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JOHN'S AUTO WRECKING
411 93RD AVENUE SOUTHEAST
OLYMPIA, WASHINGTON
FACILITY/SITE NO. 57665495
VCP PROJECT NO. SW1127
REMEDIAL INVESTIGATION

JULY 2013

by

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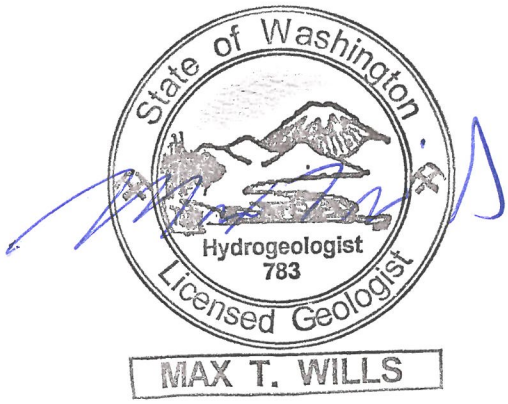
Senior Hydrogeologist



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1.0 Introduction

The John's Auto Wrecking site (site) is located at 411 93rd Avenue Southeast in Olympia, Washington. Figure 1 shows the location of the site, and Figures 2 and 3 show its general configuration. The site is currently enrolled in the Washington State Department of Ecology's (Ecology) Voluntary Cleanup Program (VCP) and is being investigated and/or remediated under the auspices of the same. The site is assigned Facility/Site No. 57665495 and VCP Project No. SW1127. The owner of the site, John Havens, is deceased, and the site is in probate pending final regulatory closure. Table 1, below, summarizes the project contacts for the site.

Table 1. Project Contacts

Law Office of Alan Wertjes	Estate Representative	Alan Wertjes, Attorney at Law	(360) 570-7488
Robinson Noble, Inc.	Consultant Representative	Max Wills, LHG, Senior Hydrogeologist, Project Manager	(425) 488-0599
Department of Ecology, Southwest Regional Office	VCP Site Manager	Eugene Radcliff, LG, Toxic Cleanup Program-Voluntary Cleanup Program	(360) 407-7404

The site is not currently being utilized for any specific purpose. When it was active, the site was occupied by a fairly extensive automobile wrecking-yard operation. Figure 2 shows an aerial of the site prior to the removal of most of the old cars and generally reflects conditions when the site was an active wrecking yard. Most of the wrecked cars, miscellaneous auto parts, and equipment associated with the wrecking-yard operation have been removed from the site. Many of the buildings and shacks have also been dismantled and much of the associated debris removed. However, there are still a few vacant buildings and shacks present, primarily at the north end of the site, along with piles of wood and other debris from demolished structures. There are also minor amounts of automobile debris (i.e., tires, auto-body parts, etc.) scattered across various areas of the site, but the preponderance has been removed. Over the past several years, a fence with a locking gate was also erected around the site, which has helped to dissuade illegal dumping. Much of the site is overgrown with Scotch broom and other invasive vegetation. The current conditions of the site are generally reflected in Figure 3, which is presented using a more recent aerial photograph.

1.1 Purpose

The purpose of this Remedial Investigation (RI) report is to present a summary of previous investigation and remediation work completed at the site. This RI report also provides a compilation of our recent investigative data and a discussion based on our professional interpretation of these data. Finally, this RI presents a summary of findings made during a recent site visit with personnel from Ecology and a discussion of work that will still need to be completed to achieve eventual regulatory closure for the site.

1.2 Site Description and Physical Setting

The address of the site is 411 93rd Avenue Southeast, and it is specifically located within Section 23 of Township 17 north, Range 2 west, relative to the Willamette Meridian. Figure 1 shows the location of the site. As shown on Figures 2 and 3, the site is comprised of six contiguous parcels identified by Thurston County Assessor-Treasurer records as parcel numbers 12723210100, 12723220200, 12723210400, 12723210401, 12723210700, and 12723210000. Thurston County Assessor-Treasurer records indicate these six parcels cover an area of approximately 15 acres. The topography at the site is relatively flat with a gentle slope to the south toward Hopkins Ditch (see Figures 2 and 3). Land surface elevations range from 202 feet above mean sea level (MSL) at the northern end of the site, to 195 feet MSL near the south end of the site along Hopkins Ditch.

The site and surrounding area are located on a broad glacial outwash plain. Noble and Wallace (1966) and Drost and others (1998) both map the surface geology in this area as Vashon recessional outwash (Qvr). They describe the Qvr as consisting of a mix of poorly sorted silt, sand, and gravel, and note that the average thickness in the area of the site is approximately 25 feet. The standard sequence of Vashon glacial deposits is Qvr, underlain by till (Qvt), which is in turn underlain by advance outwash from the Vashon glaciation (Qva). The Qvt generally consists of a random mixture of clay, silt, sand, and gravel. This unit is also typically compact and has a relatively low permeability, at least as compared with that of the Qvr and Qva deposits. The Qva deposits, similar to the Qvr, are generally comprised of silty sands and gravels, but are often better sorted than the Qvr. Qvr and Qva deposits, when saturated generally form aquifers. Qvt deposits tend to form an aquitard. Mapping by Drost and others (1998) indicates that both the Qvt and Qva are present below the Qvr in the area of the site. Their maps indicate that the thickness of the Qvt is probably at least 25 feet in the area around the site and would, therefore, provide a relatively competent confining unit between the Qvr and Qva.

Drilling and excavation activities associated with our investigation of the site reached a maximum depth of 20 feet. The materials encountered were consistent with the descriptions of the Qvr provided by Noble and Wallace (1966) and Drost and others (1998). None of the borings or excavations completed during this project extended deep enough to penetrate the Qvt.

Soils in the area of the site have been classified by the United States Department of Agriculture (Soil Survey for the Thurston County Washington Area, 1990) as Nisqually loamy, fine sand (covering approximately the northern three quarters of the site) and Norma fine, sandy loam (covering approximately the southern quarter of the site). These soils are described as having developed on glacial outwash plains and on alluvial deposits, respectively. Both of these soils are described as having relatively high infiltration rates ranging from 1.98 to 5.98 inches per hour.

Surface water present on the site includes Hopkins Ditch, which is a small seasonal stream that traverses the southern portion of the site from east to west. There is also a small pond present on the southern half of parcel 12723210700, just north of Hopkins Ditch (Figures 2 and 3). Hopkins Ditch typically only has water in it during the wetter portions of the year and is often nearly dry in the late summer. When there is water in the ditch it does not appear to flow and the ditch is, in fact, more akin to a linear series of small disconnected ponds. The head of Hopkins Ditch is located just east of the site, and the site itself lies within the headwater-area of the Salmon Creek drainage basin. Maps of this area show that Hopkins Ditch becomes Salmon Creek approximately two miles west of the site (near Little Creek Road). Salmon Creek then flows into the Black River approximately three miles further west. The Black River eventually flows into the Chehalis River, which then flows to the sea at Grays Harbor.

Groundwater at the site is relatively shallow, ranging from approximately ten feet below ground surface (bgs) at the northern end of the site, to near land surface at the southern end of the site. Figure 4 shows the locations of designated wetlands and wetland buffer zones at the site. These data, which were obtained from the geographic information system (GIS) database on the Thurston County Assessor-Treasurer's website, show that wetland areas are prominent across the southern part of the site where groundwater is highest. These wetland areas also generally correspond with the area along Hopkins Ditch. GIS data obtained from the Thurston County Assessor-Treasurer's website also shows that several areas of the site are classified as both high groundwater hazard areas and flood zones. Figure 5 shows the designated high groundwater hazard areas on the site and the adjoining buffer zones. Figure 6 shows the designated flood zones, which again occur primarily on the southern portion of the site and generally parallel the corridor of Hopkins Ditch.

Noble and Wallace (1966) determined that the regional flow direction of the water table in the area of the site is to the northwest. The water table is presumed to reflect conditions within the Qvr aquifer. Similarly, the numerical groundwater model of Northern Thurston County compiled by Drost and others (1999) indicates that the regional groundwater flow direction within the Qva and deeper aquifers is also to the northwest. Drost and others (1999) did not specifically model flow directions within the Qvr, but based on Noble and Wallace (1966) and observations made during our investigation, flow directions within the Qvr aquifer appear to be consistent with those in deeper systems.

Figure 7 presents a potentiometric (water table) surface map for the Qvr aquifer, constructed from the water levels measured in shallow monitoring wells at the site. As shown, shallow groundwater below the site (the Qvr aquifer) flows primarily toward the northwest, consistent with the regional flow direction determined by other workers. The potentiometric surface map, however, also shows that there is localized flow toward Hopkins Ditch. The potentiometric surface map presented in Figure 7 reflects conditions during the wetter portion of the year (late February) and this apparent draw of groundwater toward the ditch suggest that there is at least a minor amount of flow through the ditch during this period. It is presumed that this localized effect is diminished or absent during warmer periods of the year when water in the ditch is lower or absent.

A query of the GIS data compiled on the Thurston County Assessor-Treasurer's website indicates that there is one PUD-owned water system located approximately 1,800 feet west of the site (on parcel 12722110801). However, no specific information for this water system was available, and parcel information indicates it is located on private land. A further review of Ecology's well log database did not reveal any additional information for this particular system. Our review of Ecology's well log database found a number of logs for single domestic-type wells in the area around the site, but no logs for larger water systems (Group A or B). Additionally, GIS data on the Thurston County Assessor-Treasurer's website did not indicate any other PUD-owned water systems located within one mile of the site.

2.0 Background

2.1 Site History

As described above in Section 1.0, the site was formally occupied by a relatively large auto-wrecking operation, which involved the majority of the 15-acre site (see Figure 2). There are no records indicating that the site was previously developed for any other purposes. The site has been inactive since the death of the former owner, John Havens, and most of the material as-

sociated with the former wrecking yard (old automobiles, various machinery, and several structures) was cleared from the site between 2008 and 2009 (see Figure 3).

2.2 Previous Work

Robinson Noble first became involved with the site in 2008. At that time, Robinson Noble (dba Robinson, Noble, & Saltbush, Inc.) completed a review of available records and documents on file with Ecology and the Thurston County Health Department (TCHD). This review found that the site was listed on Ecology's Hazardous Site List with a Site Hazard Assessment (SHA) ranking of "1." Sites with SHA rankings of "1" or "2" are loosely defined by Ecology as posing a risk to human health and the environment and as having the highest priority for cleanup. Our review also found that the owners of the site had previously enrolled the site in Ecology's VCP to address the SHA ranking. However, the site was subsequently removed from the VCP due to inactivity.

Limited investigations completed while the site was previously enrolled in the VCP (prior to Robinson Noble's involvement at the site) identified nine areas of concern (AOCs). These AOCs were based on observations made at that time by a representative of TCHD (Mr. Patrick Soderberg), as well as specific types of reported past uses in these areas when the site was an active wrecking yard. Upon Robinson Noble becoming involved at the site, it was reenrolled in the VCP, and much of the subsequent investigation and remediation work completed has been focused on addressing the specific issues within each of the previously designated AOCs. Figure 8 presents a map that shows the location of each AOC, along with a description of previous uses associated with each. Figure 8 also shows the locations of various borings, wells, and test pits previously completed by Robinson Noble to investigate the various AOCs.

Previous work completed by Robinson Noble is documented in the following listed letter reports. Copies of the complete letter reports are included in Appendix A of this report.

2.2.1 Site Investigation/characterization letter report, Havens Property (aka) Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington, April 21, 2009

In February 2009, Robinson Noble conducted a subsurface investigation to evaluate the presence of potential contaminants associated with the former wrecking yard. This investigation included an evaluation of both soil and groundwater in the nine AOCs and was accomplished through the sampling of numerous borings and test pits (see Figure 8). In general, analytical results identified oil-range petroleum hydrocarbons and metals in excess of applicable Model Toxic Control Act (MTCA) Method A cleanup levels in several surface and near surface soil samples. These samples were all collected in areas with visible ground staining. Soil analyses did not detect any contamination at depth. Analyses of groundwater indicated several samples contained metal concentrations in excess of applicable MTCA Method A cleanup levels. However, groundwater samples during this phase of work were obtained through temporary wells set in direct-push soil borings, and the groundwater samples with higher detected levels were notably turbid. As such, the elevated metal concentrations in these samples were attributed to the sampled water having high amounts of suspended solids.

2.2.2 Site Remediation of the Havens Property (aka Johns Auto Wrecking) 411 93rd Avenue SE letter report, Olympia, Washington, December 10, 2009

In August 2009, Robinson Noble conducted further investigations and remediation based on the results of our previous site investigation/characterization. During this second effort, impacted soils identified during our earlier characterization were excavated and removed from the site for disposal. At this time, additional sources of contamination (i.e., drums and tanks containing oil,

automotive batteries, etc.) were also removed and transported to an appropriate disposal facility. Confirmation sampling conducted at the conclusion of this effort did not indicate the presence of any remaining contamination and verified that the remediated impacts were constrained to the near surface.

Three monitoring wells, MW-1, MW-2, and MW-3 (see Figure 8), were also installed during this second effort. These wells, which were completed in the shallowest groundwater system (Qvr), were used to establish a groundwater gradient for the site and to reevaluate potential metal impacts to the groundwater. The groundwater gradient was determined from these wells to be westerly to northwesterly across the site. Metal analyses of groundwater samples obtained from these wells did not detect the presence of metals in any of the samples, verifying our previous conclusion that metal detections in the groundwater samples collected from direct-push borings were an artifact of the samples having high turbidity.

3.0 Current Work

Following the completion of our initial investigation and remediation work (described above in Section 2.0), Ecology conducted a review of the work and provided a formal opinion. Ecology's formal opinion is presented in their letter dated August 23, 2011 (see Appendix B). As noted in the letter, Ecology identified several areas it felt required additional efforts to fully characterize potential contamination at the site.

Subsequently, Robinson Noble prepared a draft work plan to address the site characterization issues noted by Ecology in their opinion letter. The draft work plan is dated February 2012, and a copy is also provided in Appendix B. In our work plan, we contested some of the issues raised by Ecology and provided clarification and/or alternative investigative approaches to fully characterize the site. The work plan was then submitted to Ecology for review. Ecology responded via an email (dated June 28, 2012) and either accepted each of the Tasks outlined in the work plan or offered suggestions on how to modify or approach addressing specific issues of concern. A copy of Ecology's email response is also provided in Appendix B. Our draft work plan, together with Ecology's suggested modifications were then used as the basis for executing the current phase of work.

3.1 General Procedures

Field work for the current phase of work was completed in February and March 2013. Field work included soil and groundwater sampling from direct-push borings (groundwater samples were collected through temporary screens set in each boring), soil samples from hand borings, installation and sampling of new monitoring wells, collection of near surface grab samples from the wetland area at the south end of the site, and sediment sampling of Hopkins Ditch and the nearby pond. Figure 9 shows the locations where various borings and monitoring wells were installed and where samples were collected. Figures 10 through 14 present geologic logs of the direct-push borings. Figures 15 and 16 show geologic logs and construction details for monitoring wells MW-4 and MW-5, respectively. Geologic logs of previously completed borings and monitoring wells (i.e., MW-1 through MW-3) are presented in our previous reports (see Appendix A).

During field work, a Robinson Noble geologist was on site to field screen soils from each of the borings for signs of potential contamination. Field screening was accomplished using visual and olfactory cues and a hand-held photo ionization detector (PID). Field screening, as applicable, was used in a general way to guide the collection of soil samples to try to insure that worst-case soil samples were collected and subsequently analyzed. An on-site mobile laboratory was also utilized during most of the field work for analysis of petroleum hydrocarbons. On-site pe-

troleum hydrocarbon analysis was, in effect, used as an additional screening tool. Analyses were performed using Ecology analytical method NWTPH-HCID to determine the presence or absence of gasoline- through heavy oil-range petroleum hydrocarbons. In the event that petroleum hydrocarbons were detected, monitoring wells were set to better assess conditions, and additional analyses performed to quantify the detected petroleum hydrocarbon and/or to assess other potential analytes such as polycyclic aromatic hydrocarbons (PAHs).

All other analyses completed during this project were conducted at fixed-site laboratories. All samples were collected in appropriate laboratory supplied containers and, in most cases, delivered directly to the on-site mobile laboratory for proper storage and preservation pending final analysis. On other occasions when the mobile laboratory was not on site, collected samples were immediately placed in a cooler containing blue ice® and maintained at temperatures below 4° Celsius pending delivery to the laboratory. Appropriate chain-of-custody procedures were adhered to throughout this project and no discrepancies were noted. Additionally, all samples were submitted and analyzed within prescribed holding times for the particular analyses being performed. The various laboratories used during this project are each accredited for the particular analyses that they performed, and each laboratory provided results for required QA/QC analyses. A review of these QA/QC analyses did not reveal any discrepancies.

Table 2. Analytes and Analytical Methods

Analyte	Analytical Method	AOC(s)
Petroleum hydrocarbons	NWTPH-HCID	1, 2, 3, 5, 6, 7&8, 9A, 9B, Stream and wetland
Volatile organic compounds (VOCs)	EPA Method 8260C	1, 3, 6
Polycyclic aromatic hydrocarbons (PAHs)	EPA Method 8270 (SIM)	Stream and wetland
Arsenic, cadmium, chromium, lead, zinc, copper	EPA Method 7010 Series	2, 3, 5, 6, 7&8, 9A, 9B, Stream and wetland
Mercury	EPA Method 7471	2, 3, 6, 7&8, 9A, 9B, Stream and wetland
Total nickel	EPA Method SW846 6010B	2, 3, 6, 7&8, 9A, 9B, Stream and wetland
Dissolved nickel	EPA Method 200.7	2, 3, 6, 7&8, 9A, 9B, Stream and wetland
TCLP lead	EPA Method SW846 6010B	Stream and wetland
Ethylene and propylene glycols	GC-FID	3
Polychlorinated biphenyls (PCBs)	EPA Method 8082	5, 6

The complete laboratory reports for all of the analyses performed during this project are provided in Appendix C. Table 2 lists all of the various analytical methods used during this project and provides a list of the various areas where each analysis was employed. A detailed discussion of the work completed for each AOC or area, along with a discussion of the pertinent analytical results, is provided in the following sections.

3.2 AOC 1 (Body Shop and Auto Repair)

When the site was active, this AOC was reportedly used for limited body-shop work and general auto repair. There are currently two structures located within this AOC: a garage-like structure with an attached office and smaller outbuilding located approximately 50 feet to the west of the larger building. Both of these buildings are locked and boarded shut and were not accessible during site work. There is also a large pile of building and other debris (lumber, glass,

brick, metal, etc.) located approximately 50 feet south of the two structures where a third structure appears to have been demolished. Although unsightly, only minor hazardous (source) materials were observed in this debris pile (i.e., lumber preserved with creosote, florescent light fixtures, etc.).

During our previous investigations, we observed numerous five-gallon buckets containing waste oil in the area between the two existing structures. We also observed a small area of surface staining and distressed vegetation in this same area. Limited surface staining was also observed in the area south of the two structures (in the area of the current debris pile). Following the removal of the oil buckets and excavating the soils in the areas of observed surface staining, we collected both soil and groundwater samples and analyzed them for volatile organic compounds (VOCs), gasoline- through oil-range hydrocarbons, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). Laboratory analyses did not indicate the presence of any of the analytes above applicable cleanup levels (see previous reports in Appendix A and draft work plan in Appendix B).

For the current investigation, and with Ecology's concurrence, three additional borings were completed in this AOC. As shown on Figure 9, borings B12, B13, and B14 were completed respectively on the south side of the small outbuilding, in the area between the two structures, and in the area just south of the building-material debris pile. Geologic logs of the material encountered in each of these borings are presented in Figure 10. Field screening did not indicate the presence of contamination in any of these borings. Soil and groundwater samples collected from each of these three borings were initially analyzed for petroleum-hydrocarbon identification via the mobile laboratory. This initial laboratory screening did not indicate the presence of petroleum hydrocarbons in any of the samples. Therefore, no additional analyses for petroleum-hydrocarbon related compounds (i.e., PAHs) were conducted, and monitoring wells were not completed.

Additional analyses for VOCs were conducted for both the soil and groundwater samples. VOC analysis indicated the presence of tetrachloroethen (PCE) at a concentration of 1.90 μg/L in the groundwater sample collected from B13 (sample number B13-W, see Appendix C). This is below the MTCA Method A cleanup level for PCE of 5.0 μg/L. VOC analyses did not detect the presence of any other VOCs in any of the other samples collected from AOC 1.

3.3 AOC 2 (Battery Storage and Repair)

This AOC was reportedly used as a battery storage and repair area. The specific location where batteries were stored within this AOC has never been definitively determined. Our initial investigations in this area focused primarily on areas with distressed vegetation. Initial soil and groundwater samples collected from one boring (B2), along with soil samples collected from a test pit (TP2A) southeast of the current AOC (see Figure 8), were analyzed for VOCs, gasoline-through oil-range hydrocarbons, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). Laboratory analyses of a near-surface soil sample indicated low levels of nickel (well below applicable cleanup levels). Laboratory analyses did not detect the presence of any other analytes above applicable laboratory detection limits in any of the other samples. Further assessment of this AOC using aerial photographs shows that the areas of distressed vegetation were previously covered with piles of cars, and therefore, may not have been the actual battery storage location. The only place near this AOC not previously covered with cars is a small, tree-covered area located slightly to the northwest (see Figures 2, 8, and 9, and previous reports in Appendix A).

To better characterize this AOC, again with Ecology's concurrence, we completed two hand borings (HB1 and HB2) and installed a new monitoring well (MW-4). As shown in Figure 9, the borings and monitoring well were completed in the northwestern portion of the previously defined AOC, in the area below the large trees. A geologic log and construction details for MW-4 are presented in Figure 15. Standard field screening did not indicate the presence of contamination in either of the hand borings or the boring for the monitoring well. Because this area is a suspected storage area for batteries, additional field screening for pH was also conducted. The pH levels measured in this area were all within a reasonably normal range (i.e., 6.5 to 7.5). Soil samples collected from the two hand borings and the boring for MW-4 were initially analyzed for petroleum hydrocarbon identification via the mobile laboratory. This initial laboratory screening did not indicate the presence of petroleum hydrocarbons in any of the soil samples. Subsequent laboratory analysis of a water sample collected from MW-4 also did not indicate the presence of petroleum hydrocarbons. Therefore, no additional analyses for petroleum-hydrocarbon related compounds were conducted in this AOC.

Analyses of metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel) were conducted for both soil and groundwater samples collected from this AOC. As shown in Table 3 below, laboratory analyses indicated the presence of specific metals in a shallow soil sample collected from the boring for MW-4 (sample MW4-3) and the shallow soil samples collected from the two hand borings (samples HB1-3 and HB2-3). All of these detections, however, were below applicable cleanup levels. Additionally, zinc was detected at a concentration of 6 μg/L in the groundwater sample collected from MW-4, which is well below the applicable cleanup level of 4,800 μg/L. Laboratory analyses did not detect the presence of any other metals in any of the samples collected from AOC 2 (see Appendix C).

Table 3. Select Analytical Results for Metals in Soil Samples from AOC 2

Sample Number	Arsenic *(mg/Kg)*	Chromium[2] *(mg/Kg)*	Zinc *(mg/Kg)*	Copper *(mg/Kg)*	Nickel *(mg/Kg)*
MW4-3	8	7	nd	12	21
HB1-3	9	8	25	12	20
HB2-3	8	8	nd	13	19
MTCA	**20[1]**	**19/2,000[3]**	**24,000[4]**	**3,200[4]**	**1,600[4]**

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - MTCA Method A soil cleanup level for unrestricted land use
2 - Total concentration of hexavalent chromium (chromium VI) and chromium III
3 - MTCA Method A cleanup level for chromium VI and III, respectively
4 - MTCA Method B non-carcinogenic cleanup level

3.4 AOC 3 (Radiator Shop and Auto Repair)

A garage structure within this AOC was reportedly used as a radiator shop and for general auto repair. This was also reported as the entry point for cars entering the wrecking yard. During our previous investigations, surface staining was observed on the gravel area east of the garage. Analyses of grab samples from this area detected oil-range petroleum hydrocarbons at a concentration of 500 mg/Kg (below the MTCA Method A cleanup level of 2,000 mg/Kg) and lead at a concentration of 230 mg/Kg (just below the MTCA Method A cleanup level of 250 mg/Kg). Minor detections (below applicable cleanup levels) of zinc, copper, and nickel were also detected in the shallow soils. Deeper soil samples and a groundwater samples collected from a boring placed in this AOC (see Figure 8) were analyzed for gasoline- through oil-range hydrocarbons, VOCs, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). The groundwater sample was also analyzed for glycols. Laboratory analyses did not detect any of these analytes in any of the deeper soil samples or the groundwater sample. During subsequent field work, areas of surface staining were excavated and removed from the site. Addi-

tionally, two trenches were excavated along the southern and western edges of the garage, and soils from the trenches were field screened for signs of possible contamination. Field screening did not indicate that soils were impacted (see previous reports in Appendix A and our draft work plan in Appendix B).

The garage structure has since been removed from this area, and currently all that remains is the concrete slab. During the current investigation, with Ecology's concurrence, three additional borings were completed in AOC 3. As shown on Figure 9, borings B15 and B16 were completed respectively on the western and southern edges of the slab. Boring B17 was installed through a seam in the center of the slab area. Geologic logs of the material encountered in each of these borings are presented in Figure 11. Field screening did not indicate the presence of contamination in any of these borings. Soil and groundwater samples collected from each of these three borings were initially analyzed for petroleum-hydrocarbon identification via the mobile laboratory. This initial laboratory screening did not indicate the presence of petroleum hydrocarbons in any of the samples. Therefore, no additional analyses for petroleum hydrocarbon-related compounds were conducted, and monitoring wells were not completed.

Soil and groundwater samples from the three borings were submitted to the laboratory for VOC and glycol analyses. Laboratory analyses did not detect VOCs or glycols in any of the samples. Soil and groundwater samples were also submitted for analysis of metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). As shown in Table 4, laboratory analyses indicated the presence of specific metals in the shallow soil samples collected from each of the three borings and metals in a deeper sample collected from boring B17. All of these detections, however, are below applicable cleanup levels. Laboratory analyses did not detect the presence of any other metals in any of the soil samples collected from AOC 3 (Appendix C).

Table 4. Select Analytical Results for Metals in Soil Samples from AOC 3

Sample Number	Arsenic *(mg/Kg)*	Chromium[2] *(mg/Kg)*	Zinc *(mg/Kg)*	Copper *(mg/Kg)*	Nickel *(mg/Kg)*
B15-3	9	nd	nd	13	21
B16-3	9	8	5	14	22
B17-3	10	nd	nd	12	20
B17-9	nd	14	16	20	22
MTCA	**20[1]**	**19/2,000[3]**	**24,000[4]**	**3,200[4]**	**1,600[4]**

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - MTCA Method A soil cleanup level for unrestricted land use
2 - Total concentration of hexavalent chromium (chromium VI) and chromium III
3 - MTCA Method A cleanup level for chromium VI and III, respectively
4 - MTCA Method B non-carcinogenic cleanup level

As shown below in Table 5, laboratory analyses also indicated the presence of specific metals in the groundwater samples collected from each of the three borings installed at AOC 3. The results presented in Table 5 represent total metal concentrations for each analyte, and as shown, exceed applicable cleanup levels for arsenic, chromium, lead, copper, and nickel. However, each of these samples was collected through a temporary well set in a direct-push boring, and the groundwater in these wells at the time of collection was notably turbid. As discussed previously in Section 2.2, the elevated metal concentrations in each of these groundwater samples are likely attributable to the sample containing high amounts of suspended solids. Following the initial analyses for total metals, each groundwater sample found to exceed cleanup levels was reanalyzed for dissolved metals. These subsequent analyses did not detect the presence of any dissolved metals above laboratory detection limits in any of the groundwater samples (Appendix C).

Table 5. Select Analytical Results for Metals in Groundwater Samples from AOC 3

Sample Number	Arsenic (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	Zinc (µg/L)	Copper (µg/L)	Nickel (µg/L)
B15-W	**136**	2	**65**	**30**	90	**1,160**	**852**
B16-W	**59**	1	**79**	**20**	81	297	**789**
B17-W	**17**	nd	**60**	14	115	126	**382**
MTCA	5[1]	5[1]	50[1]	15[1]	4,800[2]	640[2]	320[2]

Notes: "nd" indicates not detected above applicable laboratory detection limits
Bolded values indicate concentrations exceed applicable cleanup levels
1 - MTCA Method A cleanup level for groundwater
2 - MTCA Method B non-carcinogenic cleanup level

3.5 AOC 4 (Hazardous Material Storage)

This AOC is relatively small, covering the area where a small shed was previously located. Personnel from TCHD reported that this shed covered an area approximately 8 feet by 12 feet and was used to store various hazardous materials. During our previous investigation, a test pit was excavated in the area of the former shed (see Figure 8). Soil samples from near surface to a depth of approximately four feet were collected and submitted for analyses of gasoline-through oil-range hydrocarbons, VOCs, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). The only analyte detected was nickel in one of the shallow samples at a concentration of 20 mg/Kg, well below the cleanup level of 1,600 mg/Kg (see previous reports in Appendix A and the draft work plan in Appendix B).

Considering the size of this AOC and the work that has already been accomplished in this area, our draft work plan did not recommend any additional work for this AOC. Ecology conceded to this on the condition that other work being accomplished down gradient from AOC 4 did not suggest potential groundwater concerns (see Appendix B). As described previously in Section 1.2, shallow groundwater below the site flows toward the northwest, and therefore, other work completed down gradient from AOC 4 includes the work previously described for AOCs 1, 2, and 3 in Sections 3.2, 3.3, and 3.4, respectively. As described for each of these three AOCs, no impacts to either soil or groundwater were found, and therefore, no additional work was accomplished for AOC 4. As noted by Ecology, and as shown on Figure 5, AOC 4 lies within a designated high groundwater hazard area. However, because no contamination has been found in this AOC, this is not considered a major concern.

3.6 AOC 5 (Battery Repair and Storage Shed)

This AOC is similar to AOC 4 in that most of the original source materials were contained within a small wooden shed. This shed is still present at the site, but all the original source materials have been removed. Personnel from TCHD reported that the shed was previously used primarily for storage and repair of automotive batteries. The current structure has three walls (is open to the east) and has an exposed dirt floor.

Previous work in this AOC included the excavation of test pits and the installation of a direct-push boring (see Figure 8). Soil samples collected from the test pits and the boring and an additional groundwater sample collected from the boring, were each analyzed for VOCs, gasoline-through oil-range hydrocarbons, metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel), and polychlorinated biphenyls (PCBs). Laboratory analyses found low-level oil-range hydrocarbons and select metals in one near-surface soil sample and low levels of lead and copper in the groundwater sample. The laboratory analyses did not indicate the presence of any analyte above applicable cleanup levels in any of the samples (see previous reports in Appendix A and draft work plan in Appendix B).

Following their review of our draft work plan, Ecology concurred with our recommendation to install an additional direct-push boring in this AOC but recommended that it be completed on the down-gradient side of the shed (see Appendix B). As such, boring B18 was completed adjacent to the west side of the shed, approximately midway along the west wall so that it was located just slightly south of the boring installed during our previous work (see Figures 8 and 9). A geologic log of the materials encountered in B18 is presented in Figure 12. Standard field screening did not indicate the presence of any contamination. Additional field screening for pH was also conducted (because the area was used for battery storage) but found that all levels were within a reasonably normal range (6.5 to 7.5). The soil and groundwater samples collected from B18 were also initially analyzed for petroleum hydrocarbon identification via the mobile laboratory. This initial screening did not indicate the presence of petroleum hydrocarbons in any of the samples. Therefore, no additional analyses for petroleum hydrocarbon related compounds were conducted in this AOC, and a monitoring well was not completed.

Additional laboratory analyses of both soil and groundwater were conducted for lead and PCBs. These analyses did not detect the presence of lead in any of the soil samples or PCBs in the groundwater sample. However, lead was detected in the groundwater sample at a concentration of 18 μg/L, which is just above the cleanup level of 15 μg/L. As discussed previously (Sections 2.2 and 3.4), the elevated lead concentration found in the groundwater sample from B15 is likely attributable to the fact that it was obtained through a temporary well set in a direct-push boring (and therefore had high turbidity). Subsequent analysis for dissolved lead did not detect lead above laboratory detection limits in this sample (Appendix C).

3.7 AOC 6 (Hazardous Material Storage Bunker)

This AOC is the site of a former storage building/bunker reportedly used for the storage of various hazardous materials. Currently, the only portion of the structure that is remaining is the concrete base which consists of a fairly massive floor slab with partial concrete walls. All previously stored source materials have been removed. Previous work in this area included remedial excavations to remove observed petroleum staining on the east side of the structure and a make-shift sump (reportedly constructed with a cut-down 55-gallon drum) on the northwest side of the structure. A direct-push boring with a temporary well for groundwater sampling was also completed on the east side of the structure (see boring B6 on Figure 8). Confirmation soil samples collected from the margins of the remedial excavations and soil and groundwater samples collected from the boring were analyzed for a variety of analytes including VOCs, gasoline- through oil-range hydrocarbons, metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel), PCBs, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). Copper and zinc were detected in several of the soil samples at concentrations well below applicable cleanup levels. Laboratory analyses did not detect any of the other analytes in any of the other samples (see previous reports in Appendix A and the draft work plan in Appendix B).

Ecology concluded in their formal opinion letter (Appendix B) that the soil boring (B6) was not located appropriately to evaluate potential groundwater impacts in this AOC. With Ecology's concurrence, our draft work plan proposed installation of an additional soil boring to collect a groundwater sample in the area of the former sump (see TP6C on Figure 8). A boring at this location would also be located on the down-gradient side of the AOC, in a good position to evaluate potential groundwater impacts within the AOC as a whole.

For the current phase of work, boring B19 was installed near the northwest end of the bunker (Figure 9). A geologic log of the materials encountered in this boring are presented in Figure 12. Field screening of the soils from B19 did not indicate the presence of contamination. The groundwater sample collected from B19 was initially analyzed for petroleum-hydrocarbon iden-

tification via the mobile laboratory, which did not indicate the presence of petroleum hydrocarbons. Therefore, no additional analyses for petroleum hydrocarbon-related compounds were conducted, and a monitoring well was not completed.

The groundwater sample was submitted to the laboratory for additional analyses, which included VOCs, metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel), and PCBs. Laboratory analyses did not detect the presence of any VOCs or PCBs. However, as shown below in Table 6, select metals were detected in the groundwater sample, and the analyses indicated that arsenic, chromium, and lead were present at concentrations in excess of the applicable cleanup levels. However, as with previous metal analyses (see Sections 2.2, 3.4, and 3.6), the elevated metal concentrations are likely the result of high turbidity in the groundwater sample. Subsequent analyses of dissolved arsenic, chromium, and lead did not detect the presence of any of these analytes above the applicable laboratory detection limits (see Appendix C).

Table 6. Select Analytical Results for Metals in the Groundwater Sample from AOC 6

Sample Number	Arsenic (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	Zinc (µg/L)	Copper (µg/L)	Nickel (µg/L)
B19-W	**111**	nd	**83**	**33**	119	285	199
MTCA	5[1]	5[1]	50[1]	15[1]	4,800[2]	640[2]	320[2]

Notes: "nd" indicates not detected above applicable laboratory detection limits
Bolded values indicate concentrations exceed applicable cleanup levels
1 - MTCA Method A cleanup level for groundwater
2 - MTCA Method B non-carcinogenic cleanup level

3.8 AOC 7&8 (Petroleum Storage, Car Crushing Area)

AOC 7&8 is the consolidated area of two formerly separated but adjacent AOCs. This AOC was reportedly the site of ongoing car-crushing activities, and TCHD suggested that previous soil sampling in this area identified petroleum contamination. However, official documentation substantiating these findings has never been located. Work completed during our previous investigations focused primarily on areas where car crushing was reported to have occurred and in areas with distressed vegetation.

Our previous investigations involved the excavation of several test pits and the drilling of one direct-push boring (see Figure 8). Soil and groundwater samples collected from the test pits and the boring were analyzed for VOCs, gasoline- through oil-range hydrocarbons, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). Laboratory analyses indicated low levels of oil-range hydrocarbons and various metals in several of the near surface soil samples, but none of the analytes detected exceeded applicable cleanup levels and no other analytes (i.e., VOCs, gasoline-range hydrocarbons) were detected in any of the samples. Laboratory analyses of the groundwater sample collected from the direct-push boring detected concentrations of several metals above cleanup levels, but as discussed previously, these detections were attributed to high turbidity in the sample. A monitoring well (MW-1) was subsequently installed in this AOC specifically for assessing potential metals in the shallow groundwater. Laboratory analyses of a groundwater sample from this monitoring well did not detect any metals above laboratory detection limits (see previous reports in Appendix A).

In their formal opinion letter, Ecology concluded (Appendix B) that, given the size of this AOC, an insufficient number of borings had been completed to properly characterize the area. With Ecology's concurrence, our draft work plan proposed completion and sampling of three additional direct-push borings and four hand borings. These were completed as borings B20 through B22 and HB3 through HB6 (see Figure 9). Figures 12 and 13 present logs of the materials encountered in B20 through B22. Field screening conducted during the completion of

these borings did not indicate the presence of any contamination. Soil and groundwater samples collected from each of the new borings were also analyzed for petroleum-hydrocarbon identification via the mobile laboratory. This initial screening did not indicate the presence of petroleum hydrocarbons in any of the samples, so no additional analyses for petroleum hydrocarbon-related compounds were conducted.

Soil and groundwater samples from each of the new borings were also analyzed for metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). As shown below in Table 7, laboratory analyses indicated the presence of low levels of specific metals in soils from all of the borings, except HB6. All of these detections, however, are below applicable cleanup levels.

Table 7. Select Analytical Results for Metals in Soil Samples from AOC 7&8

Sample Number	Arsenic *(mg/Kg)*	Chromium[2] *(mg/Kg)*	Lead *(mg/Kg)*	Zinc *(mg/Kg)*	Copper *(mg/Kg)*	Nickel *(mg/Kg)*
B20-6	nd	nd	nd	nd	6	16
B21-2	8	9	6	6	6	20
B21-5	nd	13	nd	12	6	8
B22-6	7	7	nd	nd	7	12
HB3-3	6	8	nd	nd	11	20
HB4-3	nd	8	nd	nd	nd	10
HB5-1	nd	nd	nd	nd	nd	16
HB6-1	nd	nd	nd	nd	nd	nd
MTCA	**20[1]**	**19/2,000[3]**	**250[1]**	**24,000[4]**	**3,200[4]**	**1,600[4]**

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - MTCA Method A soil cleanup level for unrestricted land use
2 - Total concentration of hexavalent chromium (chromium VI) and chromium III
3 - MTCA Method A cleanup level for chromium VI and III, respectively
4 - MTCA Method B non-carcinogenic cleanup level

As shown below in Table 8, laboratory analyses also indicated the presence of specific metals in the groundwater samples collected from each of the three direct-push borings. Initial analyses indicate that total metal concentrations from these borings exceed applicable cleanup levels for arsenic, cadmium, chromium, lead, copper, and nickel. However, each of these samples was notably turbid, and elevated metal concentrations in the majority of these samples are attributable to the sampled groundwater containing high amounts of suspended solids. With the exception of the groundwater sample from boring B22 (sample number B22-W), subsequent analyses for dissolved metals did not indicate the presence of any metals above laboratory detection limits in the remaining samples (Appendix C). Dissolved lead was detected in sample B22-W at a concentration of 6 μg/L, which is below the cleanup level of 15 μg/L. However, dissolved arsenic was detected in this same sample at a concentration of 8 μg/L, which is just above the cleanup level of 5 μg/L (see Appendix C). To try to verify this result, an additional groundwater sample collected at MW-1 (which is near B22) was submitted for analysis of total and dissolved arsenic. Laboratory analyses of this sample indicated a total arsenic concentration of 5 μg/L, which is the same as the cleanup level. The laboratory analysis did not detect dissolved arsenic in this sample. These results, together with the results from our previous investigations, suggest that there may be intermediate issues with low levels of arsenic in the groundwater in this area.

Table 8. Select Analytical Results for Metals in Groundwater Samples from AOC 7&8

Sample Number	Arsenic (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	Zinc (µg/L)	Copper (µg/L)	Nickel (µg/L)
B20-W	**9**	nd	**105**	**24**	64	233	201
B21-W	**114**	1	**93**	**106**	110	136	**422**
B22-W	**112**	**6**	**116**	**158**	28	**4,450**	**1,270**
MW-1	**5**	-	-	-	-	-	-
MTCA	5[1]	5[1]	50[1]	15[1]	4,800[2]	640[2]	320[2]

Notes: "nd" indicates not detected above applicable laboratory detection limits
Bolded values indicate concentrations exceed applicable cleanup levels
1 - MTCA Method A cleanup level for groundwater
"-" indicates the sample was not analyzed for this analyte
2 - MTCA Method B non-carcinogenic cleanup level

3.9 AOC 9A (Car Crushing Area)

AOC 9A (previously AOC 9) was originally thought to be the site of car-crushing activities. However, additional information provided by TCHD and Ecology suggests that car-crushing activities thought to have occurred in this area actually took place further to the south in the area designated as AOC 9B (see Figure 9). AOC 9B is discussed below in Section 3.10.

Our previous investigations in AOC 9A included the excavation of one test pit and the drilling of one direct-push boring (see Figure 8). Soil and groundwater samples collected from the test pit and boring were analyzed for VOCs, gasoline- through oil-range hydrocarbons, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). Laboratory analyses indicated low levels of nickel in both the soil and groundwater samples, but each well below the applicable cleanup levels. Analyses did not detect any other analytes above laboratory detection limits in any of the samples (see previous reports in Appendix A).

In their formal opinion letter, Ecology concluded (Appendix B) that, given the size of this AOC, an insufficient number of borings had been completed to properly characterize the area. With Ecology's concurrence, our draft work plan proposed completion and sampling of one additional direct-push boring, two hand borings, and an additional monitoring well. These were completed as boring B23, HB7 and HB8, and MW-5, respectively (see Figure 9). Figure 13 presents a log of the materials encountered in B23, and Figure 16 presents a log of the materials and construction details for MW-5. Field screening conducted during the completion of the new borings did not indicate the presence of any contamination. Soil and groundwater samples collected from each of the new borings were also analyzed for petroleum-hydrocarbon identification via the mobile laboratory. This initial screening did not indicate the presence of petroleum hydrocarbons in any of the samples, so no additional analyses for petroleum-hydrocarbon related compounds were conducted.

Soil and groundwater samples from each of the borings and monitoring well were also analyzed for metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). As shown below in Table 9, laboratory analyses indicated the presence of low levels of specific metals in the soils from each of the borings. All of the detections, however, are below applicable cleanup levels.

Table 9. Select Analytical Results for Metals in Soil Samples from AOC 9A

Sample Number	Arsenic *(mg/Kg)*	Chromium[2] *(mg/Kg)*	Lead *(mg/Kg)*	Zinc *(mg/Kg)*	Copper *(mg/Kg)*	Nickel *(mg/Kg)*
MW5-3	9	13	nd	20	23	22
MW5-6	7	17	nd	20	34	21
B23-2	8	7	nd	nd	10	7
HB7-2	7	9	nd	nd	10	15
HB8-3	6	8	nd	nd	13	22
MTCA	**20[1]**	**19/2,000[3]**	**250[1]**	**24,000[4]**	**3,200[4]**	**1,600[4]**

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - MTCA Method A soil cleanup level for unrestricted land use
2 - Total concentration of hexavalent chromium (chromium VI) and chromium III
3 - MTCA Method A cleanup level for chromium VI and III, respectively
4 - MTCA Method B non-carcinogenic cleanup level

As shown below in Table 10, laboratory analyses also indicated the presence of specific metals in the groundwater samples collected from the direct-push boring and MW-5. Although none of the analyses indicate total metal concentrations above applicable cleanup levels, the higher metal concentrations indicated for B23 (in comparison to those in MW-5) are again likely attributable to the sampled groundwater containing high amounts of suspended solids.

Table 10. Select Analytical Results for Metals in Groundwater Samples from AOC 9A

Sample Number	Arsenic *(µg/L)*	Cadmium *(µg/L)*	Chromium *(µg/L)*	Lead *(µg/L)*	Zinc *(µg/L)*	Copper *(µg/L)*	Nickel *(µg/L)*
MW-5 (w)	nd	nd	nd	11	8	5	nd
B23-W	nd	nd	20	13	70	23	54
MTCA	**5[1]**	**5[1]**	**50[1]**	**15[1]**	**4,800[2]**	**640[2]**	**320[2]**

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - MTCA Method A cleanup level for groundwater
2 - MTCA Method B non-carcinogenic cleanup level

3.10 AOC 9B (Car Crushing Area)

As described above in Section 3.9, AOC 9B is an expansion of the original AOC 9 and is intended to cover a second potential area were car-crushing activities may have occurred. Our previous investigations in this AOC included the excavation of two test pits and drilling of two direct-push borings. Two monitoring wells (MW-2 and MW-3) were also installed in this general area (see Figure 8). Soil and groundwater samples collected from the test pit and borings were analyzed for VOCs, gasoline- through oil-range hydrocarbons, and metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). Laboratory analyses indicated low levels of zinc and nickel in the soil samples, but well below applicable cleanup levels. Analyses indicated metal concentrations above cleanup levels in the groundwater sample from the direct-push boring, but as before, this was attributed to high-turbidity levels in the sample. Subsequent analyses of groundwater samples collected from the two nearby monitoring wells did not detect any metals in either of samples. Analyses also did not detect any other analytes (i.e., VOCs, petroleum hydrocarbons, etc.) in any of the other soil or groundwater samples (see previous reports in Appendix A).

Similar to AOC 9A, Ecology concluded in their formal opinion letter (Appendix B) that, given the size of AOC 9B, an insufficient number of borings had been completed to properly characterize the area. With Ecology's concurrence, our draft work plan proposed completing and sampling of two additional direct-push borings and two hand borings. These were completed as borings B24 and B25 and HB9 and HB10 (see Figure 9). Figure 14 presents logs of the material encountered in B24 and B25. Field screening conducted during the completion of the new borings did not indicate the presence of any contamination. Soil and groundwater samples collected from

each of the new borings were also analyzed for petroleum-hydrocarbon identification via the mobile laboratory. This initial screening did not indicate the presence of petroleum hydrocarbons in any of the samples, so no additional analyses for petroleum hydrocarbon-related compounds were conducted.

Soil and groundwater samples from each of the borings were also analyzed for metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel). As shown below in Table 11, laboratory analyses indicated the presence of low levels of specific metals in the soils from each of the borings. All of the detections, however, are below applicable cleanup levels.

Table 11. Select Analytical Results for Metals in Soil Samples from AOC 9B

Sample Number	Arsenic *(mg/Kg)*	Chromium[2] *(mg/Kg)*	Lead *(mg/Kg)*	Zinc *(mg/Kg)*	Copper *(mg/Kg)*	Nickel *(mg/Kg)*
B24-1	7	9	nd	6	6	15
B25-2	nd	8	nd	6	nd	nd
HB9-1	nd	nd	nd	nd	nd	209
HB10-1	6	6	43	nd	6	nd
MTCA	20[1]	19/2,000[3]	250[1]	24,000[4]	3,200[4]	1,600[4]

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - MTCA Method A soil cleanup level for unrestricted land use
2 - Total concentration of hexavalent chromium (chromium VI) and chromium III
3 - MTCA Method A cleanup level for chromium VI and III, respectively
4 - MTCA Method B non-carcinogenic cleanup level

As shown below in Table 12, laboratory analyses also indicated the presence of specific metals in the groundwater samples collected from both of the direct-push borings. Initial analyses indicate that total metal concentrations from these borings exceed applicable cleanup levels for arsenic, chromium, lead, copper, and nickel. However, each of these samples was notably turbid, and elevated metal concentrations are attributable to the sampled groundwater containing high levels of suspended solids. Subsequent analyses for dissolved metals did not indicate the presence of any metals above laboratory detection limits in the either sample (Appendix C).

Table 12. Select Analytical Results for Metals in Groundwater Samples from AOC 9B

Sample Number	Arsenic *(µg/L)*	Cadmium *(µg/L)*	Chromium *(µg/L)*	Lead *(µg/L)*	Zinc *(µg/L)*	Copper *(µg/L)*	Nickel *(µg/L)*
B24-W	**24**	2	42	**98**	106	**868**	**639**
B25-W	nd	nd	**50**	**17**	124	89	174
MTCA	5[1]	5[1]	50[1]	15[1]	4,800[2]	640[2]	320[2]

Notes: "nd" indicates not detected above applicable laboratory detection limits
Bolded values indicate concentrations exceed applicable cleanup levels
1 - MTCA Method A cleanup level for groundwater
2 - MTCA Method B non-carcinogenic cleanup level

3.11 Hopkins Ditch, Pond, and Wetland Areas

The southern portion of the site is occupied by wetlands (see Figure 4) that currently support a variety of wildlife and plant species (see Section 4.1 below). No exclusionary criteria listed under MTCA (WAC 173-340-7491) apply to the site, so MTCA (WAC 173-340-7490) requires that either a simplified or site-specific terrestrial ecological evaluation (TEE) be completed. To better evaluate the need for either a simplified TEE (as defined in WAC 173-340-7492) or a site-specific TEE (as defined in WAC 173-340-7493), sediment samples were collected in the areas of Hopkins Ditch and the adjacent wetlands and submitted to a laboratory for various chemical analyses. As requested by Ecology in their email response following their review of our draft work plan (see Appendix B), we also collected and analyzed a sediment sample from the bed of

the small pond located just north of Hopkins Ditch on the southern portion of parcel 12723210700 (Figure 3).

Sediment sample locations for the area of Hopkins Ditch and the adjacent wetlands are shown on Figure 9 as white triangles with a red circle. These samples are numbered 1 through 8 and are designated as either samples of pond sediments (PS), stream sediments (SS), or wetland sediments (WS). Sediment samples from the base of the pond (PS1) and the base of Hopkins Ditch (SS2 through SS5) were collected using a dredge tool attached to the end of pole and then transferred into laboratory-supplied containers. This dredge tool was appropriately decontaminated between each use. Sediment samples from the wetland areas (WS6 through WS8) were collected directly into laboratory-supplied containers as surface grab samples. All of the sediment samples were submitted to a laboratory for analysis of gasoline- through oil-range petroleum hydrocarbon identification, metals (arsenic, cadmium, chromium, lead, zinc, copper, mercury, and nickel), and PAHs.

Laboratory analyses did not indicate the presence of gasoline- through oil-range hydrocarbons or the presence of cadmium, arsenic, or mercury in any of the samples (Appendix C). A number of metals were detected in various samples and are summarized below in Table 13. As shown, most of the detected metal concentrations are below the applicable clean levels, but relatively high levels of lead (in excess of the cleanup level) were detected in samples WS6 and WS8. Subsequent analyses of these samples using the Toxicity Characteristic Leaching Procedure (TCLP) indicated TCLP-lead concentrations of 9.67 mg/L in WS6 and 0.25 mg/L in WS8. While both of these results indicate relatively low potential for leachability, the TCLP results of 9.67 mg/L in WS6 exceeds the 5.0 mg/L RCRA designation criteria for hazardous wastes.

