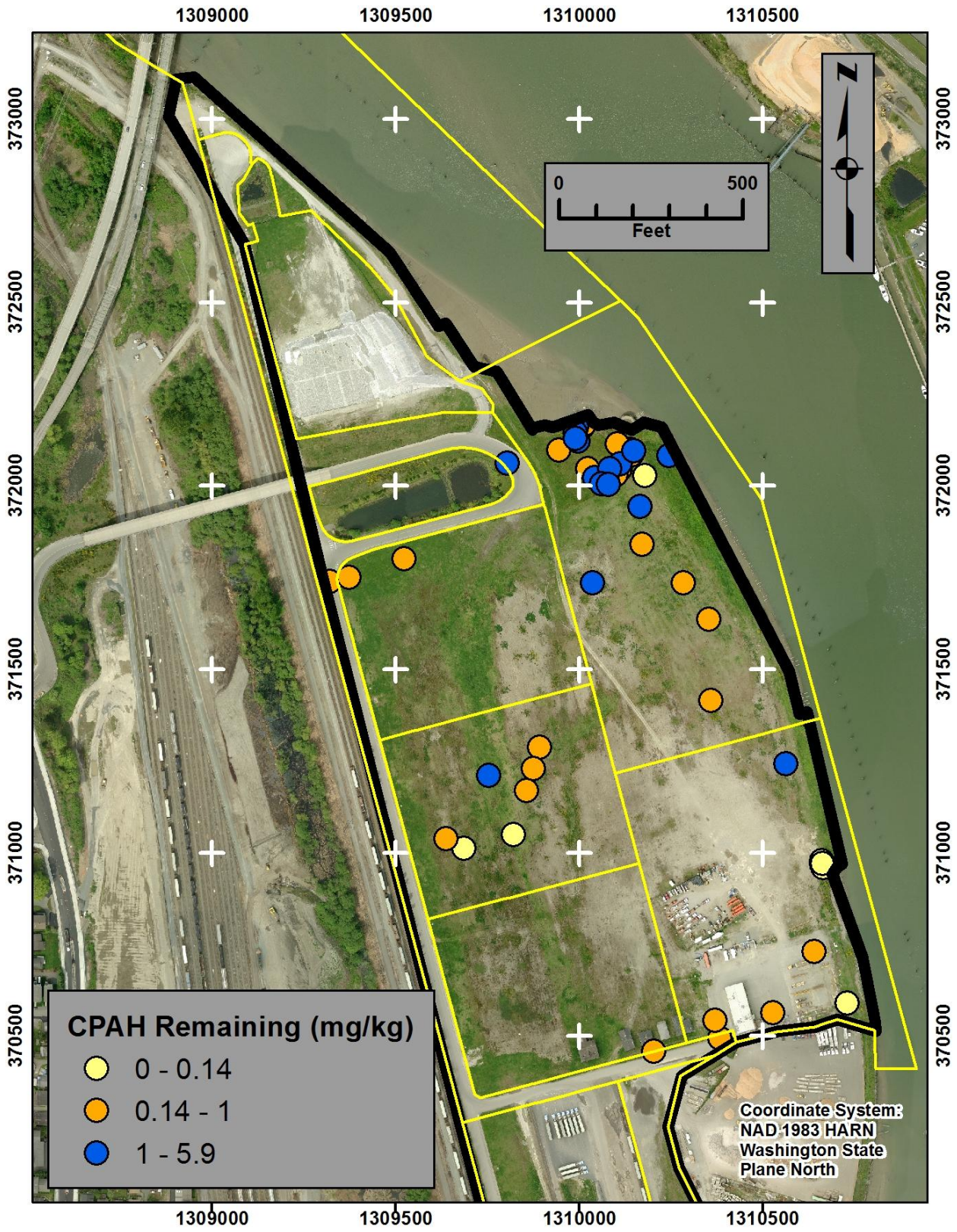


Figure 13: CPAH Remaining in Soil, North.