Table 13. Select Analytical Results for Metals in Sediment Samples

Sample Number	Chromium[1] *(mg/Kg)*	Lead *(mg/Kg)*	Zinc *(mg/Kg)*	Copper *(mg/Kg)*	Nickel *(mg/Kg)*
PS1	nd	34	40	11	10
SS2	nd	40	47	8	12
SS3	nd	25	nd	nd	8
SS4	nd	6	nd	nd	5
SS5	nd	22	6	nd	3
WS6	10	**1,230**	8	68	12
WS7	nd	53	nd	12	13
WS8	nd	**525**	156	40	18
MTCA	19/2,000[2]	250[3]	24,000[4]	3,200[4]	1,600[4]

Notes: "nd" indicates not detected above applicable laboratory detection limits
1 - Total concentration of hexavalent chromium (chromium VI) and chromium III
2 - MTCA Method A cleanup level for chromium VI and III, respectively
Bolded values indicate concentrations exceed applicable cleanup levels
3 - MTCA Method A soil cleanup level for unrestricted land use
4 - MTCA Method B non-carcinogenic cleanup level

Laboratory analyses did not indicate the presence of PAHs in sediment samples SS2, SS3, SS4, SS5, or WS7 (see Appendix C). However, various PAHs were detected in samples PS1, WS6, and WS8 (Table 14). As shown, most of the PAH concentrations that were detected were below applicable cleanup levels. However, the concentration of benzo(a)pyrene exceeds the MTCA Method A cleanup level in sample PS1. Additionally, the total toxic equivalent concentration (TTEC) for benzo(a)pyrene, calculated from individual cPAH concentrations in each sample (per WAC 173-340-708(8)), exceeds the MTCA Method A cleanup level in samples PS1 and WS8.

Table 14. Select Analytical Results for PAHs in Sediment Samples

Analyte *(mg/Kg)*	PS1	WS6	WS8	MTCA
Naphthalene	nd	nd	nd	5[2]
2-Methylnaphthalene	nd	nd	nd	320[3]
1-Methylnaphthalene	nd	nd	nd	3.5[4]
Acenaphthylene	nd	nd	nd	na[5]
Acenaphthene	nd	nd	nd	4,800[3]
Fluorene	nd	nd	nd	3,200[3]
Phenanthrene	0.252	nd	0.104	na[5]
Anthracene	nd	nd	nd	24,000[3]
Fluoranthene	0.528	nd	0.216	3,200[3]
Pyrene	0.416	nd	0.185	2,400[3]
Benzo(a)anthracene1	0.187	nd	0.092	1.4[4]
Chrysene1	0.212	nd	0.100	140[4]
Benzo(b)fluoranthene1	0.349	0.093	0.153	1.4[4]
Benzo(k)fluoranthene1	0.103	nd	nd	14[4]
Benzo(a)pyrene1	**0.202**	nd	0.085	0.1[2]
Indeno(1,2,3-cd)pyrene1	0.135	nd	nd	1.4[4]
Dibenzo(a,h)anthracene1	nd	nd	nd	0.14[4]
TTEC for benzo(a)pyrene	**0.282**	nd	**0.110**	0.1[2]
Benzo(g,h,i)perylene	0.115	nd	nd	na[5]

Notes: 1 - cPAH used to calculate total toxic equivalent concentration (TTEC) for benzo(a)pyrene
"nd" indicates not detected above applicable laboratory detection limits
Bolded values indicate concentrations exceed applicable cleanup levels
2 - MTCA Method A soil cleanup level for unrestricted land use
3 - MTCA Method B non-carcinogenic cleanup level
4 - MTCA Method B carcinogenic cleanup level
5 - no applicable cleanup level has been established

4.0 Conclusions and Recommendations

The analytical data compiled during this investigation (summarized in Section 3.0), together with data from our previous studies (summarized in Section 2.0), has been compiled to characterize conditions within specific AOCs (shown on Figures 8 and 9). The analytical data collected to date in AOCs 1, 2, 3, 4, 5, 6, 9A, and 9B does not show any indications of impact from the activities associated with the former automobile-wrecking yard (John's Auto Wrecking). The laboratory analyses of all of the soil and groundwater samples collected from these AOCs indicates that contaminants of concern (COCs) are either not present at concentrations above applicable laboratory detection limits, or if present, are below applicable cleanup levels. One reoccurring issue during this and previous investigations was the detection of high-metal concentrations in turbid groundwater samples collected from direct-push borings. In each case, with the exception of those noted below for AOC 7&8, subsequent analyses of dissolved metals indicated that the previously detected metal (detected through total metal analyses) was not present at concentrations above laboratory detection levels. This shows that the initial total metal detections were related to and the result of high suspended solids in each of these samples.

The analytical data for each of the groundwater samples collected from direct-push borings in AOC 7&8 similarly showed high concentrations for total metals. Subsequent analyses for dissolved metals in all but one of the samples (B22-W collected from boring B22) did not indicate the presence of metals above laboratory detection limits. The initial analysis of total arsenic and the subsequent analysis of dissolved arsenic in sample B22-W indicated respective concentrations of 112 and 8 μg/L which are above the cleanup level of 5 μg/L. Laboratory analyses of an additional groundwater sample collected from nearby monitoring well MW-1 (see Figure 9) indi-

cated a total arsenic concentration of 5 μg/L, but did not detect dissolved arsenic above laboratory detection limits. These results suggest there may be a minor issue with low levels of arsenic in the groundwater in this area. Laboratory analyses of all other COCs in AOC 7&8 were either not present at concentrations above applicable laboratory detection limits, or if present, were below applicable cleanup levels.

Laboratory analysis of two sediment samples (WS-6 and WS-8) collected from the wetland area adjacent to Hopkins Ditch (see Figure 9) indicate the presence of lead at respective concentrations of 1,230 and 525 mg/Kg. These values exceed the MTCA Method A cleanup level of 250 mg/Kg. Subsequent TCLP analyses indicated respective TCLP-lead concentrations of 9.67 and 0.25 mg/Kg. Both these results indicate that the lead present in these samples has relatively low mobility. However, the TCLP-lead result of 9.67 mg/Kg exceeds RCRA hazardous waste exclusion limits. Therefore, if soils are excavated for remediation, some soils may require disposal in a RCRA subtitle c (hazardous waste) landfill. Laboratory analysis for PAHs indicated the presence of benzo(a)pyrene at a concentration of 0.202 mg/Kg in the sediment sample (PS-1) collected from the base of the pond located just north of Hopkins Ditch (see Figure 9). Additionally, the TTECs of benzo(a)pyrene calculated for this same sample and one of the wetland sediment samples (WS-8) is 0.282 and 0.110 mg/Kg, respectively. All of these PAH values exceed applicable cleanup levels (the MTCA Method A cleanup level for both benzo(a)pyrene and the TTEC of benzo(a)pyrene is 0.1 mg/Kg). Laboratory analyses of all other COCs in the wetland and stream areas are either not present at concentrations above applicable laboratory detection limits, or are below applicable cleanup levels. These results indicate that there are isolated areas with minor PAH (and possibly lead) impacts in the wetland and stream areas at the south end of the site, and that additional characterization may be warranted.

4.1 June 25th Site Visit with Ecology

On June 25, 2013, following the completion of all currently contracted field work, we conducted a site visit with personnel from Ecology (Eugene Radcliff, the current VCP site manager, and Alexander Callender, Ecology's wetlands specialist for Thurston County). During this site visit, we discussed work completed to date and the results of the various laboratory analyses. We also completed a thorough walk of the site to inspect current conditions, and to conduct a reconnaissance-level assessment of the wetland area. During the site visit, Ecology made a number of assessments and noted several concerns. Following the site visit, Mr. Radcliff submitted an email documenting their observations and outlining their specific concerns. A copy of this email (dated June 26, 2013) is included in Appendix D of this report.

Ecology's primary observations and concerns for the site include the following:

- In addition to our previous observations of various wildlife species in the wetland area (including a significant population of amphibians (frogs), small unidentified black-colored fish, Gerridae (pond skaters), and various non-waterfowl-type birds), Ecology found signs of significant beaver activity (numerous freshly-chiseled logs) near the pond just north of Hopkins Ditch. Ecology's preliminary qualitative assessment of the wetland area, based on this and other observations of various vegetation types, was that it probably represents an intermediate-quality wetland. Ecology also concurred that a site-specific TEE would need to be completed to fully assess potential impacts and exposure pathways in this area of the site, and that formal wetland delineation would need to be completed to accommodate completion of the TEE.

- Ecology recommended that additional samples be collected in the pond and wetland areas to better characterize potential contamination. This includes the collection of additional sed-

iment samples and surface water samples from the pond north of Hopkins Ditch and surface water samples from Hopkins Ditch where it enters and exits the property.

- Ecology noted that there is still a significant amount of debris associated with the former wrecking yard in various areas of the site. Of particular concern were numerous tires and wheels in the wetland area around, but also specifically in, Hopkins Ditch and the adjacent pond. They also noted that there is a berm-like feature on the north side of the pond area that appears to be comprised of buried tires. In their email response (Appendix D), Ecology also noted several other specific areas containing miscellaneous debris that would need to be removed and subsequently evaluated. These include a large creosote timber near the southern edge of the property and the debris pile associated with a demolished building near the northwest corner of the site (in AOC 1). Ecology indicated that the debris still present at the site represents source material and would need to be removed in order for the site to be considered for a no-further-action (NFA) determination. Ecology specifically stated that the site could not be considered for an NFA determination if there was still source material present to potentially re-contaminate the site.

- During the site visit, Ecology noted a second pond area in the woods south of Hopkins Ditch and recommended that sediment and surface water in this area be evaluated. Based on property line flagging observed during our site visit, this pond appears to straddle the property line. Before completing any work in this area, it is recommended that the southern extent of the property be clearly defined to insure that this pond is not actually located on the adjacent property to the south.

- Ecology noted there appears to be illegal dumping occurring in the northeast corner of the site, just outside the current gate, and that measures should be taken to try to dissuade this (i.e., placement of ecology blocks or installing a chain across the access road).

- In discussing the results of metal analyses, particularly with regards to the apparent arsenic detected at MW-1, Ecology indicated that groundwater monitoring would need to be accomplished at this location (AOC 7&8) and that four consecutive quarters with results below cleanup levels would need to be accomplished before the site could be considered for an NFA determination. The requirement of "four quarters of clean results" is not specifically codified but is usually required to appropriately evaluate the effects of seasonal variation.

4.2 Initial Evaluation of Potential Exposure Pathways

Because the analytical data do not indicate impacts in AOCs 1, 2, 3, 4, 5, 6, 9A, and 9B, there are no potential exposure pathways to evaluate in these AOCs. Potential impacts from arsenic in the groundwater in AOC 7&8 and the detected lead and PAH impacts in shallow sediment samples from the pond and wetland area (described in the preceding section) have potential to affect both human and ecological receptors. However, as the site is not permanently occupied and is fenced and locked, there is only minimal opportunity for exposure to human receptors (currently only the occasional site worker, who being aware of potential issues, can take appropriate precautions to protect themselves). Furthermore, arsenic levels in the groundwater in AOC 7&8 are very low, and TCLP-lead results for discrete samples from the wetland area show low potential for leachability, both of which indicate minimal risk for exposure.

Of the various contaminants detected at the site, the PAHs found in the shallow sediment samples from the pond and the wetland areas have the highest potential for exposure. As described above, the site is not currently occupied and access to the public is limited. Therefore, the potential exposure of humane receptors is extremely minimal. However, as described in the previous section, the wetland area on the southern portion of site (where PAHs were de-

tected) potentially supports a relatively robust ecological system. The fact that PAHs were detected near surface, together with the fact that the specific PAHs detected in excess of clean-up levels are classified as carcinogenic, suggests there may be fairly significant potential exposure to ecological receptors at the site.

4.3 Recommendations

Based on the results of both our previous and current investigations (see Sections 2.0 and 3.0) and the suggestions/recommendations provided by Ecology during our recent site visit (see Section 4.1 and Appendix D), we have compiled the following list of recommendations with the ultimate goal of reaching final regulatory closure for the site.

- Undertake a program to remove all of the debris associated with the former auto-wrecking operation. In our opinion, the presence of this potential source material is currently the single largest obstacle to achieving an NFA determination and final regulatory closure for the site. In fact, the prolonged presence of this material on site poses a risk of the site being permanently dropped from the VCP, which would incur greater costs to achieve final closure. Therefore, implementing a final debris removal program should be a primary emphasis during the next phase of work. This program should include the following specific tasks:

    1. Removal of all tires, wheels, and other auto debris from the areas of Hopkins Ditch, the pond and surrounding area to the north of the ditch, and the wetland areas around the ditch. Debris removal should be accomplished using the least invasive method possible to minimize disturbance and further impacts to the wetland area (i.e., debris removal in this area should be accomplished largely by hand).

    2. Removal of the large creosote timber identified by Ecology in the wooded area to the south of Hopkins Ditch (and other lumber if found) followed by appropriate sampling to evaluate potential impacts to soils in this area. Laboratory analyses should include testing for PAHs, metals, and pentachlorophenol.

    3. Investigation and removal, if applicable, of the possible tire berm along the north edge of the pond north of Hopkins Ditch, followed by applicable testing.

    4. Removal of all other miscellaneous debris associated with the former auto-wrecking operation. This includes tires, wheels, auto-body parts, and other miscellaneous automotive parts and old fluid containers strewn across the various areas of the site. Because much of this debris is widely disbursed, removal is likely going to involve significant manpower to manually remove individual pieces of debris by hand. One approach to accomplishing this task may be the employment of volunteer organizations such as the Boy Scouts or other groups such as the Ecology Youth Corps (which would have some costs associated with their work).

    5. Removal of the large debris pile in AOC 1 associated with the demolished structure in this area. Much of this debris can be removed in bulk using heavy equipment (i.e., a back hoe and dump truck). Following the complete removal of all of the debris in this area, appropriate testing of the underlying soils should be completed including, but not limited to, the evaluation of PCBs, PAHs, metals, and petroleum hydrocarbons.

    6. Removal of any debris dumped outside the fence near the northeast corner of the site. Some type of obstruction (i.e., ecology blocks or a chain across the access road) should then be installed to dissuade further dumping.

- Conduct additional sediment and surface water testing in the area of the pond north of Hopkins Ditch, and in Hopkins Ditch itself, to better characterize potential contamination in these areas. These data will be used to assess potential exposure pathways and the completion of a site-specific TEE. Laboratory analyses should include testing for petroleum hydrocarbons, metals, PAHs, PCBs, VOCs, and semi VOCs. This additional characterization will also assist in determining appropriate remediation methods.
- Determine (possibly through a land survey) the southern boundary of the site to establish whether or not the pond in the wooded area south of Hopkins Ditch is actually located on the property. If it is found to be located on the property, it should be included in the additional characterization task described in the previous bullet and the wetland delineation/TEE described in the following bullet.
- Complete a formal wetland delineation and study for the southern portion of the site to determine the extent and quality of the wetland area and to determine the particular species of viable plants and animals that are supported. Then complete a site-specific TEE based on the wetland delineation/study to evaluate potential impacts to ecological receptors.
- Conduct groundwater monitoring for total metals at select monitoring wells for at least four consecutive quarters.
- Survey the site for existing transformers on power poles, and then review transformer history through the power company for any potential use of PCBs. Test the underlying soils near each identified transformer for PCBs, if warranted.
- Access the interior areas of the two structures in AOC 1 to determine if there are any hazardous materials present or indications of potential impact. If hazardous materials are present, they should be appropriately removed from the site. If there are any indications of impact, they should be evaluated and addressed accordingly.
- Review historical data, including topographic maps and aerial photographs, to specifically try to determined whether or not areas of the site have received extensive fill and/or been extensively reworked. Of particular concern is the area south of Hopkins Ditch. Several test pits should be excavated in this area to characterize the soils.
- To the degree possible, conduct remedial excavation of any identified soil impacts at the site.

5.0 References

Drost, Turney, Dion, and Jones, 1998, Hydrology and quality of ground water in northern Thurston County, Washington; USGS Water-Resources Investigation Report: 92-4109

Drost, B.W., Ely, D.M., and Lum II, W.E., 1999, Conceptual model and numerical simulation of the ground-water-flow system in the unconsolidated sediments of Thurston County, Washington: U.S. Geological Survey Water-Resources Investigations Report 99-4165, 254 p.

Noble and Wallace, 1966, The geological map of Thurston County, Washington, USGS Water-Supply Bulletin 10

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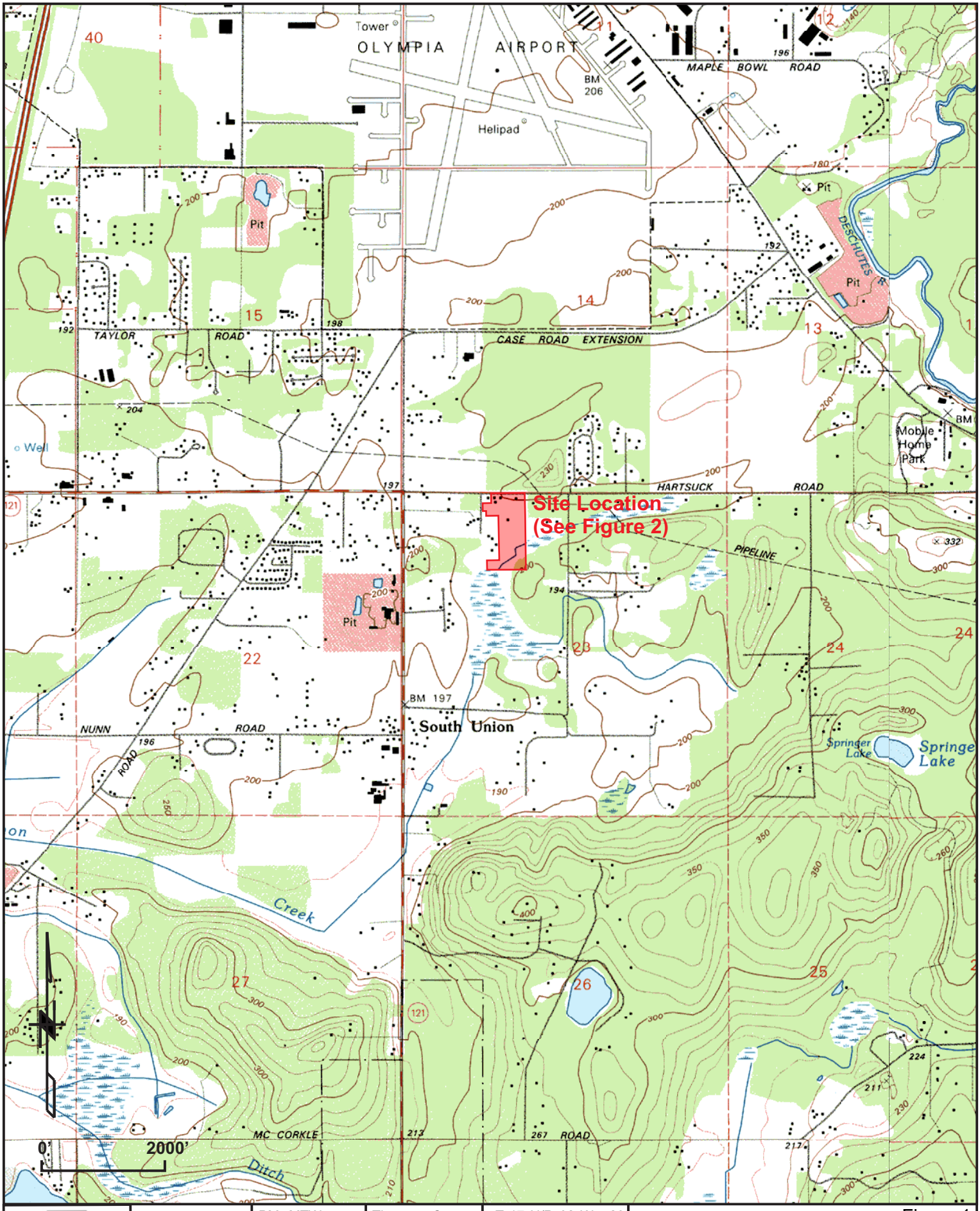
Washington State Department of Ecology, Cleanup levels and risk calculations–database of cleanup levels for chemicals and respective media, available online at https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

Washington State Department of Ecology, Water well log database, available online at http://apps.ecy.wa.gov/welllog/

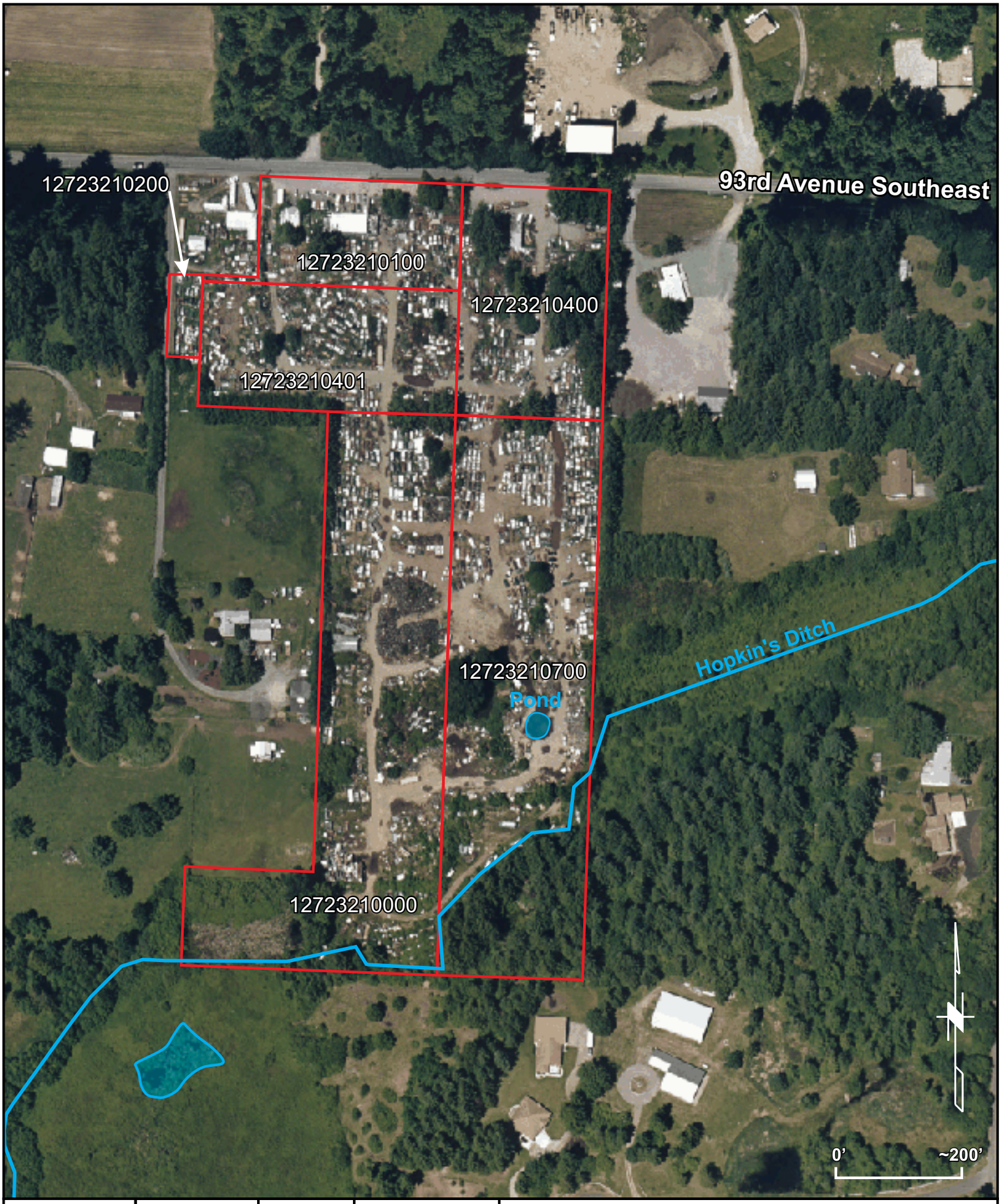
The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted hydrogeologic and environmental practices and are the result of analysis by Robinson Noble, Inc. staff. This report, and any attachments to it, is for the exclusive use of the Law Office of Alan J. Wertjes and the Estate of John Havens. Unless specifically stated in the document, no warranty, expressed or implied, is made.

FIGURES

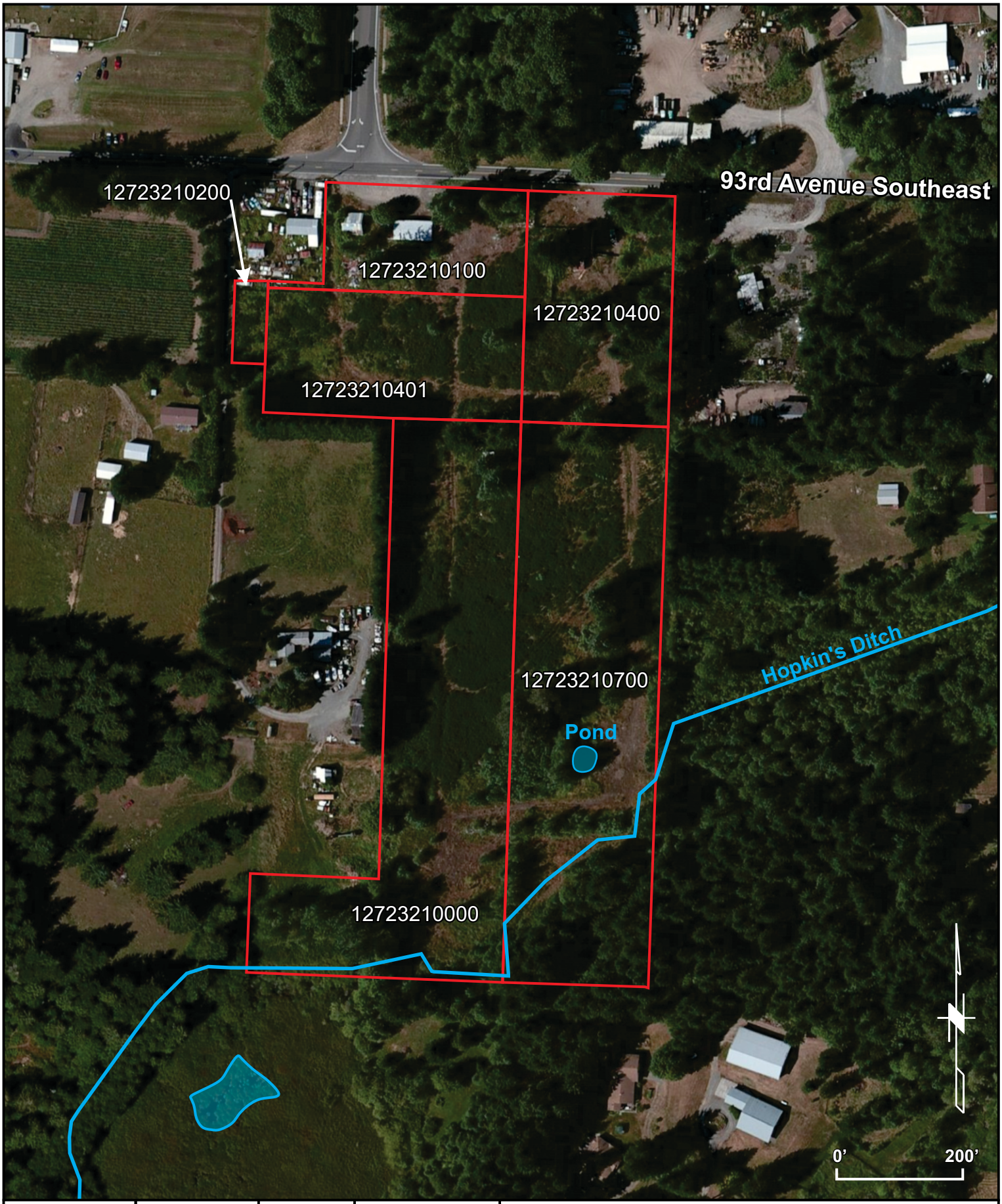


ROBINSON NOBLE	Note: Basemap taken from USGS Maytown Quad.	PM: MTW July 2013	Thurston County 2491-001E	T 17 N/R 02 W - 23 Scale 1 " = 2000'

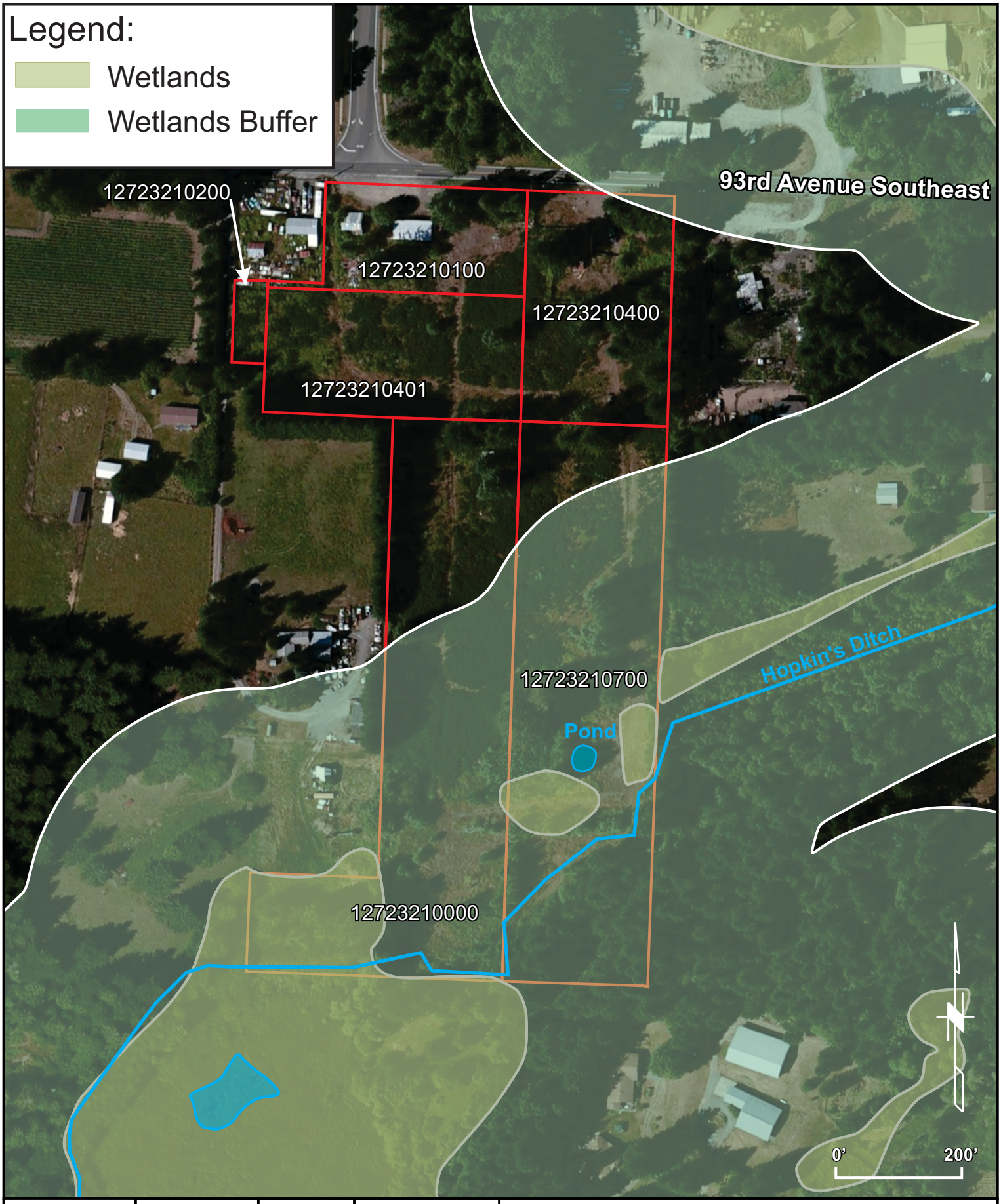
Figure 1
Vicinity Map
John's Auto Wrecking: Remedial Investigation



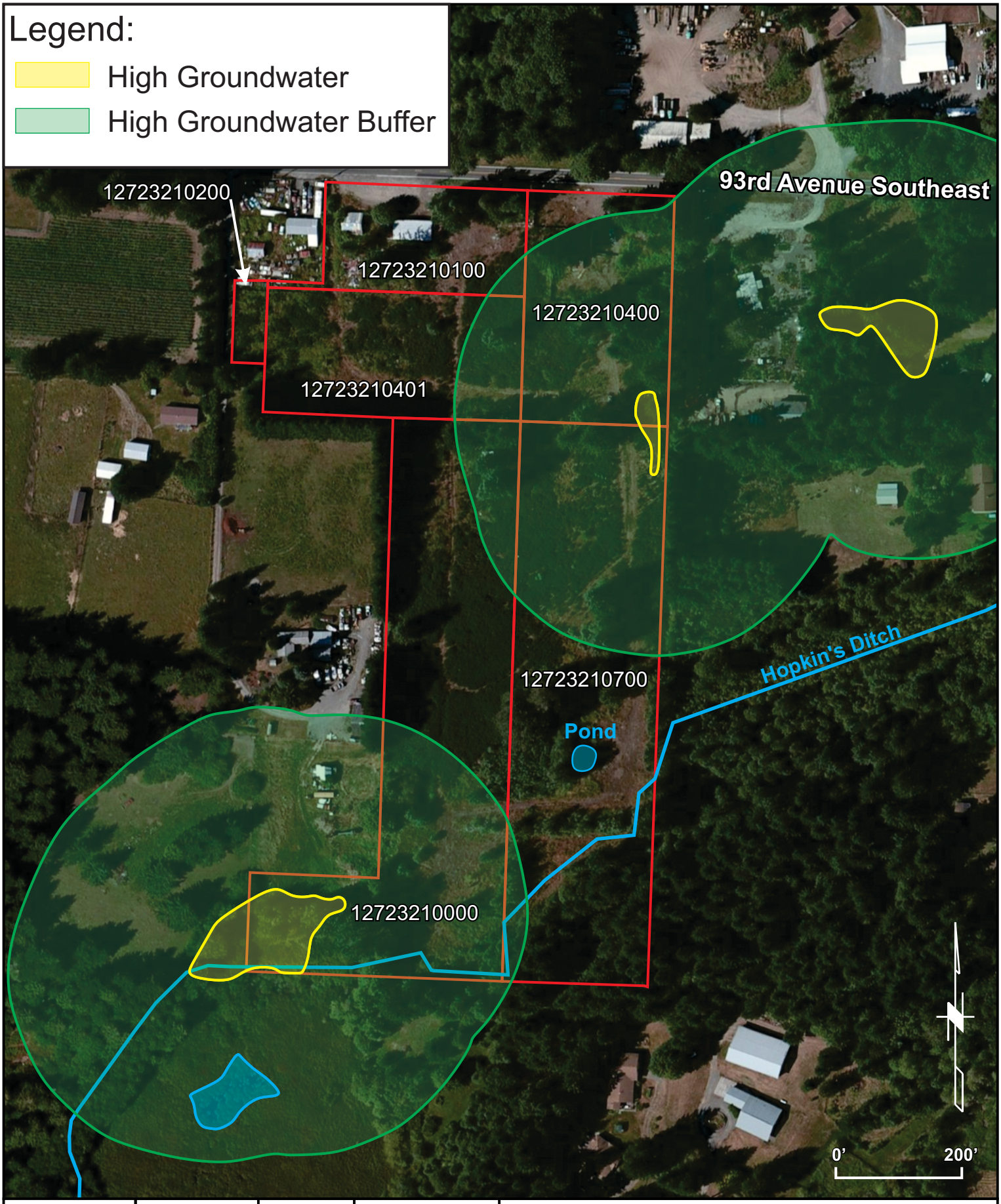
ROBINSON NOBLE	Note: Image from Thurston County Geodata Site	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = ~200'	Figure 2 Site Conditions in 2000 John's Auto Wrecking: Remedial Investigation



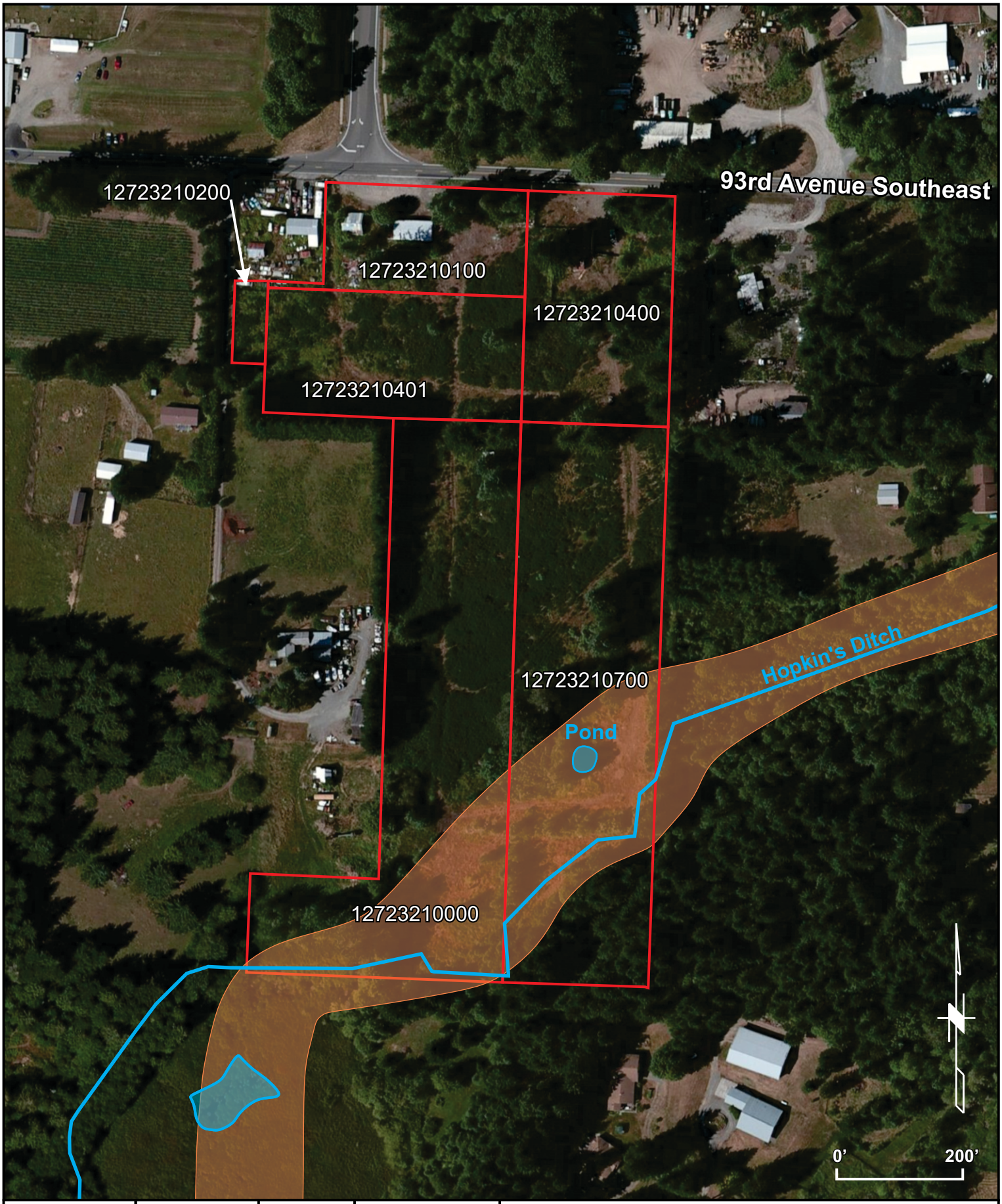
ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 200'	Figure 3 **Parcel Map** John's Auto Wrecking: Remedial Investigation



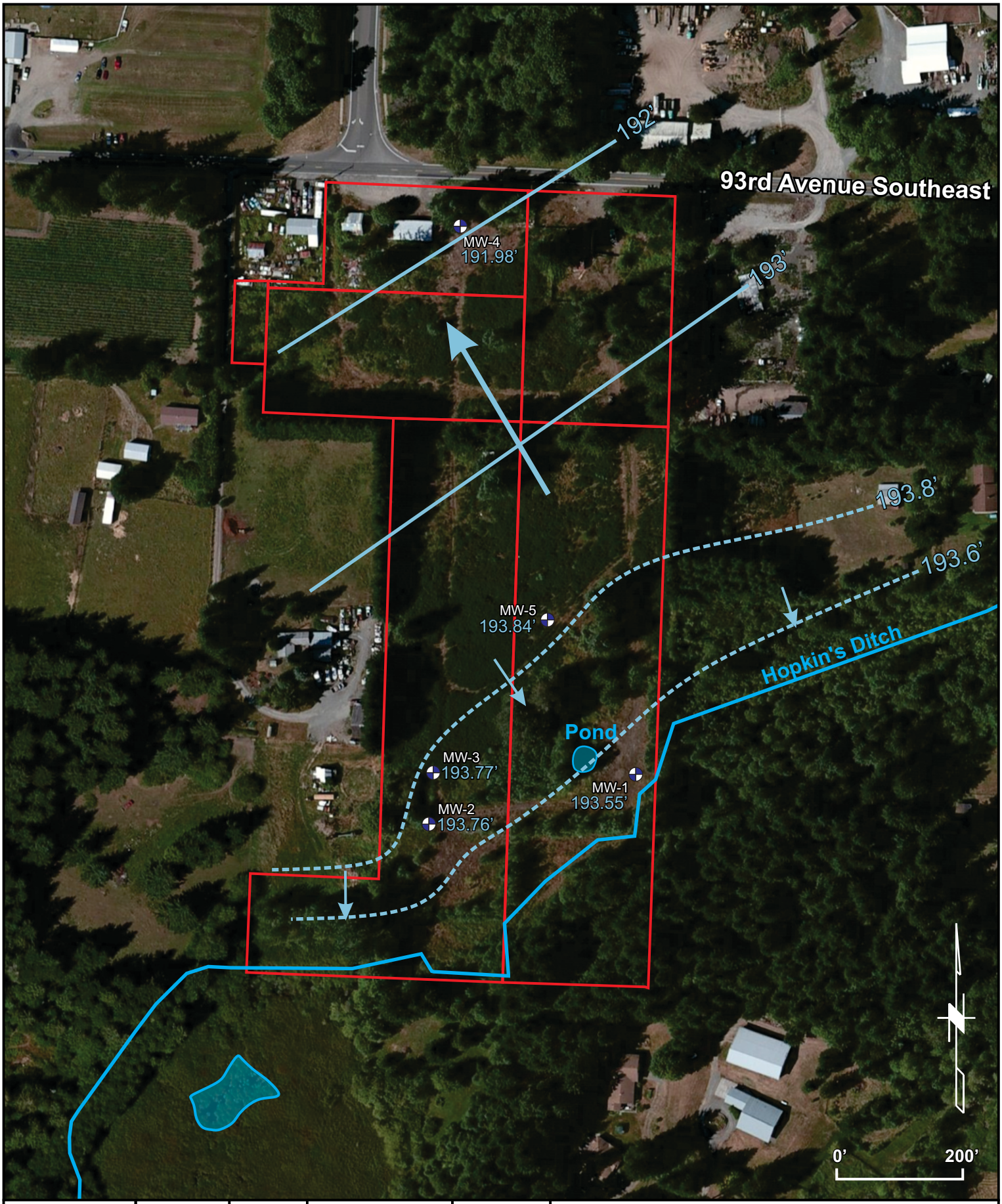
ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 200'	Figure 4 Wetlands Map John's Auto Wrecking: Remedial Investigation



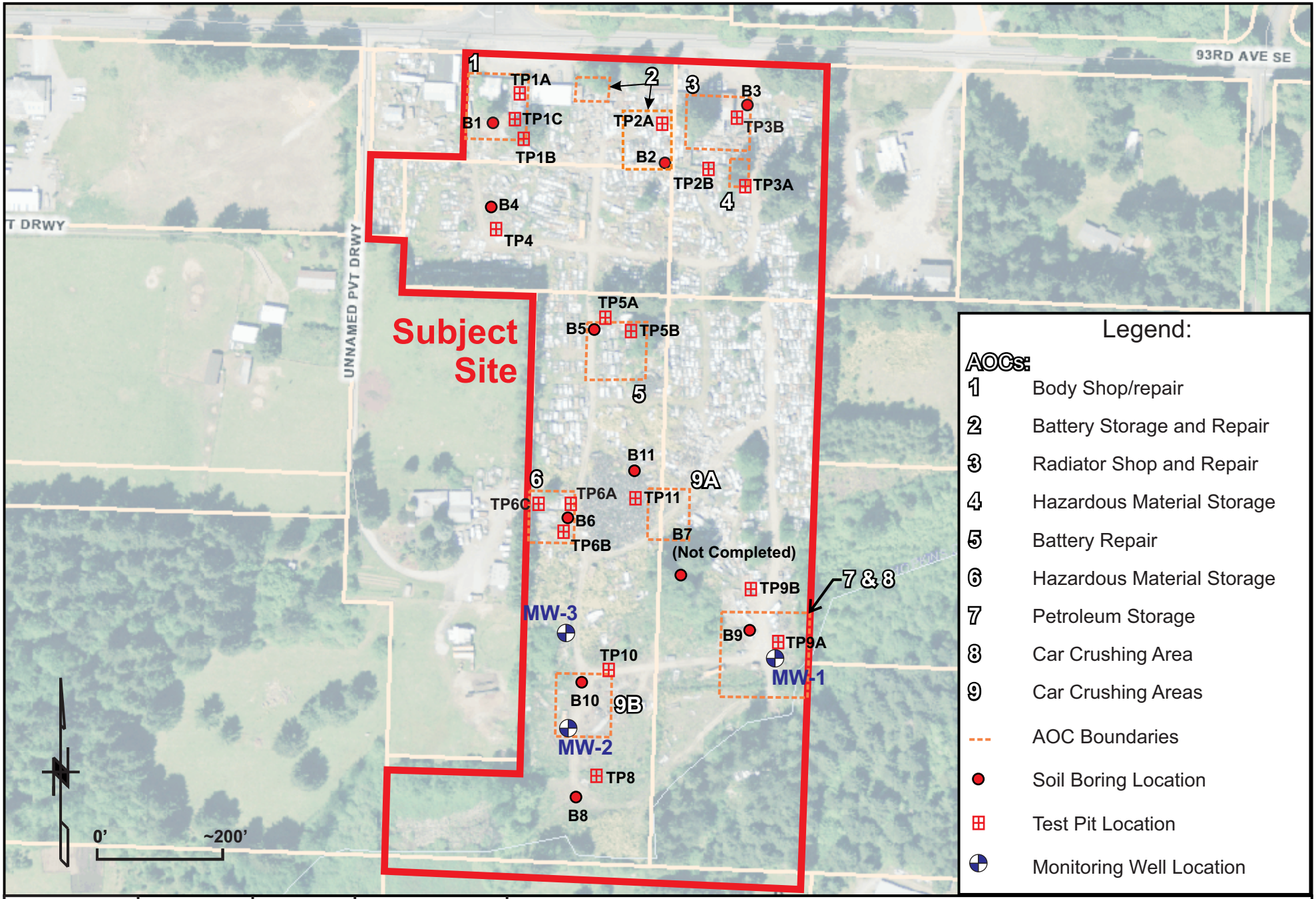
ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 200'	Figure 5 High Groundwater Hazard Map John's Auto Wrecking: Remedial Investigation



ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 200'	Figure 6 Flood Zones Map John's Auto Wrecking: Remedial Investigation



ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 200'	Water Levels Measured: 02/28/2013	Figure 7 Potentiometric Surface Map John's Auto Wrecking: Remedial Investigation

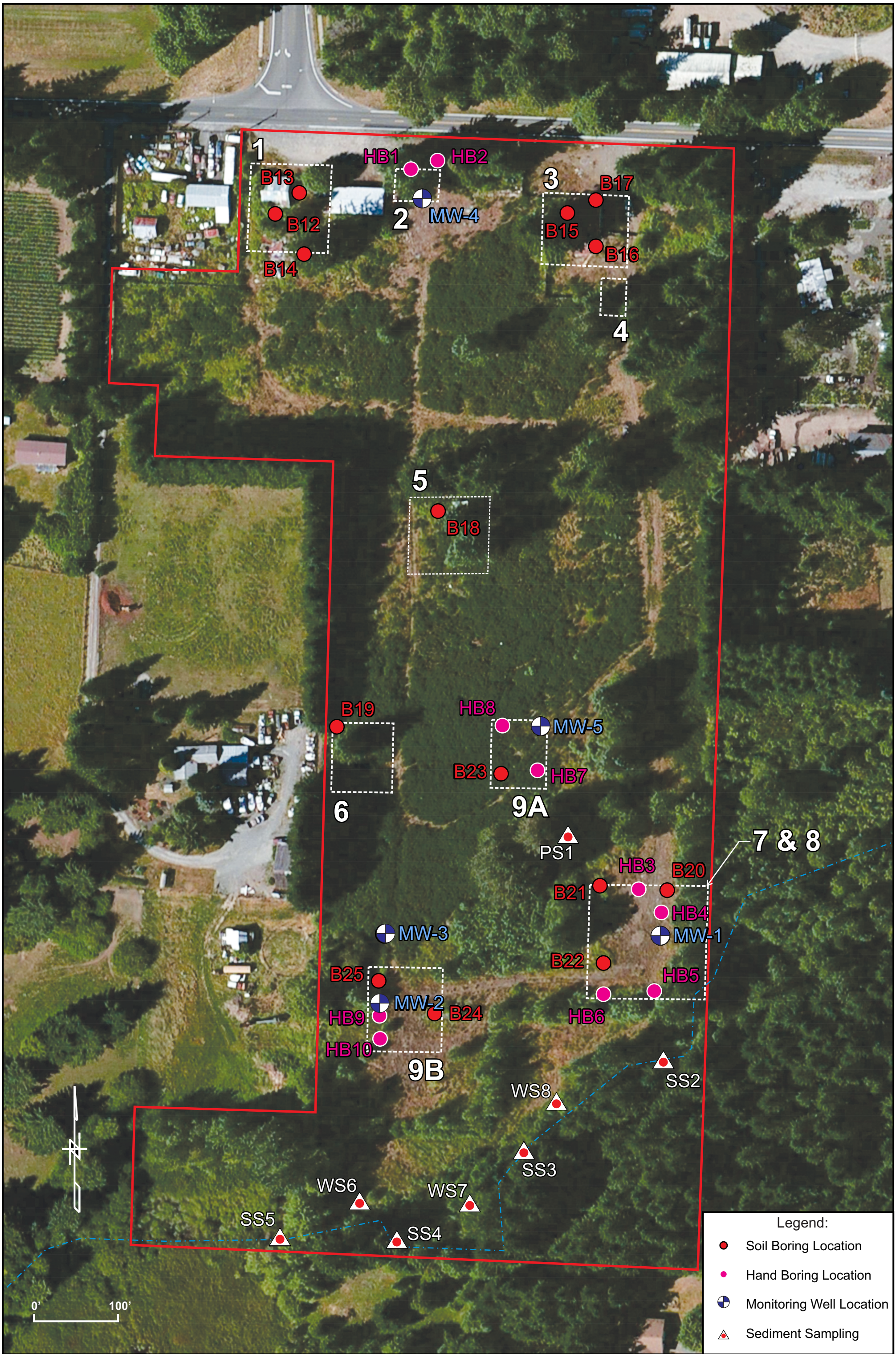


ROBINSON NOBLE	Note: Image taken from Thurston County GIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = ~200'