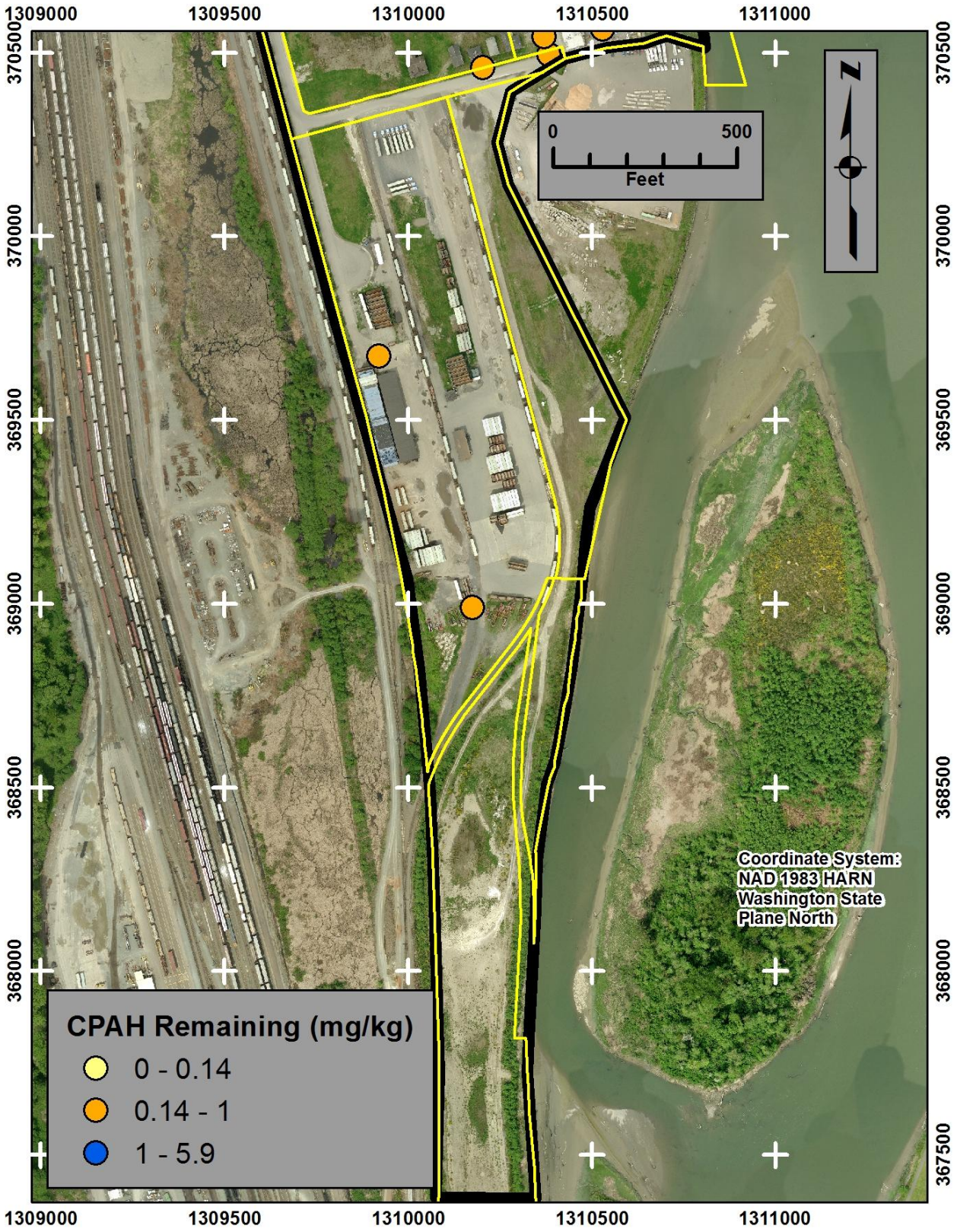


Figure 14: CPAH Remaining in Soil, South.

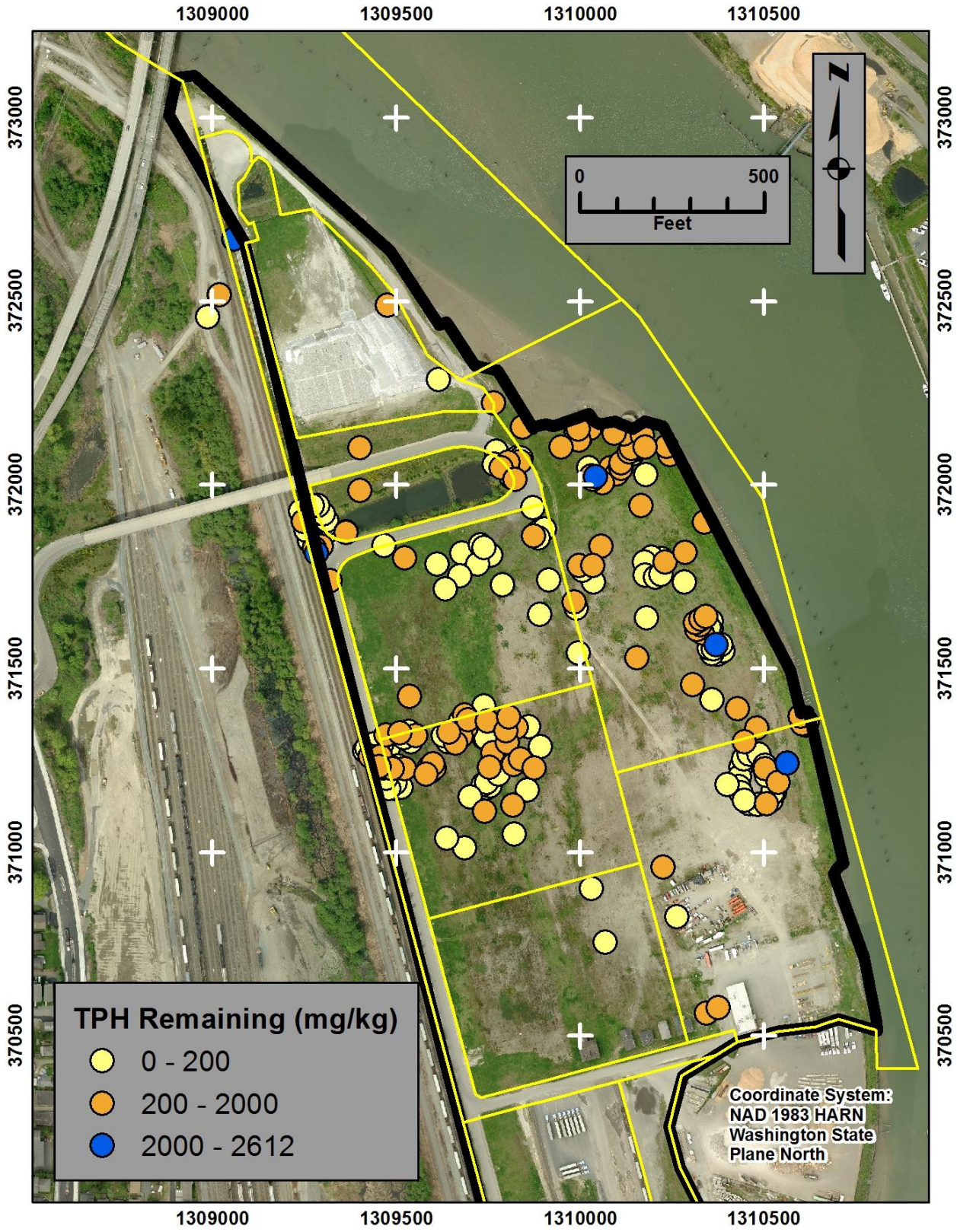


Figure 15: TPH Remaining in Soil, North.