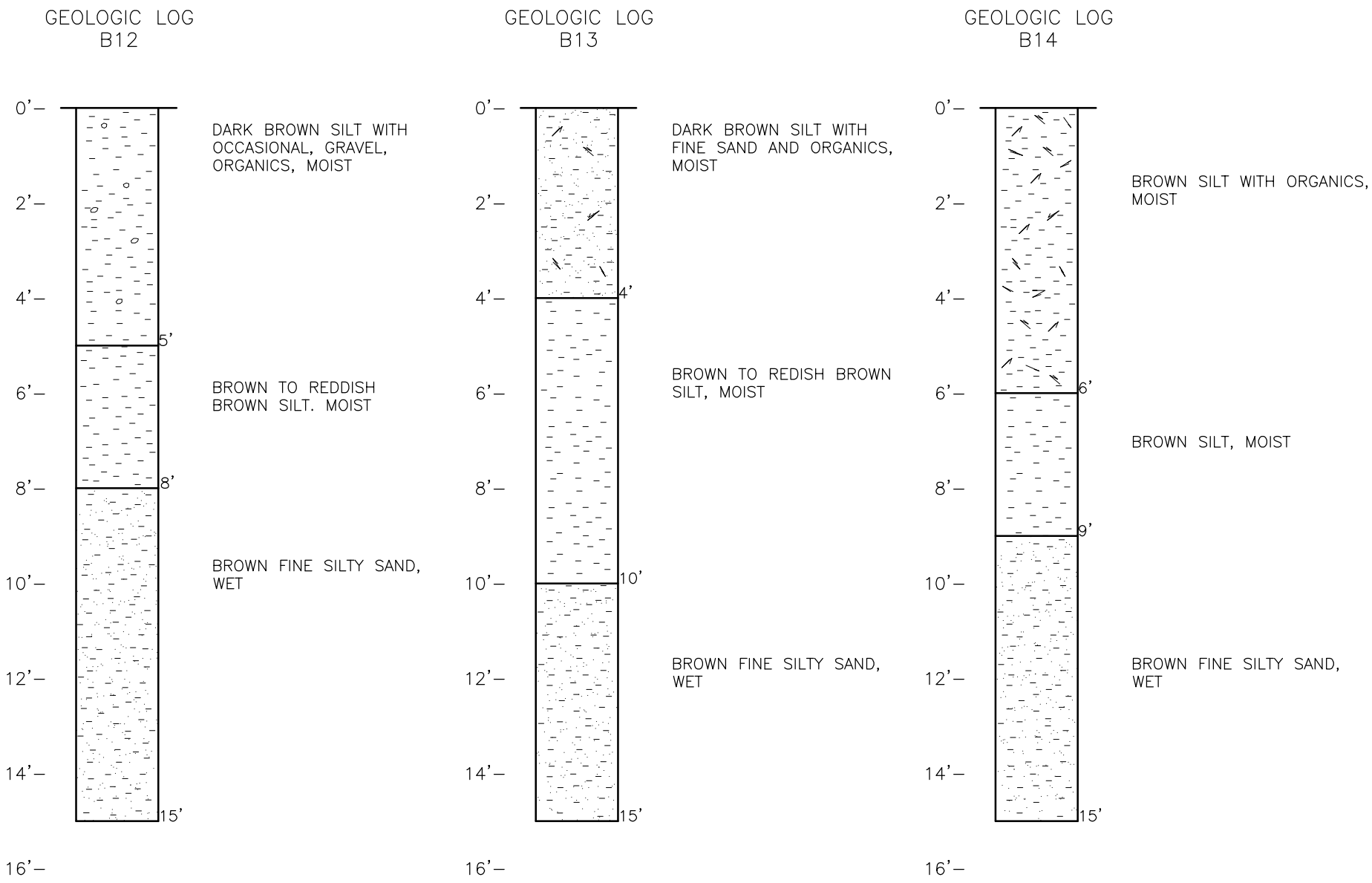
Figure 8

Previous Investigations and Remediation Work

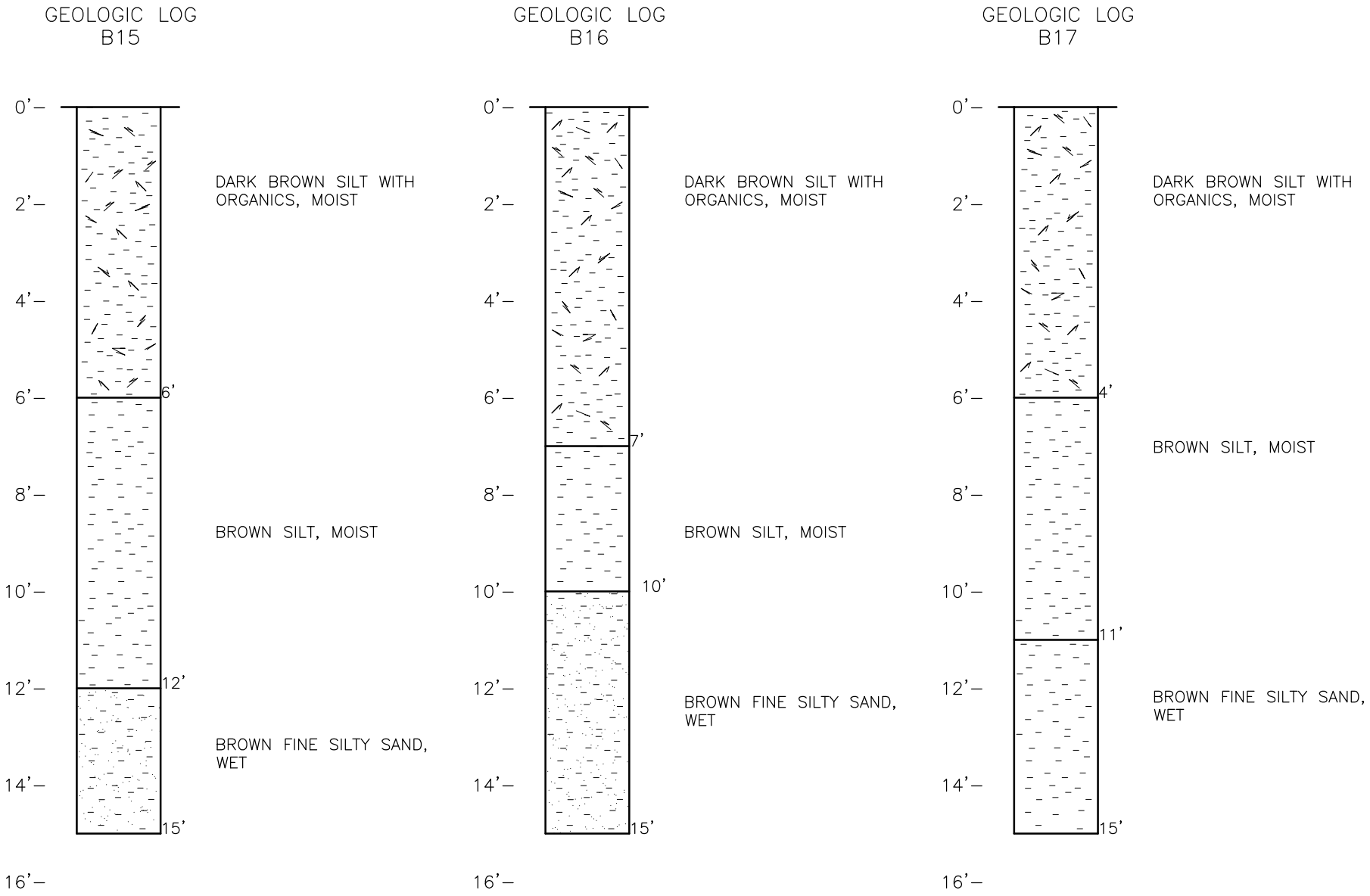
John's Auto Wrecking: Remedial Investigation



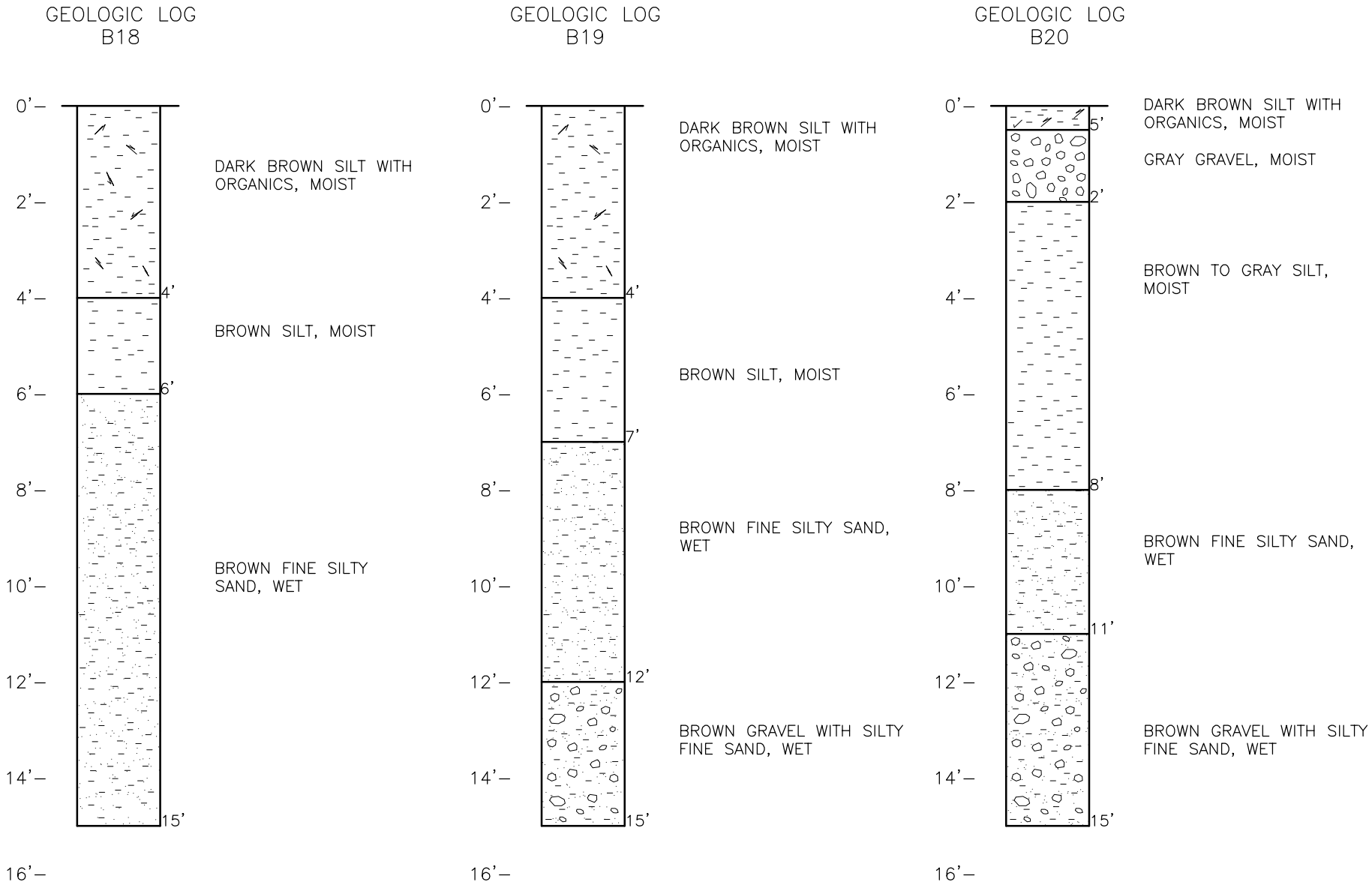
ROBINSON NOBLE	Note: Image from ESRI ArcGIS	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Scale 1” = 100’	Figure 9 Areas of Concern and Current Investigation Work John’s Auto Wrecking: Remedial Investigation



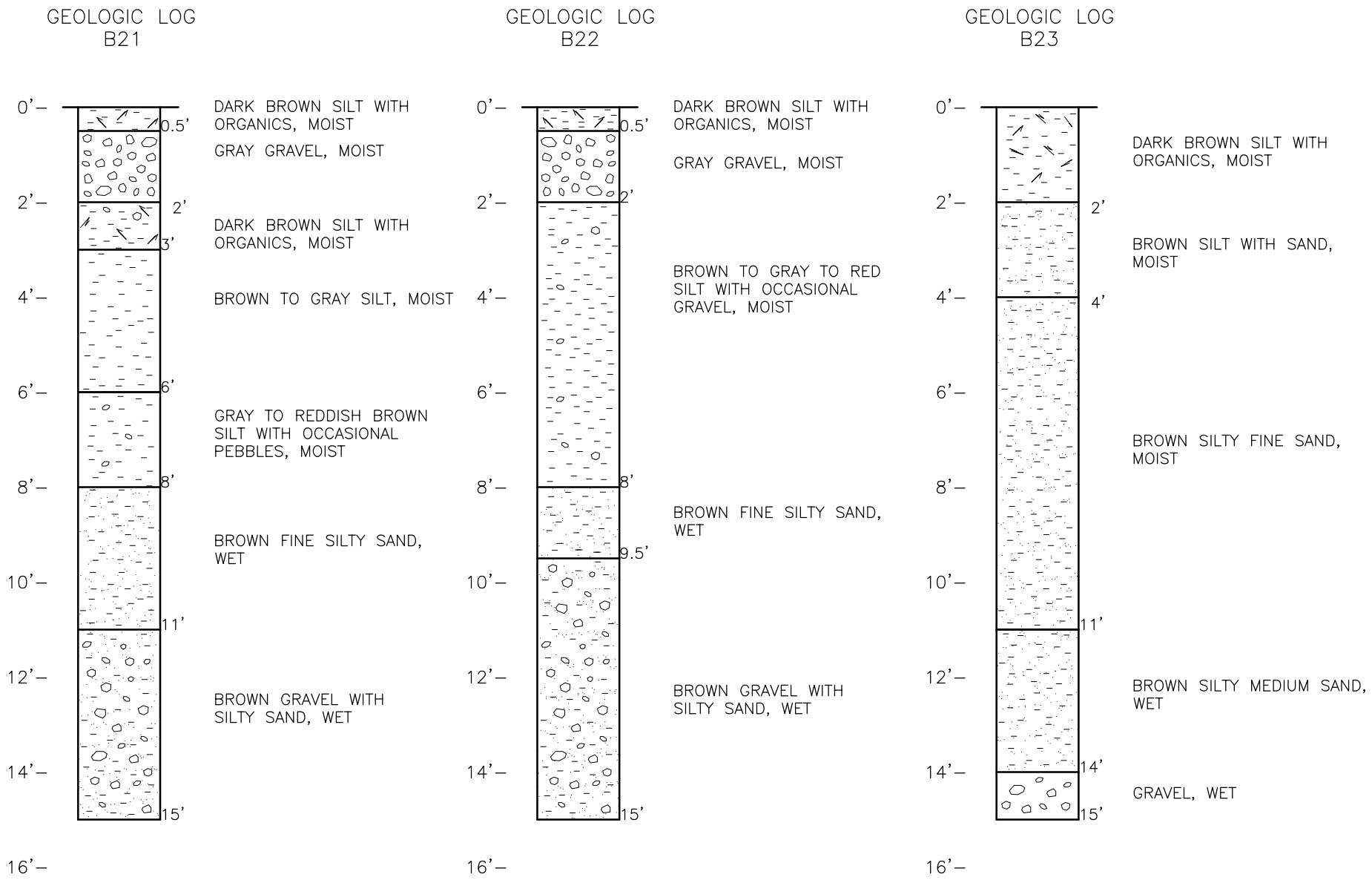
ROBINSON NOBLE	PM: MTW July 2013 2754-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 4.0'	Figure 10 Geologic Logs for Direct-Push Boreholes B12 Through B14 John's Auto Wrecking: Remedial Investigation



ROBINSON NOBLE	PM: MTW July 2013 2754-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 4.0'	Figure 11 Geologic Logs for Direct-Push Boreholes B15 Through B17 John's Auto Wrecking: Remedial Investigation



ROBINSON NOBLE	PM: MTW July 2013 2754-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 4.0'	Figure 12 Geologic Logs for Direct-Push Boreholes B18 Through B20 John's Auto Wrecking: Remedial Investigation



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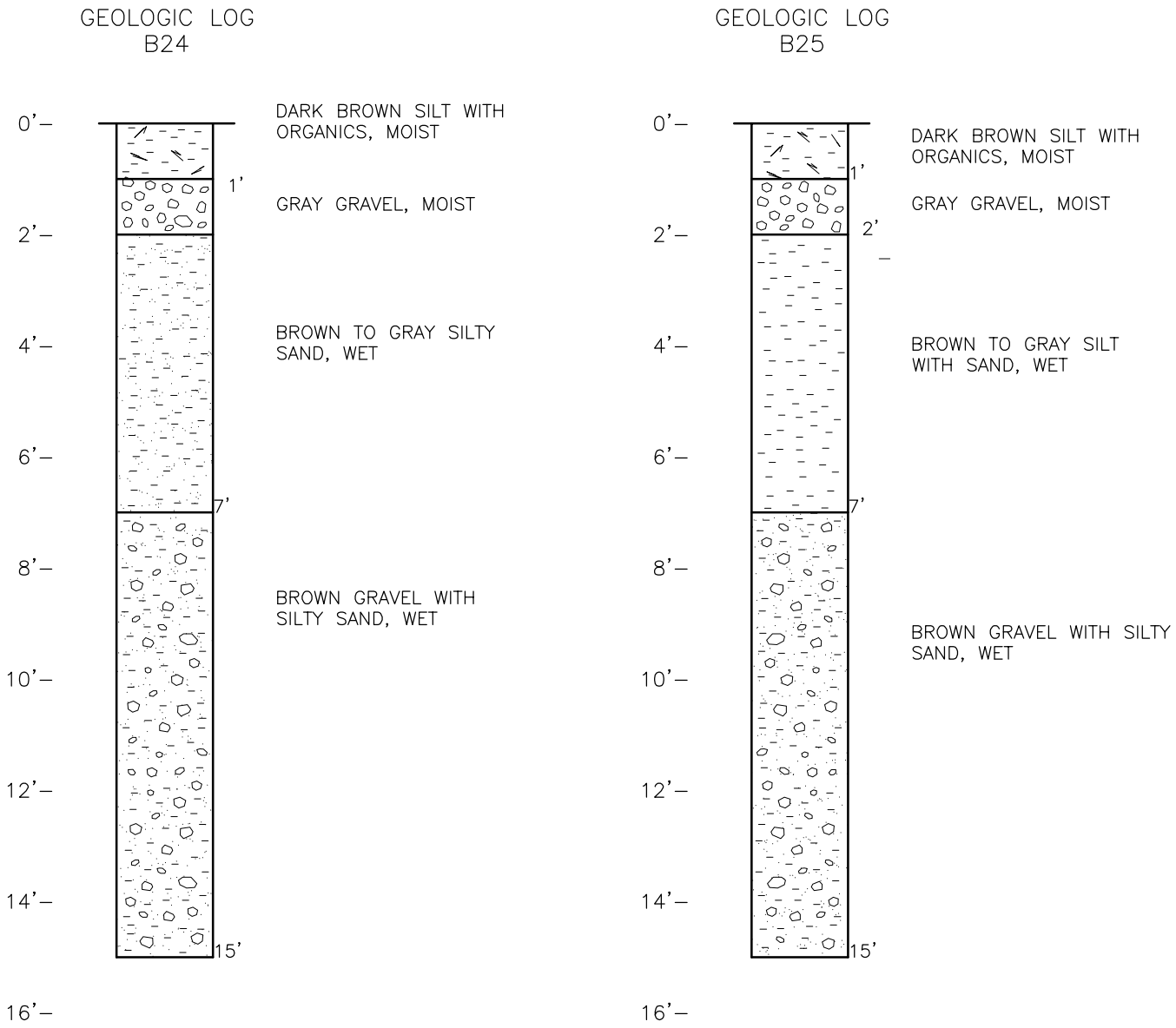
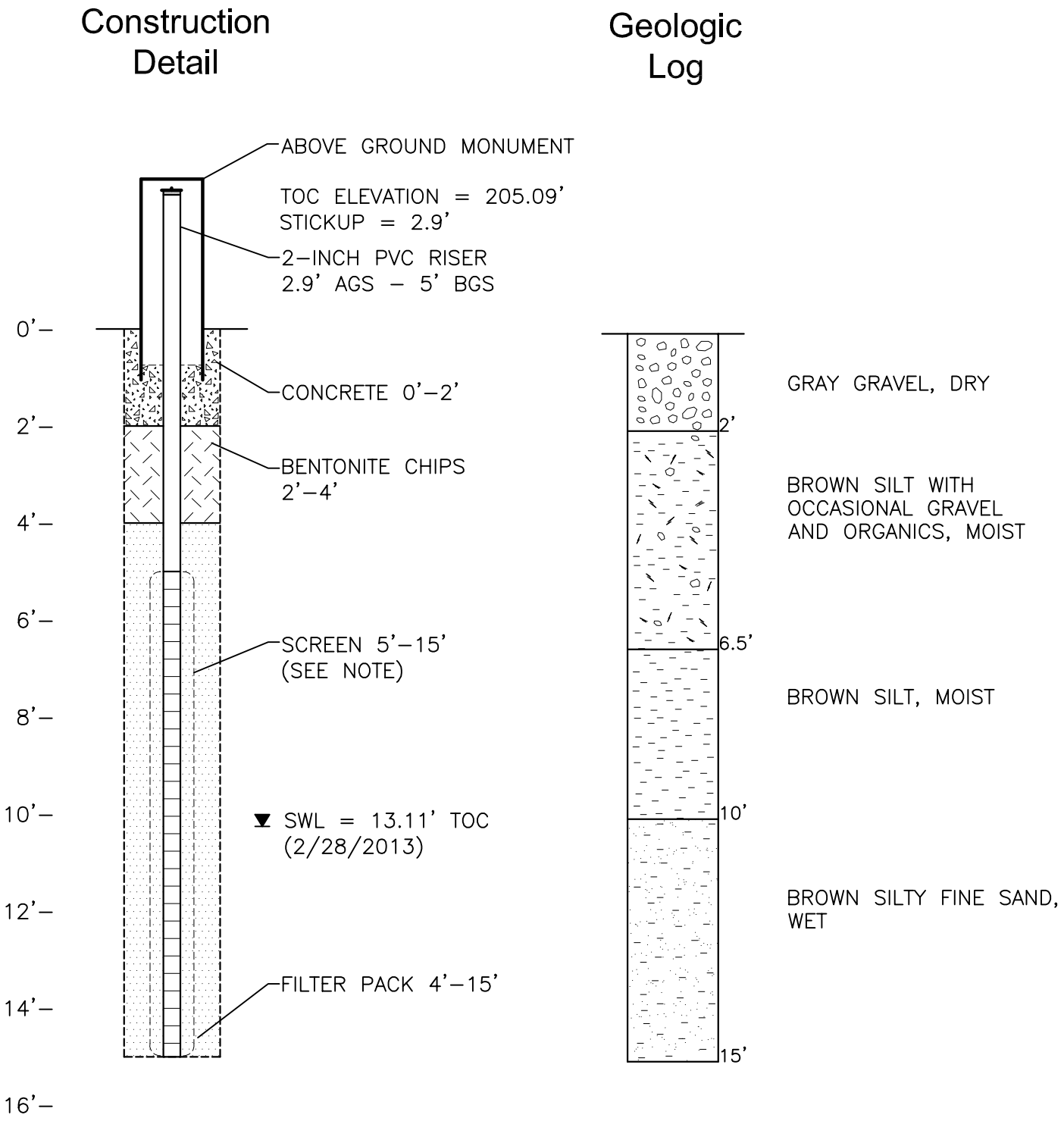
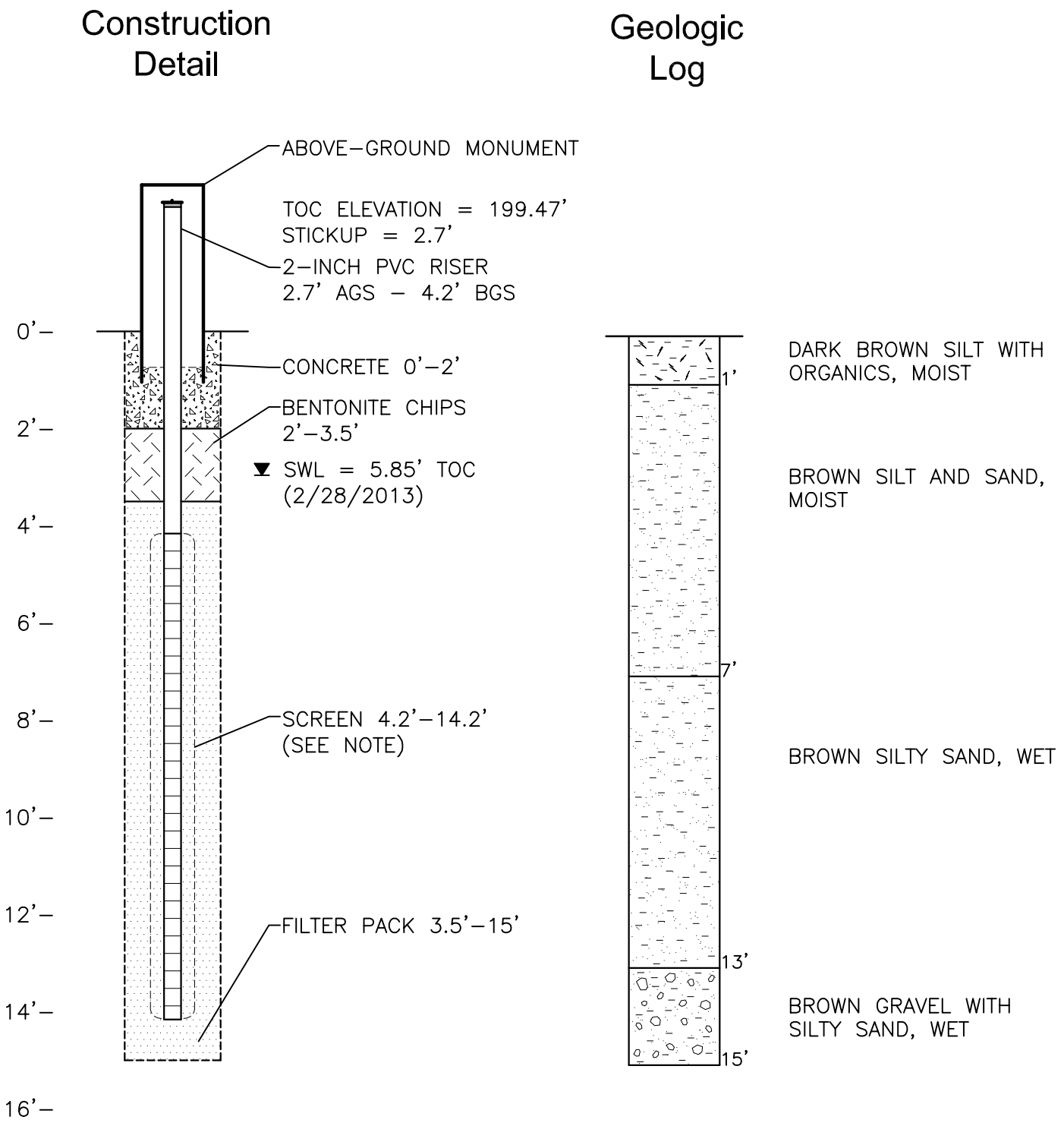


ROBINSON NOBLE	PM: MTW July 2013 2754-001E	Thurston County T 17 N/R 02 W - 23 Scale 1" = 4.0'	Figure 14 Geologic Logs for Direct-Push Boreholes B24 And B25 John's Auto Wrecking: Remedial Investigation



Note: Well screen is 2-inch pre-pack, 10-slot (0.010-inch opening) PVC pipe. Filter pack is 10x20 Colorado Silica Sand product.

ROBINSON NOBLE	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Well ID: BIB975	Figure 15 Construction Detail and Geologic Log for Monitor Well MW-4 John's Auto Wrecking: Remedial Investigation



Note: Well screen is 2-inch pre-pack, 10-slot (0.010-inch opening) PVC pipe. Filter pack is 10x20 Colorado Silica Sand product.

ROBINSON NOBLE	PM: MTW July 2013 2491-001E	Thurston County T 17 N/R 02 W - 23 Well ID: BIB976	Figure 16 Construction Detail and Geologic Log for Monitor Well MW-5 John's Auto Wrecking: Remedial Investigation

APPENDIX A

ROBINSON NOBLE SALTBUSH INC. Established 1947
GROUNDWATER & ENVIRONMENTAL SCIENTISTS

April 21, 2009

Alan J. Wertjes
Attorney at Law
1800 Cooper Pt. Rd. SW, Bldg. 3
Olympia, WA 98502

Subject: Site Investigation/characterization, Havens Property (aka) Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington

Dear Mr. Wertjes:

Robinson, Noble & Saltbush is pleased to present this letter report detailing our recent subsurface investigation of the Havens property. The site activities included the advancement of a total of 11 borings and excavation of 17 test pits. A series of soil and groundwater samples were collected and analyzed for potential contaminates associated with auto wrecking yard activities. The observations made during the subsurface work and the results of the laboratory analysis are presented below.

Site Location and History

The subject site is located within Township 17N, Range 02W, Section 23. The property is comprised of six parcels identified by Thurston County Assessor-Treasurer's records as parcels 12723210100, 12723220200, 12723210400, 12723210401, 12723210700, and 12723211000. The address assigned to these parcels is 411 93rd Avenue SE, Washington 98501 (Figure 1). These parcels are contiguous. The subject consists of approximately 15 acres.

In November 2008, Robinson, Noble and Saltbush completed a file review for the Havens property of available documents contained within the Washington State Department of Ecology (Ecology) and Thurston County Health Department records. Information within the department of Ecology records indicate the site is listed on the Department of Ecology's Hazardous Sites List. The site was ranked a "1" following the completion of a site-hazard assessment. Sites receiving a rank of 1 or 2 are generally considered the highest priority for cleanup by Ecology. Ecology loosely defines these sites as posing a risk to human health and the environment.

To address the site ranking, the property owners enrolled the site in the Ecology Voluntary Cleanup Program (VCP), but the site has since been removed from the VCP due to inactivity. During the site's enrollment within the VCP, a limited effort was made by the property owner to characterize the subject site. Eventually, activity ceased and no official reports were generated.

During the property owner's preliminary investigation, areas of concern were identified which we present below. Soil samples were collected with the assistance of Thurston County Health during the initial investigation. During this initial site work, Patrick Soderberg of Thurston County Health reportedly observed drums overflowing during a rainstorm event and releasing unknown quantities of petroleum hydrocarbons. Also, at the time of the initial investigation, the site contained a large number if automobiles and stored automotive parts and pieces. Since those initial site activities, the site has been cleared of nearly all the vehicles and many of the stored automotive pieces.

As part of the limited investigations completed while the site was enrolled in the VCP with Ecology, nine areas of concern were identified. A site diagram has been attached as Figure 2 which indicates the general areas of concern presented in the previous work. The nine areas were collaboratively identified following discussions with the property owner's previous consultant and representatives of Thurston County Health. The areas were identified as points of concern based upon on-site observations and discussions identifying specific types of past use.

Site Geology/Hydrology

The subject lies in a relatively flat, glacial outwash plain at an elevation approximately 200 feet above sea level. The site is within the Salmon Creek drainage basin and is prone to flooding during periods of heavy precipitation.

Soils in the area of the subject have been classified by the United States Department of Agriculture, published in the *Soil Survey for the Thurston County Washington Area* (1990), as predominantly two distinct soil types: Nisqually loamy, fine sand and Norma fine, sandy loam. These soils developed on glacial outwash plains and alluvium, respectively. Nearly three quarters of the property extending southward from the northern property boundary, are mapped as the Nisqually loamy, fine sand. The majority of the remaining property is mapped as Norma fine, sandy loam. Both of theses soils have high infiltration rates ranging from 1.98 to 5.98 in/hr. These descriptions are consistent with conditions observed during the drilling on site.

Surface water is present; Hopkins ditch bisects the southern quarter of the property, flowing from the eastern boundary to the southwestern corner of the property. A small pond/wetland is mapped on the southern half of parcel 12723210700. An additional wetland is mapped in the southeast corner of parcel 12723211000. The ditch, pond, and wetlands are believed to be a reflection of shallow ground water.

The subject property and surrounding area are located within a glacial outwash plain. The geological map of Thurston County, Washington, (*USGS Water-Supply Bulletin 10* by Noble and Wallace, 1966) has mapped the area as recessional outwash (Qvr1). That report describes the sediments *"as glaciofluvial materials deposited during recession of the Vashon glacier. Qvr [is] gravel*

and sand poorly sorted, usually above the water table but excellent aquifer where below the water table... Usually overlies till or recessional gravel."

Noble and Wallace (1966) report that this sandy outwash averages 25 feet thick but is much thicker to the north near Ward and Hewitt Lakes, approximately 2.5 miles away. Drost and others (1998) indicate the recessional outwash in the vicinity of the subject property ranges from 0 to 25 feet thick and may thicken to the west of the property. The recessional material, as mapped by Drost, appears to be absent approximately 1 mile southeast of the subject site.

In the normal sequence of glacial sediments in the Puget Sound area, Vashon till (Qvt) exists beneath the Vashon recessional outwash. Till is a compact mixture of clay, silt, sand, and gravel that typically has a relatively low permeability. Mapping by Drost and others (1998) indicate till is present at the property and has a thickness of 25 to 50 feet. Beneath the till is the Vashon advance outwash (Qva). The Qva is described by Drost as a coarse, sand and gravel aquifer.

The data obtained from drilling and excavation activities indicate the shallow geology below the subject property is composed of a heterogeneous mix of glacial recessional outwash deposits. The recessional sediments are a range of brown silts, sands, and gravel to silty, fine sands. These materials correlate closely with the description of the Qvr unit described by Drost. An increase in gravel size and distribution was noted in borings and test pits completed in the southern quarter of the property. Similar sediments were observed in all of the borings and excavated test pits. Shallow ground water was encountered in the borings at a depth of seven to nine feet below ground surface (bgs).

Shallow ground water beneath the subject site appears to be perched on the underlying compact till. The shallow groundwater gradient is presumed to trend toward Hopkins ditch. According to a Pacific Ground Water Group report[1], shallow ground water beneath the subject site flows toward Hopkins ditch. Since Hopkins ditch bisects a portion of the property, the gradient in areas north of the ditch trends to the southeast while areas south of the ditch trends toward the northwest. Shallow groundwater flow ultimately is controlled by the topographic surface of the underlying till material.

Site Activities

On February 15, 2009, site work for the Havens property began with a site walk completed by Robinson, Noble & Saltbush personnel and accompanied by a representative of APS, a private utility locating company. During the site walk, the boring and test pit locations were identified. Taking into account the nine areas of concern previously identified, additional field observations were used to determine the final locations of the 10 borings and test pits drilled or excavated for the current study (Figure 3). Observations made during the site inspections identified several potential contamination sources including partially filled steel drums, 24 five-gallon

[1] Pacific Ground Water Group, (2001) *Salmon Creek Drainage Basin Conceptual Model* prepared for URS Corp and Thurston County Water and Waste Management.

buckets (waste oil), two large industrial batteries, and a pile of old lighting fixtures. These remaining potential contamination sources should be collected and secured to prevent release of additional contamination into the environment.

Following the site walk, APS cleared each of the boring and test pit locations (Figure 3). Once the utility locate was completed, Northwest Probe, Inc., of Puyallup, Washington mobilized a direct-push drilling rig over the first boring location. A second contractor, Langseth Environmental Services of Tacoma, Washington began test pit excavation utilizing a rubber-tired backhoe. Field work was completed in one day.

Field screening was conducted during drilling and excavation operations using visual and olfactory observations. A total of 36 soil samples were collected from the test pits and 12 soil samples from the borings. Each of the soil samples were logged into the laboratory chain-of-custody; however, some of the deeper samples were held to be run following the results of soil samples taken from shallower depths within adjacent test pits. Soil and water samples not analyzed in the field were submitted to Libby Environmental for fixed laboratory (off-site) additional analysis (presented below). The complete analytical results of all the soil and groundwater submittals are attached in Appendix D and are summarized below.

A series of ten soil borings (Figures 4-6) were completed to depths ranging from 12 to 16 feet below ground surface (bgs). A series of 16 test pits were completed. The test pits were generally excavated to a depth of five feet bgs. The test pits were located in close proximity to the soil borings (Figure 3). At some locations, a second test pit at each boring location was incorporated into the work plan to allow for a more detailed site characterization. Two test pits were completed where staining, distressed vegetations, and or significant material storage were identified. Second test pits were completed at boring locations B1, B2, B3, B5, B6, and B9.

Each test pit and boring was logged and subjected to field screening. Field screening of samples from the borings did not suggest the presence of the target compounds. However, field screening for several of the test pit samples did. Target compounds include petroleum hydrocarbons, metals, PCB's, Chlorinated Solvents, and glycols. Selected soil samples were collected from the test pit and submitted for on-site laboratory analysis using a mobile laboratory provided by Libby Environmental, LLC. Soil samples were collected using EPA Method 5035A for volatile organic compound analysis (VOC). Samples were collected in standard four-ounce soil jars filled using stainless steel spoons. On-site analysis was completed for gasoline-, diesel-, and oil-range petroleum hydrocarbons. A water sample and selected soil samples were collected from each boring and submitted for additional on-site laboratory analysis.

Laboratory Results

Target analytes included petroleum hydrocarbons (gasoline NWTPH-Gx, diesel, and oil-range NWTPH-DxExt.), metals, PCBs, chlorinated solvents (8270), and glycols. The metals of concern have been subdivided into two separate categories: the five metals (lead, arsenic, cadmium,

chromium, mercury) commonly associated with contaminated sites and three additional metals (nickel, zinc, copper). The three additional metals were requested by Ecology in an opinion letter dated February 23, 2006 and have been targeted for areas where cars were crushed or repaired. Analysis for PCBs was completed for selected samples containing elevated levels of heavy oils. The table below presents the contaminates of concern for each of the nine areas of concern.

Table 1. Laboratory Breakdown

Contaminates of Concern	Areas of Concern	Media
Petroleum Hydrocarbons	All	Soil and Ground water
Metals (lead, arsenic, cadmium, chromium, mercury)	All	Soil and Ground water
Metals (nickel, zinc, copper)	1, 2, 3, 5, 8, 9	Soil and Ground water
PCBs	Lab dependant*	Soil and Ground water
Chlorinated Solvents	All	Soil and Ground water
Glycols	1, 3, 8, 9	Ground water

** Samples with heavy oil concentrations above MTCA Method A cleanup levels were run for PCBs*

All samples analyzed for VOC's, gasoline-range hydrocarbons, and glycols were determined to have concentrations of theses contaminates below laboratory detection levels. However, as shown on the attached analytical reports, concentrations of oil-range petroleum hydrocarbons and metals were detected in soil and groundwater samples. Laboratory results exceeding cleanup levels are discussed in detail in the following sections.

Soil concentrations of oil were identified in soil samples collected from six of the 16 test pits. The following table outlines the analytes and concentrations (above laboratory detection limits) detected in soil samples. Surface samples were collected from areas with observed soil staining and or distressed vegetation.

Table 2: Analytical Concentrations of NWTPH Dx/DX Ext. in Soil above Laboratory Detection Limits

Sample ID	Diesel (mg/kg)	Mineral Oil (mg/kg)	Oil (mg/kg)
TP1-Surf A	nd	nd	**66,700**
TP1-1'A	nd	nd	140
TP3-Surf B	nd	nd	500
TP5-Surf B	nd	nd	340
TP6-0.5'A	nd	nd	**61,900**
TP9-Surf A	nd	nd	320
Method A Limit	**2,000**	**4,000**	**2,000**

***Bold** denotes reported sample concentration exceeds MTCA Method A Limit; nd denotes analyte not detected above laboratory detection limit.*

Sample TP1-SurfA was collected from soil near an overturned, five-gallon bucket. Surprisingly, the initial results (mobile lab) for sample TP1-SurfA did not reveal elevated levels of oil. Considering the nature of the soil sample location, the lab was asked to re-analyze the sample. Libby completed the analysis at their fixed laboratory and a high oil concentration was identified. The bucket is believed to have been used to contain waste oil. Visual observations of the bucket indicate the bucket was approximately 80 percent full, suggesting a maximum release of one gallon of waste oil. The area surrounding TP1A was littered with 24 waste-oil buckets, many were observed to be full of oil. The remaining buckets appeared upright and intact.

Sample TP6-0.5'A was collected just below the surface near concrete bunkers along the western edge of the property in an area described as hazardous material storage. Several partially filled drums were observed within the concrete bunkers. The contents of the drums are unknown.

Samples from TP3B, TP5B, TP6A, and TP9A were analyzed for PCBs. As stated above, the initial laboratory results for TP1-SurfA did not reveal a detection of oil. Therefore, at the time the selection of soil samples by the lab to be analyzed for PCBs (as per the work plan), TP1-SurfA was not selected for anaylsis. Once the discrepancy was identified, the samples had been disposed of. None of the soil samples analyzed for PCBs were determined to exceed the MTCA Method A cleanup levels of 1.0 mg/kg. Analytical results for sample TP6-0.5A indicate a level of Aroclor 1260 of 0.9 mg/kg. Aroclor 1260 is one of a number of common PCB blends generally associated with electrical equipment. No oil or PCBs were detected in any of the groundwater samples collected.

The laboratory results from the metals analysis for the soil samples identified several samples with elevated levels of metals. As previously discussed, MTCA five metals (lead, cadmium, arsenic, and mercury), as well as, copper, zinc, and nickel were analyzed for selected soil and groundwater samples. No soil samples were found to exceed the respective MTCA Method A cleanup level. However, analysis of a soil sample collected from TP1-1'B revealed an elevated level of nickel of 115 mg/kg. The MTCA Priority Contaminates of Ecological Concern Table 749-2 presented in Model Toxics Control Act WAC 173-340, indicates a maximum soil concentration for unrestricted land use of nickel is 100 mg/kg. Depending on the designed end use of the property, these levels may be more restrictive then necessary. However, since additional soil remediation is recommended for the area surrounding TP1, it may be prudent to remove the all known impacted soils and include nickel in the confirmation sampling. Additional discussion concerning recommended remediation efforts is presented below.

The laboratory results from the metal's analysis on selected groundwater samples identified five borings with detected analytes. Of the ten borings completed, all but B4 and B10 were run for zinc, copper, and nickel. These borings were not selected because the presumed former site activities at these locations did not involve activities likely to generate the target compounds in

question. Borings B5, B8, B9, B10, and B11 were each found to contain metals above detection levels. The analytical results are presented in Table 3 below.

Table 3: Analytical Concentrations of Metals in Water above Laboratory Detection Limits

Sample ID	Lead (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Arsenic (ug/l)	Mercury (ug/l)	Zinc (ug/l)	Copper (ug/l)	Nickel (ug/l)
B5	11	nd	nd	nd	nd	nd	22	nd
B8	**25**	nd	30	**14**	nd	113	196	nd
B9	**113**	2.0	34	**32**	nd	560	**1400**	**807**
B10	**72**	nd	**54**	**7**	nd	nd	nd	n/a
B11	nd	nd	nd	nd	nd	nd	nd	**239**
Method A Limit	**15**	**5.0**	**50/100***	**5.0**	**2.0**			
Method B Limit						**4,800**	**590**	**1400a/ 160c****

Bold *denotes reported sample concentration exceeds reported cleanup limit; nd denotes analyte not detected above laboratory detection limit; n/a denotes not analyzed.*

* *MTCA Method A Cleanup Level 50 ug/l when Chromium VI present and 100 ug/l when absent*

** *National Toxic Rule, EPA 40 CFR part 131, fresh water 1400a (acute exposure)/160c (chronic exposure) limits*

Given the lack of a published MTCA Method A or calculated Method B clean up for nickel, we have chosen to present the National Toxic Rules exposure limits for fresh water bodies. These exposure limits are likely to be applied to any water in direct connection with the surrounding creek and wetlands.

Discussion

The initial phase of this investigation revealed some contamination from petroleum hydrocarbons has impacted soil beneath the site. Laboratory analyses of soil samples collected indicate the presence of petroleum contamination in excess of current MTCA Method A cleanup levels in areas observed to have surface staining.

The two samples identified as exceeding MTCA cleanup levels were located at TP1A and TP6A, both where surface staining was observed. The high levels of oils were detected in shallow soil samples, collected at or near the ground surface. Additional soil samples, collected at deeper levels were found to have concentrations below cleanup levels. Laboratory analyses of groundwater samples collected from each of the ten borings did not indicate the presence of petroleum hydrocarbons above practical quantitative laboratory detection levels. The nature of the observed soil impacts, and the lack of groundwater impacts, suggests a targeted removal of the stained material should suffice to remediate the petroleum hydrocarbon contamination. With the collection of confirmation samples, the remediation will generate an estimated five to ten cubic yards of material. Confirmation sampling should include analysis for oil, cPAH, and PCBs.

Groundwater sampling identified concentrations of lead, chromium, and arsenic above the respective MTCA Method A cleanup levels. The metals were identified in three borings located within the southern third of the property. Shallow soil samples collected from these areas revealed soil concentrations of the targeted metals to be below MTCA Method A cleanup levels. Soil samples collected from borings B8, B9, and B10 were all well below applicable clean up levels for the target metals.

Chromium concentrations in boring B10 revealed levels exceeding MTCA Method A clean up for chromium when hexavalent chromium is present. Following the initial laboratory results, sample B10 was delivered to Spectra Laboratories of Tacoma, Washington for additional investigation. The sample was analyzed for the presence of hexavalent chromium. The laboratory results indicate levels of hexavalent chromium were below 0.01 mg/l. However, the sample was two days outside the allowable holding time for groundwater samples and, as such, the results are not definitive. Discussions with Libby Environmental suggest that exceeding the holding should not change the results, and it is therefore unlikely that any hexavalent chromium is impacting the ground water beneath the site.

Additional target compounds zinc, copper, and nickel were analyzed for the collected groundwater samples. Samples from B9 and B11 were determined to have copper and nickel concentrations exceeding published clean up levels. B11 is in the central portion of the property.

The groundwater samples were collected from direct-push soil borings through a temporary screen placed in the open borehole. While this method allows for adequate water entry and sample collection, the temporary nature of the screen set prevents adequate well development and purging. Groundwater samples collected from direct-push soil borings are generally turbid, containing high amounts of suspended and colloidal solids. It is likely, given the nature of the groundwater sampling completed during this initial investigation, that the metals levels identified in the ground water are artificially high. Prior to initiating a remedial effort, an additional round of groundwater samples should be collected from properly developed, monitoring wells.

Recommendations

Additional site work should include:

- Entry into Ecology's Voluntary Cleanup Program (VCP) should be made in order to assure that assessment and remedial action tasks are completed to the satisfaction of Ecology. As part of the site entry into the VCP, a Terrestrial Ecological Evaluation should be completed (due to the site proximity to mapped wetlands).

- Excavation and removal of identified contaminated soil surrounding test pits TP1A and TP6A coupled with conformational sampling.

- Confirmation sampling following the removal of petroleum impacted soils should include testing for cPAH and PCBs.

- Characterization and removal of all remaining sources of contamination including steel drums, five-gallon buckets, batteries, and old electrical fixtures.

- Installation of three monitoring wells to allow for proper development and low-flow sampling. The monitoring wells should be installed within close proximity the locations of B8, B9, and B10. The monitoring wells should be designed to sample shallow ground water, screened form ~7- to 20-feet bgs depending on anticipated seasonal water level fluctuations. The monitoring wells, once developed, will be sampled for lead, cadmium, chromium, arsenic, mercury, copper, zinc, and nickel.

Summary

It is our opinion that the contaminants identified are the result of historic site activities associated with the operation of an auto wrecking yard. Given the recent removal of a majority of the sources of contamination, removal of the impacted soils and remaining potential sources scattered across the site will alleviate much of the need for future remedial activities. It is also our opinion that properly constructed and developed monitoring wells will provide a more accurate representation of the ground water beneath the subject site. Our experience has shown properly developed and sampled wells have generally provided lower concentrations of metals within sampled ground water previously identified with elevated metals concentrations. Provided this assumption proves out, additional site characterization concerning groundwater contamination (including plume delineation) and additional remedial efforts may not be necessary.

We appreciate this opportunity to be of service. Please do not hesitate to contact me if you have any questions.

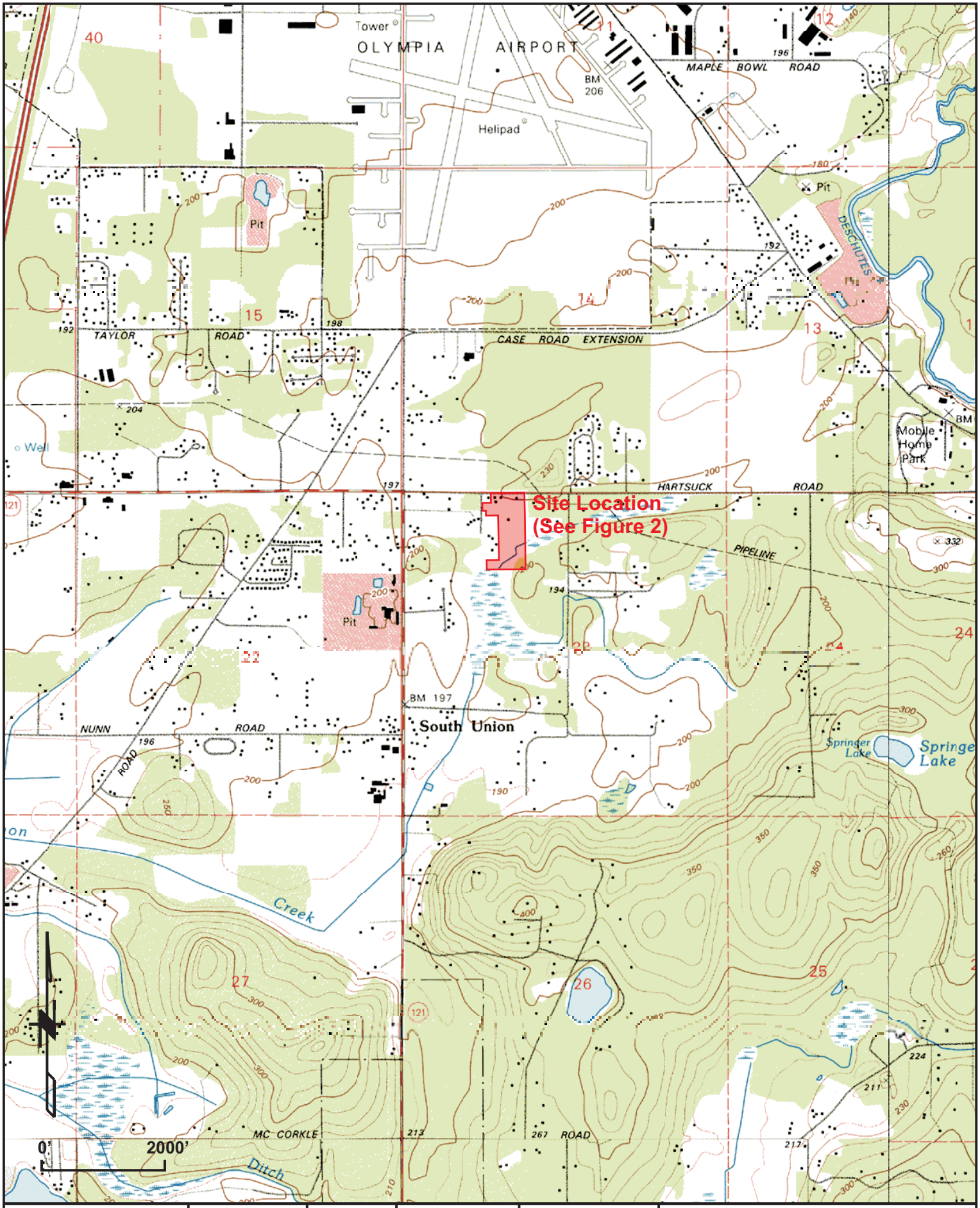
Very truly yours,
Robinson, Noble & Saltbush, Inc.