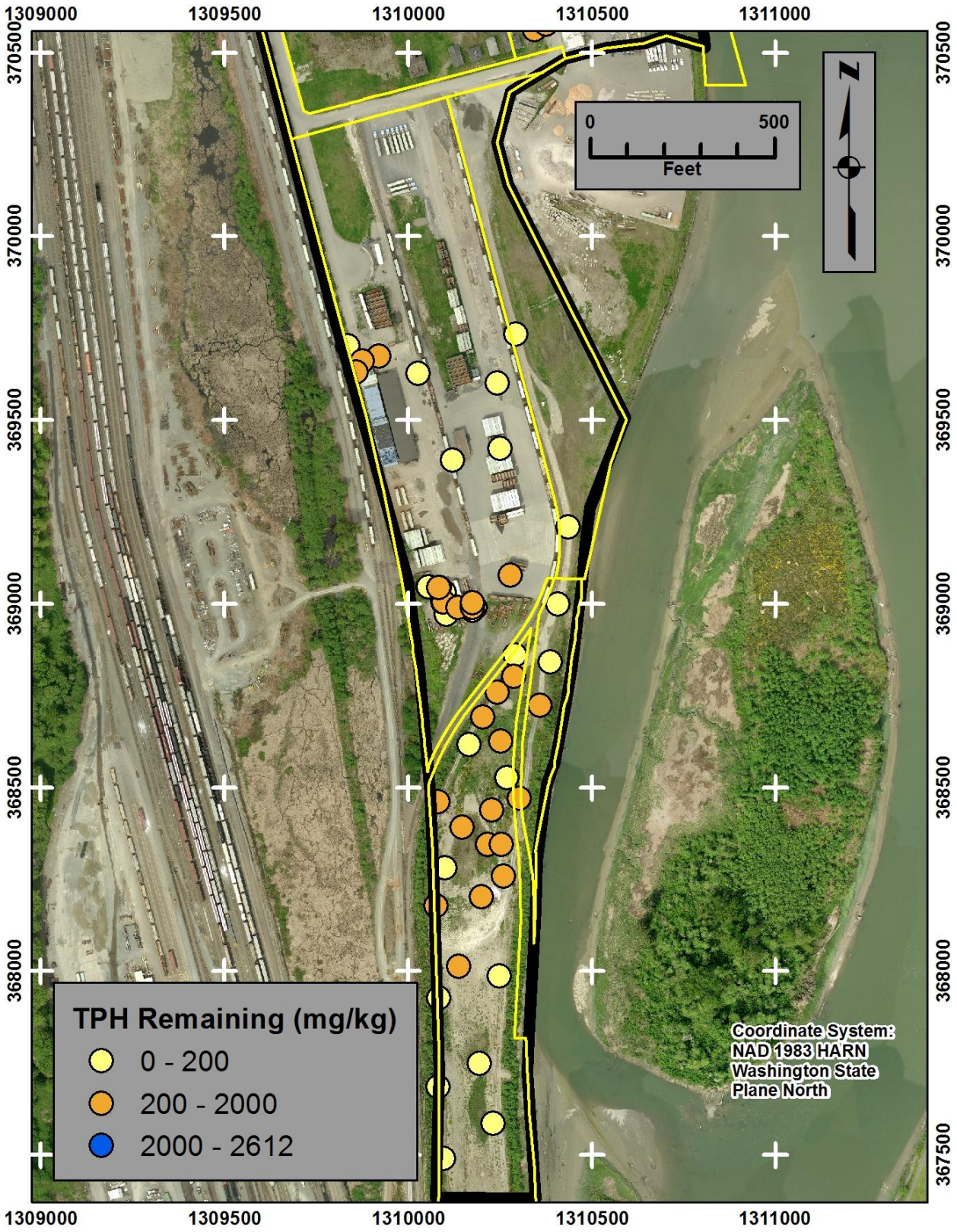


Figure 16: TPH Remaining in Soil, South.