Richard A. Bieber, LG
Project Hydrogeologist, Project Manager

John F. Hildenbrand
Associate Environmental Scientist
Environmental Services Manager

attachments

RICHARD A. BIEBER



ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Basemap taken from USGS Maytown Quad.	PM: RAB April 2009	Thurston County 2491-001B	T 17 N/R 02 W - 23 Scale 1 " = 2000'

Figure 1
Vicinity Map
Havens Property: 93rd Ave SE, Oly/Site Characterization

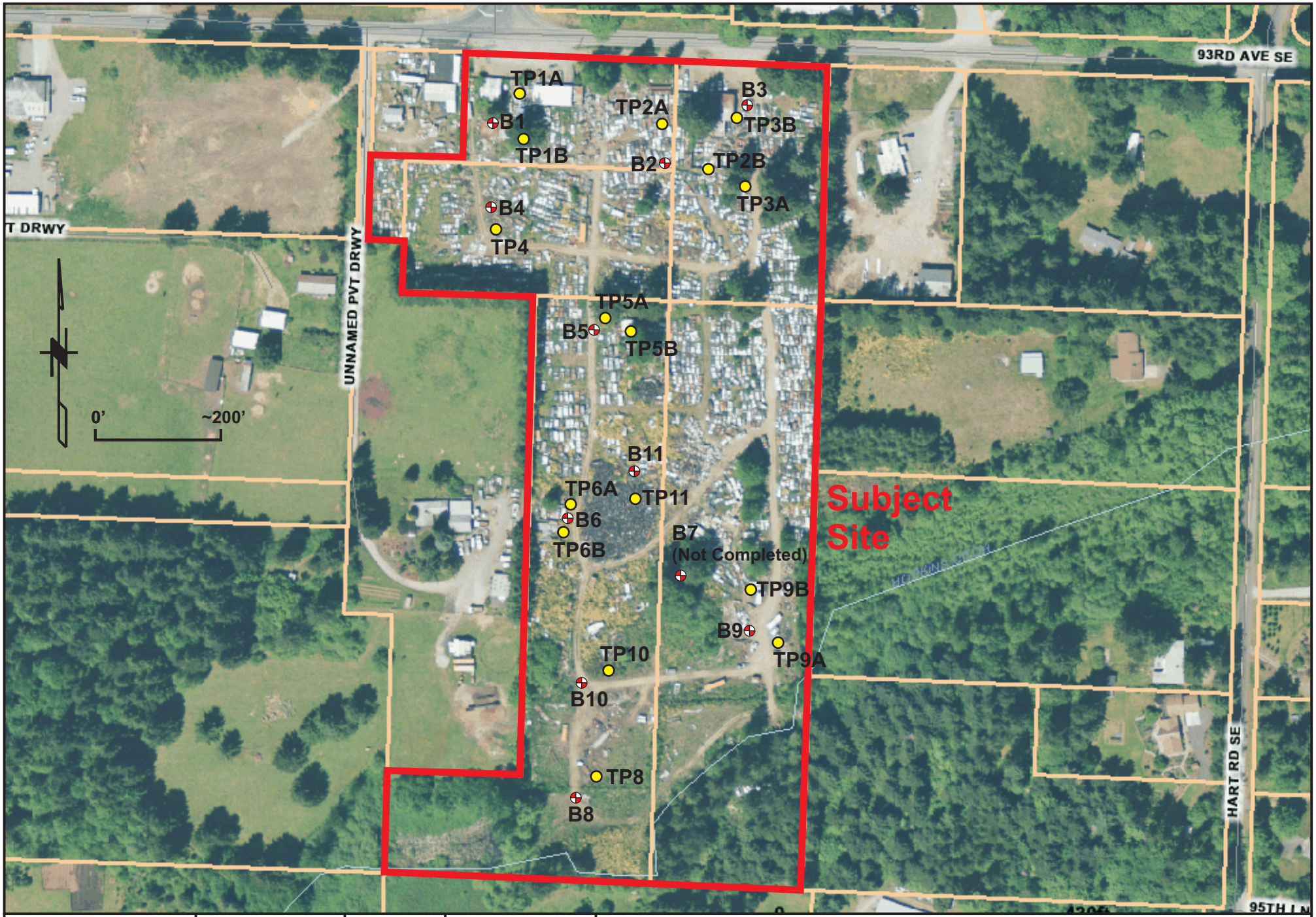
ROBINSON NOBLE SALTBUSH INC.
GROUNDWATER & ENVIRONMENTAL SCIENTISTS

Note: Image taken from Thurston County GIS Website

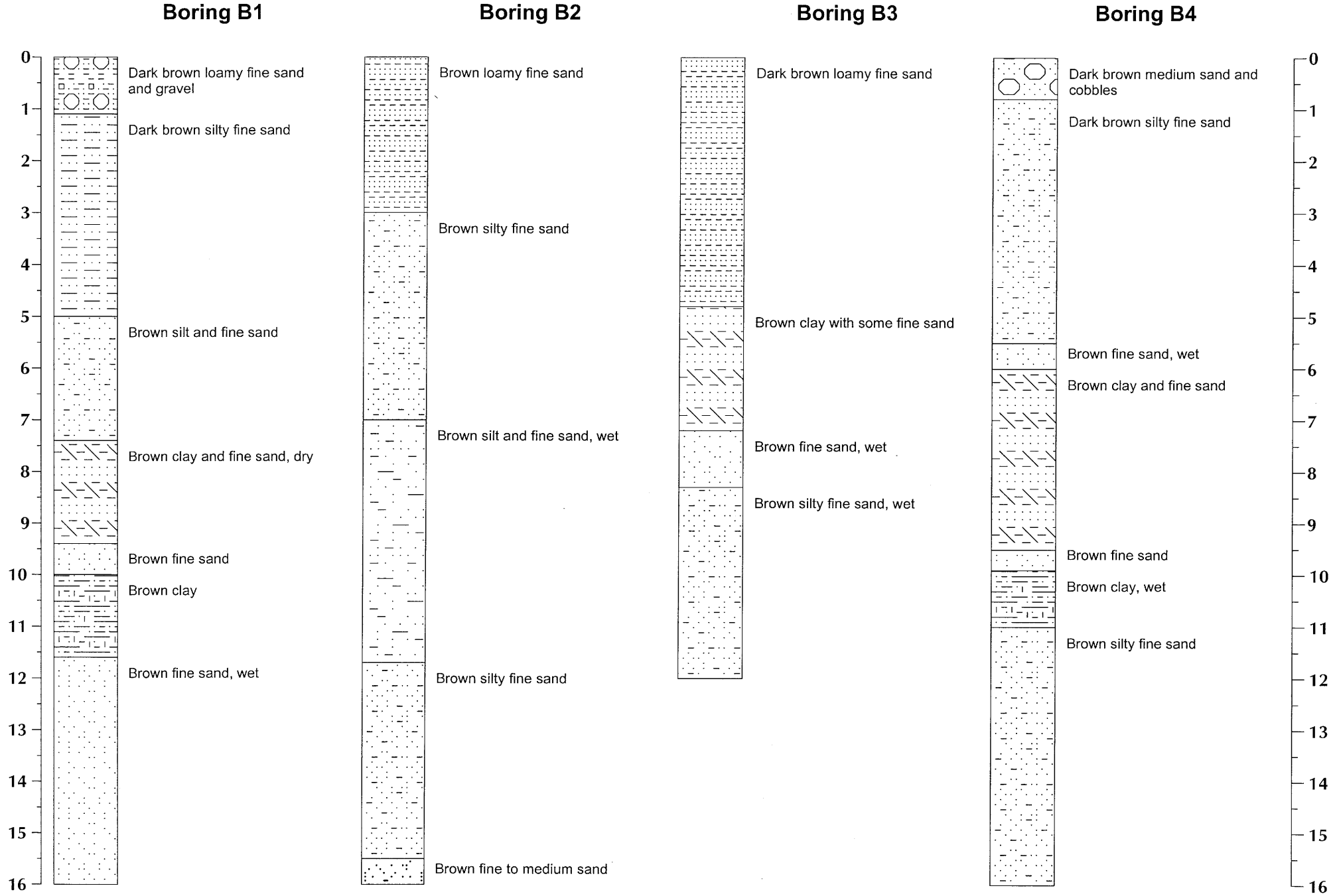
PM: RAB
April 2009
2491-001B

Thurston County
T 17 N/R 02 W - 23
Scale 1" = ~200'

Figure 2
Aerial Photo and Identified Areas of Concern
Havens Property: 93rd Ave SE, Oly/Site Characterization



ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Image taken from Thurston County GIS Website	PM: RAB April 2009 2491-001B	Thurston County T 17 N/R 02 W - 23 Scale 1” = ~200’	Figure 3 Test Pits and Boring Locations Photo Havens Property: 93rd Ave SE, Oly/Site Characterization



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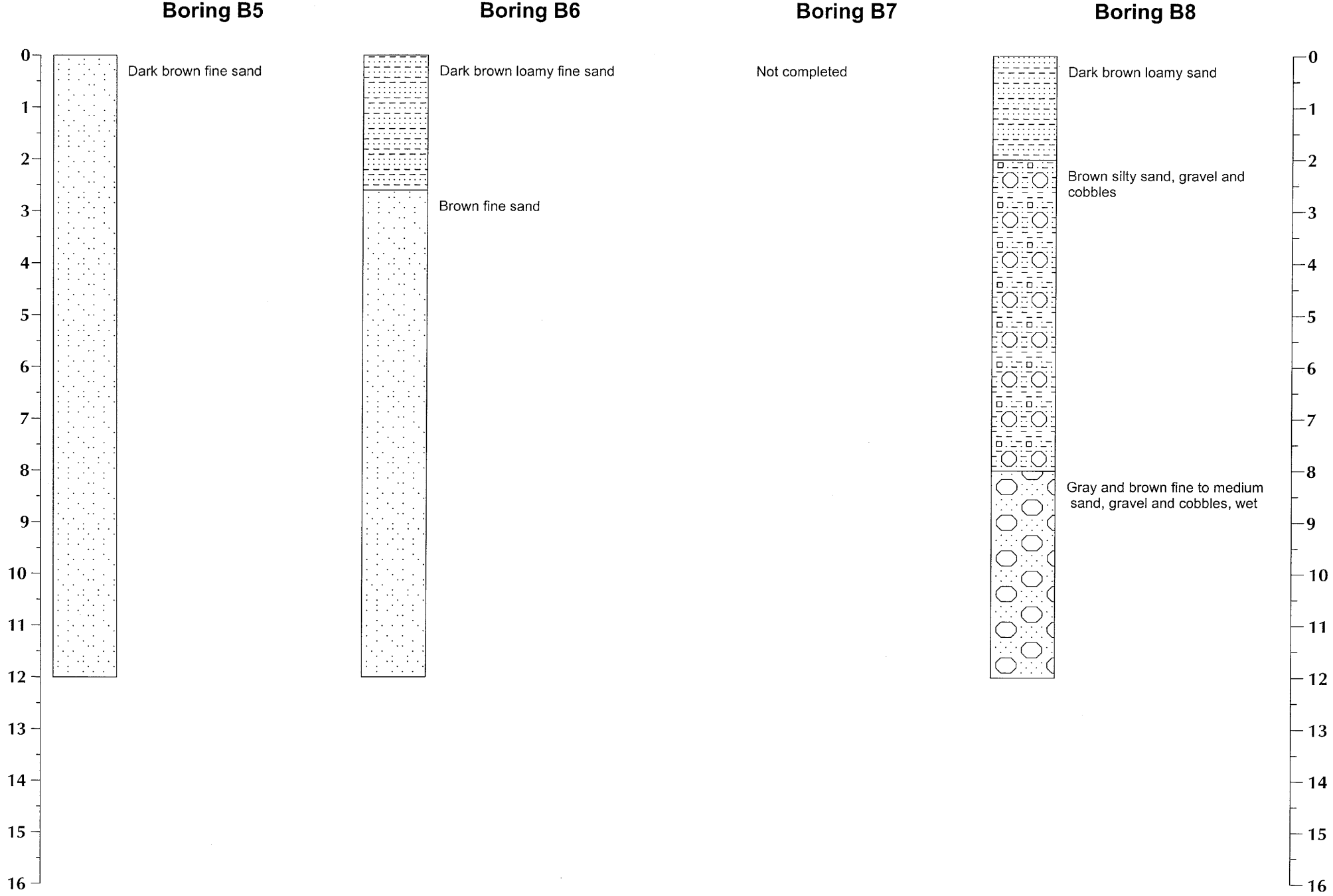
2491-001B

Figure 4
Boring Logs
Havens Property: 93rd Ave SE, Oly/Site Characterization



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May 2009
2491-001B

Figure 5
Boring Logs
Havens Property: 93rd Ave SE, Oly/Site Characterization

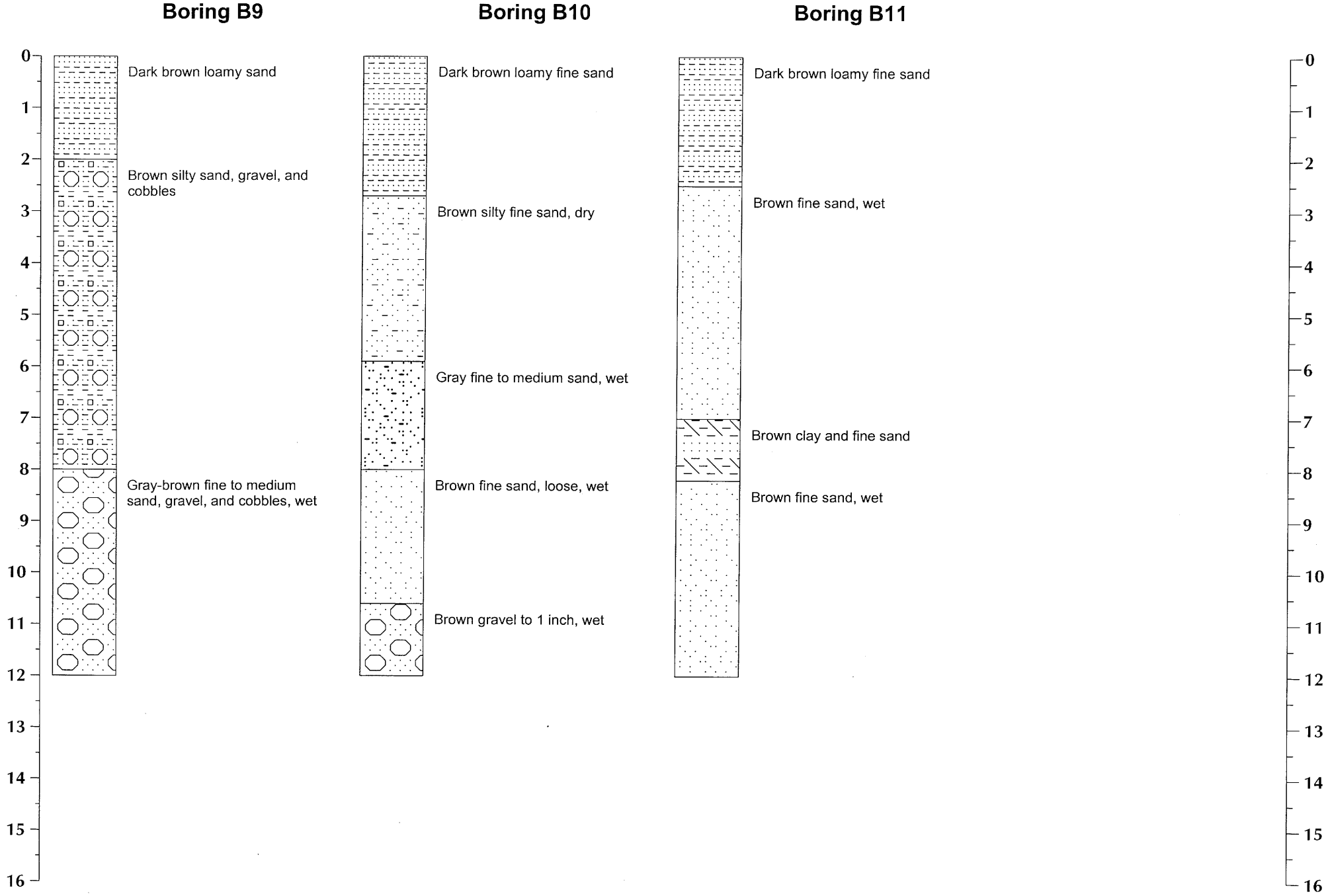

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Figure 6
Boring Logs
Havens Property: 93rd Ave SE, Oly/Site Characterization

Libby Environmental, Inc.

4139 Libby Road N.E., Olympia, WA 98506-2518

March 13, 2009

Rick Bieber
Robinson, Noble & Saltbush, Inc.
3011 Huson Street South
Suite A
Tacoma, WA 98409

Dear Mr. Bieber:

Please find enclosed the analytical data report for the Havens Project located in Tumwater, Washington. Mobile Lab Services were conducted on February 18, 2009. Soil and water samples were received and analyzed for Volatile Organic Compounds by EPA Method 8260B. Additional samples were analyzed off site for Gasoline by NWTPH-Gx, Diesel & Oil NWTPH-Dx/Dx Extended, Metals by EPA Method 7000 Series, and Glycols.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed. All soil samples are reported on a dry weight basis.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
President
Libby Environmental, Inc.

Phone (360) 352-2110 * Fax (360) 352-4154 * libbyenv@aol.com

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		Method Blank	TP1 Surf A	TP1-1'B	TP2-1' A	TP2-1' B	TP4-1'
Date Extracted	Reporting	N/A	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride *	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.02	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd	nd	nd	nd
Total Xylenes	0.03	nd	nd	nd	nd	nd	nd
Styrenes	0.02	nd	nd	nd	nd	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		Method Blank	TP1 Surf A	TP1-1'B	TP2-1' A	TP2-1' B	TP4-1'
Date Extracted	Reporting	N/A	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalene	0.03	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		125	128	131	110	132	111
1,2-Dichloroethane-d4		84	75.7	128	92.1	84.8	86.5
Toluene-d8		117	118	117	119	117	117
4-Bromofluorobenzene		112	117	108	100	121	103

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC Data - EPA 8260B Analyses

	Sample Identification: TP1-1'B						
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	
1,1-Dichloroethene	1.00	0.68	68	1.00	0.84	84	21.1
Benzene	1.00	0.80	80	1.00	0.98	98	20.2
Toluene	1.00	0.78	78	1.00	1.00	100	24.7
Chlorobenzene	1.00	1.03	103	1.00	1.29	129	22.4
Trichloroethene (TCE)	1.00	0.67	67	1.00	0.84	84	22.5
Surrogate Recovery							
Dibromofluoromethane			132			128	
1,2-Dichloroethane-d4			88.8			90.2	
Toluene-d8			117			117	
4-Bromofluorobenzene			110			111	

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	1.00	0.72	72
Benzene	1.00	0.88	88
Toluene	1.00	0.88	88
Chlorobenzene	1.00	0.74	74
Trichloroethene (TCE)	1.00	0.71	71
Surrogate Recovery			
Dibromofluoromethane			127
1,2-Dichloroethane-d4			91
Toluene-d8			115
4-Bromofluorobenzene			126

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		Method Blank	TP5-0.5' A	TP5 Surf B	TP6-0.5' A	TP6 Surf B	TP8-3'
Date Extracted	Reporting	N/A	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride *	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.02	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd	nd	nd	nd
Total Xylenes	0.03	nd	nd	nd	nd	nd	nd
Styrenes	0.02	nd	nd	nd	nd	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		Method Blank	TP5-0.5' A	TP5 Surf B	TP6-0.5' A	TP6 Surf B	TP8-3'
Date Extracted	Reporting	N/A	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalene	0.03	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		128	97.1	132	125	123	131
1,2-Dichloroethane-d4		87.1	90.8	80.6	117	120	73.3
Toluene-d8		112	111	113	119	114	121
4-Bromofluorobenzene		115	93.1	116	108	108	120

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		TP9 Surf A	TP9 Surf A Dup	TP9 Surf B	TP9-1' B	TP10-1'	TP3-1A
Date Extracted	Reporting	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride *	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.02	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd	nd	nd	nd
Total Xylenes	0.03	nd	nd	nd	nd	nd	nd
Styrenes	0.02	nd	nd	nd	nd	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		TP9 Surf A	TP9 Surf A Dup	TP9 Surf B	TP9-1' B	TP10-1'	TP3-1A
Date Extracted	Reporting	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09	2/22/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalene	0.03	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		103	131	128	127	132	101
1,2-Dichloroethane-d4		79.1	78.5	75.8	77.7	96.4	99.3
Toluene-d8		112	120	125	117	114	130
4-Bromofluorobenzene		94	112	121	109	112	99.0

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		TP3 Surf B	TP11-1'
Date Extracted	Reporting	2/18/09	2/18/09
Date Analyzed	Limits	2/22/09	2/22/09
	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd
Chloromethane	0.06	nd	nd
Vinyl chloride *	0.02	nd	nd
Bromomethane	0.09	nd	nd
Chloroethane	0.06	nd	nd
Trichlorofluoromethane	0.05	nd	nd
1,1-Dichloroethene	0.05	nd	nd
Methylene chloride	0.02	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd
1,1-Dichloroethane	0.02	nd	nd
2,2-Dichloropropane	0.05	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd
Chloroform	0.02	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd
Carbon tetrachloride	0.02	nd	nd
1,1-Dichloropropene	0.02	nd	nd
Benzene	0.02	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd
Trichloroethene (TCE)	0.03	nd	nd
1,2-Dichloropropane	0.02	nd	nd
Dibromomethane	0.04	nd	nd
Bromodichloromethane	0.02	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd
Toluene	0.02	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd
1,3-Dichloropropane	0.05	nd	nd
Dibromochloromethane	0.03	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd
Chlorobenzene	0.02	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd
Ethylbenzene	0.03	nd	nd
Total Xylenes	0.03	nd	nd
Styrenes	0.02	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		TP3 Surf B	TP11-1'
Date Extracted Date Analyzed	Reporting Limits (mg/kg)	2/18/09 2/22/09 (mg/kg)	2/18/09 2/22/09 (mg/kg)
Bromoform	0.02	nd	nd
Isopropylbenzene	0.08	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd
Bromobenzene	0.03	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd
n-Propylbenzene	0.02	nd	nd
2-Chlorotoluene	0.02	nd	nd
4-Chlorotoluene	0.02	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd
tert-Butylbenzene	0.02	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd
sec-Butylbenzene	0.02	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd
Isopropyltoluene	0.02	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd
n-Butylbenzene	0.02	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd
Naphthalene	0.03	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		125	123
1,2-Dichloroethane-d4		115	110
Toluene-d8		116	112
4-Bromofluorobenzene		102	101

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC Data - EPA 8260B Analyses

Sample Identification: TP10-1'							
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	
1,1-Dichloroethene	1.00	1.27	127	1.00	1.03	103	20.9
Benzene	1.00	0.97	97	1.00	1.27	127	26.8
Toluene	1.00	1.13	113	1.00	1.24	124	9.3
Chlorobenzene	1.00	1.20	120	1.00	0.91	91	27.5
Trichloroethene (TCE)	1.00	0.78	78	1.00	0.98	98	22.7
Surrogate Recovery							
Dibromofluoromethane			134			132	
1,2-Dichloroethane-d4			80.4			89.0	
Toluene-d8			115			116	
4-Bromofluorobenzene			113			119	

Laboratory Control Sample			
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	1.00	0.85	85
Benzene	1.00	1.24	124
Toluene	1.00	1.35	135
Chlorobenzene	1.00	0.75	75
Trichloroethene (TCE)	1.00	1.00	100
Surrogate Recovery			
Dibromofluoromethane			131
1,2-Dichloroethane-d4			89.5
Toluene-d8			117
4-Bromofluorobenzene			116

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description		Method Blank	B1	B2	B2 Dup	B3	B4
Date Sampled	Reporting	N/A	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits (ug/l)	2/18/09 (ug/l)	2/18/09 (ug/l)	2/18/09 (ug/l)	2/18/09 (ug/l)	2/18/09 (ug/l)	2/18/09 (ug/l)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd	nd	nd
Vinyl chloride *	0.2	nd	nd	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	2.0	nd	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd	nd
MTBE	1.0	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Benzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd	nd
Styrenes	1.0	nd	nd	nd	nd	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description		Method Blank	B1	B2	B2 Dup	B3	B4
Date Extracted	Reporting	N/A	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Isopropylbenzene	4.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
n-Propylbenzene	1.0	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Isopropyltoluene	1.0	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
n-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd	nd	nd
Naphthalene	5.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		125	133	86.7	127	128	127
1,2-Dichloroethane-d4		84	122	66.8	72.4	80.2	103
Toluene-d8		117	121	108	118	109	117
4-Bromofluorobenzene		112	108	86.6	110	113	100

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC Data - EPA 8260B Analyses

	Sample Identification: B1						
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)	
1,1-Dichloroethene	30	24.0	80	30	32.9	110	31.3
Benzene	30	28.9	96	30	37.7	126	26.4
Toluene	30	27.6	92	30	37.2	124	29.6
Chlorobenzene	30	28.6	95	30	26.2	87	8.8
Trichloroethene (TCE)	30	24.4	81	30	32.6	109	28.8
Surrogate Recovery							
Dibromofluoromethane			133			127	
1,2-Dichloroethane-d4			87			78	
Toluene-d8			118			115	
4-Bromofluorobenzene			112			116	

	Laboratory Control Sample		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
1,1-Dichloroethene	20	14.3	72
Benzene	20	17.6	88
Toluene	20	17.6	88
Chlorobenzene	20	14.9	75
Trichloroethene (TCE)	20	14.2	71
Surrogate Recovery			
Dibromofluoromethane			127
1,2-Dichloroethane-d4			91
Toluene-d8			115
4-Bromofluorobenzene			126

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description		B6	B8	B9	B10	B11
Date Sampled	Reporting	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd	nd
Vinyl chloride *	0.2	nd	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd	nd
1,1-Dichloroethene	2.0	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd
MTBE	1.0	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd	nd
Benzene	1.0	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd
Styrenes	1.0	nd	nd	nd	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN WATER

Sample Description		B6	B8	B9	B10	B11
Date Extracted	Reporting	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
Date Analyzed	Limits	2/18/09	2/18/09	2/18/09	2/18/09	2/18/09
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Isopropylbenzene	4.0	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd
n-Propylbenzene	1.0	nd	nd	nd	nd	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd	nd
tert-Butylbenzene	1.0	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd	nd
sec-Butylbenzene	1.0	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd	nd
Isopropyltoluene	1.0	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd	nd
n-Butylbenzene	1.0	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd	nd
Naphthalene	5.0	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd	nd
Surrogate Recovery						
Dibromofluoromethane		99.3	97.3	110	120	133
1,2-Dichloroethane-d4		73.1	72.1	93.5	101	129
Toluene-d8		114	111	108	115	119
4-Bromofluorobenzene		102	88.5	92.2	100	109

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%
ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Gasoline (NWTPH-Gx) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (ug/l)
Method Blank	2/18/09	90	nd
B1	2/18/09	98	nd
B2	2/18/09	88	nd
B2 Dup	2/18/09	94	nd
B3	2/18/09	67	nd
B4	2/18/09	112	nd
B5	2/18/09	90	nd
B6	2/18/09	71	nd
B8	2/18/09	101	nd
B9	2/18/09	111	nd
B10	2/18/09	86	nd
B11	2/18/09	85	nd
Practical Quantitation Limit			100

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Oil (mg/kg)
Method Blank	2/20/09	111	nd	nd	nd
TP2-1' A	2/20/09	104	nd	nd	nd
TP2-1' B	2/20/09	88	nd	nd	nd
TP1-Surf A	2/20/09	110	nd	nd	nd
TP1-1' B	2/20/09	98	nd	nd	nd
TP4-1'	2/20/09	85	nd	nd	nd
TP5-0.5A	2/20/09	79	nd	nd	nd
TP5-Surf B	2/20/09	105	nd	nd	340
TP6-0.5A	2/20/09	int	nd	nd	61900
TP6-Surf B	2/20/09	110	nd	nd	nd
TP6-Surf B Dup	2/20/09	109	nd	nd	nd
TP8-3'	2/20/09	110	nd	nd	nd
TP9-Surf A	2/20/09	110	nd	nd	320
TP9-1' B	2/20/09	95	nd	nd	nd
TP9- Surf B	2/20/09	90	nd	nd	nd
TP10-1'	2/20/09	105	nd	nd	nd
TP11-1'	2/20/09	85	nd	nd	nd
TP11-1' Dup	2/20/09	135	nd	nd	nd
TP3-1'A	2/20/09	83	nd	nd	nd
TP3-Surf B	2/20/09	100	nd	nd	500
Practical Quantitation Limit			25	40	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Athanasius

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Oil (mg/kg)
Method Blank	2/25/09	110	nd	nd	nd
TP1-Surf A	2/25/09	int	nd	nd	66700
TP1-Surf A Dup	2/25/09	int	nd	nd	65700
TP1-1' B	2/25/09	90	nd	nd	140
TP6-0.5'A	2/25/09	int	nd	nd	38600
TP6-4.0' A	2/25/09	90	nd	nd	nd
TP6-4.0' A Dup	2/25/09	89	nd	nd	nd
Practical Quantitation Limit			25	40	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Athanasius

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/l)	Mineral Oil (ug/l)	Oil (ug/l)
Method Blank	2/19/09	105	nd	nd	nd
B1	2/19/09	100	nd	nd	nd
B2	2/19/09	65	nd	nd	nd
B3	2/19/09	101	nd	nd	nd
B4	2/19/09	106	nd	nd	nd
B5	2/19/09	116	nd	nd	nd
B6	2/19/09	81	nd	nd	nd
B8	2/20/09	100	nd	nd	nd
B9	2/20/09	72	nd	nd	nd
B9 DUP	2/20/09	110	nd	nd	nd
B10	2/20/09	113	nd	nd	nd
B11	2/20/09	118	nd	nd	nd
Practical Quantitation Limit			200	400	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Gautam Dutta

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Gasoline (NWTPH-Gx) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	2/18/09	90	nd
TP1-Surf A	2/18/09	70	nd
TP1-1' B	2/18/09	71	nd
TP2-1' A	2/18/09	68	nd
TP2-1' B	2/18/09	69	nd
TP4-1'	2/18/09	79	nd
TP4-1' Dup	2/18/09	87	nd
Practical Quantitation Limit			10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Gasoline (NWTPH-Gx) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	2/19/09	121	nd
TP3-1'A	2/19/09	118	nd
TP3-Surf B	2/19/09	100	nd
TP5-0.5A	2/19/09	105	nd
TP5-Surf B	2/19/09	112	nd
TP6-0.5A	2/19/09	91	nd
TP6-Surf B	2/20/09	82	nd
TP8-3'	2/20/09	89	nd
TP9-Surf A	2/20/09	104	nd
TP9-1' B	2/19/09	110	nd
TP9- Surf B	2/19/09	93	nd
TP10-1'	2/19/09	75	nd
TP11-1'	2/20/09	87	nd
TP11-1' DUP	2/20/09	66	nd
Practical Quantitation Limit			10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Gautam Dutta

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)	Mercury (mg/kg)
Method Blank	2/20/09	nd	nd	nd	nd	nd
TP1-Surf A	2/20/09	25	nd	nd	nd	nd
TP1-1' B	2/20/09	26	nd	nd	nd	nd
TP2-1' A	2/20/09	nd	nd	nd	nd	nd
TP2-1' B	2/20/09	nd	nd	nd	nd	nd
TP4-1'	2/20/09	nd	nd	nd	nd	nd
TP3-1'A	2/20/09	nd	nd	nd	nd	nd
TP3-Surf B	2/20/09	230	nd	nd	nd	nd
TP5-0.5A	2/20/09	nd	nd	nd	nd	nd
TP5-Surf B	2/20/09	27	nd	nd	nd	nd
TP6-0.5A	2/20/09	8	nd	nd	nd	nd
TP6-Surf B	2/20/09	nd	nd	nd	nd	nd
TP8-3'	2/20/09	nd	nd	nd	nd	nd
TP9-Surf A	2/20/09	25	nd	nd	nd	nd
TP9-1' B	2/20/09	6	nd	nd	nd	nd
TP9- Surf B	2/20/09	nd	nd	nd	nd	nd
TP10-1'	2/20/09	nd	nd	nd	nd	nd
TP11-1'	2/20/09	nd	nd	nd	nd	nd
TP11-1' DUP	2/20/09	nd	nd	nd	nd	nd
Practical Quantitation Limit		5.0	1.0	5.0	5.0	0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC for Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)	Mercury (% Recovery)
LCS	2/20/09	101%	122%	101%	114%	88%
TP11-1' MS	2/20/09	127%	97%	73%	101%	93%
TP11-1' MSD	2/20/09	125%	98%	80%	98%	93%
RPD	2/20/09	2%	1%	9%	3%	0%
Practical Quantitation Limit		5.0	1.0	5.0	5.0	0.5

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)	Nickel (mg/kg)
Method Blank	2/24/09	nd	nd	nd
TP1-Surf A	2/24/09	7	16	19
TP1-1' B	2/24/09	11	23	115 -
TP2-1' A	2/24/09	nd	nd	21
TP2-1' B	2/24/09	nd	nd	25
TP3-1'A	2/24/09	nd	nd	20
TP3-Surf B	2/24/09	20	19	32
TP5-0.5A	2/24/09	nd	11	27
TP5-Surf B	2/24/09	nd	9	nd
TP8-3'	2/24/09	nd	nd	13
TP9-Surf A	2/24/09	5	17	30
TP9-1' B	2/24/09	nd	nd	35
TP9- Surf B	2/24/09	nd	13	40
TP11-1'	2/24/09	nd	nd	23
TP11-1' DUP	2/24/09	nd	nd	--
Practical Quantitation Limit		5.0	1.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt & Zoe (DAL)

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC for Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)	Nickel (% Recovery)
LCS	2/24/09	96%	71%	98%
TP11-1' MS	2/24/09	92%	108%	106%
TP11-1' MSD	2/24/09	93%	114%	106%
RPD	2/24/09	1%	5%	0%
Practical Quantitation Limit		5.0	1.0	5.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt & Zoe (DAL)

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)	Mercury (mg/kg)
Method Blank	3/1/09	nd	nd	nd	nd	nd
B8-2.5'	3/1/09	nd	nd	nd	nd	nd
B9-8.5'	3/1/09	nd	nd	nd	nd	nd
B10-4.5'	3/1/09	nd	nd	nd	nd	nd
B10-4.5' Dup	3/1/09	nd	nd	nd	nd	nd
Practical Quantitation Limit		5.0	1.0	5.0	5.0	0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC for Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)	Mercury (% Recovery)
LCS	3/1/09	105%	96%	100%	100%	90%
B10-4.5' MS	3/1/09	102%	85%	int	109%	94%
B10-4.5' MSD	3/1/09	114%	80%	int	99%	86%
RPD	3/1/09	11%	6%		10%	9%
Practical Quantitation Limit		5.0	1.0	5.0	5.0	0.5

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)	Nickel (mg/kg)
Method Blank	3/1/09	nd	nd	nd
B8-2.5'	3/1/09	nd	3.1	12
B9-8.5'	3/1/09	nd	10.2	20
B10-4.5'	3/1/09	nd	3.4	20
B10-4.5' Dup	3/1/09	nd	3.2	--
Practical Quantitation Limit		5.0	1.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt & Spectra Labs

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC for Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)	Nickel (% Recovery)
LCS	3/1/09	105%	100%	--
B10-4.5' MS	3/1/09	int	int	--
B10-4.5' MSD	3/1/09	int	int	--
RPD	3/1/09			
Practical Quantitation Limit		5.0	1.0	5.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt & Spectra Labs

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Arsenic (ug/l)	Mercury (ug/l)
Method Blank	2/20/09	nd	nd	nd	nd	nd
B1	2/20/09	nd	nd	nd	nd	nd
B2	2/20/09	nd	nd	nd	nd	nd
B3	2/20/09	nd	nd	nd	nd	nd
B4	2/20/09	nd	nd	nd	nd	nd
B5	2/20/09	11	nd	nd	nd	nd
B6	2/20/09	nd	nd	nd	nd	nd
B8	2/20/09	25	nd	30	14	nd
B9	2/20/09	113	2.0	34	32	nd
B10	2/20/09	72	nd	54	7.0	nd
B11	2/20/09	nd	nd	nd	nd	nd
B11 Dup	2/20/09	nd	nd	nd	nd	nd
Practical Quantitation Limit		5.0	1.0	10.0	3.0	1.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC for Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)	Mercury (% Recovery)
LCS	2/20/09	100%	97%	127%	94%	93%
B11 MS	2/20/09	106%	108%	128%	86%	83%
B11 MSD	2/20/09	101%	107%	127%	81%	97%
RPD	2/20/09	4.8	0.9	0.8	6.0	16
Practical Quantitation Limit		5.0	1.0	10.0	3.0	1.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

Analyses of Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Copper (ug/l)	Zinc (ug/l)	Nickel (ug/l)
Method Blank	2/24/09	nd	nd	nd
B1	2/24/09	nd	nd	nd
B2	2/24/09	nd	nd	nd
B3	2/24/09	nd	nd	nd
B5	2/24/09	22	nd	nd
B8	2/24/09	196	113	nd
B9	2/24/09	1400	560	807
B11	2/24/09	nd	nd	239
B11 Dup	2/24/09	nd	nd	--
Practical Quantitation Limit		5.0	10.0	50.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt & Zoe (DAL)

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Libby Env.Project No.L090218-10

QA/QC for Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)	Nickel (% Recovery)
LCS	2/24/09	99%	99%	98%
B11 MS	2/24/09	118%	102%	104%
B11 MSD	2/24/09	111%	100%	98%
RPD	2/24/09	6.1	2.0	5.9
Practical Quantitation Limit		5.0	10.0	5.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt & Zoe (DAL)

SPECTRA Laboratories
2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/10/2009

Libby Environmental, LLC
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: Havens
Date Received: 02/27/2009
Spectra Project: 2009020488

Client ID	Spectra #	Analyte	Result	Units	Method	Matrix	Date Sampled
B10	1	Hexavalent Chromium	< 0.01	mg/L	SM3500-CR-D	Water	02/18/2009

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
as sej

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/06/2009

Libby Environmental, LLC
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: Havens
Sample Matrix: Water
Date Sampled: 02/18/2009
Date Received: 02/19/2009
Spectra Project: 2009020318

Client ID	Spectra #	Analyte	Result	Units	Method
B1	1	Ethylene Glycol	<10	mg/L	GC-FID
B1	1	Propylene Glycol	<10	mg/L	GC-FID
B3	2	Ethylene Glycol	<10	mg/L	GC-FID
B3	2	Propylene Glycol	<10	mg/L	GC-FID
B8	3	Ethylene Glycol	<10	mg/L	GC-FID
B8	3	Propylene Glycol	<10	mg/L	GC-FID
B9	4	Ethylene Glycol	<10	mg/L	GC-FID
B9	4	Propylene Glycol	<10	mg/L	GC-FID

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/sgh

2930 Westlake Ave N Suite 100
Seattle, WA 98109
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Libby Environmental
Attn: Sherry Chilcutt
4139 Libby Road NE
Olympia, WA 98506

RE: Haven
Fremont Project No: CHM090225-2

February 27th, 2009

Sherry:

Enclosed are the analytical results for the ***Haven*** soil samples received by Fremont Analytical on Wednesday February 25th, 2009.

The samples were received in good condition – in the proper containers (4 oz soil jars), properly sealed, labeled and within holding time. The samples were extracted, analyzed and then stored in a refrigeration unit at the USEPA-recommended temperature of 4°C ± 2°C. There were no sample receipt or sample analysis issues to report.

Examination of these samples was conducted for the presence of the following:

- ***PCB's (Polychlorinated Biphenyls) in Soil by EPA 8082***

This application was performed under Washington State Department of Ecology accreditation parameters. All appropriate Quality Assurance / Quality Control method parameters have been applied.

Please contact the laboratory if you should have any questions about the report.

Thank you for using Fremont Analytical!

Sincerely,

Michael Dee
Sr. Chemist / Principal

mikedee@fremontanalytical.com

Fremont Analytical

2930 Westlake Ave. N., Suite 100
Seattle, WA 98109

T: 206.352.3790
F: 206.352.7178
Email: info@fremontanalytical.com

Analysis of PCB's (Polychlorinated Biphenyls) in Soil by EPA 8082

Project: Haven
Client: Libby Environmental
Client Project #: N/A
Lab Project #: CHM090225-2

EPA 8082 (mg/kg)	MRL	Method Blank	LCS	TP 5-Surface B	Duplicate TP 5-Surface B	TP 6-0.5A
Date Extracted		2/26/09	2/26/09	2/26/09	2/26/09	2/26/09
Date Analyzed		2/26/09	2/26/09	2/26/09	2/26/09	2/26/09
Matrix				Soil	Soil	Soil
Aroclor 1016	0.5	nd		nd	nd	nd
Aroclor 1221	0.5	nd		nd	nd	nd
Aroclor 1232	0.5	nd		nd	nd	nd
Aroclor 1242	0.5	nd		nd	nd	nd
Aroclor 1248	0.5	nd		nd	nd	nd
Aroclor 1254	0.5	nd		nd	nd	nd
Aroclor 1260	0.5	nd	96%	nd	nd	**0.9**
Surrogate Recovery						
Surr 1 (TCMX)		100%	97%	88%	81%	70%
Surr 2 (DCBP)		99%	112%	105%	82%	108%

"nd" Indicates no detection at the listed reporting limits
"int" Indicates that interference prevents determination
"C" Indicates coelution with Sample Peaks
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 65% to 135%
Surrogates Concentration = 25 µg/L
Spike Concentration = 1.0 mg/kg

Fremont Analytical

2930 Westlake Ave. N., Suite 100
Seattle, WA 98109

T: 206.352.3790
F: 206.352.7178
Email: info@fremontanalytical.com

Analysis of PCB's (Polychlorinated Biphenyls) in Soil by EPA 8082

Project: Haven
Client: Libby Environmental
Client Project #: N/A
Lab Project #: CHM090225-2

EPA 8082 (mg/kg)	MRL	TP 9-Surface A	TP 3-Surface B	MS TP 5-Surface B
Date Extracted		2/26/09	2/26/09	2/26/09
Date Analyzed		2/26/09	2/26/09	2/26/09
Matrix		Soil	Soil	Soil
Aroclor 1016	0.5	nd	nd	
Aroclor 1221	0.5	nd	nd	
Aroclor 1232	0.5	nd	nd	
Aroclor 1242	0.5	nd	nd	
Aroclor 1248	0.5	nd	nd	
Aroclor 1254	0.5	nd	nd	
Aroclor 1260	0.5	nd	nd	99%
Surrogate Recovery				
Surr 1 (TCMX)		79%	85%	81%
Surr 2 (DCBP)		82%	88%	91%

"nd" Indicates no detection at the listed reporting limi
"int" Indicates that interference prevents determinati
"C" Indicates coelution with Sample Peaks
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 65% to 135%
Surrogates Concentration = 25 µg/L
Spike Concentration = 1.0 mg/kg

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph 360-352-2110
Fax 360-352-4154

Client: Libby Env. (See above)
Address:
Phone: Fax:
Client Project #

Date: 2/24/09 Page: 1 of 1
Project Manager: Sharon Chadwell
Project Name: HAVEN
Location:
Collector: Date of Collection: 2/18

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext	PAH 8270	PCB's 8082	MTCA 5 Metals			Field Note/# Containers
1 TP 5 Surface B		11:15	Soil	4oz jar									X					
2 TP 6 -0.5A		11:45	↓	↓									↓					
3 TP 9 - Surface A		13:35																
4 TP 3 Surface B		2:22																
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		

Relinquished by	Date / Time	Received by	Date / Time
[signature]	2/24/09 4pm	[signature]	2/24/09 4pm
[signature]		[signature]	2/25/09 1230
Relinquished by	Date / Time	Received by	Date / Time

Sample Receipt:

Good Condition?	Y
Cold?	Ice
Seals Intact?	Y
Total Number of Containers	4

Remarks: Std

TAT 24HR 48HR 5-Day

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: RNS
Address:
Phone: 253-475-7711 Fax: 253-472-5846
Client Project #

Date: 2-18-09
Page: 1 of ~~2~~ 3 4 see
Project Manager: R Reber
Project Name: Havens Project
Location: Tumwater Washington
Collector: S Malon R Reber
Date of Collection: 2-18-09

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Ni Zn Cu		Glycol	Field Note/# Containers
1	TP2-1'A	1'	0845	S	4oz VOA			X			X		X			X	X			2
2	TP2-4 A	4'	0845	S	4oz VOA			X			X		X							2 Hold
3	~~B2-5~~ B2		0848	W	Amber, VOA			X			X		X			X	X		~~X~~	6
4	~~B2~~ B2-7'	7'	~~0900~~ 0900	S	VOA			X			X									2 Hold
5	TP2-1'B	1'	0900	S	4oz VOA			X			X		X			X	X			2
6	TP2-4'B	4'	0900	S																2
7	B4		0937	W	Amber poly VOA			X			X		X			X				6
8	B4-5.8'	5.8	0936	S	4oz VOA			~~X~~			~~X~~		~~X~~			~~X~~				2 Hold
9	TP1-surf A	surf	0925	S	〃			X			X		X			X	X			2
10	TP1-3.5 A	3.5	0940	S	〃			X			X		X			X	X			2 Hold
11	TP1-11'A	11	0945	S	〃			X			X		X			X	X			2 Hold
12	TP1-4B	4'	1010		〃															2 Hold
13	TP1-1B	1'	1005	S	〃			X			X		X			X	X			2
14	B1-7.5	7.5	1006	S	〃			X			X		X			X	X			2 Hold
15	B1		1006	W	Amber Poly VOA			X			X		X			X	X		X	6
16	TP4-1	1'	1030	S	4oz VOA			X			X		X			X				2
17	TP4-4.5	4.5	1025	S	〃															2 Hold
18	B5-6.5'	6.5	1033	S	〃			X			X		X			X	X			2 Hold

Relinquished by:	Date / Time	Received by	Date / Time
[signature]	2/18/08 3:00	[signature] T Chalk	2-18-09

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2-18-09 Page: 2 of 4 SDG

Client: RNS
Project Manager: R Barber
Address:
Project Name: Homes Project
Phone: Fax:
Location: Tumwater, Washington
Client Project #
Collector: S Malone, R Barber Date of Collection: 2-18-09

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	As, Zn, Cu	6 Metals	Field Note/# Containers
1 B5		1033	W	pol, VOA			X			X	X			X	X			6
2 B6		1058	W	"			X			X	X			X				6
3 B6-5.5		1058	S	4oz VOA			X			X	X			X				2 Hold
4 TP5-0.5A		1045	S	"			X			X	X			X	X			2
5 TP5-5.5A		1050	S	"			X											2 Hold
6 TP5-surf B		1115	S	"			X			X	X			X	X			2
7 TP5-1B		1120	S	"			B											2 Hold
8 TP5-4B		1125	S	"														2 Hold
9 B11		1127	W	pol, VOA			X			X	X			X	X			6
10 B11-5.0		1127	S	4oz VOA			X			X	X			X	X			2 Hold
11 TP6-0.5A		1145	S	"			X			X	X			X				2
12 TP6-4.0A		1150	S	"														2 Hold
13 B8-2.5		1154	S	"			X			X	X			X	X			2 Hold
14 B8		1157	W	pol, VOA			X			X	X			X	X		X	6
15 TP6-surf B		1200	S	4oz VOA			X			X	X			X				2
16 TP6-4' B		1205	S	"														2 Hold
17 TP8-3'		1250	S	"			X			X	X			X	X			2
18 TP8-8'		1255	S	"														2 Hold

Relinquished by:	Date / Time	Received by	Date / Time
	2/18/09 3:00		2-18-09
Relinquished by:	Date / Time	Received by	Date / Time
Relinquished by:	Date / Time	Received by	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Client: RNS

Address:

Phone: Fax:

Client Project #

Date: 2-18-09

Page: 3 of 3 4

Project Manager: R Baker

Project Name: Havens Project

Location: Tumwater, Washington

Collector: S Malon R Baker Date of Collection: 2-18-09

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	N, Zn, Cu	Cl, cols	Field Note/# Containers
1	B10-4.5		1309	S	4oz VOA														2 Hold
2	B_10		1311	W	Poly, Amber, VOA			X			X	X			X				~~2~~
3	B9		1338	W	"			X			X	X			X	X		X	7
4	B9 8.5		1336	S	4oz VOA														2 Hold
5	TP9-Surf A		1335	S	"			X			X	X			X	X			2
6	TP9-4' A		1340	S	"														2 Hold
7	TP9-Surf B		1355	S	"			X			X	X			X	X			2
8	TP9-1' B		1400	S	"			X			X	X			X	X			2
9	TP9-4' B		1405	S	"														2 Hold
10	TP10-1		1320	S	"			X			X	X			X				2
11	TP10-5'		1325	S	"														2 Hold
12	TP3-1A		1410	S	"			X			X	X			X	X			2
13	TP3-4'A		1415	S	"														2 Hold
14	B3-7.5		1403	S	"														2 Hold
15	B3		1409	S	"			X			X	X			X	X		X	7
16	TP11-1'		1445	S	"			X			X	X			X				2
17	TP11-4'		1450	S															2 Hold
18	TP3 Surf B		1425	S				X			X	X			X	X			2

Run ☆

Mislabeled as a Soil? Actually water? (S)

Relinquished by:	Date / Time	Received by	Date / Time
	2/18/09 3:00		2-18-01
Relinquished by:	Date / Time	Received by	Date / Time
Relinquished by:	Date / Time	Received by	Date / Time

Sample Receipt:	
Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: RNS

Address:

Phone: Fax:

Client Project #

Date: 2-18-06

Page: 4 of 4

Project Manager: R Bieber

Project Name: Travers

Location:

Collector: R Bieber S Mathne Date of Collection: 2-18-06

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals			Field Note/# Containers
1 TP3-4'B		1435	S	4oz VOA														2 Hold.
2 TP3-1'B		1430	S	4oz VOA														2 Hold
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		

Relinquished by:	Date / Time	Received by	Date / Time
	2/18/09 5:00		2-18-09
Relinquished by:	Date / Time	Received by	Date / Time
Relinquished by:	Date / Time	Received by	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

ROBINSON NOBLE SALTBUSH INC. Established 1947
GROUNDWATER & ENVIRONMENTAL SCIENTISTS

December 10, 2009

Alan J. Wertjes
Attorney at Law
1800 Cooper Pt. Rd. SW, Bldg. 3
Olympia, WA 98502

Subject: Site Remediation of the Havens Property (aka Johns Auto Wrecking)
411 93rd Avenue SE, Olympia, Washington

Dear Mr. Wertjes:

Robinson & Noble is pleased to present this letter report detailing our recent remediation activities at the Havens property site. Previous site activities identified impacted areas associated with the historic auto wrecking yard activities as discussed in our April 2009[1] report. The current remediation activities included the placement of three monitoring wells, collection and removal of the remaining sources of potential contamination, and the removal and disposal of identified impacted soils. This letter details these site activities and the results of the completed laboratory analysis.

Site Location and History

The subject site is located within Township 17N, Range 02W, Section 23. The property is comprised of six parcels identified by Thurston County Assessor-Treasurer's records as parcels 12723210100, 12723220200, 12723210400, 12723210401, 12723210700, and 12723211000. These parcels are contiguous. The address assigned to these parcels is 411 93rd Avenue SE, Washington 98501 (Figure 1). The subject consists of approximately 15 acres.

In November 2008, Robinson & Noble completed a file review of available documents contained within the Washington State Department of Ecology (Ecology) and Thurston County Health Department records for the Havens property. The Department of Ecology records indicate the site is listed on Ecology's Hazardous Sites List. The site was ranked a "1" following the completion of a site-hazard assessment. Sites receiving a rank of 1 or 2 are generally considered the highest priority for cleanup by Ecology. Ecology loosely defines these sites as posing a risk to human health and the environment.

To address the site ranking, the property owners enrolled the site in the Ecology Voluntary Cleanup Program (VCP). During the site's enrollment within the VCP, a limited effort was made by the property owner to characterize the subject site. Eventually, activity ceased and no official reports were generated. The site was subsequently removed from the VCP due to inac-

[1] Robinson, Noble & Saltbush, Inc., April 2009, Site Investigation/characterization, Havens Property (aka) Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington, as published for the Havens Estate

tivity. In 2008, Robinson & Noble was contracted to complete a file review and prepare a work plan to conduct a remedial investigation of the site.

Site work for the Havens property started in February 2009. Robinson & Noble, with the assistance of Pacific Northwest Probe & Drilling and Langseth Environmental, completed a series of ten soil borings ranging from 12 to 16 feet below ground surface (bgs) and 16 test pits excavated to depths ranging from five to 12 feet bgs. Soil borings were completed near identified areas of concern. The test pits were located in close proximity to the soil borings. At some locations, a second test pit at each boring location was incorporated into the work plan to allow for a more detailed characterization. Two test pits were completed where staining, distressed vegetation, and/or significant material storage were identified. Laboratory results for the collected soil samples identified contaminated soil surrounding test pits TP1A and TP6A. Additionally, groundwater samples collected from borings B8, B9, B10, and B11 identified elevated levels of target metals (Robinson, Noble & Saltbush, April 2009).

Site Activities

On August 13, 2009, remediation activities began with the collection and removal of the unsecured sources of potential contamination documented during the February 2009 field work. Langseth Environmental, with the assistance of ProVac Services, collected all of the loose buckets and drums of waste oil. Once collected, the waste oil from the buckets was field screened for chlorinated solvents. Buckets and drums determined to be free of chlorinated solvents were purged of their contents using a Vactor truck. The emptied buckets were wiped clean and crushed for disposal at a solid waste landfill. Field characterization identified one drum, which contained an unknown quantity of chlorinated solvents. This drum was secured and stored under cover on a concrete floor in one of the remaining structures on site. The drum was later sampled, characterized, and properly disposed of by PSC transportation group. Table 1 presents the material removed from the site. Shipping manifest and weigh tickets for all disposal activities are attached.

Table 1. Removed sources of contamination

Quantity	Description	Quantity	Description
800 gallons	Used Oil	1	275-gallon tank
3 tons	Sludge	1	500-gallon tank
~ 50	5 gallon buckets	1	1,300-gallon tank
13	55-gallon drums	2	Large industrial batteries
1	250-gallon tank	4	Automobile batteries

Once the site was secured of the remaining sources of contamination, the focus of the remediation activities shifted to the excavation of identified impacted soils. On August 14, Langseth Environmental mobilized a rubber tire back hoe to complete the excavation of impacted soils. Initial excavations were completed in the areas surrounding TP6A and TP1A (Figure 2). Following the removal of the impacted soils, confirmation samples were collected and submitted to an on-

site mobile lab for analysis. As with previous efforts, laboratory analysis was provided by Libby Environmental, Inc. Two additional sites were identified as potentially impacted areas: a sump within the floor of the concrete bunker near TP6A and an area of oil staining (TP1C) in the garage/shed located south of TP1A (Figure 2). Soils were removed at each location. Once field screening determined that impacted soil had been removed, confirmation soil samples were collected. Target analytes included gasoline-, diesel-, and oil-range petroleum hydrocarbons (analyzed with methods NWTPH-Gx and NWTPH-Dx/DxExtended). Additional analytes tested were lead, arsenic, cadmium, chromium, copper, zinc, mercury, nickel, PCBs, and carcinogenic polyaromatic hydrocarbons (cPAHs). In addition to those listed above, soil collected from TP6C was also analyzed for benzene; toluene; ethyl benzene; xylene, commonly referred to as BTEX (method VOA 8021B); and chlorinated solvents (method 8270).

Laboratory results of the collected confirmation samples indicate concentrations of copper, zinc and nickel were identified at TP1B and TP6C. These concentrations were below published MTCA Method B (unrestricted land use) cleanup levels of 2,960 and 24,000 mg/kg for copper and zinc. The MTCA Priority Contaminates of Ecological Concern Table 749-2 presented in Model Toxics Control Act WAC 173-340, indicates a maximum soil concentration for unrestricted land use of nickel is 100 mg/kg. Test Pit TP1B was also identified as having a concentration of mineral oil in the soil of 1,020 mg/kg. The MTCA Method A cleanup level for mineral oil in the soil is 4,000 mg/kg. These results indicate that each location has been successfully remediated. A complete list of analytical results is attached. A total of 4.8 tons of contaminated soils were removed from the site.

Monitoring Well Installation

To further quantify the soil and groundwater impacts, we supervised the placement of three monitoring wells on August 20, 2009. All of the wells were constructed with two-inch diameter, schedule 40 PVC blank risers and two-inch diameter, schedule 40 PVC 0.020-inch slot (20-slot) screens coupled with flush-threaded joints and installed with caps screwed to the bottom of the assemblies. Specific screen and riser lengths were adjusted as appropriate for the material encountered at each drilling location. The screens were packed in Colorado Silica Sand Products 10 x 20 sand. Typically, the filter packs extended from the bottom of each boring to approximately one foot above the screens. The remaining annular spaces above the pack were filled with hydrated bentonite chips to within three feet of the surface. Above ground monuments and bollards were set in concrete pads at each location. Well logs and construction diagrams are presented in Figure 3.

Each monitoring well was logged and sampled material was subjected to field screening. Field screening did not indicate the presence of any contamination. Well drilling encountered varying mixtures of brown, silty sands and gravels. The wells that were completed in the first groundwater zone encountered a medium-grained sand and gravel. Water levels measured after the completion of the monitoring wells indicate a general groundwater depth of approximately 7.5 bgs. The local groundwater flow direction appears to be to the west northwest.

Once the wells were completed, each well was developed using a DC-submersible pump, surge block, and water bailer. Following the development, we collected a water sample from each well and submitted them to an off-site laboratory for analysis. The groundwater samples were analyzed for lead, arsenic, cadmium, chromium, copper, zinc, mercury, and nickel.

As presented in our April 2009 letter, elevated levels of metals were detected in groundwater samples collected from several of the direct push borings completed on the southern half of the property. At that time, we suggested that the elevated levels of metals observed in the groundwater samples were a result of turbid water being sampled from the direct-push borings. We recommended that the placement and sampling of properly developed monitoring wells would produce a groundwater sample more reflective of actual conditions beneath the site. The laboratory results from the metals analysis in the monitoring wells did not indicate any analytes above laboratory detection limits. We believe these samples represent current groundwater quality at the subject. Additional sampling is not recommended at this time.

Summary

It is our opinion that the contaminants identified are the result of historic site activities associated with the operation of an auto wrecking yard. We have supervised the collection and disposal of the identified potential sources of contamination. In addition we have directed the excavation and disposal of identified impacted soils. We have also determined that previously identified metals within the groundwater were not reflective of actual conditions beneath the site. Following the site's re-entry into the VCP, we anticipate the site be granted a no-further-action designation reflecting the completion of the subsurface investigation and subsequent remedial activities.

We appreciate this opportunity to be of service. Please contact us if you have any questions.

Very truly yours,
Robinson & Noble, Inc.

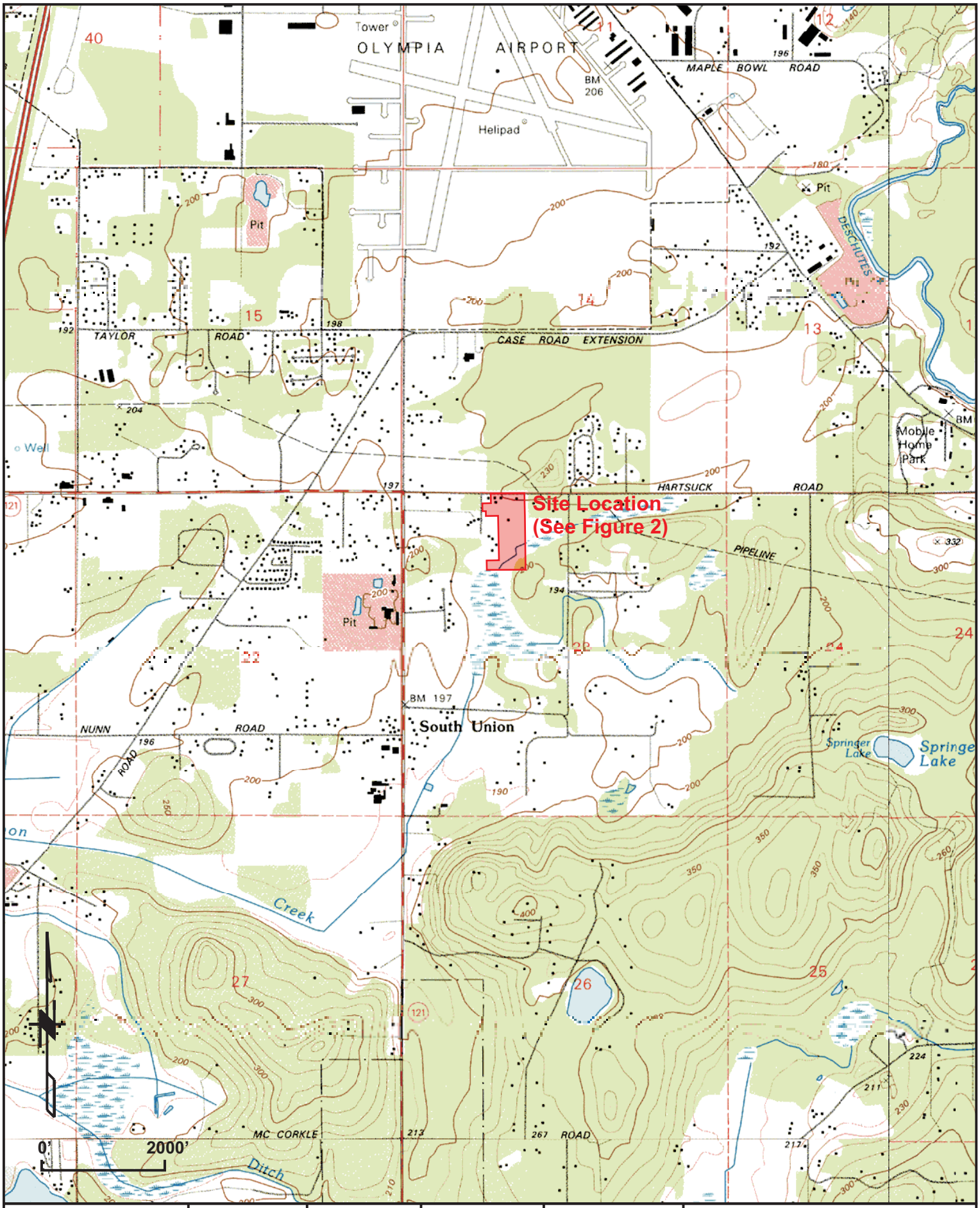
Richard A. Bieber, LG
Project Hydrogeologist, Project Manager

cc: Patrick Soderberg

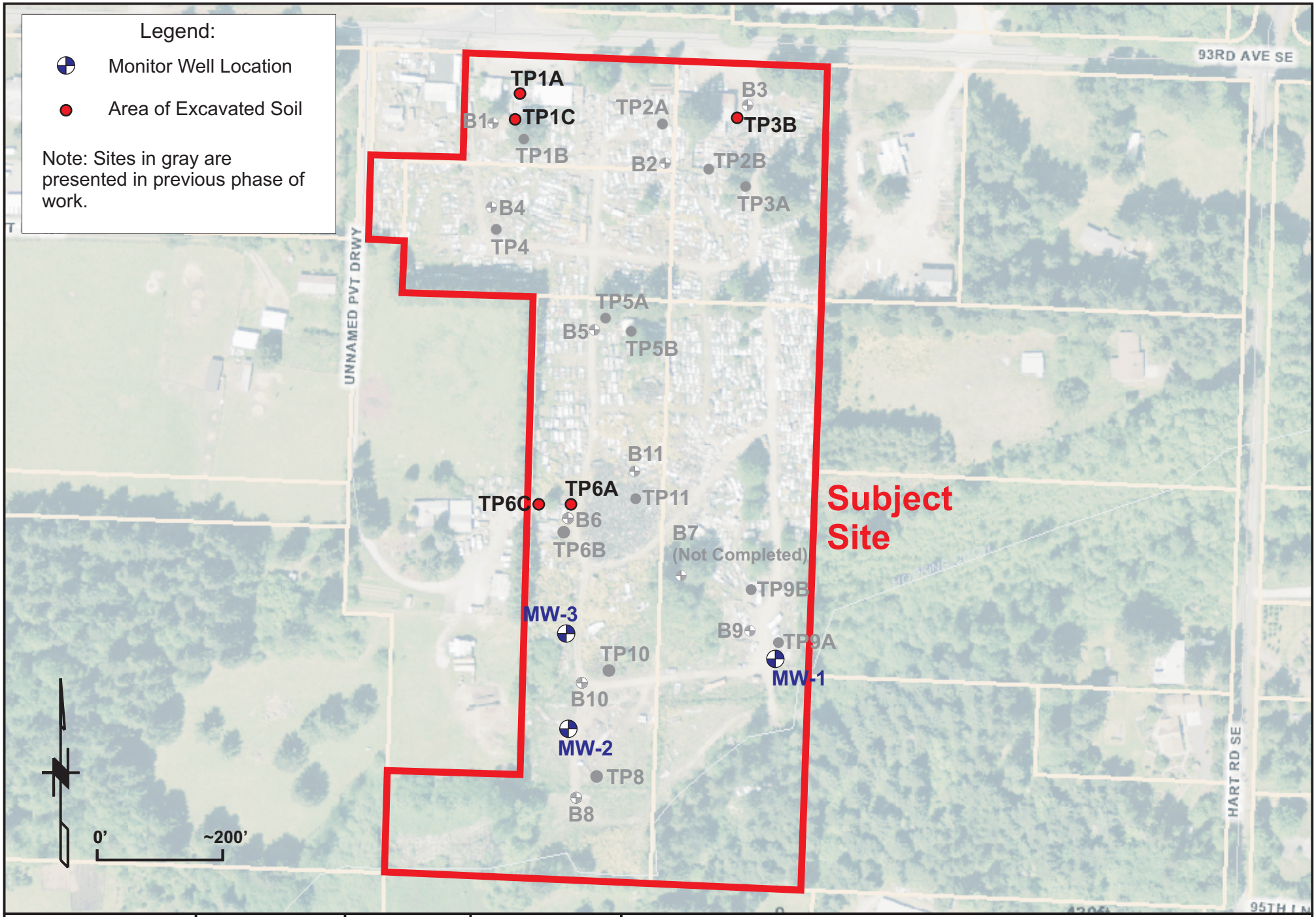
attachments

RICHARD A. BIEBER

FIGURES

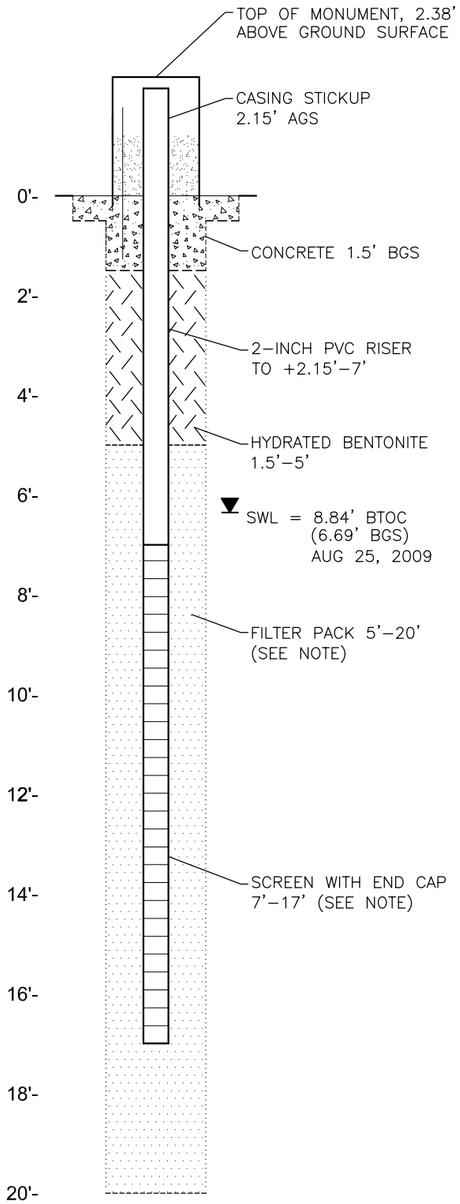


ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Basemap taken from USGS Maytown Quad.	PM: RAB December 2009	Thurston County 2491-001C	T 17 N/R 02 W - 23 Scale 1 " = 2000'	Figure 1 Vicinity Map Havens Property: 93rd Ave SE, Olympia/Site Remediation

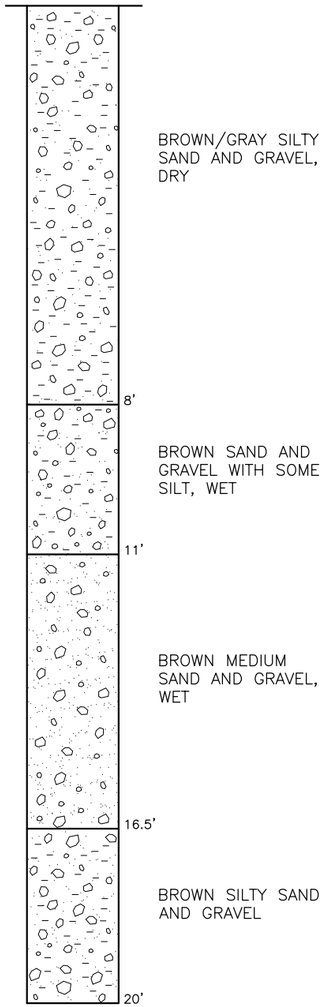


ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Image taken from Thurston County GIS Website	PM: RAB December 2009 2491-001C	Thurston County T 17 N/R 02 W - 23 Scale 1" = ~200'	Figure 2 Monitor Well and Previous Test Pit and Boring Location Map Havens Property: 93rd Ave SE, Olympia/Site Remediation

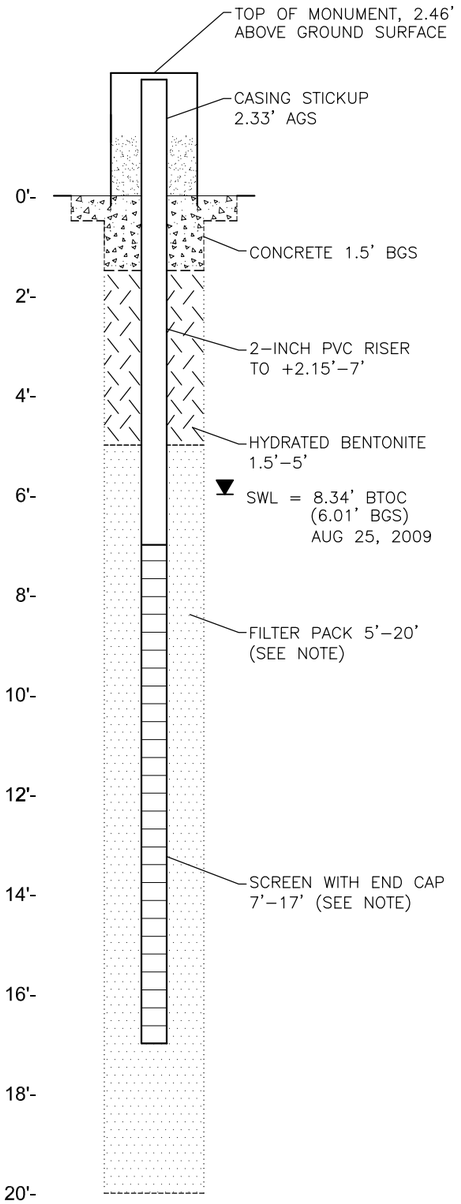
Construction Detail MW-1



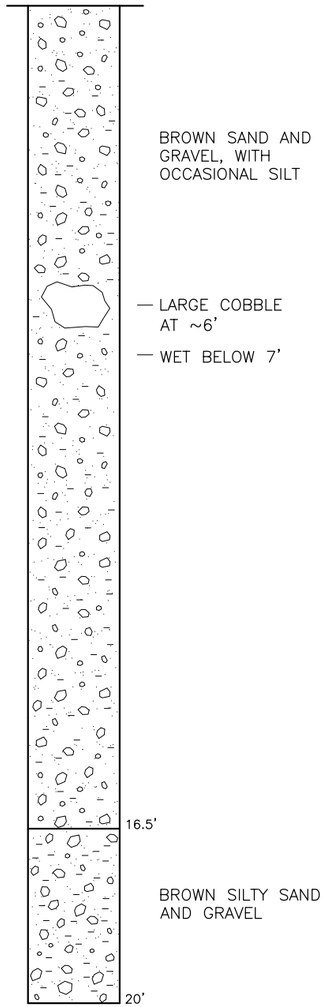
Geologic Log MW-1



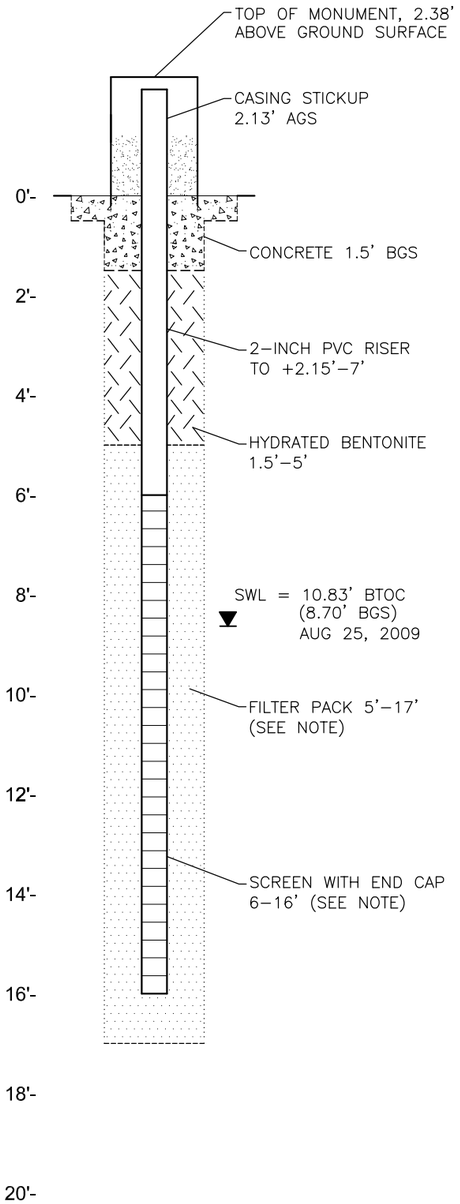
Construction Detail MW-2



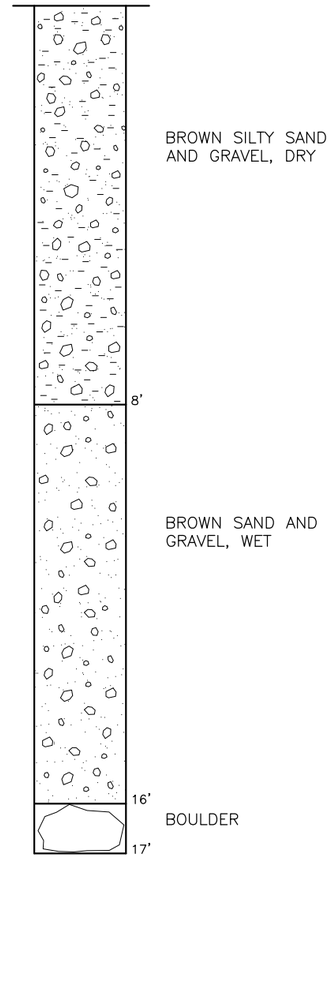
Geologic Log MW-2



Construction Detail MW-3



Geologic Log MW-3



ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	PM: RAB December 2009 2491-001C	Thurston County T 17 N/R 02 W - 23	NOTE: ALL WELL SCREEN ARE 2–INCH SCHEDULE 40 PVC PIPE, 20–SLOT (0.020 OPENING). FILTER PACK IS 10x20 COLORADO SILICA SAND PRODUCT.

Figure 3

Construction Detail and Geologic Log for Monitor Wells 1 - 3

Havens Property: 93rd Ave SE, Olympia/Site Remediation

SAMPLING RESULTS

scale: 1 square=____

August 25, 2009 MW-1 notes

2491-0014

Sampling MW-1 w/ peristaltic pump using a graduated bucket.

DTW btoc 2-inch 8.84'

water column is 9.94' (x 0.163) =
1.62 gallons (x3) = 4.86 gallons
to be removed.

water is coming out clear w/ very little to no particles

13:05 - well has reached stabilization sampling @ 13:10

Samples stored in a cooler with Blue Ice

Volume purged before sampling - 3.75 gallons

MW-1 Wertjes - Havens Property Tuesday, August 28, 2009

Time (min)	Time (actual)	Flow Rate	Cum Volume	Temp °C	Cond	spec Cond	TDS	DO mg/L	pH	Eh mV
5	12:30	0.08	0.5	12.73	0.116	0.089	0.075	4.97		
10	12:35	⟩	0.75	12.64°	0.115	0.088	0.075	4.89	6.01	50
15	12:40	⟩	1	12.70	0.114	0.087	0.074	4.84		
20	12:45	0.10	1.5	12.73	0.113	0.087	0.074	4.80	6.11	45
25	12:50	0.10	2	12.66	0.113	0.086	0.073	4.78		
30	12:55	0.05	2.75	12.54	0.112	0.085	0.073	4.78	6.08	46
35	13:00	0.10	2.75	12.63	0.111	0.085	0.072	4.77	6.03	49
40	13:05	0.10	3.75	12.73°C	0.111	0.084	0.072	4.77	6.07	47

scale: 1 square=____

Tuesday, August 25, 2009 MW-2

pump used: peristaltic
purge method: graduated bucket
Total Well Depth: 18.24
DTW: 8.34
water Column: 9.90 ft of H_2O
x 0.163 = 1.61 gallons
x 3 = 4.84 gallons (three well volumes)

screened interval - 5.91 - 15.91' bgs

13:30 pumping from well

water is coming out of the well w/ a brown tinge, no →

notes 2491-0021

→ visible particles, however

14:20 Three well volumes removed, sampling.

MW-2

Time (actual)	Time (min)	Flow Rate	Cum Volume	Temp °C	Cond.	Spec Cond	TDS	DO	pH	Eh
13:35	5	0.1	0.25	15.04	0.099	0.080	0.065	0.68		
13:40	10	0.1	0.75	14.21	0.100	0.080	0.065	0.42	6.16	46
13:45	15	0.05	1	13.87	0.102	0.080	0.066	0.34	6.13	43
13:50	20	0.1	1.5	13.75	0.101	0.080	0.066	0.30	6.11	45
13:55	25	0.1	2	13.94	0.101	0.080	0.066	0.27	6.13	44
14:00	30	0.1	2.5	13.83	0.101	0.080	0.066	0.26	6.12	44
14:05	35	0.1	3	13.89	0.100	0.078	0.065	0.23	6.11	45
14:10	40	0.1	3.5	13.68	0.100	0.078	0.065	0.22	6.22	39
14:15	45	0.15	4.25	13.81	0.100	0.079	0.065	0.21	6.19	40
14:20	50	0.15	5	13.81	0.100	0.078	0.065	0.20	6.20	40

scale: 1 square=_____

Tuesday, August 25, 2009 — Notes for mw-3 — 2491-0914

Pump used: peristaltic
purge method: graduated bucket
Total well depth: 17.99' TOC
DTW: 10.83' TOC
water column: 7.16 ft of H_2O
X 0.163 = 1.17 gallons
3 well volumes = 3.50 gallons

14:30 pumping water from mw-3

- water has a slight tan/brown color

15:15 Three well volumes removed
Sampling mw-3

mw-3

Time (actual)	Time (min)	Flow Rate	Cum Volume	Temp °C	Cond.	Spec Cond	TDS	DO	pH	Eh
14:40	10	0.1	0.5	15.11	0.097	0.079	0.063	1.32		
14:45	15	0.1	1	14.61	0.096	0.077	0.062	0.78	5.92	55
14:50	20	0.1	1.5	14.39	0.095	0.076	0.062	0.65	5.93	55
14:55	25	0.1	2	14.55	0.095	0.076	0.061	0.61	5.91	56
15:00	30	0.05	2.25	14.68	0.094	0.076	0.061	0.62	5.91	56
15:05	35	0.1	2.75	14.52	0.093	0.075	0.061	0.57	5.95	54
15:10	40	0.1	3.25	14.27	0.093	0.074	0.060	0.54	5.95	55
15:15	45	0.05	3.5	14.22	0.093	0.073	0.060	0.49	5.89	57

scale: 1 square=_____

LABORATORY RESULTS

Libby Environmental, Inc.

4139 Libby Road N.E., Olympia, WA 98506-2518

September 4, 2009

Rick Bieber
Robinson, Noble & Saltbush, Inc.
3011 Huson Street South
Suite A
Tacoma, WA 98409

Dear Mr. Bieber:

Please find enclosed the analytical data report for the Havens Property 411 93RD Project located in Tumwater, Washington. Mobile Lab Services were conducted on August 14, 2009. Soil samples were received and analyzed for VOC's by EPA Method 8260B, Gasoline by NWTPH-Gx, Diesel & Oil by NWTPH-Dx/Dx Extended, PCB's by EPA Method 8082, and MTCA 5 Metals by EPA Method 7000 Series.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed. All soil samples are reported on a dry weight basis.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
President
Libby Environmental, Inc.

Phone (360) 352-2110 * Fax (360) 352-4154 * libbyenv@aol.com

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Env.Project No.L090814-30

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		Method Blank	CTP6C
Date Extracted	Reporting	N/A	8/14/09
Date Analyzed	Limits	8/17/09	8/17/09
	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd
Chloromethane	0.06	nd	nd
Vinyl chloride *	0.02	nd	nd
Bromomethane	0.09	nd	nd
Chloroethane	0.06	nd	nd
Trichlorofluoromethane	0.05	nd	nd
1,1-Dichloroethene	0.05	nd	nd
Methylene chloride	0.02	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.02	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd
1,1-Dichloroethane	0.02	nd	nd
2,2-Dichloropropane	0.05	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd
Chloroform	0.02	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd
Carbon tetrachloride	0.02	nd	nd
1,1-Dichloropropene	0.02	nd	nd
Benzene	0.02	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd
Trichloroethene (TCE)	0.03	nd	nd
1,2-Dichloropropane	0.02	nd	nd
Dibromomethane	0.04	nd	nd
Bromodichloromethane	0.02	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd
Toluene	0.02	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd
1,3-Dichloropropane	0.05	nd	nd
Dibromochloromethane	0.03	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd
Chlorobenzene	0.02	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd
Ethylbenzene	0.03	nd	nd
Total Xylenes	0.03	nd	nd
Styrenes	0.02	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Env.Project No.L090814-30

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN SOIL

Sample Description		Method Blank	CTP6C
Date Extracted	Reporting	N/A	8/14/09
Date Analyzed	Limits	8/17/09	8/17/09
	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd
Isopropylbenzene	0.08	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd
Bromobenzene	0.03	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd
n-Propylbenzene	0.02	nd	nd
2-Chlorotoluene	0.02	nd	nd
4-Chlorotoluene	0.02	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd
tert-Butylbenzene	0.02	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd
sec-Butylbenzene	0.02	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd
Isopropyltoluene	0.02	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd
n-Butylbenzene	0.02	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd
Naphthalene	0.03	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		108	108
1,2-Dichloroethane-d4		100	116
Toluene-d8		92.7	95.7
4-Bromofluorobenzene		102	98.2

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Deanna M. Donovan

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Env.Project No.L090814-30

QA/QC Data - EPA 8260B Analyses

Sample Identification: L090814-2

Matrix Spike

	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	0.50	0.50	100
Benzene	0.50	0.54	108
Toluene	0.50	0.57	114
Chlorobenzene	0.50	0.49	98
Trichloroethene (TCE)	0.50	0.55	110

Surrogate Recovery	
Dibromofluoromethane	105
1,2-Dichloroethane-d4	96.1
Toluene-d8	94.9
4-Bromofluorobenzene	99.3

Laboratory Control Sample

	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	0.50	0.49	98
Benzene	0.50	0.51	101
Toluene	0.50	0.51	101
Chlorobenzene	0.50	0.48	96
Trichloroethene (TCE)	0.50	0.51	102

Surrogate Recovery	
Dibromofluoromethane	104
1,2-Dichloroethane-d4	99.0
Toluene-d8	95.4
4-Bromofluorobenzene	95.3

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Deanna M. Donovan

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Soil

Sample Number	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline (mg/kg)	Surrogate Recovery (%)
Method Blank	8/17/09	nd	nd	nd	nd	nd	109
LCS	8/17/09	105%	104%				101
CTP6C	8/17/09	nd	nd	nd	nd	nd	109
MS L090814-2	8/17/09	112%	109%				109
Practical Quantitation Limit		0.02	0.10	0.05	0.15	10	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Trifluorotoluene): 65% TO 135%

ANALYSES PERFORMED BY: Deanna M. Donovan

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Oil (mg/kg)
Method Blank	8/14/2009	116	nd	nd	nd
Method Blank	8/17/2009	98.3	nd	nd	nd
CTP6A	8/14/2009	99.8	nd	nd	nd
CTP6A dup	8/14/2009	116	nd	nd	nd
CTP1A	8/14/2009	89.6	nd	nd	nd
CTP1B	8/17/2009	127	nd	1020	nd
CTP1C	8/14/2009	110	nd	nd	nd
CTP6C	8/14/2009	119	nd	nd	nd
Practical Quantitation Limit			25	40	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Deanna M. Donovan

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	8/18/09	nd
CTP1B	8/18/09	nd
CTP6C	8/18/09	nd
CTP6C Dup	8/18/09	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
LCS	8/18/09	108%
MS	8/18/09	116%
MSD	8/18/09	111%
RPD	8/18/09	4%
Practical Quantitation Limit		0.5

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

Analyses of Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	8/18/09	nd	nd	nd	nd	nd	nd
CTP1B	8/18/09	nd	nd	nd	nd	9	35
CTP6C	8/18/09	nd	nd	nd	nd	11	42
CTP6C Dup	8/18/09	nd	nd	nd	nd	11	47
Practical Quantitation Limit		5.0	1.0	5.0	5.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

QA/QC for Metals in Soil by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)	Copper (% Recovery)	Zinc (% Recovery)
LCS	8/18/09	106%	88%	104%	97%	122%	111%
MS	8/18/09	116%	106%	106%	112%	int	int
MSD	8/18/09	118%	106%	121%	108%	int	int
RPD	8/18/09	2%	0%	13%	4%	int	int
Practical Quantitation Limit		5.0	1.0	5.0	5.0	5.0	5.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	Method Blank	LCS	CTP6A	CTP1A	CTP1C	CTP6C
Date Extracted		N/A	8/25/09	8/25/09	8/25/09	8/25/09	8/25/09
Date Analyzed		8/25/09	8/25/09	8/25/09	8/25/09	8/25/09	8/25/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.05	nd	106%	nd	nd	nd	nd
Aroclor 1221	0.05	nd		nd	nd	nd	nd
Aroclor 1232	0.05	nd		nd	nd	nd	nd
Aroclor 1242	0.05	nd		nd	nd	nd	nd
Aroclor 1248	0.05	nd		nd	nd	nd	nd
Aroclor 1254	0.05	nd		nd	nd	nd	nd
Aroclor 1260	0.05	nd	108%	nd	nd	nd	nd
Surrogate Recovery							
TCMX		95	108	10	125	128	131
DCBP		98	95	98	99	104	79

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090814-30

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	CTP6C Dup	CTP6C MS	CTP6C MSD
Date Extracted		8/25/09	8/25/09	8/25/09
Date Analyzed		8/25/09	8/25/09	8/25/09
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.05	nd	104%	111%
Aroclor 1221	0.05	nd		
Aroclor 1232	0.05	nd		
Aroclor 1242	0.05	nd		
Aroclor 1248	0.05	nd		
Aroclor 1254	0.05	nd		
Aroclor 1260	0.05	nd	112%	121%
Surrogate Recovery				
TCMX		106	107	123
DCBP		108	125	131

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

2930 Westlake Ave N Suite 100
Seattle, WA 98109
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Libby Environmental
Attn: Sherry Chilcutt
4139 Libby Road NE
Olympia, WA 98506

RE: Haven's Property
Fremont Project No: CHM090819-3

August 24th, 2009

Sherry:

Enclosed are the analytical results for the ***Haven's Property*** soil samples received by Fremont Analytical on August 19th, 2009.

The samples were received in good condition – in the proper containers (5 – 4oz soil jars) properly sealed, labeled and within holding time. The samples were received in a cooler with gel ice with a cooler temperature of 8.5°C, which is within the laboratory recommended cooler temperature range (<4°C - 10°C). The samples were extracted, analyzed then stored in refrigeration units at the USEPA-recommended temperature of 4°C ± 2°C. There were no sample receipt or sample analysis issues to report.

Examination of these samples was conducted for the presence of the following:

- ***Polyaromatic Hydrocarbons in Soil by EPA Method 8270C***

This application was performed under Washington State Department of Ecology accreditation parameters. All appropriate Quality Assurance / Quality Control method parameters have been applied. Please contact the laboratory if you should have any questions about the report.

Thank you for using Fremont Analytical!

Sincerely,

Michael Dee
Sr. Chemist / Principal

mikedee@fremontanalytical.com

Fremont Analytical

2930 Westlake Ave. N., Suite 100
Seattle, WA 98103

T: 206.352.3790
F: 206.352.7178
email: info@fremontanalytical.com

Analysis of Polyaromatic Hydrocarbons in Soil by EPA Method 8270C

Project: Haven's Property
Client: Libby Environmental
Client Project #: N/A
Lab Project #: CHM090819-3

EPA 8270C (SIM) (mg/kg)	MRL	Method Blank	LCS	CTP6A	CTP1A	CTP1C	CTP1B	CTP1B Duplicate	CTP6C
Date Extracted		8/19/09	8/19/09	8/19/09	8/19/09	8/19/09	8/19/09	8/19/09	8/19/09
Date Analyzed		8/19/09	8/19/09	8/20/09	8/20/09	8/20/09	8/20/09	8/20/09	8/20/09
Matrix				Soil	Soil	Soil	Soil	Soil	Soil
Acenaphthene	*0.05*	*nd*	*108%*						
Pyrene	*0.05*	*nd*	*100%*						
Benzo(a)anthracene	0.05	nd		nd	nd	nd	nd	nd	nd
Chrysene	0.05	nd		nd	nd	nd	nd	nd	nd
Benzo(b)fluoranthene	0.05	nd		nd	nd	nd	nd	nd	nd
Benzo(k)fluoranthene	0.05	nd		nd	nd	nd	nd	nd	nd
Benzo(a)pyrene	0.05	nd		nd	nd	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.05	nd		nd	nd	nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.05	nd		nd	nd	nd	nd	nd	nd
Benzo(g,h,i)perylene	0.05	nd		nd	nd	nd	nd	nd	nd
Total PAH Carcinogens				0.0	0.0	0.0	0.0	0.0	0.0
Surrogate Recovery									
(Surr 1) 2-Fluorobiphenyl		79%	74%	86%	82%	93%	93%	90%	87%
(Surr 2) p-Terphenyl		86%	81%	87%	90%	89%	90%	92%	95%

Total PAH Carcinogens Defined as:
Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Ideno(1,2,3-cd)pyrene & Dibenzo(a,h)anthracene

"nd" Indicates not detected at listed reporting limits
"int" Indicates that interference prevents determination
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 50% to 150%
Surrogate Concentration = 0.5 mg/kg
Spike Concentration = 1.0 mg/kg

Fremont Analytical

2930 Westlake Ave. N., Suite 100
Seattle, WA 98103

T: 206.352.3790
F: 206.352.7178
email: info@fremontanalytical.com

Analysis of Polyaromatic Hydrocarbons in Soil by EPA Method 8270C

Project: Haven's Property
Client: Libby Environmental
Client Project #: N/A
Lab Project #: CHM090819-3

EPA 8270C (SIM) (mg/kg)	MRL	MS Batch 090817-1-1	MSD Batch 090817-1-1	RPD %
Date Extracted		8/19/09	8/19/09	
Date Analyzed		8/20/09	8/20/09	
Matrix		Soil	Soil	
Acenaphthene	*0.05*	*135%*	*129%*	*5%*
Pyrene	*0.05*	*123%*	*123%*	*0%*
Benzo(a)anthracene	0.05			
Chrysene	0.05			
Benzo(b)fluoranthene	0.05			
Benzo(k)fluoranthene	0.05			
Benzo(a)pyrene	0.05			
Indeno(1,2,3-cd)pyrene	0.05			
Dibenzo(a,h)anthracene	0.05			
Benzo(g,h,i)perylene	0.05			
Total PAH Carcinogens				

Total PAH Carcinogens Defined as:
Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Ideno(1,2,3-cd)pyrene & Dibenzo(a,h)anthracene

Surrogate Recovery		
(Surr 1) 2-Fluorobiphenyl	101%	104%
(Surr 2) p-Terphenyl	96%	98%

"nd" Indicates not detected at listed reporting limits
"int" Indicates that interference prevents determination
"J" Indicates estimated value
"MRL" Indicates Method Reporting Limit
"LCS" Indicates Laboratory Control Sample
"MS" Indicates Matrix Spike
"MSD" Indicates Matrix Spike Duplicate
"RPD" Indicates Relative Percent Difference

Acceptable RPD is determined to be less than 30%
Acceptable Recovery Limits:
Surrogates = 65% to 135%
LCS, LCSD, MS, MSD = 50% to 150%
Surrogate Concentration = 0.5 mg/kg
Spike Concentration = 1.0 mg/kg

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/25/2009

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: Haven's Property
Sample Matrix: Soil
Date Sampled: 08/14/2009
Date Received: 08/18/2009
Spectra Project: 2009080290

Client ID	Spectra #	Analyte	Result	Units	Method
CTP1B	1	Total Nickel	25	mg/Kg	SW846 6010B
CTP6C	2	Total Nickel	21	mg/Kg	SW846 6010B

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: RNS
Address: 3011 South huson
Phone: 975-7711 Fax:
Client Project #: 2491-001C

Date: 8/14/09
Page: 1 of 1
Project Manager: RAB
Project Name: Havens Property
Location: 411 93RD Tumwater
Collector: RAB
Date of Collection: 8/14/09

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals Zn, Ni, Cu				Field Note/# Containers
1	CTP6A	1'	9:00	soil	4oz								X		X					Hold CPAH
2	CTP1A	1'	9:50	soil	4oz								X		X					Hold CPAH
3	CTP1C	1.5	10:30	soil	4oz								X		X	[illegible] per RAB 8/14/09				Hold CPAH
4	CTP1B	2.0	10:15	soil	4oz								X		~~X~~	X				Hold CPAH Zn, Ni, Cu
5	CTP6C	3.0	10:55	soil	4oz			X			X		X		X	X				Hold CPAH Zn, Ni, Cu
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				

Run DND 8/17 (Zn, Ni, Cu)

Relinquished by	Date / Time	Received by	Date / Time
[signature]	8/14/09 12:10	[signature]	8/14/09 1210

Sample Receipt:
- Good Condition?
- Cold?
- Seals Intact?
- Total Number of Containers

Remarks: no PCB's on CTP1B as per a phone call w/RAB DND 8/14/09

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road N.E., Olympia, WA 98506-2518

September 4, 2009

Rick Bieber
Robinson, Noble & Saltbush, Inc.
3011 Huson Street South
Suite A
Tacoma, WA 98409

Dear Mr. Bieber:

Please find enclosed the analytical data report for the Havens Property 411 93RD Project located in Tumwater, Washington. Water samples were received and analyzed for MTCA 5 Metals by EPA Method 7000 Series on August 30, 2009.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
President
Libby Environmental, Inc.

Phone (360) 352-2110 * Fax (360) 352-4154 * libbyenv@aol.com

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090825-4

Analyses of Total Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Arsenic (ug/l)	Copper (ug/l)	Zinc (ug/l)
Method Blanl	8/30/09	nd	nd	nd	nd	nd	nd
MW-1	8/30/09	nd	nd	nd	nd	nd	nd
MW-2	8/30/09	nd	nd	nd	nd	nd	nd
MW-3	8/30/09	nd	nd	nd	nd	nd	nd
MW-3 Dup	8/30/09	nd	nd	nd	nd	nd	nd
Practical Quantitation Lin		5.0	0.5	10.0	3.0	5.0	10.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C

QA/QC for Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)	Copper (% Recovery)	Zinc (% Recovery)
LCS	8/30/09	119%	107%	107%	102%	116%	127%
MW-3 MS	8/30/09	95%	106%	102%	95%	120%	74%
MW-3 MSD	8/30/09	100%	99%	108%	89%	119%	78%
RPD	8/30/09	5.1	6.8	5.7	6.5	0.8	5.3

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C

Analyses of Dissolved Metals in Water by EPA Method 7000 Series

Sample Number	Date Analyzed	Lead (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Arsenic (ug/l)	Copper (ug/l)	Zinc (ug/l)
Method Blanl	8/30/09	nd	nd	nd	nd	nd	nd
MW-1	8/30/09	nd	nd	nd	nd	nd	nd
MW-2	8/30/09	nd	nd	nd	nd	nd	nd
MW-3	8/30/09	nd	nd	nd	nd	nd	nd
MW-3 Dup	8/30/09	nd	nd	nd	nd	nd	nd
Practical Quantitation Lin		5.0	0.5	10.0	3.0	5.0	10.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C
Libby Project No.L090825-4

Analyses of Total Mercury in Water by EPA Method 7471

Sample Number	Date Analyzed	Mercury (ug/l)
Method Blank	8/30/09	nd
MW-1	8/30/09	nd
MW-2	8/30/09	nd
MW-3	8/30/09	nd
MW-3 Dup	8/30/09	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury Percent Recovery
LCS	8/30/09	103%
MW-3 MS	8/30/09	95%
MW-3 MSD	8/30/09	105%
RPD	8/30/09	10

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

Haven's Property PROJECT
Tumawater, WA
Robinson, Noble & Saltbush
Client Project #2491-001C

Analyses of Dissolved Mercury in Water by EPA Method 7471

Sample Number	Date Analyzed	Mercury (ug/l)
Method Blank	8/30/09	nd
MW-1	8/30/09	nd
MW-2	8/30/09	nd
MW-3	8/30/09	nd
MW-3 Dup	8/30/09	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

SPECTRA Laboratories
2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/31/2009

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: Sertjes-Havens Property
Sample Matrix: Water
Date Sampled: 08/25/2009
Date Received: 08/27/2009
Spectra Project: 2009080465

Client ID	Spectra #	Analyte	Result	Units	Method
MW-1	1	Dissolved Nickel	< 0.015	mg/L	EPA 200.7
MW-1	1	Nickel	< 0.015	mg/L	EPA 200.7
MW-2	2	Dissolved Nickel	< 0.015	mg/L	EPA 200.7
MW-2	2	Nickel	< 0.015	mg/L	EPA 200.7
MW-3	3	Dissolved Nickel	< 0.015	mg/L	EPA 200.7
MW-3	3	Nickel	< 0.015	mg/L	EPA 200.7

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 8-25-09 Page: 1 of 1

Client: Robinson, Noble & Saltbush
Project Manager: KAB
Address: 3011 S. Huson St. Ste A Tacoma, WA 98409
Project Name: Wertjes - Hawens Property
Phone: (253)475-7711 Fax: (253)472-5846
Location: Hawens Property, Tumwater, WA
Client Project # 2491-001A
Collector: JSB Date of Collection: 8-25-09

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals (TOTAL ASSUMED)			Field Note/# Containers
1 mw-1		13:10	H_2O	250 mL										X				2
2 mw-2		14:20	↓	Poly										↓				2
3 mw-3		15:15	↓											↓				2
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
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14																		
15																		
16																		
17																		
18																		

Relinquished by:	Date / Time	Received by	Date / Time
[signature]	8-25-09 16:00	[signature]	8/25/09 16:00
Relinquished by:	Date / Time	Received by	Date / Time
Relinquished by:	Date / Time	Received by	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/31/2009

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: Sertjes-Havens Property
Sample Matrix: Water
Date Sampled: 08/25/2009
Date Received: 08/27/2009
Spectra Project: 2009080465

Client ID	Spectra #	Analyte	Result	Units	Method
MW-1	1	Dissolved Nickel	< 0.015	mg/L	EPA 200.7
MW-1	1	Nickel	< 0.015	mg/L	EPA 200.7
MW-2	2	Dissolved Nickel	< 0.015	mg/L	EPA 200.7
MW-2	2	Nickel	< 0.015	mg/L	EPA 200.7
MW-3	3	Dissolved Nickel	< 0.015	mg/L	EPA 200.7
MW-3	3	Nickel	< 0.015	mg/L	EPA 200.7

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager

a7/scj

20090804165

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

Client: Libby Env. (receabme)
Address:
Phone: Fax:
Client Project #

Date: 8/26/09 Page: 1 of 1
Project Manager: Sherry Chilcutt
Project Name: Wertjes - Havens Property
Location:
Collector: Date of Collection:

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	T. D. Dissolved D.	Total D.	Field Note/# Containers
1 MW-1			H2O	Poly											X	X		
2 MW-2			↓	↓											X	X		
3 MW-3															X	X		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		

Relinquished by: Date / Time 8/26/09 Received by: Date / Time 8/26/09

Relinquished by: Date / Time Received by: Date / Time 08-27 AM

Relinquished by: Date / Time Received by: Date / Time

Sample Receipt:

Good Condition?	Y
Cold?	Y
Seals Intact?	NA
Total Number of Containers	6

Remarks: Std

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

WASTE DISPOSAL DOCUMENTS

Libby Environmental, Inc.

4139 Libby Road N.E., Olympia, WA 98506-2518

September 29, 2009

Rick Bieber
Robinson, Noble & Saltbush, Inc.
3011 Huson Street South
Suite A
Tacoma, WA 98409

Dear Mr. Bieber:

Please find enclosed the analytical data report for the Wertjes: Havens Property Project located in Tumwater, Washington. A product sample w as analyzed for Selected Volatile Organic Compounds by EPA Method 8260b, PCB's by EPA Method 8082b, TCLP RCRA8 Metals by EPA method 1311/6010b, Specific Gravity, Flashpoint and pH.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work was sent to Alan Wertjes, Attorney at Law.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
President
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@aol.com

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

WERTJES: HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Client Project #2491-001A
Libby Env.Project No.L090922-5

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN PRODUCT

Sample Description		Method Blank	D-1
Date Sampled	Reporting	N/A	9/22/09
Date Analyzed	Limits	9/23/09	9/23/09
	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	200	nd	nd
Chloromethane	200	nd	nd
Vinyl chloride	20	nd	nd
Bromomethane	200	nd	nd
Chloroethane	200	nd	nd
Trichlorofluoromethane	200	nd	nd
1,1-Dichloroethene	200	nd	nd
Methylene chloride	100	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	500	nd	nd
trans-1,2-Dichloroethene	100	nd	nd
1,1-Dichloroethane	100	nd	nd
2,2-Dichloropropane	200	nd	nd
cis-1,2-Dichloroethene	100	nd	nd
Chloroform	100	nd	nd
1,1,1-Trichloroethane (TCA)	100	nd	nd
Carbon tetrachloride	100	nd	nd
1,1-Dichloropropene	100	nd	nd
Benzene	100	nd	115,000
1,2-Dichloroethane (EDC)	100	nd	nd
Trichloroethene (TCE)	100	nd	nd
1,2-Dichloropropane	100	nd	nd
Dibromomethane	100	nd	nd
Bromodichloromethane	100	nd	nd
cis-1,3-Dichloropropene	100	nd	nd
Toluene	100	nd	1,300,000
Trans-1,3-Dichloropropene	100	nd	nd
1,1,2-Trichloroethane	100	nd	nd
Tetrachloroethene (PCE)	100	nd	nd
1,3-Dichloropropane	100	nd	nd
Dibromochloromethane	100	nd	nd
1,2-Dibromoethane (EDB) *	1.0	nd	nd
Chlorobenzene	100	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd
Ethylbenzene	100	nd	380,000
Total Xylenes	200	nd	2,770,000
Styrenes	100	nd	nd

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

WERTJES: HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Client Project #2491-001A
Libby Env.Project No.L090922-5

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260B IN PRODUCT

Sample Description		Method Blank	D-1
Date Extracted	Reporting	N/A	9/22/09
Date Analyzed	Limits	9/23/09	9/23/09
	(ug/l)	(ug/l)	(ug/l)
Bromoform	100	nd	nd
Isopropylbenzene	400	nd	39,900
1,2,3-Trichloropropane	100	nd	nd
Bromobenzene	100	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd
n-Propylbenzene	100	nd	153,000
2-Chlorotoluene	100	nd	nd
4-Chlorotoluene	100	nd	nd
1,3,5-Trimethylbenzene	100	nd	359,000
tert-Butylbenzene	100	nd	151,000
1,2,4-Trimethylbenzene	100	nd	1,270,000
sec-Butylbenzene	100	nd	28,600
1,3-Dichlorobenzene	100	nd	nd
Isopropyltoluene	100	nd	18,100
1,4-Dichlorobenzene	100	nd	nd
1,2-Dichlorobenzene	100	nd	nd
n-Butylbenzene	100	nd	nd
1,2-Dibromo-3-Chloropropane	100	nd	nd
1,2,4-Trichlorolbenzene	200	nd	nd
Hexachloro-1,3-butadiene	500	nd	nd
Naphthalene	500	nd	670,000
1,2,3-Trichlorobenzene	500	nd	nd
Surrogate Recovery			
Dibromofluoromethane		96.2	101
1,2-Dichloroethane-d4		93.7	110
Toluene-d8		93.7	98
4-Bromofluorobenzene		86.0	103

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

WERTJES: HAVENS PROPERTY PROJECT
Tumwater, Washington
Robinson, Noble & Saltbush, Inc.
Client Project #2491-001A
Libby Env.Project No.L090922-5

QA/QC Data - EPA 8260B Analyses

	Laboratory Control Sample		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
1,1-Dichloroethene	10	7.3	73
Benzene	10	7.6	76
Toluene	10	7.5	75
Chlorobenzene	10	8.6	86
Trichloroethene (TCE)	10	7.8	78

Surrogate Recovery	
Dibromofluoromethane	103
1,2-Dichloroethane-d4	117
Toluene-d8	97
4-Bromofluorobenzene	96

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

SPECTRA Laboratories
2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

09/25/2009

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

P.O.#: 2491-001A
Project: Wertjes-Havens Property
Client ID: D-1
Sample Matrix: Oil
Date Sampled: 09/22/2009
Date Received: 09/22/2009
Spectra Project: 2009090450
Spectra Number: 1

Analyte	Result	Units	Method
Specific Gravity at 60 °F	0.8911		ASTM D-287
Flashpoint (PMCC)	> 210	°F	ASTM D-93
TCLP Arsenic	< 0.05	mg/L	SW846 6010B
TCLP Barium	0.030	mg/L	SW846 6010B
TCLP Cadmium	0.021	mg/L	SW846 6010B
TCLP Chromium	< 0.007	mg/L	SW846 6010B
TCLP Lead	0.05	mg/L	SW846 6010B
TCLP Selenium	< 0.08	mg/L	SW846 6010B
TCLP Silver	< 0.007	mg/L	SW846 6010B
TCLP Mercury	< 0.0002	mg/L	SW846 7470A
pH	6.37	pH Units	SW846 9045

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a5/snb

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

Date: 9-22-09
Page: 1 of 1

Client: Robinson, Noble & Saltbush
Address: 3011 S. Huson St, Ste A, Tacoma, WA
Phone: (253)475-7711 Fax: (253)472-5846
Client Project # 2491-001A

Project Manager: RAB
Project Name: Worthies: Havens Property
Location: Tumwater
Collector: JJB
Date of Collection: 9-22-09

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	TCLP Metals D004-D011	pH, Specific gravity	Flashpoint	Field Note/# Containers
1	D-1	n/a	14:00	product	Voa/1/2 liter			X							X		X	X	X	3 voa / 1-1/2 litre glass
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				

Relinquished by:	Date / Time	Received by	Date / Time
[signature]	9-22-09 14:30	[signature]	9/22/09 14:30

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks: Std

TAT 24HR 48HR 5-Day

Distribution White - Lab, Yellow - File, Pink - Originator

ENVIRONMENTAL SERVICES
GROUP
Western Region

PLEASE REMIT TO
PSC ENVIRONMENTAL SERVICES LLC
P.O. BOX 3069
Houston, TX 77253-3069

Invoice # 22000131734

Invoice Date 10/30/2009
Customer 56766
Terms Net 30 days

ATTN.: TOM SMITH
ROBINSON, NOBEL AND SALTBUSH
3011 S HUSON STREET, SUITE A
TACOMA, WA 98409

SITE ADDRESS:
WERTJES
411 93RD AVE
TUMWATER, WA 98501

ORDER 1042631 WERTJES

Thank you for your business.

10/19/2009

Intra-State Transportation :

	LTL TRANSPORTATION MINIMUM	1.00 @ 100.000 / E	$100.00
10/19/2009	Doc No. 154203-09	Manifest 005605557JJK	Waste Receipt KNT-7141P
1	427104-00 - NON REGULATED OIL	1.00 @ 167.000 / DM55	$167.00
2	428047-00 - EMPTY DRUMS	1.00 @ 30.000 / E	$30.00

Sub Total	$297.00
Energy Charge	$43.07
INVOICE TOTAL	$340.07

We honor the above merchant cards for payment. Please contact our local PSC billing office for payment instructions.

1042631 154203

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	CESQG	1	(877) 577-2668	005605557 JJK

GENERATOR

5. Generator's Name and Mailing Address

ROBINSON, NOBLE & SALTBUSH, INC
3811 SOUTH HUSON, SUTIE A
TACOMA WA 98409 (253)475-7711

Generator's Site Address (if different than mailing address)

WERTJES
411 93RD AVE
TUMWATER WA 98501 (253)475-7711

6. Transporter 1 Company Name — U.S. EPA ID Number

BURLINGTON ENVIRONMENTAL, LLC — WAR000001743

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY
20245 77TH AVENUE SOUTH
Facility's Phone: KENT, WA 98032 (253) 872-8838 — WAD991281767

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. MATERIAL NOT REGULATED BY DOT	1	DM	45	G	
	2. MATERIAL NOT REGULATED BY DOT	1	DM	20	P	
	3.					
	4.					

14. Special Handling Instructions and Additional Information

(1) 427104-00 - NON REGULATED OIL (2) 428047-00 - EMPTY DRUMS

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Jeremy Bush — Signature: Jeremy Bush — Month: 10 Day: 19 Year: 09

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Steve Glenn — Signature: Steve Glenn — Month: 10 Day: 19 Year: 09

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Christine Crisostomo — Signature: Christine Crisostomo — Month: 10 Day: 19 Year: 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

'09 OCT 19 PM 1:12

7418

PSC
PNW - ESG - TRANSPORTATION GROUP

☐ **RESOURCE RECOVERY** 1629 East Alexander Ave., Tacoma WA 98421 (253) 383-3044
☑ **BEI PUGET SOUND** 1629 East Alexander Ave., Tacoma WA 98421 (253) 383-3044

BILL OF LADING

DATE	BEGINNING MILEAGE	ON DUTY
10-19-09	287252	7:00 AM / PM
DRIVER NAME	**ENDING MILEAGE**	**OFF DUTY**
Steve Glenn	287300	AM / PM

VEHICLE NO.	TRAILER NO.	BOX NO.	COST CENTER	SHIPPERS NO.	ORDER NO.
102			1109	154203	1042631

SHIPPER / ORIGIN

NAME Wertjes
ADDRESS 411 93rd Ave.
CITY Tumwater STATE WA ZIP 98501

WEIGH INFORMATION

GROSS
TARE
NET

FOR OFFICE USE ONLY

MILEAGE / CONTAINER	RATE	FREIGHT
PLEASE PAY THIS AMOUNT ➡		

QUANTITY	DOT PROPER SHIPPING NAME
2pc	per manifest # 154203

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

X _____ DATE 10-19-09

DESTINATION

NAME BE Kent RECEIPT #
ADDRESS
CITY Kent STATE WA ZIP 98032
VEHICLE NO. 102 TRAILER NO. DATE
☐ LOADED ☑ UNLOADED ☐ RINSED

☐ **TACOMA** 1701 E. Alexander Ave., Tacoma, WA 98421 (253) 627-7568
☐ **WASHOUGAL** 625 South 32nd St. (P.O. Box 229) Washougal, WA 98671 (360) 835-8594
☑ **KENT** 20245 77th Ave. S., Kent, WA 98032 (253) 872-7859

ARRIVAL TIME: 9:30

LOAD TIME: START: AM / PM	____ HRS. FREE TIME	UNLOAD TIME: START: AM / PM	____ HRS. FREE TIME
FINISH: AM / PM	____ HRS. CHARGEABLE	FINISH: AM / PM	____ HRS. CHARGEABLE

REASON FOR LOAD DELAY: _____

SIGNATURE FOR DELAY: _____
DRIVER SIGNATURE Steve Glenn

REASON FOR LOAD DELAY: _____

SIGNATURE FOR DELAY: _____

COMMENTS: _____

Philip Services, Corporation

Generator's Waste Profile 427104-00

Starts : 05 OCT 2009
Expires: 31 OCT 2010
Printed: 07 OCT 2009

Status : PENDING

Sales Rep 0040 Jason R. Collins
Acct Mngr 035 Brenda Smithson

A: GENERATOR (137439) SITE INFORMATION

WERTJES
411 93RD AVE
TUMWATER, WA 98501
> Contact JEREMY BUSH

EPA CESQG
SIC 562998 N
Phone (253) 475-7711

B: CUSTOMER (57429) INFORMATION

ROBINSON, NOBLE & SALTBUSH, INC
3011 SOUTH HUSON, SUITE A
TACOMA, WA 98409

C: WASTE INFORMATION

On File > MSDS No Analysis Yes Sample No

Waste Name NON REGULATED OIL
Process SITE CLEANOUT

D: PHYSICAL CHARACTERISTICS OF WASTE

Phys States L-Liq
Top Color VARIES
Mid Color
Bot Color
Odor Mild oil
Layers Single Phased
Spec Grav <1
PH Range 6-7
Free Liq % 100
Flash Test Closed Cup
Flash Rnge >210F

E: CHEMICAL COMPOSITION OF WASTE

Information Provided By Generator

OIL (100 %)

PCB's NS Cyanides NS Phenolics NS Sulfides NS TOC >10% VOC <500 PPM

F: METALS METHOD Gen Knowledge

Arsenic	<5	Cadmium	<1	Chromium	<5	Silver	<5
Barium	<100	Merc TCLP	<0.2	Selenium	<1	Nickel	
		Lead	<5	Merc Tot		Thallium	

Zinc
Copper
Chrome-6

G: OTHER CHARACTERISTICS OF WASTE

Ign. Solid No Oxidizer No Explosive No Shock Sensitive No Water Reactive No Reactive No

H: EPA / STATE WASTE IDENTIFICATION

Dangerous / Hazardous No TSCA No Universal Waste No

Form W206 Source G19 Origin 1 SubPart CC No NESHAPS No CERCLA No Debris No Waste Water No

EPA Codes
State Codes

I: SHIPPING INFORMATION

Marine Pollutant No Dangerous Wet No Inhalation Hazard No Poison No

Containers DM Metal Drum DF Fiber Drum
Qty to Ship Now
Projected Volume Seasonal

DOT Descrip MATERIAL NOT REGUALTED BY DOT

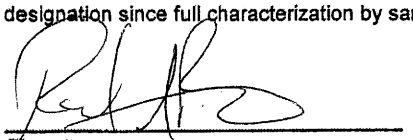
J: SPECIAL HANDLING INFORMATION

CESQG: WOULD NOT OTHERWISE BE REGULATED;
Waste Categs AF01

GENERATOR CERTIFICATION

I hereby certify, as an authorized representative of the Generator named above, that PSC Environmental, LLC has been fully informed of all information known about this waste, including but not limited to, the waste's generation process, composition, and physical characteristics, necessary to identify proper treatment and disposal of waste and this information is true and accurate.

If this is an existing profile which is being renewed, I hereby certify that there have been no changes in this waste, chemical, physical, or regulatory designation since full characterization by sample testing.



Signature

Richard Bibler
Printed Name

Project Manager
Title

10/7/09
Date

PSC Environmental, LLC maintains the appropriate permits for and will accept the dangerous waste the generator is shipping as required by WAC 173-303-290(3).

August 18, 2009

Alan J. Wertjes
1800 Cooper Point Road, Bldg 3
Olympia, WA 98502

RE: Havens Property
411 – 93rd Ave SE, Tumwater, WA

Dear Mr. Wertjes:

Enclosed is the invoice for the recently completed remediation project at the Havens site in Tumwater, WA.

Billing for this project is based on the estimate letter dated June 4, 2009.

August 13, 2009
Mobilize labor and equipment to the Havens site in Tumwater, WA. Pump and dispose of numerous containers of used oil located throughout the site. Load +/- 50 – 5 gallon containers, 13 – 55 gallon drums, 1 – 500 gallon tank, 1 – 250 gallon tank, 1 – 275 gallon tank, 1 – 6' X 6' open top fuel tank (1300 gallons), 6 vehicle batteries, and 2 – large commercial fork lift type batteries for cleaning and disposal. The 6' X 6' open top tank appeared to have been utilized as a storage unit for contaminated soil from the site. The tank was full of oily water and approximately 2.5' – 3' of sludge/soil material. All containers and tanks required to be cleaned prior to disposal. Due to the overgrown vegetation and required access needed to get vac truck close to containers requiring pumping, an excavator was required. This dense material was very difficult to pump and this in turn is the explanation for the excess hours billed for the vac truck and site supervisor.

Mob to site	$ 300.00
8 hrs excavator/operator @ $125/hr	1000.00
8 hrs 5 yd dump truck (load & haul debris) @ $95/hr	760.00
8 hrs service truck (load & haul debris) @ $65/hr	520.00
8 hrs supervisor/foreman @ $95/hr	760.00

7517 Portland Avenue, Suite A, Tacoma, WA 98404 • Phone: (253) 536-6961 • Fax: (253) 548-0201
E-Mail: Langsethes@email.com

2 hrs supervisor/foreman @ $142.50/hr	285.00
8 hrs 2 – laborers @ $45/hr	720.00
8 hrs Vac truck @ $135/hr	1080.00
3 hrs Vac truck @ $202.50	607.50
800 gallons used oil for disposal @ .50/gal	400.00
3 tons sludge/soil for disposal @ $105/ton	315.00
Load, haul, dispose of +/- 50 – 5 gallons containers	380.00
Dispose 13 – 55 gallon drums @ $15/each	195.00
Dispose 1 – 250, 1 – 275, 1 – 500 gallon tanks	850.00
Dispose 1 – 1300 gallon tank	500.00
Dispose 2 – large commercial batteries & 4 small	250.00

August 14, 2009
On site to excavate, load, haul, and dispose of petroleum contaminated soil at the direction of Rick Bieber LG, Robinson & Noble Project Hydrogeologist.

6 hrs excavator @ $125/hr	750.00
6 hrs dump truck @ $130/hr	780.00
6 hrs supervisor @ $95/hr	570.00
6 hrs laborer @ $45/hr	270.00
PCS disposal @ $105/ton (4.8 tons)	504.00
Mob out	300.00
Total	$ 12,096.50

Thank you for the opportunity to work with you on this project. Please give me a call if I can answer any questions regarding this or any future projects.

Sincerely,

Tom Langseth
Langseth Environmental Services, Inc.

THURSTON CO PUBLIC WORKS WARC
2404-A1 HERITAGE CT SW
Olympia, WA 98502
(360)709-3076

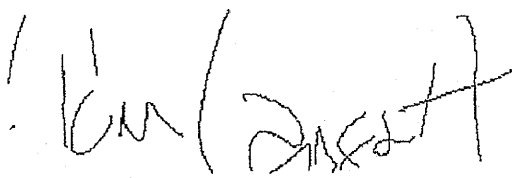
Bill Acct:001226
LANGSETH ENVIRONMENTAL SVS INC
Haul Acct:

SITE:WA WARC Facility
DATE:08/14/09 TICKET#:4117107
TIME IN:12:56 ID IN: AK
TIME OUT:13:02 ID OUT: MK
TURNAROUND TIME: 6
TRUCK:101326
PO:

	LBS	TONS
GROSS:	30840	15.42
TARE:	21240	10.62
NET:	9600	4.80

VOL: 0

MATERIAL:



NOTE:

B.O.L. # 16446

SHIPPING PAPER

PRO-VAC

6622 112th Street East
Puyallup, WA 98373

DELIVERY DATE: 8.13.09	JOB #: 090811-006
SHIPPER / CUSTOMER: Longseth	POINT OF CONTACT:
ADDRESS: 411 93rd Ave SE	PHONE #:
CITY, STATE, ZIP: Lynnwood WA.	
CARRIER / TRANSPORTER: PRO-VAC	PHONE #: 253 435-4328
CONSIGNEE / FACILITY: PRS	POINT OF CONTACT: G. Smith
ADDRESS: 3003 Taylor Way	PHONE #: 253 383-4175
CITY, STATE, ZIP: Tacoma, WA 98421	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM	CHLOR	pH
A	material not regulated by DOT wtr/oil	001	FT.	1600	G		
B							
C							
D							

Special Handling Instruction and Additional Information:

Placards Provided YES_____ NO V

SHIPPER'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway, vessel, and rail according to applicable international and national government regulations.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME: X Tom Longseth	SIGNATURE: X	8	13	09
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME: X TRAVIS OLSEN	SIGNATURE: X	8	13	09
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME: X	SIGNATURE: X			

CARRIER

PCRCD,LLC dba LRI
17925 MERIDIAN ST E
PUYALLUP, WA 98375

000985 LANGSETH ENVIRO SVCS, INC.
7517 PORTLAND AVE.E.
TACOMA WA 98404

SITE	TICKET	GRID	WEIGHMASTER
51	349643		Jo I

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/14/09	08/14/09	15:21	15:34		

REFERENCE	ORIGIN

Scale 1 Gross Wt. 10020 LB
Scale 2 Tare Wt. 9240 LB
Net Weight 780 LB

Inbound - Charge ticket

QTY	UNIT	DESCRIPTION
0.39	TON	07 REGULAR DEMOLITIO

Operating hours 8AM to 5:45PM 7 days a week.
Hidden Valley Transfer Station

SIGNATURE

BATTERY SYSTEMS *The Single Source Solution!*

P.O. Box 90906
Long Beach, CA 90809-0906

249948

PICK UP MEMO

DATE 8/10/01

TO: LANGSTON DAVID

QTY	DESCRIPTION
2	STEEL CAGE
4	AUTO BATTERIES
	HAZARDOUS MATERIAL LICENSE #131148
	Batteries Disposed of at RSR, 720 S. 7th Ave., City of Industry, CA 91764, EPA #CAD066233966 or Exide, 2700 S. Indiana, Los Angeles, CA 90023, EPA #CAD097854541
	BATTERIES, WET, FILLED WITH ACID CLASS 8 • I.D. NO. UN2794, PG111 EMERGENCY PHONE NUMBER (800) 424-9300 CHEMTREC

RECEIVED BY

PRS Group, Inc
3003 Taylor Way
Tacoma, WA 98421
Phone #253 383-4175

Date
8/13/2009

Langseth Environmental
7517 Portland Ave. Suite A
Tacoma, WA 98404

PRS Job #	P.O. No.			Entry Log #
	Pro Vac			31496

Item	Quantity	Description		
Oily Water	800	Gallons		
Sludge	3	Ton(s)		

Hawes's Site
411 - 93rd Ave E

APPENDIX B

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

August 23, 2011

Mr. Alan J. Wertjes
1800 Cooper Point Road, Building 3
Olympia, Washington 98502

Re: Further Action at the following Site:

- **Site Name:** John's Auto Wrecking
- **Site Address:** 411 93rd Avenue Southeast, Olympia, Washington 98501-9701
- **Facility/Site No.:** 57665495
- **VCP Project No.:** SW1127

Dear Mr. Wertjes:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the John's Auto Wrecking facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Total petroleum hydrocarbons (TPH) in the oil-range (TPH-O) into the Soil.
- Volatile Organic Compounds into the Soil.
- Glycol into the Soil.
- Polychlorinated Biphenyls (PCBs) into the Soil.

- Metals into the Soil.
- Petroleum Hydrocarbons into the Groundwater.
- Volatile Organic Compounds into the Groundwater.
- Glycol into the Groundwater.
- Metals into the Groundwater.

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Robinson Noble Saltbush, Inc., **Site Remediation of the Havens Property (aka Johns Auto Wrecking), 411 93rd Avenue SE, Olympia, Washington,** dated December 10, 2009.

2. Robinson Noble Saltbush, Inc., **Site Investigation/characterization, Havens Property (aka) Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington,** dated April 21, 2009.

3. Department of Ecology Response Letter, **Site Investigation Work Plan Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington prepared by Associated Environmental Group, LLC, dated June 15, 2006,** dated June 26, 2006.

4. Associated Environmental Group, LLC, **Site Investigation Work Plan Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington,** dated June 15, 2006.

5. Department of Ecology Opinion Letter, **Opinion Pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the following Hazardous Waste Site: John's Auto Wrecking,** dated February 23, 2006.

6. Associated Environmental Group, LLC, **Site Investigation Work Plan Johns Auto Wrecking, 411 93rd Avenue SE, Olympia, Washington,** dated June 15, 2005.

7. EarthSafe Environmental, **Sampling and Analysis Plan, Johns Auto Wrecking and Towing,** received June 7, 2002.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-6365.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A.**

The Site is located at 411 93rd Avenue SE in Olympia, Washington approximately 0.5 miles southeast of the Olympia Regional Airport. The 15-acre Site is comprised of six tax parcels, and operated as an automobile wrecking yard for approximately 22 years until its closure sometime in the early 2000s. A perennial creek named Hopkins Ditch (Salmon Creek) runs across the southern portion of the Site. Almost half the Site lies within the 300-foot High Groundwater Buffer, the Hopkins Ditch Wetland, or wetland buffer identified on the Thurston County GeoData Center Website. The Site has a shallow groundwater table and two areas of the Site are identified as High Groundwater Hazards, one in the southwest corner of parcel 12723210000 and the other in the southeast corner of parcel 12723210400 and the northeast corner of parcel 12723210700. Approximately 50 percent of the parcels were located within the High Groundwater Hazards buffer area. Groundwater hazard areas have a history of flooding events and impacting groundwater.

In March 2002, Thurston County Environmental Health Department (TCEH) issued a *Notice of Violation - Order to Correct* Letter to John's Auto Wrecking for several hazardous materials and state-regulated dangerous waste storage issues. TCEH subsequently performed a Site Hazard Assessment (SHA) and the Site was determined to have a ranking of 1 in February 2004. In June 2004, EarthSafe Environmental produced a remedial investigation and cleanup work plan, identifying six major areas of concern (AOCs). The Site was entered into the Voluntary Cleanup Program (VCP) under VCP account number SW0652 in March 2005. In June 2005, Associated Environmental

Group LLC (AEG) provided a Site characterization work plan for Ecology review. In February 2006, Ecology provided a Further Action Opinion Letter detailing deficiencies in the AEG work plan. In June 2006, AEG submitted another work plan for review. Also in June 2006, Ecology reviewed the plan and provided additional comments detailing the lack of response to Ecology's earlier 2006 comments. In September 2007, Ecology terminated the VCP agreement due to lack of activity.

Sometime around 2007, the Site was cleared of most of the wrecked vehicles, batteries, tires, hazardous material, dangerous waste, and other associated debris that resulted in the original 2002 TCEH complaint.

In April 2009, Robinson, Noble and Saltbush, Inc. (Robinson) conducted Site investigation activities. Robinson identified a total of nine AOCs based on the past locations of major Site operations. TPH-O soil contamination above the applicable MTCA Method A Soil Cleanup Level (CUL) for unrestricted land uses was identified in two areas: AOC 1 and AOC 6 (see Figure 2). Robinson also advanced 11 borings, B-1 through B-11. Borings B-2, B-4, B-8, and B-10 did not appear to be associated with any of the previously identified AOCs and no specific rationale was provided in the report to explain why those specific locations were selected.

In August 2009, Robinson conducted remediation activities at the Site. Robinson documented the removal of 800 gallons of "used" oil, 3 tons of sludge, two large industrial lead-acid batteries, four automotive batteries, and several empty containers ranging in volume from a 1,300-gallon steel above-ground storage tank to plastic 5-gallon buckets. The "used" oil and sludge were stored in these various containers around the Site. The wastes were characterized then disposed of at the appropriate disposal facilities. Robinson also excavated and removed petroleum-contaminated soil (PCS) exceeding the applicable MTCA Method A CULs from two locations on the Site. A total of 4.8 tons of PCS was excavated and transported to the Thurston County Public Works Waste and Recovery Center in Olympia, Washington. Robinson collected a soil confirmation sample from each location; however, the confirmation samples were not linked to any specific contaminated sample and the relationship to the original contaminated sample was ambiguous. The size of the excavation areas was not discussed and the number of samples collected may not have been adequate to delineating the PCS area.

In July 2010, the Estate of John Havens (former owner of John's Auto Wrecking) received a *Resolution of Notice of Violation* Letter from TCEH acknowledging the 2002 violations had been satisfactorily resolved. The Site was re-entered into the VCP in August 2010 and the two interim investigation reports by Robinson describing the

February 2011 and August 2010 remedial investigation activities were submitted to Ecology for review. Ecology understands that there is no current business or remedial activity of any kind occurring at the Site.

Based on a review of the available information, Ecology has the following comments:

1. Ecology has determined previous investigations were insufficient in determining the extent of potential contamination associated with the AOCs identified at the Site. The nature of the auto salvage operations, the longevity of those operations, the hazardous materials used and dangerous wastes generated by salvage activities, and the typical effects of those operations on the physical and environmental Site conditions requires a more comprehensive evaluation of all Site media. The approach used by Robinson to evaluate the Site appeared to be a focused environmental investigation of the 15-acre Site, with emphasis on smaller AOCs within the Site. Aerial imagery over a period of 14 years indicated extensive areas of each of the parcels on the Site had some aspect of automobile salvage or storage. Previous Site visits by Ecology personnel have documented extensive soil staining from fluids leaking out of salvage vehicles or containers and dangerous waste storage issues throughout the Site. During a Site visit in December 2010, the Ecology Site manager observed extensive dark soil staining across the Site, smaller piles of tires, several piles that included debris, empty propane cylinders, and rusting metal, partial salvaged car bodies, open surface water with no storm water runoff controls, two piles, one for creosoted timbers and one for galvanized metals, and oil-stained concrete floors and pads. These potential sources of contamination should be evaluated and removed. A comprehensive Site history needs to be developed for the Site to include activity, waste products and amounts generated, history of waste handling and storage practices, longevity of that operation at that location, spills, and types of activities and practices of previous owners. Ecology does not believe the Site has been sufficiently delineated to rule out possible contamination within the AOCs or at other areas of the Site. Ecology recommends that sufficient samples be collected to delineate the Site. The United States Environmental Protection Agency (EPA) recommends automobile salvage yard processes should be evaluated for the following compounds: acetylene gas, common solvents, rubber, compressed oxygen, automotive fluids, degreasing agents, gasoline, hydraulic oils, fuel additives, diesel fuels, common lubricants, asbestos, lead, and sulfuric acid. In areas where waste oil storage and burning of debris was known or suspected to have occurred, the soil should be evaluated for the presence of polycyclic aromatic hydrocarbons (PAHs). If the evaluation indicates the salvage processes used or produced one or more of the compounds listed above, then those compounds should be analyzed for during the Site characterization. Unless documentation can be provided to a disqualify specific constituents of concern

(COCs) from further evaluation, specific laboratory analysis should be run for the following COCs: cyanide, priority pollutant organic (volatiles, semi-volatiles, pesticide/PCBs), TPH, fuel additives, heavy metals (antimony, arsenic, beryllium, cadmium, chromium [hexavalent & total], copper, lead, mercury, nickel, selenium, silver, thallium, and zinc). Ecology recommends analysis of TPH for diesel and oil range hydrocarbons be conducted and reported to conform to *Technical Memoranda #4, Determining Compliance with Method A Cleanup Levels for Diesel and Heavy Oil*, which can be found at http://www.ecy.wa.gov/programs/tcp/policies/tcppoly.html.

2. According to the monitoring well logs in the December 2010 Robinson report, monitoring wells MW-1 and MW-2 were improperly screened to identify petroleum hydrocarbon contamination on the groundwater surface. The static water level was measured above the top of the well screens. Ecology recommends the well screen interval be corrected or the wells abandoned and re-installed with the correct well screen intervals.

3. Groundwater was sampled from all borings. Borings B-1 and B-6 analytical results indicated there was no groundwater contamination caused by the evaluated COCs; however, these two borings were not collocated with the contaminated locations (Test Pit TP1A and TP6A) where PCS above the applicable MTCA Method A Soil CULs was found. Ecology does not consider those groundwater analytical results representative of groundwater at those PCS locations (Please note that no logs or other details of the test pit investigations were provided for Ecology review). Ecology recommends that the groundwater at previous PCS locations TP1A and TP6A be evaluated.

4. Given the shallow groundwater table and concerns for potential impacts, Ecology recommends a minimum of six groundwater monitoring wells in addition to the three monitoring wells already on the Site. According to Ecology's *Guidance on Sampling and Data Analysis Methods* (Publication No. 94-49) "Ecology expects that a hydrogeological investigation will be conducted at any site where (1) soil contamination is found within 10 feet of the groundwater table and there is permeable soil, or (2) when a soil contaminant is potentially mobile considering the site's geological setting, particularly if there is a high concentration of contamination relative to the groundwater standard". As stated in comment 3 above, one well each should be installed at TP1A and TP6A. Ecology also recommends one well each for AOC 3, AOC 5, and AOC 9, and one well located on the east property boundary between parcels 12723210400 and 12723210700 in the identified High Groundwater Hazard area (MW-4). Groundwater should be evaluated via temporary monitoring wells or probes at AOC 2, AOC 4, AOC 7, and AOC 8.

5. AOC numbers 3 and 4 have not been adequately delineated. During a Site visit in December 2010, Ecology personnel observed a partially enclosed, lean-to shed attached to a dilapidated building that housed the former radiator repair and auto shop in AOC 3 and the former hazardous material storage area in AOC 4. While the interior condition of the former radiator repair and auto shop could not be observed, the shed area was open to inspection. The concrete floor of the shed was heavily stained with oils and the staining continued to the edges of the concrete pad. Discussions with other Ecology Waste 2 Resources personnel concerning the condition of the interior of the building provided anecdotal information describing the floor as being in poor condition and heavily stained. Ecology recommends a more detailed study in these two areas to include the soils on the perimeter of the concrete slabs floors and within the floors where conditions indicate a possible pathway to the soil underneath the slabs. Because these areas lie within the designated High Groundwater Hazards buffer, groundwater should be evaluated by at least two groundwater monitoring wells (one well in AOC 3 and the other at the MW-4 location).

   Also, Ecology does not believe AOC 1, AOC 2, AOC 5, AOC 7, AOC 8, and AOC 9 have been adequately investigated. Due to the size of those identified AOCs and the lack of details or information provided concerning the AOCs, Ecology determined the investigation was insufficient for Ecology to properly evaluate and make a determination on the environmental condition of those areas.

6. There is an intermittent pond on parcel 12723210700. In December 2010, Ecology personnel observed the pond and noticed indications that surface water flowed into the pond depression from the surrounding area. The pond had several pieces of metal and rubber debris protruding from the water surface and scattered around the perimeter of the pond. Ecology recommends this feature be evaluated for connectivity to groundwater as well as the surface water runoff pathway; the soil, sediment, and surface water associated this feature should be collected and analyzed for COCs listed in comment 1. Hopkins Ditch was not observed during the Site visit; however, if similar conditions exist at the stream channel, then the soil, sediments, and surface water should also be evaluated at that location.

7. In general, the Ecology reviewer had difficulty identifying the locations where individual soil samples were collected from with any great accuracy within any of the AOCs. The scale at which these areas were mapped and the description of the local conditions of a sample location was not sufficient to allow for a determination to be made on the rationale to choose a particular location versus another location as representative of the AOC. A Site conceptual model should be developed and potential vulnerable receptors be identified for the Site. For this Site, Ecology

recommends that two cross-sections be developed for the Site; one depicting the north-south orientation of the Site to include AOC 1, AOC 5, AOC 9, the shallow pond, AOC 9, and Hopkins Ditch. The other cross-section should be a east-west cross-section from MW-4 through AOC 5 to AOC 6. Furthermore, based on the size of the identified AOCs on Figure 2, the AOCs needed to be evaluated by more than just one or two soil samples. A greater level of map detail of the sampling areas is needed to properly evaluate the soil confirmation sample location and validity. Ecology recommends when conducting a focused investigation that the individual AOCs are presented at a sufficient level of detail with a greater resolution than of the Site Map scale. Please include all soil boring and test pit logs. A review of *Chapter 173-340-840 WAC – General Submittal Requirements* and Appendix A of Ecology's *Draft Guidance for Remediation of Petroleum Contaminated Sites* (Publication No. 10-09-057) may be helpful.

8. All sample analytical data should be provided in summary tables. Confirmation samples should be readily and easily linked to the sample they are supposed to validate, both on an applicable map and summary table. All groundwater data should be presented in a format that will allow for an easy review and comparison to all previous groundwater sampling events.

9. In February 2006, Ecology provided an Opinion Letter stating Ecology had determined the June 15, 2005 proposed work plan by AEG was not likely sufficient to meet the substantive requirements of MTCA. Ecology provided additional recommendations to address the sufficiency issues. Ecology has no record of a revised work plan being submitted for review and approval. Furthermore, the two latest Robinson reports did not implement those recommendations. Ecology recommends that the February 23, 2006 Opinion Letter (letter is attached in Enclosure A) be reviewed and those applicable comments implemented into a new work plan as necessary, in addition to the recommendations listed in this letter. Please provide Ecology with an updated work plan for the remedial activities identified above for review and approval to ensure that the proposed activities will likely meet the substantive requirements of MTCA.

10. In accordance with WAC 173-340-7490, a Terrestrial Ecological Evaluation (TEE) needs to be completed for the Site. Please fill out the TEE form and submit it (along with supporting information, as appropriate) to Ecology for review. The form can be found on our website at http://www.ecy.wa.gov/biblio/ecy090300.html.

11. In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), all data generated for Independent Remedial Actions shall be submitted <u>simultaneously</u> in both a written and electronic

format. For additional information regarding electronic format requirements, see the website http://www.ecy.wa.gov/eim. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy. **Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.** Please be sure to submit all soil and groundwater data collected to date, as well as any future data, in this format. Data collected prior to August 2005 (effective date of this policy) is not required to be submitted; however, you are encouraged to do so if it is available. Be advised that Ecology requires up to two weeks to process the data once it is received.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance you established for the Site do not meet the substantive requirements of MTCA.

Method A CULs for soil and groundwater are being used to characterize the Site. If sediment and/or surface water data are collected, the applicable or relevant and appropriate requirements (such as sediment management standards and surface water criteria) should be used to establish CULs.

Standard points of compliance are being used for the Site. The point of compliance for protection of groundwater will be established in the soils throughout the Site. For soil cleanup levels based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance shall be established in the soils throughout the Site from the ground surface to 15 feet below ground surface. In addition, the point of compliance for the groundwater is established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site does not meet the substantive requirements of MTCA.

The affected Site media must be fully characterized prior to conducting any final cleanup action. For a Site cleanup action to qualify for a no further action opinion, it must meet one or more of the minimum cleanup requirements in WAC 173-340-360(2). Once the full extent of the contamination has been defined, it will be necessary to develop a feasibility study based on the information collected in the characterization phase. The

feasibility study should include all practicable methods of treatment in addressing the Site cleanup. Please note that monitored natural attenuation is a cleanup alternative that must be approved by Ecology before implementation.

4. Cleanup.

Ecology has determined the cleanup you performed does not meet any cleanup standards at the Site.

Ecology has determined cleanup actions at the Site are insufficient due to the inadequacy of the Site characterization. While much of the salvage material and some PCS have been removed from the Site, some material still remains. Visual observations suggest PCS in excess of the applicable MTCA CULs may still remain in place beneath several areas of the Site and there are many debris piles, some salvage vehicles, and salvage debris visible in the pond that may still contribute to on-going environmental contamination.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (360) 407-7404 or e-mail at erad461@ecy.wa.gov.

Sincerely,

Eugene Radcliff, L.G.
Site Manager
SWRO Toxics Cleanup Program

GER/ksc:Johns Auto Wrecking Site FA

Enclosures (4): A – Description and Diagrams of the Site
Figure 1 Vicinity Map
Figure 2 Aerial Photo and Identified Areas of Concern
Figure 3 Test Pits and Boring Locations Photo
Figure 2 Monitoring Well and Previous Test Pit and Boring Location Map
Letter Department of Ecology Opinion Letter

By certified mail: (7010 1670 0002 4158 8967)

cc: Mr. Richard A. Bieber, Robinson Noble Saltbush, Inc.
Mr. Patrick Soderberg, Thurston County Environmental Health Division
Scott Rose – Ecology
Dolores Mitchell – Ecology (without enclosures)

Enclosure A

Description and Diagrams of the Site

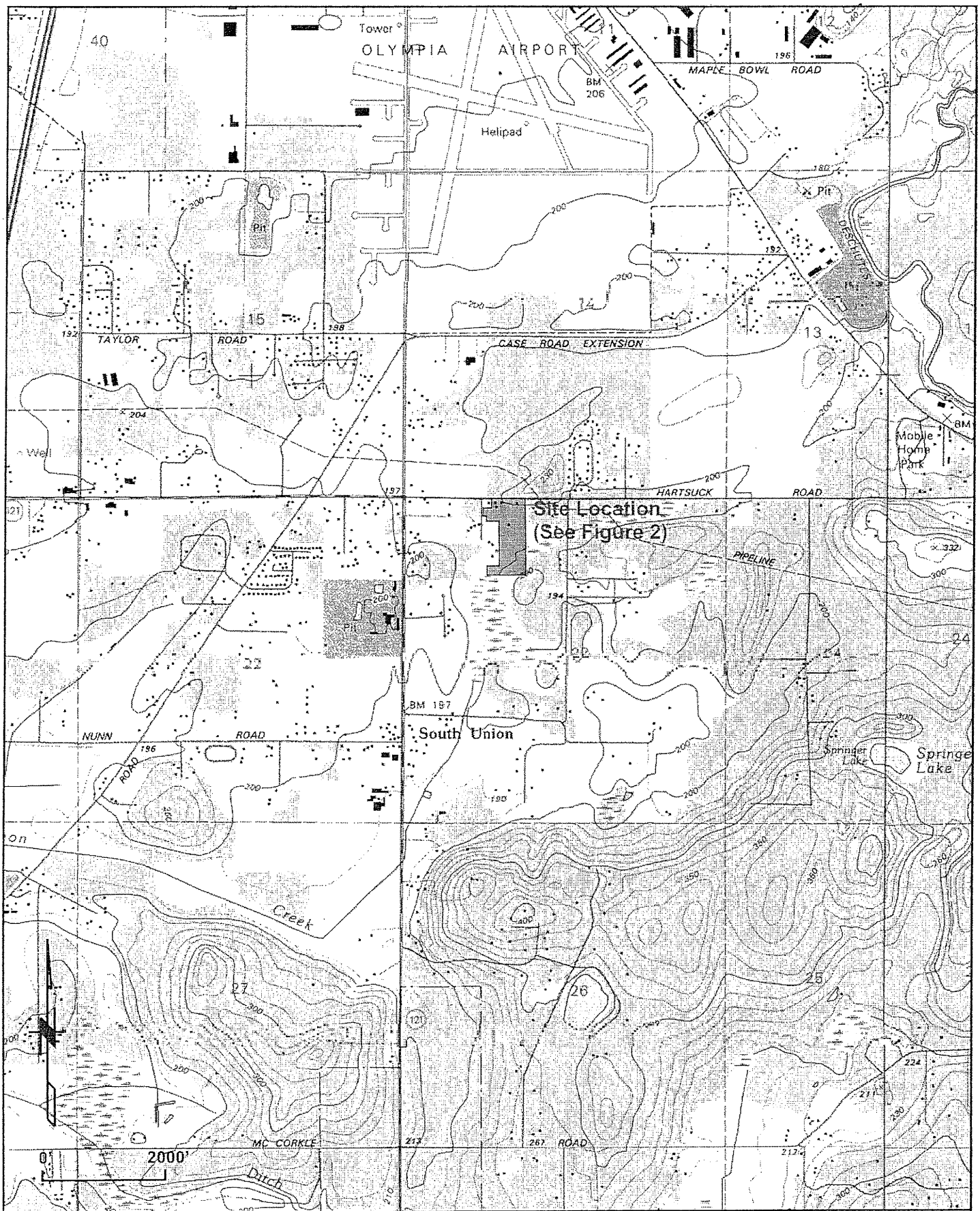
Site Description

Media of Concern: Soil and Groundwater

The John's Auto Wrecking (Site) is located at 411 93rd Avenue Southeast, Olympia, Thurston County, Washington (see Figure 1). The Site has been zoned for light industrial purposes and was as an auto salvage yard for approximately 22 years. The parcel on which the facility is located encompasses approximately 16 acres. The northern most area of the property contains five buildings used in the various salvage operations. In the middle portion of the Site, there was a large accumulation of tires taken from the salvage vehicles and a pond just to the southeast of the tires. Various other salvage operation areas were inadequately defined and scattered about the Site. A stream runs roughly east to west across the southern portion of the Site. The Site is bordered on the north by 93rd Avenue Southeast, on the east by undeveloped residential and light industrial properties, on the south by undeveloped residential properties, and on the West by residential and undeveloped light industrial properties. The Thurston County Assessor's office notes the John's Auto Wrecking Site has assigned tax parcel numbers of 12723210100, 12723210200, 12723210400, 12723210401, 12723210700, and 12723210000.

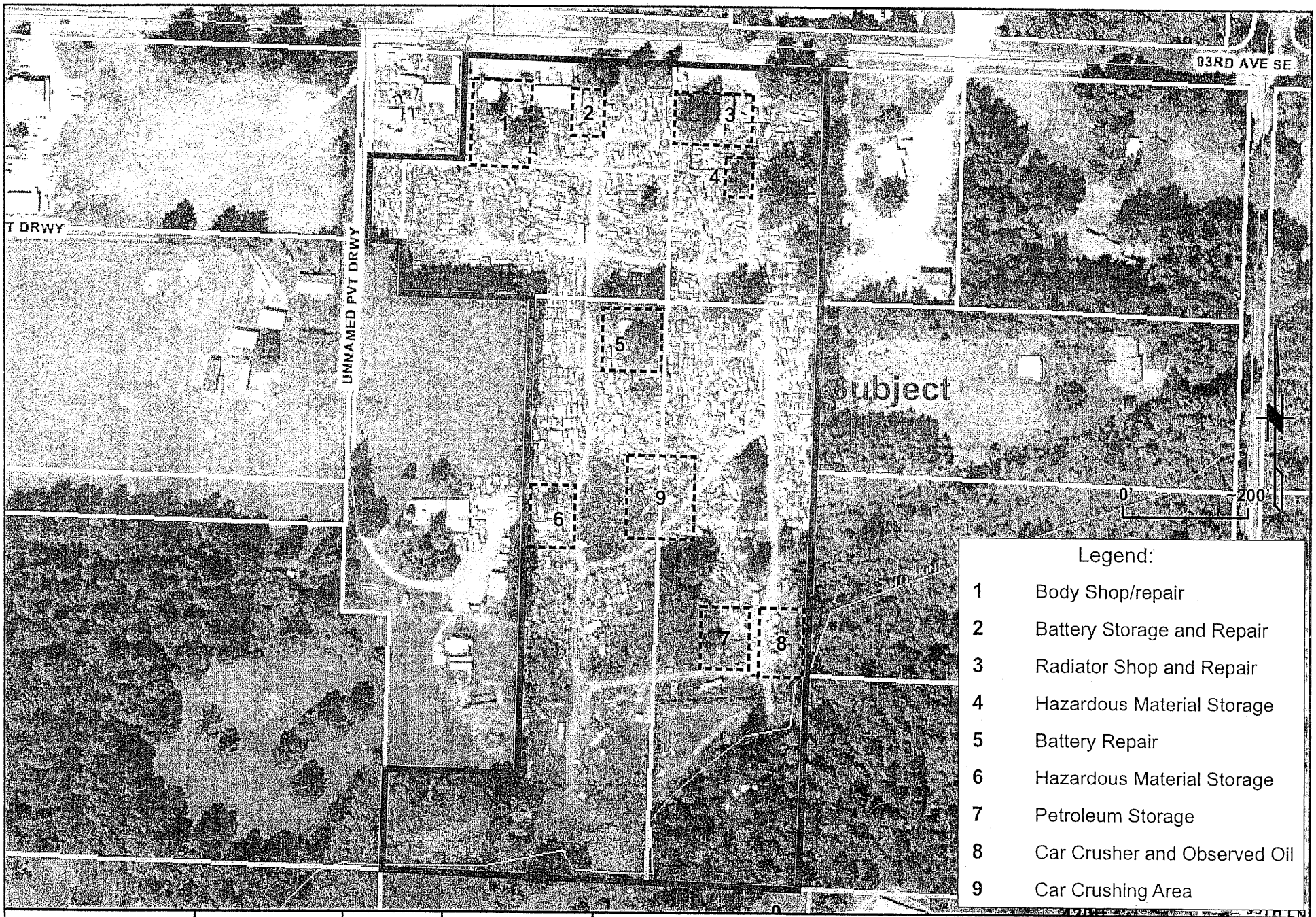
The Site lies in a glacial outwash plain about 0.5 miles southeast of the Olympia Regional Airport. The Site is located in the Upper Chehalis Watershed and is in the Salmon Creek sub-watershed. The Site soils are described as Nisqually loam soil that is typified by 0-3 percent slopes. The groundwater is reported to be less than 10 feet below ground surface and the Site is located in an identified high groundwater hazard area that is prone to flooding. Contaminated surface soil located at the above areas of concern has the potential to impact shallow groundwater beneath the Site.

The Site is currently not in use but still has some potential contamination sources present in the salvage yard. Previous investigations, that have been very limited in scope, have found petroleum contamination in the soil that exceeds the state cleanup standard and those areas of soil contamination have been reported to have been removed. Potential sources of contamination are easily observed when walking about the Site and those areas have not been reported as being subject to any environmental investigation. The eastern and southern boundary areas of the Site have not been adequately investigated to determine if contamination has left the salvage yard parcels.

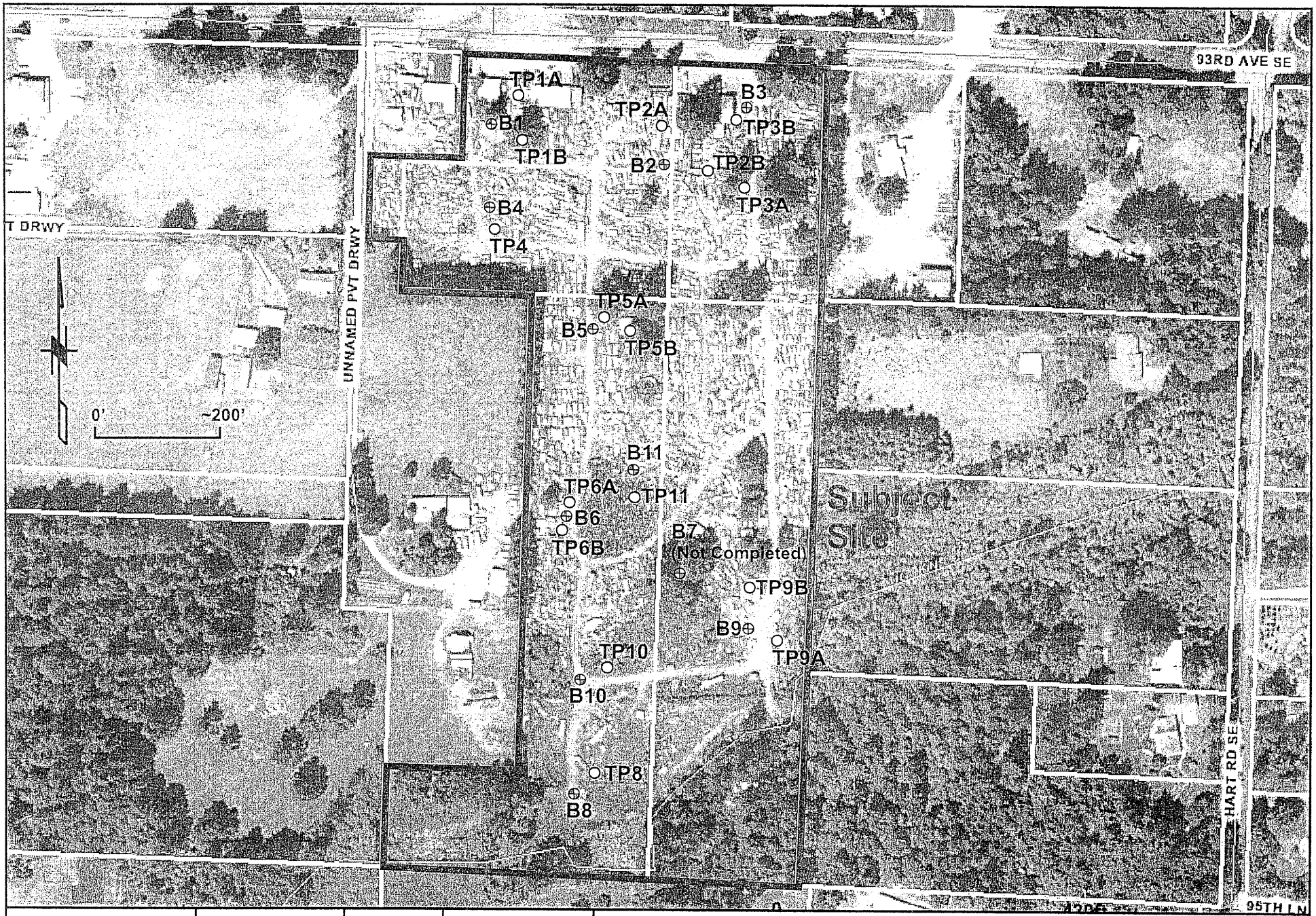


ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Basemap taken from USGS Maytown Quad.	PM: RAB April 2009	Thurston County 2491-001B	T 17 N/R 02 W - 23 Scale 1 " = 2000'

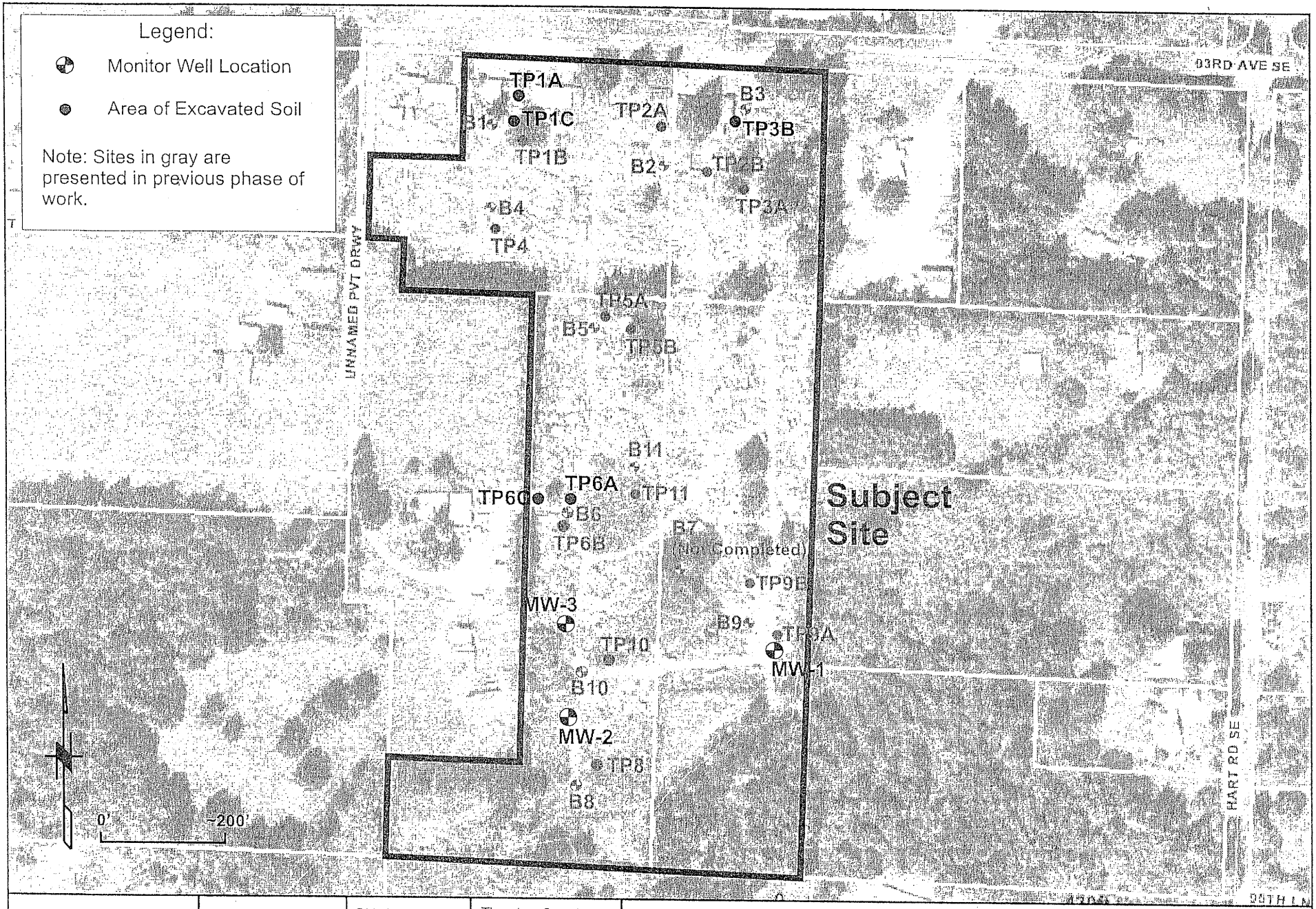
Figure 1
Vicinity Map
Havens Property: 93rd Ave SE, Oly/Site Characterization



ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Image taken from Thurston County GIS Website	PM: RAB April 2009 2491-001B	Thurston County T 17 N/R 02 W - 23 Scale 1" = ~200'	Figure 2 Aerial Photo and Identified Areas of Concern Havens Property: 93rd Ave SE, Oly/Site Characterization



ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Image taken from Thurston County GIS Website	PM: RAB April 2009 2491-001B	Thurston County T 17 N/R 02 W - 23 Scale 1" = ~200'	Figure 3 Test Pits and Boring Locations Photo Havens Property: 93rd Ave SE, Oly/Site Characterization



ROBINSON NOBLE SALTBUSH INC. GROUNDWATER & ENVIRONMENTAL SCIENTISTS	Note: Image taken from Thurston County GIS Website	PM: RAB December 2009 2491-001C	Thurston County T 17 N/R 02 W - 23 Scale 1" = ~200'	Figure 2 Monitor Well and Previous Test Pit and Boring Location Map Havens Property: 93rd Ave SE, Olympia/Site Remediation

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

CERTIFIED MAIL

February 23, 2006

Mr. John Havens
8118 Spurgeon Creek Road
Olympia, WA 98513

Re: Opinion pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the following Hazardous Waste Site:

- Name: John's Auto Wrecking
- Address: 411 93rd Avenue SE, Olympia, WA
- Facility/Site No.: 57665495
- VCP No.: SWO652

Dear Mr. Havens:

Thank you for submitting documents regarding your proposed remedial action for John's Auto Wrecking (Site) for review by the Washington State Department of Ecology (Ecology) under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding whether your proposed remedial action is likely to be sufficient to meet the specific substantive requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Petroleum Hydrocarbons in Soil
- Volatile Organic Compounds in Soil
- Glycol in Soil
- Polychlorinated Biphenyls in Soil
- Metals in Soil
- Petroleum Hydrocarbons in Groundwater
- Volatile Organic Compounds in Groundwater
- Glycol in Groundwater
- Metals in Groundwater

regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Petroleum Hydrocarbons in Soil
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- Petroleum Hydrocarbons in Groundwater
- Volatile Organic Compounds in Groundwater
- Glycol in Groundwater
- Metals in Groundwater

Ecology requires determination of the lateral and vertical extent of contaminants in soil and groundwater in excess of the MTCA Cleanup Level. The Site Characterization Work Plan lacks adequate detail to achieve this requirement. Please submit a revised plan that also addresses the following comments:

a) The locations and number of samples are not sufficient to characterize the above 11 Areas of Concern (AOC). Constituents of concern (COCs) should be developed for each AOC and a summary table prepared that details the AOC, sample number, COCs, analyses methods selected for each sample, sample depths, sample collection method (e.g. hand auger, direct-push, etc.).

b) Soil samples should be collected using a grid system within each AOC. The density of the grid spacing should be appropriate to adequately characterize each of the AOCs. It is recognized that different grid spacing will probably be appropriate (e.g. crusher areas will require a denser grid than AOC-11 – car storage area).

c) Additional detail describing sample depths and the rationale for the depths chosen is necessary.

d) Soil sample, groundwater sample, and monitoring well locations should be shown on a map of the site. Sample locations within buildings should also be shown on detail maps.

e) Boring logs should be prepared for all borings (including hand auger borings).

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(i) and WAC 173-340-515(5).

This opinion does not resolve a person's liability to the state under MTCA or protect a person from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). The opinion is advisory only and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your proposed remedial action(s):

1. June 15, 2005, Associated Environmental Group, LLC. Site Characterization Work Plan, John's Auto Wrecking, 437 93rd Avenue SE, Olympia, Washington.

The reports listed above will be kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. Appointments can be made by calling the SWRO resource contact, Leslie Koziara, at (360) 407-6365.

The Site is defined by the extent of contamination caused by the following release(s):

- Petroleum Hydrocarbons in Soil
- Volatile Organic Compounds in Soil
- Glycol in Soil
- Polychlorinated Biphenyls in Soil
- Metals in Soil
- Petroleum Hydrocarbons in Groundwater
- Volatile Organic Compounds in Groundwater
- Glycol in Groundwater
- Metals in Groundwater

The Site is more particularly described in Enclosure A to this letter which includes a detailed Site diagram. The description of the Site is based solely on the information contained in the referenced documents.

Based on a review of your proposed remedial action and supporting documentation listed above, **Ecology has determined that the proposed remedial action <u>is not</u> likely to be sufficient to meet the specific substantive requirements contained in MTCA and its implementing**

opinion under the VCP. **This letter also does not provide an opinion regarding the sufficiency of any other remedial action proposed for or conducted at the Site.**

Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me at (360) 407-6247 or via e-mail at stee461@ecy.wa.gov.

Sincerely,

SSTeel

Steve Teel, LHG
Hydrogeologist
Toxics Cleanup Program
Southwest Regional Office

ST/ksc:SW0652 Opinion on Proposed RA

Enclosures:

Cc: Michael S. Chun, General Manager/Principal, Associated Environmental Group LLC
Patrick Soderberg, Thurston County Health Department, Environmental Health Division
Gerald Tousley, Thurston County Health Department, Environmental Health Division
Chuck Cline – Ecology
Robert Warren – Ecology
Trish Akana – Ecology (SW0652)

f) It is recommended that soil samples for volatile organic compound analyses be collected and prepared using EPA Method 5035A.

g) Detail needs to be added discussing how wash/decontamination water will be disposed of.

h) Additional detail needs to be provided on how hand auger samples will be collected and transferred from the auger to the sample container.

i) How will permanent monitoring wells be surveyed? How many monitoring wells will be installed? What is the rationale for determining the location and number of monitoring wells?

j) The sampling plan only lists benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene and methyl tertiary butyl ether (MTBE) as constituents analyzed by EPA Method 8260. Because the site was used for car repairs, which could have utilized solvents, it will be necessary to include the full VOC constituent list in the sampling plan, particularly for the car repair and crusher areas. Glycol compounds need to also be added to the constituent list at any location suspected to contain radiator or brake fluids.

k) Metals analyses should include lead, arsenic, cadmium, chromium, mercury, nickel, zinc, and copper. Mercury was widely used in automobile convenience lighting switches from the early 1970s to 2002.

l) The site address in the title is incorrect and should be changed to "411" from "437".

In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted in both a written and electronic format. Additional information regarding electronic format requirements, see the website http://www.ecy.wa.gov/eim. All laboratory analyses shall be performed by the State of Washington Certified Laboratory for each analytical method used.

This opinion does not represent a determination by Ecology that the proposed remedial action will be sufficient to characterize and address the specified contamination at the Site or that no further remedial action will be required at the Site upon completion of the proposed remedial action. To obtain either of these opinions, you must submit an independent remedial action report to Ecology upon completion of the remedial action and request such an

ENCLOSURE A

The 15-acre site is located south of Tumwater and has been used as a wrecking yard supporting towing operations and related businesses for about 24 years. Site buildings/areas include a body/repair shop, possible battery storage area, former radiator shop, hazardous materials storage area, battery refurbishing shed, car crusher areas, and the car storage yard. A ditch (Hopkins Ditch) and a wetland are located in the southern portion of the property.

An inspection of the facility by Thurston County Environmental Health Division (TCEHD) in October 2001 concluded that the facility was out of compliance due to improper hazardous waste storage and improper disposal of solid waste. During a follow-up visit by TCEHD in February 2002, junk cars were observed in areas of standing water in the wetlands/ditch area. Drums containing crushing fluids (oil, gasoline, and hydraulic fluids) were also overflowing (from rain water) and discharging to the ground. A Site Hazard Assessment (SHA) was completed for the site and the ranking was determined to be a 1.

The following environmental concerns are present at the site:

Soil Contamination from Junkyard Past Practices: Limited June 2002 soil sampling results from a gasoline spill area showed gasoline and total xylenes concentrations above the MTCA Method A Cleanup Level for Unrestricted Uses. Based on observations from TCEHD staff and Ecology's review, 11 areas of concern are identified at the site: 1) body shop/repair area; 2) potential battery storage area; 3) old radiator shop/current repair area; 4) hazardous materials storage area "A"; 5) battery refurbishing/storage shed; 6) hazardous materials storage area "B"; 7) gasoline spill area; 8) former crusher area; 9) recent crusher area; 10) car storage area in the ditch/wetland; and, 11) general car storage area (north of the ditch/wetland).

Groundwater: Contaminated surface soil located at the above areas of concern has the potential to have impacted shallow groundwater beneath the site. Shallow groundwater is estimated to fluctuate seasonally from above the ground surface to less than ten feet below ground surface.

ATTACHMENTS (from consultant report)
"Proposed Work" Figure

ROBINSON
NOBLE

HAVENS PROPERTY
(aka) JOHNS AUTO WRECKING SITE
411 93RD AVENUE SE, OLYMPIA, WASHINGTON
DRAFT WORK PLAN
FOR SUPPLEMENTAL SITE INVESTIGATION

FEBRUARY 2012

by

Richard A. Bieber, LG
Senior Project Geologist

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HAVENS PROPERTY (aka) JOHNS AUTO WRECKING SITE 411 93RD AVENUE SE, OLYMPIA, WASHINGTON DRAFT WORK PLAN FOR SUPPLEMENTAL SITE INVESTIGATION February 2012

HAVENS PROPERTY (aka) JOHNS AUTO WRECKING SITE 411 93RD AVENUE SE, OLYMPIA, WASHINGTON DRAFT WORK PLAN FOR SUPPLEMENTAL SITE INVESTIGATION February 2012

Overview of Site and Purpose of Work Plan

The purpose of this document is to respond to the Washington State Department of Ecology's (Ecology) opinion letter dated August 23, 2011 concerning further cleanup actions at the subject site and also to propose a work plan for satisfying Ecology's requirements for supplemental site investigation and clean up.

The 15-acre subject site, which served as a wrecking yard and supported towing operations for approximately 22 years, was inspected by the Thurston County Environmental Health Division (County) in October 2001. The County identified nine distinct Areas of Concern (AOCs) for the site (Figure 1). A site hazard assessment was completed by the County, and the site was ranked as a "top priority" site. In 2005, the "Johns Auto Wrecking" site was listed in Ecology's Voluntary Cleanup Program (VCP) database as VCP Number SW1127. Figure 1 is a site plan layout showing the AOC and general site features.

The site has been characterized and sampled several times since 2001. To date, the only confirmed contaminant releases are TPH and PCBs in soil and several metals in both soil and groundwater. Other potential contaminants have not been detected in soil or groundwater. Souls previously identified with concentrations of target analytes which exceeded respective cleanup limits have been removed from the site. This work plan will be consistent with MTCA requirements (i.e., WAC 173-340-900 and Table 830-1) required testing for petroleum releases, but in light of the fact that considerable work has already been completed at the site, we are recommending a streamlined, abbreviated approach emphasizing known contaminants and the presence or absence of key "indicator" chemicals of concern. This plan also emphasizes further characterization of only a portion of the nine AOCs cited above.

The following discussion describes what tasks are being proposed for the site including each of the site AOC. Every effort has been made to streamline and combine tasks or AOCs where possible to eliminate unnecessary expenditure of cost or effort.

Task 1: Preconstruction Meeting and Site Clearing Support

Prior to initiation of drilling activities, we advise a project status or pre-construction meeting to include Ecology. It is our recommendation, given the site's history within the VCP program, that we allow time for Ecology to provide comments regarding the plan as proposed. Depending on the input from Ecology, adjustments to the drilling and sampling may need to be addressed. Having a pre-construction meeting will allow a chance for those changes to be discussed, finalized, and incorporated. The goal of this work plan is to set a strong baseline of understanding at the site to provide a clear pathway to regulatory closure.

To facilitate the proposed investigation, it is recommended the site be cleared of most of the standing invasive vegetation (Himalayan blackberry and scotch broom). In addition, it is recom-

mended the remaining miscellaneous debris noted during our recent site visit be removed. It is anticipated that much, if not all, of the identified debris is considered solid waste rather than hazardous waste. As such, these removal activities can be performed by any suitable clearing and hauling company. While this material should be removed from the site, in general, it is not likely a source material. Special care should be taken to remove all debris, including timbers, metal roofing, and fencing, from the intermittent stream and wetland buffer. These materials, if left in place, could contribute to potential degradation of the stream and wetland ecosystems.

Ecology has requested that soil and groundwater samples be collected within the footprint of the main garage area on the northeast corner of the property. Therefore, it is recommended that the remaining structures on site be demolished and removed from the site. The buildings cover a large portion of the property that should be incorporated into the next phase of the investigation. While, in some cases, samples can be collected with the buildings in place, standing buildings will slow work progress and, in some cases, necessitate additional borings to be drilled to assess covered or inaccessible areas. Additionally, the buildings provide access and cover for the illegal dumping of material at the subject site. These illegal dumping activities have contributed several piles of solid waste and abandoned vehicle hulks in the northern portion of the property. It will be necessary, whether or not the buildings are removed, to better secure the site to prevent additional illegal dumping.

Task 2: Site Characterization

General Field Procedures

Field work described in this work plan should be completed in multiple phases or "tiers" to allow for a review of collected analytical data, thus allowing for more streamlined data collection for the remainder of the investigation. Given the nature of the sediments previously observed at the site, we plan to use a direct-push drilling rig for the advancement of soil borings, setting of temporary screens, and where proposed, the completion of monitoring wells. Given the relatively shallow nature of groundwater in the area, we propose that wells be completed with one- to two-inch PVC pre-packed screens. These screens will allow for proper well development and groundwater sample collection. Well screen diameter and length will be determined in the field depending on observed conditions and the capabilities of the drilling rig at each location. During groundwater sampling, field parameters including conductivity, DO, ORP, and pH will be measured using a field meter.

The direct-push drilling rig will provide a nearly continuous core of material encountered in each well bore. Soil sampling will generally be accomplished by selecting two soil samples from each bore hole. A shallow (near surface) sample above the vadose zone and a deeper sample from the top of the groundwater interface will be collected at each boring. Additional soil samples will be collected as and where field screening necessitates. Analysis of the samples will, in general, begin with analysis of the shallow sample, and depending on laboratory results, the deeper sample may or may not be analyzed. Again, this general plan will be adjusted where actual field conditions suggest running both is necessary for proper screening.

As a cost-savings measure going forward, we plan to use NWTPH-HCID as a semi-quantitative screening method for the presence or absence of petroleum hydrocarbons (PHCs) on site. This test will be employed prior to the completion and selection of either NWTPH Gx or NWTPH Dx. Depending on the results of the initial screening, additional analysis will or will not be necessary. We also plan to utilize a mobile laboratory for near real-time in-field analysis. Results col-

lected while in the field can be used to refine the drilling and sampling plan should unexpected material be identified. Additionally, considering a majority of the proposed target analytes are petroleum hydrocarbons, there is a laboratory cost savings using a mobile laboratory. Location-specific changes to this general sampling and analysis plan are presented below.

Area of Concern Determinations

In response to Ecology's August 2011 response letter, we have reviewed the project file, including data collected to date, and propose the following series of investigations. Each of the following subtasks are associated with specific areas of concern as previously identified in our initial scope of work developed in 2008. Prior to our joining the investigation team, previous site activities included a site visit and collection of soil samples in 2002. According to Thurston County Health Department (TCHD) documents at that time, a series of four areas of concern were developed by another contractor in collaboration with TCHD personnel. The information presented in a January 27, 2004 TCHD worksheet (identified in Ecology files) suggests these areas were located on the southern half of the property near active car-crushing activities. It was suggested by TCHD that soil samples collected from the vicinity of these AOCs revealed elevated levels of gasoline-range hydrocarbons and gasoline additives. However, no report was ever submitted, and therefore, this work cannot be referenced or reviewed. Personal correspondence with Patrick Soderberg of TCHD identified these areas as AOCs 7 and 8 as shown in Figure 2 (attached).

Additional AOCs 1-6 and 9 (Figure 2) are located based on a review of previous work completed by AEG in 2006, the TCHD worksheet, and personal correspondence with Mr. Soderberg. During our initial site investigation, we adjusted the locations of some of the soil borings and test pits based on field observations and further discussions on site with Mr. Soderberg. For the purposes of this work plan, we will present the rationale for inclusion or removal of each AOC and subsequent target analytes on a case-by-case basis.

Area of Concern 1 – Body Shop/Auto Repair

Our review of available documents suggests this area was utilized for general auto repair and limited body shop activities. During our initial site walk and subsequent source removal activities, we observed numerous five-gallon buckets with lids (used to store waste oil) stacked along a small area between the house and garage (or outbuilding). A small area of soil staining and distressed vegetation was observed near the location of an overturned bucket. Following the removal of these miscellaneous buckets, we completed a test pit (TP1A) in the area of observed soil staining. At that time, site logistics and overhead utilities prevented us from mobilizing the drill rig to this location for the collection of a water sample. A soil boring (B1) was advanced to the southeast of the observed soil staining on the opposite side of the outbuilding in an area of distressed vegetation. A second test pit was completed in the vicinity of AOC 1 at TP1B in an apparent burn pile area.

From these three sampling locations, four soil samples and one groundwater sample were analyzed for volatile organics, gasoline- and diesel-range hydrocarbons, and metals (arsenic, mercury, cadmium, chromium, lead, nickel, copper and zinc). Only the surface sample collected from TP1A indicated any target analytes above MTCA Method A cleanup limits. Oil was measured in the TP1A surface of 66,700 mg/kg, which is well above MTCA guidelines. A sample collected at the same location at a depth of one foot indicated an oil concentration of 140 mg/kg, which is below the respective MTCA cleanup limit. A second mobilization to the site was scheduled to remove the indentified impacted soils from the TP1A area. During this field effort, a second ar-

ea of stained soil was identified on the south side of the outbuilding and subsequently removed. Two confirmation samples were collected from the base of each excavation area. Laboratory results indicated that impacted soils had been successfully removed.

In their opinion letter, Ecology suggested additional investigation in this area. Specifically, they have requested that a monitoring well be completed at the TP-1A area. We have proposed that at least three additional soil borings be advanced in the area mapped as AOC 1. Two borings will be completed at the locations of the minor soil excavations. These borings will be advanced to groundwater. Two soil and a single groundwater sample will be collected at each location. The groundwater sample will be collected through a temporary screen set in one of the boreholes. A third boring is proposed for the area within the adjacent garage where concrete staining was observed. Depending on the status of the building at the time of the investigation, this boring may or may not be advanced. Target analytes at this location will be limited to volatile organics (due to potential body work completed at this location), gasoline- and diesel-range petroleum hydrocarbons, and BTEX (from vehicle repair). Should diesel-range petroleum hydrocarbons be identified, we will submit the sample for cPAH analysis, a commonly occurring toxic by-product of petroleum combustion. Should any groundwater impacts be observed, a monitoring well will be recommended at that specific location.

Area of Concern 2 – Battery Storage

Area of Concern 2 has been previously identified as a potential battery storage area. The first reference to this area as being utilized for battery storage is a copy of a faxed document dated December 5, 2005 between Patrick Soderberg (TCHD) and Mike Blum (Ecology). The fax appears to be a series of notations made by Mr. Soderberg to Mr. Blum regarding the proposed AOCs and suspected site uses. This specific AOC is listed as "*Battery Storage?"*. Discussions with Mr. Soderberg during our initial site walk did not specifically locate the battery storage area. Therefore, during our initial site investigation, TP2A and B2 were completed near observed distressed vegetation and areas where visual observations suggested a former structure may have stood.

Ecology suggests this area has not been fully characterized. Additionally, they request a groundwater monitoring well be advanced at AOC 2. A further review of historic aerial photos suggests that much of the area identified as AOC 2, as previously described, was covered in cars except for a tree-covered portion along the northern boundary of the AOC. Limiting the AOC to this area reduces its overall size. Therefore, we propose a soil boring be advanced in this tree-covered area, extending to groundwater and two hand augers be advanced to three feet. Two soil samples will be collected at each location with field screening for pH conducted in the field. We propose completing the boring as a two-inch, PVC, pre-packed groundwater monitoring well. Following well development, a groundwater sample will be collected. Target analytes for AOC 2 are limited to a standard suite of metals common to wrecking yard activities (lead, arsenic, cadmium, chromium, mercury, zinc, copper, and nickel) and pH. This well will also provide a greater level of detail for subsequent groundwater flow discussions.

Area of Concern 3 – Radiator Shop/Auto Repair

AOC 3 was previously identified as an "old" radiator shop and auto repair area. During our research, it was determined that this location, and its associated garage structure, was the entry point for many of the cars to the wrecking yard. The area was also used for miscellaneous vehicle repair. Our initial investigation identified areas of suspected petroleum staining on the gravel area east of the associated garage. A surface sample (TP3 surf B) collected from the

stained area revealed an oil concentration of 500 mg/kg, below the MTCA cleanup level of 2,000 mg/kg. Lead was detected in this sample at a concentration of 230 mg/kg. The MTCA cleanup levels for lead in soil are 250 mg/kg. Minor detections of zinc, copper, and nickel were also detected. A groundwater sample was collected from a temporary screen set in boring B3 at the location of TP 3B. Analytical results yielded no evidence of the target analytes above laboratory detection limits. Soil samples were analyzed for gasoline- and diesel-range hydrocarbons, metals, and volatile organics. In addition to the list above, the groundwater sample was analyzed for glycols.

Following our initial investigation, a separate field effort was conducted to remove the observed stained soils (even where identified concentrations did not exceed cleanup limits). During this second mobilization, shallow-stained soils were removed from AOC 3. Additionally, two trenches were completed along the edge of the western and southern edges of the concrete floor, beneath the garage structure. Field screening completed during the trench excavation did not identify any stained soils or petroleum odors associated with a potential release. During these excavations, a representative of TCHD was on site to observe the underlying site conditions. We did not collect a soil sample at this location due to an absence of field screening or other evidence of a suspected release to the observed soils.

Ecology requested additional soil samples be collected in response to observed stained concrete in the garage. Ecology requested at least one (preferably more) soil samples be collected beneath the concrete slab. Additionally, Ecology requests a monitoring well be completed at this location.

At this time, we recommend a series of three additional soil borings be advanced: the first to be advanced on the south side of the concrete floor, the second on the west side, and the third directly through the center of the floor. Depending on the status of the structure, this may not be possible until the building is demolished or stabilized. Two soil samples will be collected from each boring. Groundwater samples will be collected from each boring through temporary screens. Soil samples will be analyzed for gasoline- and diesel-range hydrocarbons, metals, and volatile organics. Groundwater samples will be analyzed for gasoline- and diesel-range hydrocarbons, metals, volatile organics, and glycols. Should diesel-range petroleum hydrocarbons be identified, we will submit the sample for cPAH analysis. A well will be recommended if any of the target analytes are found to exceed MTCA Method A cleanup limits in groundwater.

Area of Concern 4 – Hazardous Waste Storage

Area of Concern 4 formerly contained a small shed used to store hazardous materials. Information provided by Mr. Soderberg estimated the actual area covered by the shed was approximately 96 square feet (shed footprint 8 by 12 feet). Test pit TP3A was completed within the footprint of the former shed. Two soil samples were collected at this location at one and four-feet below ground surface. The soil samples were analyzed for gasoline- and diesel-range hydrocarbons, metals, and volatile organics. The only observed concentration which exceeded the laboratory detection limit was for nickel at 20 mg/kg. Considering the size of this AOC and the testing already completed, we do not recommend additional investigation at this location.

Area of Concern 5 – Battery Storage Shed

Area of Concern 5 is similar in area to AOC4 with a majority of the potential source material located within a small wooden shed or outbuilding. We conducted two test pits and a soil boring at this location. One test pit was completed on the back side of the shed near two large industrial lead acid batteries. The second was completed beneath the shed itself (the shed was ac-

cessible through one open side). The soil samples were analyzed for gasoline- and diesel-range hydrocarbons, metals, volatile organics, and PCBs. None of the analyzed samples were found to contain levels of target analytes above the respective cleanup limits. A surface soil sample collected at TP 5B was found to contain oil at a concentration of 340 mg/kg, below the applicable MTCA cleanup level. The sample was also analyzed for PCBs and results were below laboratory detection limits. The laboratory results from the groundwater sample collected from boring B5 did not contain any target analytes above applicable cleanup limits. Detections of lead and copper were found in the water at concentrations of 11 and 20 µg/L, respectively.

Ecology requests a monitoring well be placed at this location. However, considering the actual size of the potential source area and the results from the previous investigation, we do not consider the addition of a monitoring well at this location to be necessary. We propose that a single boring be advanced to groundwater on the east side of the existing shed for the collection of single soil and groundwater samples. The groundwater sample will be collected through a temporary screen. The soil and groundwater samples will be analyzed for diesel-range petroleum hydrocarbons, PCBs, and lead. Should diesel-range petroleum hydrocarbons be identified, we will submit the sample for cPAH analysis. As with AOC 2, we propose to collect soil pH values in the field during the drilling observations and field screening. If field screening suggests the presence of any target compounds or if laboratory results from an onsite mobile laboratory indicate the presence of target compounds the boring will be completed at a monitoring well. If field conditions and mobile laboratory results are not available and impacts are identified at this location a second mobilization and installation of a monitoring well may be necessary.

Area of Concern 6 – Hazardous Material Storage (Bunker)

Area of Concern 6 formerly contained what appears to be a former covered outbuilding that was used to store hazardous materials. The concrete building foundations are all that remain at the location. During our investigation, we completed two test pits and borings on the east side of the concrete slab. The northern, southern, and western foundation walls were intact with the eastern side missing, presumably to allow access. Sampling was conducted on the east side, assuming any runoff would have infiltrated the ground at this location. Soil sampling completed at test pit TP6A detected both oil and PCBs at concentrations of 61,900 and 0.9 mg/kg, respectively. A deeper sample collected at four feet from this same test pit did not detect oil at concentrations exceeding the laboratory detection limits. Soil samples were analyzed for gasoline- and diesel-range hydrocarbons, metals, volatile organics, and PCBs. A groundwater sample was collected from boring B6 completed adjacent to TP6A. The groundwater results did not indicate any target analytes above laboratory detection limits. Groundwater samples were analyzed for gasoline- and diesel-range hydrocarbons, metals, and volatile organics. The groundwater sample was not analyzed for PCBs.

A second mobilization was completed to remove identified soil hot spots. While soil was being removed from test pit TP6A, a small sump was found in the floor of the concrete bunker. The sump contained a 55-gallon drum cut down to approximately three-quarters size. The drum was used presumably to collect runoff from the concrete slab. Using a backhoe, the excavation contractor removed the drum and approximately one and a half feet of stained "suspect" soil for disposal. Once field screening indicated the suspect impacted material had been removed, a confirmation soil sample was collected from both the sump area (TP6C) and the TP6A locations. The soil sample from TP6A was analyzed for diesel-range petroleum hydrocarbons, PCBs, and cPAHs. There were no detections from the TP6A confirmation sample. The soil sample from the sump area was analyzed for gasoline- and diesel-range hydrocarbons, metals, cPAHs,

PCBs, and volatile organics. The only target analytes detected above laboratory detection limits were copper and zinc, both well below applicable cleanup levels.

Ecology contends the soil boring completed at B6 is not at the same location as the material identified in TP6A. The boring was not completed in the excavation footprint of TP6A, but was completed between TP6A and TP6B which were 15 feet apart. We contend that the boring was as close as field conditions would allow. We do, however, propose that an additional groundwater sample be collected from the "sump" location at TP6C. We propose to field screen the observed soils and collect a groundwater sample from a temporary screen. The groundwater sample will be analyzed for gasoline- and diesel-range hydrocarbons, metals, PCBs, and volatile organics. Should diesel-range petroleum hydrocarbons be identified, we will submit the sample for cPAH analysis.

Area of Concern 7 and 8 – Petroleum Storage and Car Crushing

AOCs 7 and 8 were initially identified as areas with ongoing car-crushing activities and observed oil staining. Information provided by TCHD suggests soil sampling completed in the area identified that a release of petroleum hydrocarbons had occurred somewhere in the vicinity of AOCs 7 and 8. Our sampling in this area was limited to areas identified as potential locations for the car-crushing equipment areas where we observed distressed vegetation. Our initial investigation of the area identified potential metals contamination, and ultimately, a monitoring well was completed at the location of AOC 8. The well was installed and designed to assess metals contamination, as no other target analytes were identified at this location.

Ecology requests that additional soil and groundwater samples be collected from both AOC 7 and AOC 8. Considering the size of the AOCs as drawn, we concur. We propose that a series of three soil borings be completed as drawn on Figure 1. Two soil samples and a groundwater sample will be collected from each location. In addition to the three proposed borings, we propose that a series of four additional near-surface soil samples be collected using a hand auger. The depth of hand-auger drilling will be approximately three feet. Should the hand-auger samples from a particular location reveal target compounds exceeding applicable MTCA cleanup limits, a soil boring and or monitoring well will be completed at that location. Target compounds for these AOCs are gasoline- and diesel-range hydrocarbons and metals for both soil and groundwater. Should diesel-range petroleum hydrocarbons be identified, we will submit the sample for cPAH analysis.

Area of Concern 9 – Car Crushing

Area of Concern 9 was originally thought to be a site used for car-crushing activities. During our initial site walk, we thought evidence of these activities was readily observable. Our investigation was limited to one test pit and one soil boring at this location. Now additional information provided by TCHD records and Ecology files suggests that car-crushing activities may not have actually taken place at this location, but actually occurred further to the southwest. We have, therefore, adjusted the AOC to reflect this new information. Since there is still anecdotal evidence of car crushing at the original AOC 9 location, we have kept this site in the AOC. The AOC now contains two separate areas, which have been designated AOC 9A and AOC 9B.

Ecology requests that additional soil and groundwater samples be collected from this AOC. Considering the new size of AOC9 (A and B), and the numerous possible locations for the car crusher, we concur. We propose a series of four soil borings be completed as drawn on Figure 1, with at least one of the borings from AOC 9A being completed as a monitoring well. Two soil samples and a groundwater sample will be collected from each location. In addition to the four

proposed borings, we propose that a series of four additional near-surface soil samples be collected using a hand auger. Should the hand-auger samples from a particular location reveal target compounds exceeding applicable cleanup limits, a soil boring or monitoring well will be completed at that location. Target compounds for this AOC are gasoline- and diesel-range hydrocarbons and metals for both soil and groundwater. Should diesel-range petroleum hydrocarbons be identified, we will submit the sample for cPAH analysis. The monitoring well will provide an additional monitoring point for the site-specific TEE investigation discussed below.

Terrestrial Ecological Evaluation – Data Considerations

MTCA requires that a Terrestrial Ecological Evaluation (TEE) be conducted at the site to evaluate the potential for contaminant exposure and risk associated with terrestrial wildlife and avian (bird) receptors. Based on our understanding of the site, we believe that a site-specific TEE will be required to satisfy Ecology's requirements due to the fact that each of the 9 AOCs are independent, and some of these areas represent a higher potential for toxicity or risk than others. The supplemental data collection proposed in this work plan has focused on the types of environmental data we will need to complete a site-specific TEE. We will address the AOCs discussed in this work plan with more emphasis on areas of specific concern to ecological receptors. The southernmost portion of the property supports higher quality habitat, including a mapped intermittent stream, a small pond, a wetland area and associated wetland buffer, and a wooded area. Other portions of the site also support some high-quality ecological habitat.

The site-specific TEE will emphasize potential ecological exposure pathways occurring in the upper few inches of stream/wetland sediment and terrestrial soils. Thus we recommend that four stream and four wetland sediment samples (total of eight) be collected in the southern portion of the site using a hand-held (Ponar or Ekman) dredge which will sample the upper six inches or so of sediments. Specific locations will be shown on sampling maps in the final work plan. The streams and wetland area is the site of greatest potential ecological concern.

Regarding chemicals of concern, we recommend that long-lived persistent contaminants such as PAHs, TPH, and metals be emphasized rather than less persistent chemicals (e.g., VOCs or glycols), which are less likely to cause exposure and potential hazard to receptors.

When key indicator chemicals are found on site, we will characterize the specific areas where they are found in a more detailed manner to understand nature and extent of contamination and the potential for ecological exposures to occur. Findings and conclusions from the site-specific TEE will be valuable in identifying whether any further investigation or follow up will be required, or whether the site had been adequately characterized and/or remediated.

Task 3: Meeting and Report

Upon completion of the site characterization, we recommend a project status meeting (potentially including Ecology) for the purpose of presenting our findings and recommendations toward a path forward. Following this meeting, we will provide a technical report detailing findings and conclusions from the data collected (as specified in this work plan) and planned future work (if necessary).

Task 4: VCP Support and EIM Submission

Following the completion of each round of data gathering, we will provide guidance for data submissions within VCP including uploading all collected data to Ecology's Electronic Information Management system (EIM). As part of VCP, Ecology requires that all data collected on

site be submitted via their EIM portal prior to issuance of any closure determination. It is our recommendation to enter all data into EIM as it is collected, from this point forward. This will help prevent any lengthy delays or fees.

The statements, conclusions, and recommendations provided in this report are to be exclusively used within the context of this document. They are based upon generally accepted hydrogeologic and environmental practices and are the result of analysis by Robinson Noble, Inc. staff. This report, and any attachments to it, is for the exclusive use of the Havens Estate. Unless specifically stated in the document, no warranty, expressed or implied, is made.

ROBINSON NOBLE

Note: Image taken from Thurston County GIS Website

PM: RAB
Feburary 2012
2491-001D

Thurston County
T 17 N/R 02 W - 23
Scale 1” = ~200’

Figure 1
Areas of Concern and Proposed Drilling Locations
Havens Property: 93rd Ave SE, Olympia/Site Characterization

Max Wills

From: Radcliff, Eugene (ECY) [mailto:erad461@ECY.WA.GOV]
Sent: Thursday, June 28, 2012 4:15 PM
To: John F. Hildenbrand
Cc: Rose, Scott (ECY)
Subject: Havens Property Work Plan for Supplemental Investigation - SW1127

John:

Thank you for submitting the *Havens Property (aka) Johns Auto Wrecking Site Draft Work Plan* (Plan) dated February 2012 for Ecology review.

I have finished my review of the Plan and as per our telephone conversation, here are my comments. In general, I think the Plan will address most of Ecology's concerns outlined in the August 23, 2011 Further Action Opinion Letter. Here are my comments for the Plan:

- Task 1 – Accepted without comment.
- Task 2 – Accepted with the following comments:

- AOC 4 – Ecology accepts the Robinson Noble, Inc. recommendation to not further characterize this area *unles s* new information from downgradient locations would suggest potential groundwater concerns from that area. It should be noted that this area is in a recognized *High Ground Water Hazard* area.
- AOC 5 – Ecology would recommend the proposed soil/groundwater sample be collected from a downgradient location at the Battery Storage Shed.
- TEE – accepted when characterization of pond (see attached photo) between AOC 9A and AOCs 7 and 8 is considered for evaluation.

- Task 3 – Ecology would welcome the opportunity to provide Ecology's perspective (and comments as needed) for any future planning session concerning additional remedial work need at the Site.
- Task 4 – Accepted without comment.

If you have any questions or comments, please contact me.

Sincerely,

Eugene Radcliff, L.G.
Toxic Cleanup Program-Voluntary Cleanup Program
Washington Department of Ecology
(360) 407-7404
erad461@ecy.wa.gov

APPENDIX C

Libby Environmental, Inc.

4139 Libby Road NE • Olympia, WA 98506-2518

April 19, 2013

Max Wills
Robinson Noble
17625 130th Avenue NE, Suite 102
Woodinville, WA 98072

Dear Mr. Wills:

Please find enclosed the analytical data report for the John Havens Estate Project located in Olympia, Washington. Soil and water samples were analyzed for Hydrocarbon Identification by NWTPH-HCID, Volatile Organic Compounds by EPA Method 8260C, Total & Dissolved Metals Arsenic, Cadmium, Chromium, Lead, Zinc and Copper by EPA Method 7010 Series and Mercury by EPA Method 7471, Ethylene & Propylene Glycol by Method GC-FID, Total Nickel by EPA Method SW846 6010B, Dissolved Nickel by EPA Method 200.7, PCB (Polychlorinated Biphenyls) by EPA Method 8082, TCLP Lead by EPA Method SW846 6010B and Polyaromatic Hydrocarbons (PAH) by EPA Method 8270 from February 25 - April 18, 2013.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. All soil samples are reported on a dry weight basis. An invoice for this analytical work has been sent to Alan Wertjes.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Jamie L. Deyman
President
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@aol.com

www.LibbyEnvironmental.com

Libby Environmental, Inc.

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Heavy Oil (mg/kg)
Method Blank	4/1/13	111	nd	nd	nd	nd
PS1	4/1/13	129	nd	nd	nd	nd
SS2	4/1/13	105	nd	nd	nd	nd
SS3	4/1/13	117	nd	nd	nd	nd
SS4	4/1/13	102	nd	nd	nd	nd
SS5	4/1/13	105	nd	nd	nd	nd
WS6	4/1/13	93	nd	nd	nd	nd
WS7	4/1/13	130	nd	nd	nd	nd
WS8	4/1/13	95	nd	nd	nd	nd
WS8 Dup	4/1/13	121	nd	nd	nd	nd
Practical Quantitation Limit			20	50	100	100

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

Libby Environmental, Inc.

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	4/2/13	nd	nd	nd	nd
PS1	4/2/13	34	nd	nd	nd
SS2	4/2/13	40	nd	nd	nd
SS3	4/2/13	25	nd	nd	nd
SS4	4/2/13	6.2	nd	nd	nd
SS5	4/2/13	22	nd	nd	nd
WS6	4/2/13	1230	nd	9.7	nd
WS7	4/2/13	53	nd	nd	nd
WS8	4/2/13	525	nd	nd	nd
WS8 Dup	4/2/13	443	nd	nd	nd
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	4/2/13	109%	100%	116%	103%
WS8 MS	4/2/13	int	109%	int	111%
WS8 MSD	4/2/13	int	117%	int	117%
Post-Spike	4/2/13	97%	n/a	118%	n/a
RPD	4/2/13	int	7%	int	5%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RECOVERY LIMITS FOR POST-DIGESTION SPIKES: 80%-120%
ACCEPTABLE RESULT FOR 1/5 DILUTION: 90%-110% of expected value
ACCEPTABLE RPD IS 20%
"int" indicates an interference which requires the additional QC samples of a post-digestion spike and a 1/5 dilution

ANALYSES PERFORMED BY: Sherry Chilcutt

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	4/2/13	nd
PS1	4/2/13	nd
SS2	4/2/13	nd
SS3	4/2/13	nd
SS4	4/2/13	nd
SS5	4/2/13	nd
WS6	4/2/13	nd
WS7	4/2/13	nd
WS8	4/2/13	nd
WS8 Dup	4/2/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Jamie Deyman & Ramses Osorio

Libby Environmental, Inc.

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	4/2/13	115%
WS8 MS	4/2/13	115%
WS8 MSD	4/2/13	115%
RPD	4/2/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Jamie Deyman & Ramses Osorio

Libby Environmental, Inc.

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Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	4/2/13	nd	nd
PS1	4/2/13	11	40
SS2	4/2/13	8	47
SS3	4/2/13	nd	nd
SS4	4/2/13	nd	nd
SS5	4/2/13	nd	5.6
WS6	4/2/13	68	7.6
WS7	4/2/13	12	nd
WS8	4/2/13	40	156
WS8 Dup	4/2/13	35	141
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

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HAVENS PROJECT
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Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	4/2/13	93%	118%
WS8 MS	4/2/13	int	int
WS8 MSD	4/2/13	int	int
Post-Spike	4/2/13	97%	108%
RPD	4/2/13	int	int

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

Analyses of Total Arsenic in Water by EPA Method 7010

Sample Number	Date Analyzed	Arsenic µg/L
Method Blank	4/2/13	nd
MW1	4/2/13	5.2
MW1 Dup	4/2/13	5.4
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

QA/QC for Arsenic in Water by EPA Method 7010

Sample Number	Date Analyzed	Arsenic (% Recovery)
LCS	4/2/13	106%
MW1 MS	4/2/13	104%
MW1 MSD	4/2/13	108%
RPD	4/2/13	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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HAVENS PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130329-11
Client Project # 2491-001E

Analyses of Dissolved Arsenic in Water by EPA Method 7010

Sample Number	Date Analyzed	Arsenic µg/L
Method Blank	4/11/13	nd
MW1	4/11/13	nd
MW1 Dup	4/11/13	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

04/09/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: Havens
Sample Matrix: Soil
Date Sampled: 03/29/2013
Date Received: 04/02/2013
Spectra Project: 2013040063

Client ID	Spectra #	Analyte	Result	Units	Method
PS-1	1	Total Nickel	10.0	mg/Kg	SW846 6010B
SS-2	2	Total Nickel	11.8	mg/Kg	SW846 6010B
SS-3	3	Total Nickel	7.6	mg/Kg	SW846 6010B
SS-4	4	Total Nickel	4.6	mg/Kg	SW846 6010B
SS-5	5	Total Nickel	2.6	mg/Kg	SW846 6010B
WS-6	6	Total Nickel	12.1	mg/Kg	SW846 6010B
WS-7	7	Total Nickel	12.5	mg/Kg	SW846 6010B
WS-8	8	Total Nickel	18.1	mg/Kg	SW846 6010B

Date Analyzed: 4-8-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

4/8/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013040063
Applies to Spectra #'s 1 thru 8

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 4/8/2013 Date Analyzed: 4/8/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 4/8/2013 Date Analyzed: 4/8/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	1.881	94.1

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 4/8/2013 Date Analyzed: 4/8/2013
Sample Spiked: 2013040063-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.259	2.0	2.153	94.7	2.151	94.6	0.1

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

1304003

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 4/1/13 Page: 1 of 1

Client: Libby Environmental, Inc.

Project Manager: Jamie Deyman

Address:

Project Name: Havens

City: State: Zip:

Location: City, State:

Phone: Fax:

Collector: Date of Collection:

Client Project #

Email:

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	N:			Field Notes
1 PS-1			Soil	4oz JAR											X				
2 SS-2															X				
3 SS-3															X				
4 SS-4															X				
5 SS-5															X				
6 WS-6															X				
7 WS-7															X				
8 WS-8															X				
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	4/2/13 1:20pm	Marie Walt	4-2-13 1:20pm
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

Std

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Libby Environmental
Jamie Deyman
4139 Libby Rd. NE
Olympia, Washington 98506

RE: Havens
Lab ID: 1304024

April 09, 2013

Attention Jamie Deyman:

Fremont Analytical, Inc. received 8 sample(s) on 4/3/2013 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee
Sr. Chemist / Principal

Fremont Analytical

Date: *04/09/2013*

CLIENT: Libby Environmental
Project: Havens
Lab Order: 1304024

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1304024-001	PS1	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-002	SS2	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-003	SS3	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-004	SS4	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-005	SS5	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-006	WS6	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-007	WS7	03/29/2013 12:00 AM	04/03/2013 2:00 PM
1304024-008	WS8	03/29/2013 12:00 AM	04/03/2013 2:00 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1304024**
Date: **4/9/2013**

CLIENT: Libby Environmental
Project: Havens

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Fremont Analytical

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-001
Client Sample ID: PS1

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
2-Methylnaphthalene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
1-Methylnaphthalene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Acenaphthylene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Acenaphthene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Fluorene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Phenanthrene	252	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Anthracene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Fluoranthene	528	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Pyrene	416	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Benz(a)anthracene	187	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Chrysene	212	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Benzo(b)fluoranthene	349	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Benzo(k)fluoranthene	103	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Benzo(a)pyrene	202	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Indeno(1,2,3-cd)pyrene	135	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Dibenz(a,h)anthracene	ND	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Benzo(g,h,i)perylene	115	85.7		µg/Kg-dry	1	4/6/2013 6:54:00 PM
Surr: 2-Fluorobiphenyl	91.2	50.4-142		%REC	1	4/6/2013 6:54:00 PM
Surr: Terphenyl-d14 (surr)	105	48.8-157		%REC	1	4/6/2013 6:54:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	45.9			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-002
Client Sample ID: SS2

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
2-Methylnaphthalene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
1-Methylnaphthalene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Acenaphthylene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Acenaphthene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Fluorene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Phenanthrene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Anthracene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Fluoranthene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Pyrene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Benz(a)anthracene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Chrysene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Benzo(b)fluoranthene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Benzo(k)fluoranthene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Benzo(a)pyrene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Indeno(1,2,3-cd)pyrene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Dibenz(a,h)anthracene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Benzo(g,h,i)perylene	ND	88.4		µg/Kg-dry	1	4/6/2013 7:17:00 PM
Surr: 2-Fluorobiphenyl	75.0	50.4-142		%REC	1	4/6/2013 7:17:00 PM
Surr: Terphenyl-d14 (surr)	73.4	48.8-157		%REC	1	4/6/2013 7:17:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	46.0			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-003
Client Sample ID: SS3

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
2-Methylnaphthalene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
1-Methylnaphthalene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Acenaphthylene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Acenaphthene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Fluorene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Phenanthrene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Anthracene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Fluoranthene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Pyrene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Benz(a)anthracene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Chrysene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Benzo(b)fluoranthene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Benzo(k)fluoranthene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Benzo(a)pyrene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Indeno(1,2,3-cd)pyrene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Dibenz(a,h)anthracene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Benzo(g,h,i)perylene	ND	90.6		µg/Kg-dry	1	4/6/2013 7:41:00 PM
Surr: 2-Fluorobiphenyl	84.1	50.4-142		%REC	1	4/6/2013 7:41:00 PM
Surr: Terphenyl-d14 (surr)	83.4	48.8-157		%REC	1	4/6/2013 7:41:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	45.4			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-004
Client Sample ID: SS4

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
2-Methylnaphthalene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
1-Methylnaphthalene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Acenaphthylene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Acenaphthene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Fluorene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Phenanthrene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Anthracene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Fluoranthene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Pyrene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Benz(a)anthracene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Chrysene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Benzo(b)fluoranthene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Benzo(k)fluoranthene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Benzo(a)pyrene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Indeno(1,2,3-cd)pyrene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Dibenz(a,h)anthracene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Benzo(g,h,i)perylene	ND	107		µg/Kg-dry	1	4/6/2013 8:04:00 PM
Surr: 2-Fluorobiphenyl	89.2	50.4-142		%REC	1	4/6/2013 8:04:00 PM
Surr: Terphenyl-d14 (surr)	101	48.8-157		%REC	1	4/6/2013 8:04:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	53.8			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-005
Client Sample ID: SS5

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
2-Methylnaphthalene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
1-Methylnaphthalene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Acenaphthylene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Acenaphthene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Fluorene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Phenanthrene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Anthracene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Fluoranthene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Pyrene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Benz(a)anthracene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Chrysene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Benzo(b)fluoranthene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Benzo(k)fluoranthene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Benzo(a)pyrene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Indeno(1,2,3-cd)pyrene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Dibenz(a,h)anthracene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Benzo(g,h,i)perylene	ND	378		µg/Kg-dry	1	4/6/2013 8:27:00 PM
Surr: 2-Fluorobiphenyl	73.2	50.4-142		%REC	1	4/6/2013 8:27:00 PM
Surr: Terphenyl-d14 (surr)	90.3	48.8-157		%REC	1	4/6/2013 8:27:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	86.9			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-006
Client Sample ID: WS6

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
2-Methylnaphthalene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
1-Methylnaphthalene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Acenaphthylene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Acenaphthene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Fluorene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Phenanthrene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Anthracene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Fluoranthene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Pyrene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Benz(a)anthracene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Chrysene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Benzo(b)fluoranthene	92.5	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Benzo(k)fluoranthene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Benzo(a)pyrene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Indeno(1,2,3-cd)pyrene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Dibenz(a,h)anthracene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Benzo(g,h,i)perylene	ND	81.5		µg/Kg-dry	1	4/6/2013 8:51:00 PM
Surr: 2-Fluorobiphenyl	86.7	50.4-142		%REC	1	4/6/2013 8:51:00 PM
Surr: Terphenyl-d14 (surr)	95.5	48.8-157		%REC	1	4/6/2013 8:51:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	41.2			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-007
Client Sample ID: WS7

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
2-Methylnaphthalene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
1-Methylnaphthalene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Acenaphthylene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Acenaphthene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Fluorene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Phenanthrene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Anthracene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Fluoranthene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Pyrene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Benz(a)anthracene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Chrysene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Benzo(b)fluoranthene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Benzo(k)fluoranthene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Benzo(a)pyrene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Indeno(1,2,3-cd)pyrene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Dibenz(a,h)anthracene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Benzo(g,h,i)perylene	ND	76.8		µg/Kg-dry	1	4/6/2013 9:14:00 PM
Surr: 2-Fluorobiphenyl	89.4	50.4-142		%REC	1	4/6/2013 9:14:00 PM
Surr: Terphenyl-d14 (surr)	101	48.8-157		%REC	1	4/6/2013 9:14:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	35.3			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Analytical Report

WO#: **1304024**
Date Reported: **4/9/2013**

Client: Libby Environmental
Project: Havens
Lab ID: 1304024-008
Client Sample ID: WS8

Collection Date: 3/29/2013
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 4373		Analyst: PH
Naphthalene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
2-Methylnaphthalene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
1-Methylnaphthalene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Acenaphthylene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Acenaphthene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Fluorene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Phenanthrene	104	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Anthracene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Fluoranthene	216	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Pyrene	185	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Benz(a)anthracene	91.5	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Chrysene	99.6	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Benzo(b)fluoranthene	153	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Benzo(k)fluoranthene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Benzo(a)pyrene	85.0	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Indeno(1,2,3-cd)pyrene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Dibenz(a,h)anthracene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Benzo(g,h,i)perylene	ND	72.3		µg/Kg-dry	1	4/6/2013 10:24:00 PM
Surr: 2-Fluorobiphenyl	83.3	50.4-142		%REC	1	4/6/2013 10:24:00 PM
Surr: Terphenyl-d14 (surr)	93.9	48.8-157		%REC	1	4/6/2013 10:24:00 PM
Sample Moisture (Percent Moisture)				Batch ID: R7991		Analyst: JS
Percent Moisture	39.0			wt%	1	4/4/2013 9:15:02 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1304024
CLIENT: Libby Environmental
Project: Havens

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-4373**	SampType: **MBLK**	Units: **µg/Kg**	Prep Date: **4/5/2013**	RunNo: **8033**
Client ID: **MBLKS**	Batch ID: **4373**		Analysis Date: **4/6/2013**	SeqNo: **160065**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.0									
2-Methylnaphthalene	ND	50.0									
1-Methylnaphthalene	ND	50.0									
Acenaphthylene	ND	50.0									
Acenaphthene	ND	50.0									
Fluorene	ND	50.0									
Phenanthrene	ND	50.0									
Anthracene	ND	50.0									
Fluoranthene	ND	50.0									
Pyrene	ND	50.0									
Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	405		500.0		81.0	50.4	142				
Surr: Terphenyl-d14 (surr)	463		500.0		92.7	48.8	157				

Sample ID: **LCS-4373**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **4/5/2013**	RunNo: **8033**
Client ID: **LCSS**	Batch ID: **4373**		Analysis Date: **4/6/2013**	SeqNo: **160066**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	989	50.0	1,000	0	98.9	74.3	115				
2-Methylnaphthalene	873	50.0	1,000	0	87.3	72.9	120				
1-Methylnaphthalene	1,020	50.0	1,000	0	102	74.1	116				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Date: *4/9/2013*

Work Order: 1304024
CLIENT: Libby Environmental
Project: Havens

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-4373**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **4/5/2013**	RunNo: **8033**
Client ID: **LCSS**	Batch ID: **4373**		Analysis Date: **4/6/2013**	SeqNo: **160066**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthylene	950	50.0	1,000	0	95.0	69.8	123				
Acenaphthene	1,010	50.0	1,000	0	101	66.4	125				
Fluorene	982	50.0	1,000	0	98.2	64.7	122				
Phenanthrene	1,000	50.0	1,000	0	100	67.2	123				
Anthracene	1,020	50.0	1,000	0	102	65.5	127				
Fluoranthene	1,030	50.0	1,000	0	103	57.6	131				
Pyrene	1,070	50.0	1,000	0	107	58.1	131				
Benz(a)anthracene	936	50.0	1,000	0	93.6	46.5	143				
Chrysene	1,010	50.0	1,000	0	101	63	125				
Benzo(b)fluoranthene	805	50.0	1,000	0	80.5	47.7	139				
Benzo(k)fluoranthene	1,050	50.0	1,000	0	105	60.7	136				
Benzo(a)pyrene	802	50.0	1,000	0	80.2	50.6	133				
Indeno(1,2,3-cd)pyrene	840	50.0	1,000	0	84.0	57.9	133				
Dibenz(a,h)anthracene	827	50.0	1,000	0	82.7	52.8	135				
Benzo(g,h,i)perylene	946	50.0	1,000	0	94.6	55	132				
Surr: 2-Fluorobiphenyl	474		500.0		94.7	50.4	142				
Surr: Terphenyl-d14 (surr)	482		500.0		96.3	48.8	157				

Sample ID: **1303193-003BDUP**	SampType: **DUP**	Units: **µg/Kg-dry**	Prep Date: **4/5/2013**	RunNo: **8033**
Client ID: **BATCH**	Batch ID: **4373**		Analysis Date: **4/6/2013**	SeqNo: **160068**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.8						0	0	30	
2-Methylnaphthalene	ND	50.8						0	0	30	
1-Methylnaphthalene	ND	50.8						0	0	30	
Acenaphthylene	ND	50.8						0	0	30	
Acenaphthene	ND	50.8						0	0	30	
Fluorene	ND	50.8						0	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1304024
CLIENT: Libby Environmental
Project: Havens

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **1303193-003BDUP**	SampType: **DUP**	Units: **µg/Kg-dry**	Prep Date: **4/5/2013**	RunNo: **8033**
Client ID: **BATCH**	Batch ID: **4373**		Analysis Date: **4/6/2013**	SeqNo: **160068**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	62.3	50.8						58.76	5.93	30	
Anthracene	ND	50.8						0	0	30	
Fluoranthene	100	50.8						94.85	5.73	30	
Pyrene	107	50.8						107.7	0.946	30	
Benz(a)anthracene	ND	50.8						52.07	200	30	
Chrysene	69.2	50.8						75.30	8.49	30	
Benzo(b)fluoranthene	70.1	50.8						70.10	0.0249	30	
Benzo(k)fluoranthene	ND	50.8						0	0	30	
Benzo(a)pyrene	ND	50.8						0	0	30	
Indeno(1,2,3-cd)pyrene	ND	50.8						0	0	30	
Dibenz(a,h)anthracene	ND	50.8						0	0	30	
Benzo(g,h,i)perylene	ND	50.8						0	0	30	
Surr: 2-Fluorobiphenyl	454		508.1		89.4	50.4	142		0		
Surr: Terphenyl-d14 (surr)	509		508.1		100	48.8	157		0		

Sample ID: **1304025-001BMS**	SampType: **MS**	Units: **µg/Kg-dry**	Prep Date: **4/5/2013**	RunNo: **8033**
Client ID: **BATCH**	Batch ID: **4373**		Analysis Date: **4/6/2013**	SeqNo: **160072**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	946	53.2	1,064	108.6	78.7	42.9	138				
2-Methylnaphthalene	920	53.2	1,064	45.47	82.2	42.8	151				
1-Methylnaphthalene	1,040	53.2	1,064	28.83	94.7	41.6	148				
Acenaphthylene	1,190	53.2	1,064	94.82	103	32.6	160				
Acenaphthene	1,060	53.2	1,064	24.48	96.9	46.3	142				
Fluorene	1,090	53.2	1,064	32.21	99.8	43.4	153				
Phenanthrene	1,340	53.2	1,064	286.0	99.2	45.5	140				
Anthracene	1,180	53.2	1,064	86.22	103	32.6	160				
Fluoranthene	1,660	53.2	1,064	467.3	112	44.6	161				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1304024
CLIENT: Libby Environmental
Project: Havens

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **1304025-001BMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **4/5/2013** RunNo: **8033**
Client ID: **BATCH** Batch ID: **4373** Analysis Date: **4/6/2013** SeqNo: **160072**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	1,780	53.2	1,064	600.3	110	48.3	158				
Benz(a)anthracene	1,430	53.2	1,064	277.6	108	57.5	169				
Chrysene	1,250	53.2	1,064	274.1	91.9	45.2	146				
Benzo(b)fluoranthene	1,610	53.2	1,064	388.6	114	42.2	168				
Benzo(k)fluoranthene	1,240	53.2	1,064	131.2	104	48	161				
Benzo(a)pyrene	1,400	53.2	1,064	329.5	100	34.4	179				
Indeno(1,2,3-cd)pyrene	1,350	53.2	1,064	213.7	107	41.1	165				
Dibenz(a,h)anthracene	1,240	53.2	1,064	40.04	113	38.1	166				
Benzo(g,h,i)perylene	1,170	53.2	1,064	220.0	89.1	45.6	157				
Surr: 2-Fluorobiphenyl	334		532.0		62.8	50.4	142				
Surr: Terphenyl-d14 (surr)	542		532.0		102	48.8	157				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Fremont Analytical

Sample Log-In Check List

Client Name: **LIBBY**	Work Order Number: **1304024**
Logged by: **Clare Griggs**	Date Received: **4/3/2013 2:00:00 PM**

Chain of Custody

1.	Were custodial seals present?	Yes ☑	No ☐	Not Required ☐
2.	Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
3.	How was the sample delivered?	UPS		

Log In

4.	Coolers are present?	Yes ☑	No ☐	NA ☐
5.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
6.	Were all coolers received at a temperature of >0° C to 10.0°C	Yes ☑	No ☐	NA ☐
7.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
8.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
9.	Are samples properly preserved?	Yes ☑	No ☐	
10.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
11.	Is there headspace present in VOA vials?	Yes ☐	No ☐	NA ☑
12.	Did all sample containers arrive in good condition?(unbroken)	Yes ☑	No ☐	
13.	Does paperwork match bottle labels?	Yes ☑	No ☐	
14.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
15.	Is it clear what analyses were requested?	Yes ☑	No ☐	
16.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

18. Additional remarks/Disrepancies

Pulled sample dates from sample label, not noted on COC.

Item Information

Item #	Temp °C	Condition
Cooler	9.6	Good

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

1304024

www.LibbyEnvironmental.com

Date: 4/1/13 Page: 1 of 1

Client: Libby Environmental, Inc.
Address:
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jamie Deyman
Project Name: Havens
Location: City, State:
Collector: Date of Collection:
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals		Field Notes
1	PS1			S	4oz Jar								X					
2	SS2												X					
3	SS3												X					
4	SS4												X					
5	SS5												X					
6	WS6												X					
7	WS7												X					
8	WS8												X					
9																		
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17																		

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Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

STD

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

04/18/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	Haven
Client ID:	WS6
Sample Matrix:	Soil
Date Sampled:	03/29/2013
Date Received:	04/11/2013
Spectra Project:	2013040360
Spectra Number:	1

Analyte	Result	Units	Method
TCLP Lead	9.67	mg/L	SW846 6010B

Date Analyzed: 4-18-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

04/18/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	Haven
Client ID:	WS8
Sample Matrix:	Soil
Date Sampled:	03/29/2013
Date Received:	04/11/2013
Spectra Project:	2013040360
Spectra Number:	2

Analyte	Result	Units	Method
TCLP Lead	0.25	mg/L	SW846 6010B

Date Analyzed: 4-18-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

4/18/2013

Libby Environmental, Inc
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013040360
Applies to Spectra #'s 1 and 2

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - TCLP

Method Blank

Date Digested: 4/18/2013 Date Analyzed: 4/18/2013

Element	Result
Lead	< 0.04

Blank Spike (LCS)

Date Digested: 4/18/2013 Date Analyzed: 4/18/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Lead	1.0	1.027	102.7

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 4/18/2013 Date Analyzed: 4/18/2013
Sample Spiked: 2013040360-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Lead	9.668	1.0	10.480	81.2	10.520	85.2	4.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

1304 0360

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Client: Libby Environmental, Inc
Address: (See above)
City: State: Zip:
Phone: Fax:
Client Project #

Date: 4-11-13 Page: 1 of 1
Project Manager: Jamie Deyman
Project Name: Haven
Location: City, State: Olympia, WA
Collector: Date of Collection: 3-29-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	TCLP Pb		Field Notes
1	WS6	ø	1350	soil	Jar											X			
2	WS8	ø	1420	soil	Jar											X			
3																			
4																			
5																			
6																			
7																			
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Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Standard

need EDD please

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3/29/2013 Page: 1 of 1

Client: ROBINSON NORCE

Project Manager: MAX WILLS

Address: 3011 S. HOSMER ST SUITE A

Project Name: HAINES

City: TACOMA State: WA Zip: 98409

Location: 411 93rd AVE SE City, State: OLYMPIA WA

Phone: (253) 475-7711 Fax:

Collector: MTW/ALY Date of Collection: 3/29/13

Client Project # 2491-001E

Email: MWILLS@ROBINSON-NORCE.COM

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	ARSENIC-TOTAL	ZINC, COPPER, NICKEL	TCLP Pb	Field Notes
1 MW1	-	1320	WATER	POLY											(X)				RUSH FOR DISSOLVED
2 PS1	Ø	1220	SED	4oz				X				X		X		X			
3 SS2	Ø	1240	↓	↓				X				X		X		X			
4 SS3	Ø	1250						X				X		X		X			4-10-13 STD per Max via phone & email run disc AS, TCLP Pb
5 SS4	Ø	1305						X				X		X		X			
6 SS5	Ø	1335						X				X		X		X			
7 WS6	Ø	1350						X				X		X		X	(X)		
8 WS7	Ø	1400						X				X		X		X			
9 WS8	Ø	1420	↓	↓				X				X		X		X	(X)		
10																			
11																			
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Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

STD TURN
NEED EIM

TAT: 24HR 48HR 5-DAY

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Light Oil (mg/kg)	Heavy Oil (mg/kg)
Method Blank	2/26/13	103	nd	nd	nd	nd
Method Blank	2/27/13	90	nd	nd	nd	nd
B18-3	2/26/13	111	nd	nd	nd	nd
B18-6	2/26/13	93	nd	nd	nd	nd
B18-6 Dup	2/26/13	89	nd	nd	nd	nd
B20-6	2/26/13	114	nd	nd	nd	nd
B20-6 Dup	2/26/13	96	nd	nd	nd	nd
B21-2	2/26/13	123	nd	nd	nd	nd
B21-5	2/26/13	108	nd	nd	nd	nd
B22-6	2/26/13	104	nd	nd	nd	nd
MW-5-3	2/26/13	99	nd	nd	nd	nd
MW-5-6	2/26/13	87	nd	nd	nd	nd
MW-5-6 Dup	2/26/13	102	nd	nd	nd	nd
B23-2	2/27/13	90	nd	nd	nd	nd
B23-4	2/27/13	85	nd	nd	nd	nd
B23-4 Dup	2/27/13	92	nd	nd	nd	nd
Practical Quantitation Limit			20	50	100	100

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke & Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
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FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	Method Blank	LCS	B18-3	B18-3 Dup	B18-6	B18-6 MS
Date Sampled		N/A	2/26/13	2/26/13	2/26/13	2/26/13	2/26/13
Date Analyzed		2/28/13	2/28/13	2/28/13	2/28/13	2/28/13	2/28/13
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.02	nd	85%	nd	nd	nd	86%
Aroclor 1221	0.02	nd		nd	nd	nd	
Aroclor 1232	0.02	nd		nd	nd	nd	
Aroclor 1242	0.02	nd		nd	nd	nd	
Aroclor 1248	0.02	nd		nd	nd	nd	
Aroclor 1254	0.02	nd		nd	nd	nd	
Aroclor 1260	0.02	nd	80%	nd	nd	nd	106%
Surrogate Recovery							
TCMX		100	90	74	80	80	101
DCBP		100	90	108	86	106	95

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	3/2/13	nd	nd	nd	nd
B20-6	3/2/13	nd	nd	nd	nd
B21-2	3/2/13	5.5	nd	8.7	8.1
B21-5	3/17/13	nd	nd	13.2	nd
B22-6	3/2/13	nd	nd	7.2	6.6
MW5-3	3/2/13	nd	nd	13	8.6
MW5-6	3/17/13	nd	nd	17.4	6.7
MW5-6 Dup	3/17/13	nd	nd	18.6	6.4
B23-2	3/2/13	nd	nd	6.6	7.8
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	92%	101%	99%	88%
L130225-10 MS	3/2/13	86%	96%	101%	86%
L130225-10 MSD	3/2/13	96%	99%	89%	83%
RPD	3/2/13	11%	3%	13%	3%
LCS	3/17/13	109%	103%	92%	103%
MW5-6 MS	3/17/13	105%	90%	92%	86%
MW5-6 MSD	3/17/13	94%	93%	85%	92%
RPD	3/17/13	11%	3%	8%	7%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	2/27/13	nd
B20-6	2/27/13	nd
B21-2	2/27/13	nd
B22-6	2/27/13	nd
MW5-3	2/27/13	nd
B23-2	3/4/13	nd
B21-5	3/19/13	nd
MW5-6	3/19/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

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Libby Project # L130226-30
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	2/27/13	112%
L130225-10 MS	2/27/13	103%
L130225-10 MSD	2/27/13	103%
RPD	2/27/13	0%
LCS	3/4/13	112%
L130227-1 MS	3/4/13	103%
L130227-1 MSD	3/4/13	103%
RPD	3/4/13	0%
LCS	3/19/13	106%
L130315-6 MS	3/19/13	106%
L130315-6 MSD	3/19/13	106%
RPD	3/19/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

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Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	3/2/13	nd	nd
B20-6	3/2/13	5.9	nd
B21-2	3/2/13	6.1	5.8
B21-5	3/17/13	6.0	12
B22-6	3/2/13	6.9	nd
MW5-3	3/2/13	23	20
MW5-6	3/17/13	34	20
MW5-6 Dup	3/17/13	33	19
B23-2	3/2/13	9.6	nd
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

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QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	95%	89%
L130225-10 MS	3/2/13	91%	92%
L130225-10 MSD	3/2/13	92%	99%
RPD	3/2/13	1%	8%
LCS	3/17/13	106%	116%
MW5-6 MS	3/17/13	95%	85%
MW5-6 MSD	3/17/13	85%	91%
RPD	3/17/13	11%	7%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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Analyses of Lead in Soil by EPA Method 7421

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	3/2/13	nd
B18-3	3/2/13	nd
B18-6	3/2/13	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

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Libby Project # L130226-30
Client Project # 2491-001E

QA/QC for Lead by EPA Method 7421

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	3/2/13	92%
L130227-1 MS	3/2/13	103%
L130227-1 MSD	3/2/13	111%
RPD	3/2/13	8%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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Hydrocarbon Identification by NWTPH-HCID for Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/l)	Diesel (µg/l)	Mineral Oil (µg/l)	Heavy Oil (µg/l)
Method Blank	2/26/13	103	nd	nd	nd	nd
Method Blank	2/27/13	84	nd	nd	nd	nd
B18-W	2/26/13	101	nd	nd	nd	nd
B19-W	2/26/13	106	nd	nd	nd	nd
B19-W Dup	2/26/13	87	nd	nd	nd	nd
B20-W	2/26/13	93	nd	nd	nd	nd
B20-W Dup	2/26/13	112	nd	nd	nd	nd
B21-W	2/26/13	123	nd	nd	nd	nd
B22-W	2/26/13	110	nd	nd	nd	nd
B23-W	2/27/13	98	nd	nd	nd	nd
B23-W Dup	2/27/13	96	nd	nd	nd	nd
Practical Quantitation Limit			200	500	500	500

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke & Jamie Deyman

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Water

Sample Description		Method Blank	B19-W
Date Sampled	Reporting	N/A	2/26/13
Date Analyzed	Limits	2/28/13	2/28/13
	(µg/l)	(µg/l)	(µg/l)
Dichlorodifluoromethane	2.0	nd	nd
Chloromethane	2.0	nd	nd
Vinyl chloride	0.2	nd	nd
Bromomethane	2.0	nd	nd
Chloroethane	2.0	nd	nd
Trichlorofluoromethane	2.0	nd	nd
1,1-Dichloroethene	2.0	nd	nd
Methylene chloride	1.0	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd
1,1-Dichloroethane	1.0	nd	nd
2,2-Dichloropropane	2.0	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd
Chloroform	1.0	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd
Carbon tetrachloride	1.0	nd	nd
1,1-Dichloropropene	1.0	nd	nd
Benzene	1.0	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd
Trichloroethene (TCE)	1.0	nd	nd
1,2-Dichloropropane	1.0	nd	nd
Dibromomethane	1.0	nd	nd
Bromodichloromethane	1.0	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd
Toluene	1.0	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd
1,3-Dichloropropane	1.0	nd	nd
Dibromochloromethane	1.0	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd
Chlorobenzene	1.0	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	2.0	nd	nd
Styrene	1.0	nd	nd

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Robinson Noble
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Libby Project # L130226-30
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Water

Sample Description		Method Blank	B19-W
Date Sampled	Reporting	N/A	2/26/13
Date Analyzed	Limits	2/28/13	2/28/13
	(µg/l)	(µg/l)	(µg/l)
Bromoform	1.0	nd	nd
Isopropylbenzene	4.0	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd
Bromobenzene	1.0	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd
n-Propylbenzene	1.0	nd	nd
2-Chlorotoluene	1.0	nd	nd
4-Chlorotoluene	1.0	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd
tert-Butylbenzene	1.0	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd
sec-Butylbenzene	1.0	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd
Isopropyltoluene	1.0	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd
n-Butylbenzene	1.0	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd
Naphthalenes	5.0	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		104	117
1,2-Dichloroethane-d4		121	122
Toluene-d8		97	91
4-Bromofluorobenzene		97	99

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

QA/QC Data - EPA 8260C Analyses

Sample Identification: L130226-3							
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)	(%)
1,1-Dichloroethene	10	7.5	75	10	7.7	77	2.4
Benzene	10	9.4	94	10	9.3	93	1.8
Toluene	10	8.1	81	10	8.4	84	3.3
Chlorobenzene	10	8.6	86	10	8.7	87	1.7
Trichloroethene (TCE)	10	9.0	90	10	8.8	88	2.5
Surrogate Recovery							
Dibromofluoromethane			107			110	
1,2-Dichloroethane-d4			122			125	
Toluene-d8			95			99	
4-Bromofluorobenzene			91			95	

Laboratory Control Sample			
	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)
Benzene	10	9.4	94
Toluene	10	8.9	89
Chlorobenzene	10	9.0	90
Trichloroethene (TCE)	10	9.5	95
Surrogate Recovery			
Dibromofluoromethane			101
1,2-Dichloroethane-d4			110
Toluene-d8			105
4-Bromofluorobenzene			96

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Kyle Williams

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
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Libby Project # L130226-30
Client Project # 2491-001E

Analyses of PCB (Polychlorinated Biphenyls) in Water by EPA Method 8082

Sample Description	PQL	Method Blank	LCS	B18-W	B18-W Dup	B19-W	B19-W MS
Date Sampled		N/A	2/26/13	2/26/13	2/26/13	2/26/13	2/26/13
Date Analyzed		2/28/13	2/28/13	2/28/13	2/28/13	2/28/13	2/28/13
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Aroclor 1016	0.02	nd	85%	nd	nd	nd	83%
Aroclor 1221	0.02	nd		nd	nd	nd	
Aroclor 1232	0.02	nd		nd	nd	nd	
Aroclor 1242	0.02	nd		nd	nd	nd	
Aroclor 1248	0.02	nd		nd	nd	nd	
Aroclor 1254	0.02	nd		nd	nd	nd	
Aroclor 1260	0.02	nd	80%	nd	nd	nd	108%
Surrogate Recovery							
TCMX		100	90	80	89	87	100
DCBP		100	90	98	83	99	108

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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Robinson Noble
Olympia, Washington
Libby Project # L130226-30
Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Cadmium µg/L	Chromium µg/L	Arsenic µg/L
Method Blank	3/2/13	nd	nd	nd	nd
B19-W	3/2/13	33	nd	83	111
B20-W	3/2/13	24	nd	105	8.7
B21-W	3/2/13	106	0.6	93	114
B22-W	3/2/13	158	5.8	116	112
B23-W	3/2/13	13	nd	20	nd
Practical Quantitation Limit		5.0	0.5	10.0	3.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

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QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	103%	101%	99%	95%
L130301-9 MS	3/2/13	102%	92%	89%	93%
L130301-9 MSD	3/2/13	107%	94%	77%	97%
RPD	3/2/13	5%	2%	14%	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

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Analyses of Mercury in Water by EPA Method 7470

Sample Number	Date Analyzed	Mercury µg/L
Method Blank	3/4/13	nd
B19-W	3/4/13	nd
B20-W	3/4/13	nd
B21-W	3/4/13	nd
B22-W	3/4/13	nd
B23-W	3/4/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

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QA/QC for Mercury by EPA Method 7470

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/4/13	112%
L130227-30 MS	3/4/13	94%
L130227-30 MSD	3/4/13	94%
RPD	3/4/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

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Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper µg/L	Zinc µg/L
Method Blank	3/2/13	nd	nd
B19-W	3/2/13	285	119
B20-W	3/2/13	233	64
B21-W	3/2/13	136	110
B22-W	3/2/13	4450	28
B23-W	3/2/13	23	70
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

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QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	106%	100%
L130301-9 MS	3/2/13	111%	106%
L130301-9 MSD	3/2/13	119%	112%
RPD	3/2/13	7%	6%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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Analyses of Lead in Water by EPA Method 7421

Sample Number	Date Analyzed	Lead µg/L
Method Blank	3/2/13	nd
B18-W	3/2/13	18
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

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QA/QC for Lead by EPA Method 7421

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	3/2/13	103%
L130301-9 MS	3/2/13	102%
L130301-9 MSD	3/2/13	107%
RPD	3/2/13	5%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

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Analyses of Dissolved Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Cadmium µg/L	Chromium µg/L	Arsenic µg/L	Copper µg/L
Method Blank	3/17/13	nd	nd	nd	nd	nd
LCS	3/17/13	115%	99%	107%	119%	106%
B18-W	3/17/13	nd	-	-	-	-
B19-W	3/17/13	nd	-	nd	nd	-
B20-W	3/17/13	nd	-	nd	nd	-
B21-W	3/17/13	nd	-	nd	nd	-
B22-W	3/17/13	6	nd	nd	8.0	69
Practical Quantitation Limit		5.0	0.5	10.0	3.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

SPECTRA Laboratories

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03/06/2013

Libby Environmental, Inc.
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Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Sample Matrix: Soil
Date Sampled: 02/26/2013
Date Received: 02/28/2013
Spectra Project: 2013020625

Client ID	Spectra #	Analyte	Result	Units	Method
B20-6	1	Total Nickel	16	mg/Kg	SW846 6010B
B21-2	2	Total Nickel	20.1	mg/Kg	SW846 6010B
B22-6	3	Total Nickel	11.7	mg/Kg	SW846 6010B
MW-5-3	4	Total Nickel	21.7	mg/Kg	SW846 6010B
B20-W	5	Nickel	0.201	mg/L	SW846 6010B
B19-W	6	Nickel	0.199	mg/L	SW846 6010B
B21-W	7	Nickel	0.422	mg/L	SW846 6010B
B22-W	8	Nickel	1.27	mg/L	SW846 6010B
B23-W	9	Nickel	0.054	mg/L	SW846 6010B

Date Analyzed - 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

SPECTRA Laboratories

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3/5/2013

Libby Environmental
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Olympia, WA 98506

Units: mg/L
Spectra Project: 2013020625
Applies to Spectra #'s 1 thru 4

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.098	104.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030045-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.156	2.0	2.008	92.6	1.994	91.9	0.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/5/2013

Libby Environmental, Inc
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013020625
Applies to Spectra #'s 5 thru 9

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Water/Liquid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	1.0	0.963	96.3

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030044-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.047	1.0	0.956	90.9	0.949	90.2	0.8

Recovery Limits 75-125%
RPD Limit 20

Spectra Laboratories

Steven G. Hibbs
Laboratory Manager

2013020625

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: Libby Environmental INC
Address: SEE ABOVE
City: State: Zip:
Phone: Fax:
Client Project #

Date: 2-27-13 Page: 1 of 1
Project Manager: Jamie Deyman
Project Name: John Havens Estate
Location: City, State:
Collector: Date of Collection: 2-26-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	pH	Turbidity	Oil & Grease	Zinc, Copper	Zinc, Copper, Lead	TSS	BOD 5	Nitrate/Nitrite	Total Phosphorus	COD	TPH	Nickle			Field Notes
1	B20-6			Soil	4oz JAR												X			
2	B21-2			Soil	4oz JAR															
3	B22-6			Soil	4oz JAR															
4	MW-5-3			Soil	4oz JAR															
5	B20-W			H2O	Poly															
6	B19-W			H2O	Poly															
7	B21-W			H2O	Poly															
8	B22-W			H2O	Poly															
9	B23-W			H2O	Poly												X			
10																				

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	2-27-13 10:30AM	[signature]	2/28/13 @1000
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Record pH here:

STD

Distribution: White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/07/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	B23-2
Sample Matrix:	Soil
Date Sampled:	02/26/2013
Date Received:	03/01/2013
Spectra Project:	2013030009
Spectra Number:	1

Analyte	Result	Units	Method
Total Nickel	7.1	mg/Kg	SW846 6010B

Date Analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/mlh

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/5/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030009
Applies to Spectra #'s 1 thru 4

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.098	104.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030045-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.156	2.0	2.008	92.6	1.994	91.9	0.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/5/2013

Libby Environmental, Inc
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030009
Applies to Spectra #'s 5 and 6

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Water/Liquid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	1.0	0.963	96.3

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030044-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.047	1.0	0.956	90.9	0.949	90.2	0.8

Recovery Limits 75-125%
RPD Limit 20

Spectra Laboratories

Steven G. Hibbs
Laboratory Manager

2013030009

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2-28-13 Page: 1 of 1

Client: Libby Environmental
Project Manager: Jaime Deyman
Address: SEE ABOVE
Project Name: John Havens Estate
City: State: Zip:
Location: City, State:
Phone: Fax:
Collector: Date of Collection: 2/26/13 - 2/27/13
Client Project #
Email:

Sample Number	Depth	Time	Sample Type	Container Type	pH	Turbidity	Oil & Grease	Zinc, Copper	Zinc, Copper, Lead	TSS	BOD 5	Nitrate/Nitrite	Total Phosphorus	COD	TPH	Nickle			Field Notes
2/26/13 1 B23-2			SOIL	4oz JAR											X				
2 B24-1			SOIL	↓											↓				
3 B25-2			SOIL	↓											↓				
4 HB7-2			SOIL	↓											↓				
5 B24-W			H2O	Poly											↓				
6 B25-W			H2O	↓											↓				
7																			
8																			
9																			
10																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	2/28/13 9:30	[signature]	3/1/13 @ 1000
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Record pH here:

5 DAY
STD

Distribution: White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/21/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Date Received: 03/15/2013
Spectra Project: 2013030343

Client ID	Spectra #	Analyte	Result	Units	Method	Matrix	Date Sampled
B21-W	1	Dissolved Nickel	< 0.015	mg/L	EPA 200.7	Water	02/26/2013
B22-W	2	Dissolved Nickel	< 0.015	mg/L	EPA 200.7	Water	02/26/2013
B21-5	3	Total Nickel	8.3	mg/Kg	SW846 6010B	Soil	02/26/2013
MW5-6	4	Total Nickel	21.4	mg/Kg	SW846 6010B	Soil	02/26/2013

Dated analyzed: 3-20-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a8/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

March 20, 2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506

Units:	mg/L
Spectra Project:	2013030343
Applies to Spectra #'s	1 and 2

QUALITY CONTROL RESULTS

ICP Dissolved Metals - EPA Method 200.7 - Water

Dissolved Filter Blank

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013

Element	Result
Nickel	< 0.015

Initial Calibration Verification (ICV)

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013

Element	ICV Conc.	ICV Result	ICV %Rec
Nickel	1.0	0.973	97.3

ICV Recovery limits 95-105%

Spectra Laboratories

Steve Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/20/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030343
Applies to Spectra #'s 3 and 4

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	1.965	98.3

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013
Sample Spiked: 2013030386-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.462	2.0	2.206	87.2	2.185	86.2	1.2

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

L0130803 43

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3-14-13 Page: 1 of 1

Client: Libby Environmental, Inc. Project Manager: Jamie Deyman

Address: (See above) Project Name: John Havens Estate

City: State: Zip: Location: City, State: Olympia, WA

Phone: Fax: Collector: Date of Collection: 2-26-13

Client Project # Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Dissolved Ni	Total Ni	Field Notes
1	B21-W	—	1400	H2O	Poly											X			
2	B22-W	—	1440	H2O	Poly											X			
3	B21-5	5	1350	Soil	Jar												X		
4	MW5-6	6	1540	Soil	Jar												X		
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	3-14-13	[signature]	3/15/13 @ 0935
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks: Standard EDD

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: ROBINSON & NOBLE
Address: 3011 S HUSON SUITE A, TACOMA
Phone: (253) 475-7711 Fax:
Client Project # 2491-001E

Date: 2/26/13 Page: 1 of 2 1st
Project Manager: MAX WILLS
Project Name: JOHN HAUENS ESTATE
Location: 911 93rd AVE SE City: OLYMPIA
Collector: ACY Date of Collection: 2/26/13

3-14-13 dissolved metals added per Max via email. STD

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	2 INCL. LEAD	See Notes	Field Notes
1	B18-3	3	940	SOIL	4oz				X						X		X		
2	B18-6	6	950	SOIL	4oz				X						X		X		[redacted]
3	B13-W	-	1000	WTR	AMB				X						X		X	X	Pb - Diss
4	B19-W	-	1050	WTR	AMB/POLY/VOA		X		X						X	X	X	X	Pb, Cr, As - Diss
5	B20-6	6	1150	SOIL	4oz				X						X	X			
6	~~B20~~	~~-~~	~~-~~	~~SOIL~~	~~4oz~~	~~-~~	~~-~~	~~-~~	~~X~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~X~~	~~X~~	~~-~~	~~-~~	~~HOLD FOR METALS~~
7	B20-W	-	1200	WTR	AMB/POLY				X						X	X		X	Pb, Cr, As - Diss
8	B21-2	2	1345	SOIL	4oz				X						X	X			
9	B21-5	5	1350	SOIL	4oz				X						X	X			~~HOLD~~ ~~Run Metals~~
10	B21-W	-	1400	WTR	AMB/POLY				X						X	X		X	Pb, Cr, As, Ni - Diss
11	B22-6	6	1430	SOIL	4oz				X						X	X			
12	~~B22~~	~~-~~	~~-~~	~~SOIL~~	~~4oz~~	~~-~~	~~-~~	~~-~~	~~X~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~X~~	~~X~~	~~-~~	~~-~~	~~HOLD FOR METALS~~
13	B22-W	-	1440	WTR	AMB/POLY				X						X	X		X	Pb, Cd, Cr, As, Cu, Ni - Diss
14	MW5-3	3	1530	SOIL	4oz				X						X	X			
15	MW5-6	6	1540	SOIL	4oz				X						X	X			~~HOLD~~ ~~Run Metals~~
16	B23-2	2	1600	SOIL	4oz				X						X	X			
17	B23-4	4	1605	SOIL	4oz				X						X	X			HOLD FOR METALS
18	B23-W	-	1615	WTR	AMB/POLY				X						X	X			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	2-26-13 1624	[signature]	2-26-13 16:24
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
STD TURN
NEED EIM
We need EIM

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Heavy Oil (mg/kg)
Method Blank	2/27/13	90	nd	nd	nd	nd
B24-1	2/27/13	91	nd	nd	nd	nd
B24-2	2/27/13	92	nd	nd	nd	nd
B24-2 Dup	2/27/13	91	nd	nd	nd	nd
B25-2	2/27/13	93	nd	nd	nd	nd
HB7-2	2/27/13	95	nd	nd	nd	nd
Practical Quantitation Limit			20	50	100	100

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	3/2/13	nd	nd	nd	nd
B24-1	3/2/13	nd	nd	9.0	6.5
B25-2	3/2/13	nd	nd	7.9	nd
HB7-2	3/2/13	nd	nd	9.2	6.5
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	92%	101%	99%	88%
L130225-10 MS	3/2/13	86%	96%	101%	86%
L130225-10 MSD	3/2/13	96%	99%	89%	83%
RPD	3/2/13	11%	3%	13%	3%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	3/4/13	nd
B24-1	3/4/13	nd
B25-2	3/4/13	nd
HB7-2	3/4/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/4/13	112%
L130227-1 MS	3/4/13	103%
L130227-1 MSD	3/4/13	103%
RPD	3/4/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	3/2/13	nd	nd
B24-1	3/2/13	6.3	6.3
B25-2	3/2/13	nd	6.1
HB7-2	3/2/13	10	nd
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	95%	89%
L130225-10 MS	3/2/13	91%	92%
L130225-10 MSD	3/2/13	92%	99%
RPD	3/2/13	1%	8%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/l)	Diesel (µg/l)	Mineral Oil (µg/l)	Heavy Oil (µg/l)
Method Blank	2/27/13	84	nd	nd	nd	nd
B24-W	2/27/13	97	nd	nd	nd	nd
B25-W	2/27/13	97	nd	nd	nd	nd
Practical Quantitation Limit			200	500	500	500

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Cadmium µg/L	Chromium µg/L	Arsenic µg/L
Method Blank	3/2/13	nd	nd	nd	nd
B24-W	3/2/13	98	2.4	42	24
B25-W	3/2/13	17	nd	50	nd
Practical Quantitation Limit		5.0	0.5	10.0	3.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	103%	101%	99%	95%
L130301-9 MS	3/2/13	102%	92%	89%	93%
L130301-9 MSD	3/2/13	107%	94%	77%	97%
RPD	3/2/13	5%	2%	14%	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Mercury in Water by EPA Method 7470

Sample Number	Date Analyzed	Mercury µg/L
Method Blank	3/4/13	nd
B24-W	3/4/13	nd
B25-W	3/4/13	nd
B25-W Dup	3/4/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7470

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/4/13	112%
B25-W MS	3/4/13	94%
B25-W MSD	3/4/13	94%
RPD	3/4/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
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FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper µg/L	Zinc µg/L
Method Blank	3/2/13	nd	nd
B24-W	3/2/13	868	106
B25-W	3/2/13	89	124
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

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FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	106%	100%
L130301-9 MS	3/2/13	111%	106%
L130301-9 MSD	3/2/13	119%	112%
RPD	3/2/13	7%	6%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-30
Client Project # 2491-001E

Analyses of Dissolved Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Cadmium µg/L	Chromium µg/L	Arsenic µg/L	Copper µg/L
Method Blank	3/17/13	nd	nd	nd	nd	nd
LCS	3/17/13	115%	99%	107%	119%	106%
B24-W	3/17/13	nd	-	-	nd	nd
B25-W	3/17/13	nd	-	nd	-	-
Practical Quantitation Limit		5.0	0.5	10.0	3.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/08/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	B24-1
Sample Matrix:	Soil
Date Sampled:	02/27/2013
Date Received:	03/01/2013
Spectra Project:	2013030009
Spectra Number:	2

Analyte	Result	Units	Method
Total Nickel	15.4	mg/Kg	SW846 6010B

Date Analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/mlh

SPECTRA Laboratories

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03/08/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	B25-2
Sample Matrix:	Soil
Date Sampled:	02/27/2013
Date Received:	03/01/2013
Spectra Project:	2013030009
Spectra Number:	3

Analyte	Result	Units	Method
Total Nickel	< 1.5	mg/Kg	SW846 6010B

Date Analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/mlh

SPECTRA Laboratories

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03/08/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	HB7-2
Sample Matrix:	Soil
Date Sampled:	02/27/2013
Date Received:	03/01/2013
Spectra Project:	2013030009
Spectra Number:	4

Analyte	Result	Units	Method
Total Nickel	15	mg/Kg	SW846 6010B

Date Analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/mlh

SPECTRA Laboratories

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03/08/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	B24-W
Sample Matrix:	Water
Date Sampled:	02/27/2013
Date Received:	03/01/2013
Spectra Project:	2013030009
Spectra Number:	5

Analyte	Result	Units	Method
Nickel	0.639	mg/L	EPA 200.7

Date Analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Marie Holt for
Steve Hibbs, Laboratory Manager
sh/mlh

SPECTRA Laboratories

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03/08/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	B25-W
Sample Matrix:	Water
Date Sampled:	02/27/2013
Date Received:	03/01/2013
Spectra Project:	2013030009
Spectra Number:	6

Analyte	Result	Units	Method
Nickel	0.174	mg/L	EPA 200.7

Date Analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Marie Holt for
Steve Hibbs, Laboratory Manager
a6/mlh

SPECTRA Laboratories

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3/5/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030009
Applies to Spectra #'s 1 thru 4

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.098	104.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030045-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.156	2.0	2.008	92.6	1.994	91.9	0.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories

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3/5/2013

Libby Environmental, Inc
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030009
Applies to Spectra #'s 5 and 6

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Water/Liquid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	1.0	0.963	96.3

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030044-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.047	1.0	0.956	90.9	0.949	90.2	0.8

Recovery Limits 75-125%
RPD Limit 20

Spectra Laboratories

Steven G. Hibbs
Laboratory Manager

20130300009

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2-28-13 Page: 1 of 1

Client: Libby Environmental
Address: SEE ABOVE
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jaime Deyman
Project Name: John Havens Estate
Location: City, State:
Collector: Date of Collection: 2/26/13 - 2/27/13
Email:

Sample Number	Depth	Time	Sample Type	Container Type	pH	Turbidity	Oil & Grease	Zinc, Copper	Zinc, Copper, Lead	TSS	BOD 5	Nitrate/Nitrite	Total Phosphorus	COD	TPH	Nickle			Field Notes
2/26/13 1 B23-2			Soil	4oz JAR												X			
2 B24-1			Soil																
3 B25-2			Soil																
4 DUP B7-2			Soil																
5 B24-W			H2O	Poly															
6 B25-W			H2O																
7																			
8																			
9																			
10																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	2/28/13 9:30	[signature]	3/1/13 @ 1000
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Record pH here:

5 DAY
STD

Distribution: White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

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03/21/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project:	John Havens Estate
Client ID:	B24-W
Sample Matrix:	Water
Date Sampled:	02/27/2013
Date Received:	03/15/2013
Spectra Project:	2013030344
Spectra Number:	1

Analyte	Result	Units	Method
Dissolved Nickel	< 0.015	mg/L	EPA 200.7

Dated analyzed: 3-20-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a6/scj

SPECTRA Laboratories

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March 20, 2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506

Units:	mg/L
Spectra Project:	2013030344
Applies to Spectra #'s	1

QUALITY CONTROL RESULTS

ICP Dissolved Metals - EPA Method 200.7 - Water

Dissolved Filter Blank

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013

Element	Result
Nickel	< 0.015

Initial Calibration Verification (ICV)

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013

Element	ICV Conc.	ICV Result	ICV %Rec
Nickel	1.0	0.973	97.3

ICV Recovery limits 95-105%

Spectra Laboratories

Steve Hibbs
Laboratory Manager

201303044

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3-14-13 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (See above)
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jamie Deyman
Project Name: John Havens Estate
Location: City, State: Olympia, WA
Collector: Date of Collection: 2-27-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Dissolved N.		Field Notes
1	B24-W	—	930	H2O	Poly											X			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	3-14-13	[signature]	3/15/13 @ 0935
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Standard
EDD

TAT: 24HR 48HR 5-DAY

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

Date: 2/27/13 Page: 2 of 2

Client: ROBINSON NOBLE
Address: 3011 S HUSON SUITE A
City: TACOMA State WA Zip: 98409
Phone: (253) 475-7711 Fax:
Client Project # 2491-001E

Project Manager: MAX WILLS
Project Name: JOHN HAUGNS ESTATE
Location: 411 93rd AVE SE City, State: OLYMPIA WA
Collector: ACY Date of Collection: 2/26/13
Email: MWILLS@ROBINSON-NOBLE.COM 2-27-13

3-14-13 dissolved metals added per Max Via email. STD

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Zinc, COPPER, Nickel see notes	Field Notes
1 B24-1	1	914	SOIL	4 oz				X						X	X		
2 B24-2	2	920	SOIL	4 oz				X						X	X		HOLD FOR METALS
3 B24-W	—	930	WTR	AMB/POLY				X						X	X	⊗	Pb, As, Cu, Ni - Diss
4 B25-2	2	1010	SOIL	4 oz				X						X	X		
~~5 B25~~			~~SOIL~~	~~4 oz~~				~~X~~						~~X~~	~~X~~		~~HOLD FOR METALS~~
6 B25-W	—	1020	WTR	AMB/POLY				X						X	X	⊗	Pb, Cr - Diss
7 HB7-2	2	1305	Soil	4oz				X						X	X		
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by:	Date / Time	Received by:	Date / Time
Aaron Young	2-27-13		
Relinquished by:	Date / Time	Received by: James L Dayman	Date / Time 2/27/13 1305
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
SD TURN
NEED EIM

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
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Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Heavy Oil (mg/kg)
Method Blank	3/4/13	101	nd	nd	nd	nd
HB8-3	3/4/13	103	nd	nd	nd	nd
HB1-3	3/4/13	117	nd	nd	nd	nd
HB2-3	3/4/13	96	nd	nd	nd	nd
HB4-3	3/4/13	113	nd	nd	nd	nd
HB3-3	3/4/13	97	nd	nd	nd	nd
HB3-3 Dup	3/4/13	118	nd	nd	nd	nd
Practical Quantitation Limit			20	50	100	100

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

4139 Libby Road NE
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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	3/2/13	nd	nd	nd	nd
HB8-3	3/2/13	nd	nd	7.9	6.3
HB1-3	3/2/13	nd	nd	8.0	8.9
HB2-3	3/2/13	nd	nd	8.4	8.2
HB4-3	3/2/13	nd	nd	7.6	nd
HB3-3	3/2/13	nd	nd	7.7	6.1
HB3-3 Dup	3/2/13	nd	nd	7.8	5.9
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
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FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	92%	101%	99%	88%
HB3-3 MS	3/2/13	103%	98%	88%	114%
HB3-3 MSD	3/2/13	111%	99%	89%	99%
RPD	3/2/13	8%	1%	1%	14%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	3/4/13	nd
HB8-3	3/4/13	nd
HB1-3	3/4/13	nd
HB2-3	3/4/13	nd
HB4-3	3/4/13	nd
HB3-3	3/4/13	nd
HB3-3 Dup	3/4/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/4/13	112%
HB3-3 MS	3/4/13	103%
HB3-3 MSD	3/4/13	103%
RPD	3/4/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
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Phone: (360) 352-2110
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Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	3/2/13	nd	nd
HB8-3	3/2/13	13	nd
HB1-3	3/2/13	12	25
HB2-3	3/2/13	13	nd
HB4-3	3/2/13	nd	nd
HB3-3	3/2/13	11	nd
HB3-3 Dup	3/2/13	10	nd
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130227-1
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	95%	89%
HB3-3 MS	3/2/13	93%	90%
HB3-3 MSD	3/2/13	82%	97%
RPD	3/2/13	13%	8%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/07/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Sample Matrix: Soil
Date Sampled: 02/27/2013
Date Received: 03/01/2013
Spectra Project: 2013030010

Client ID	Spectra #	Analyte	Result	Units	Method
HB8-3	1	Total Nickel	22.2	mg/Kg	SW846 6010B
HB1-3	2	Total Nickel	20.0	mg/Kg	SW846 6010B
HB2-3	3	Total Nickel	18.6	mg/Kg	SW846 6010B
HB4-3	4	Total Nickel	9.5	mg/Kg	SW846 6010B
HB3-3	5	Total Nickel	19.9	mg/Kg	SW846 6010B

Date Analyzed - 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/5/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030010
Applies to Spectra #'s 1 thru 5

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.098	104.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030045-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.156	2.0	2.008	92.6	1.994	91.9	0.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

2013 030010

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2-28-13 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (see above)
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jamie Deyman
Project Name: John Havens Estate
Location: City, State: Olympia, WA
Collector: Date of Collection: 2-27-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Nickel		Field Notes
1	HB8-3	3	1410	Soil	Jar											X			
2	HB1-3	3	1445	↓	↓											X			
3	HB2-3	3	1500													X			
4	HB4-3	3	1530													X			
5	HB3-3	3	1545													X			
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Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2-27-13 Page: 1 of 1

Client: Robinson Noble

Project Manager: Max Wills

Address: 3011 S Huson Suite A

Project Name: John Havens Estate

City: Tacoma State: WA Zip: 98409

Location: 411 93rd Ave SE City, State: Olympia

Phone: 253-475-7711 Fax:

Collector: ACY Date of Collection: 2-27-13

Client Project # 2491-001E

Email: mwills@robinsonnoble.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	zinc, copper, nickel		Field Notes
1	HBS-3	3	1410	Soil	4 oz				X						X	X			
2	HB1-3	3	1445	↓	↓				X						X	X			
3	HB2-3	3	1500						X						X	X			
4	HB4-3	3	1530						X						X	X			
5	HB3-3	3	1545						X						X	X			
6																			
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Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

EI AM Please

TAT: 24HR 48HR 5-DAY

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Mineral Oil (mg/kg)	Heavy Oil (mg/kg)
Method Blank	3/5/13	100	nd	nd	nd	nd
HB5-1	3/5/13	92	nd	nd	nd	nd
HB6-1	3/5/13	80	nd	nd	nd	nd
HB9-1	3/5/13	92	nd	nd	nd	nd
HB10-1	3/5/13	87	nd	nd	nd	nd
HB10-1 Dup	3/5/13	93	nd	nd	nd	nd
Practical Quantitation Limit			20	50	100	100

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	3/2/13	nd	nd	nd	nd
HB5-1	3/2/13	nd	nd	nd	nd
HB6-1	3/2/13	nd	nd	nd	nd
HB9-1	3/2/13	nd	nd	nd	nd
HB10-1	3/2/13	43	nd	6.1	5.6
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	92%	101%	99%	88%
L130225-10 MS	3/2/13	86%	96%	101%	86%
L130225-10 MSD	3/2/13	96%	99%	89%	83%
RPD	3/2/13	11%	3%	13%	3%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	3/4/13	nd
HB5-1	3/4/13	nd
HB6-1	3/4/13	nd
HB9-1	3/4/13	nd
HB10-1	3/4/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/4/13	112%
L130227-1 MS	3/4/13	103%
L130227-1 MSD	3/4/13	103%
RPD	3/4/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
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FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	3/2/13	nd	nd
HB5-1	3/2/13	nd	nd
HB6-1	3/2/13	nd	nd
HB9-1	3/2/13	nd	nd
HB10-1	3/2/13	5.5	nd
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130228-3
Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	95%	89%
L130225-10 MS	3/2/13	91%	92%
L130225-10 MSD	3/2/13	92%	99%
RPD	3/2/13	1%	8%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

SPECTRA Laboratories

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03/06/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Sample Matrix: Soil
Date Sampled: 02/28/2013
Date Received: 03/01/2013
Spectra Project: 2013030012

Client ID	Spectra #	Analyte	Result	Units	Method
HB5-1	1	Total Nickel	15.7	mg/Kg	SW846 6010B
HB6-1	2	Total Nickel	< 1.5	mg/Kg	SW846 6010B
HB9-1	3	Total Nickel	209	mg/Kg	SW846 6010B
HB10-1	4	Total Nickel	< 1.5	mg/Kg	SW846 6010B

Date analyzed: 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

SPECTRA Laboratories

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3/5/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030012
Applies to Spectra #'s 1 thru 4

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.098	104.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030045-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.156	2.0	2.008	92.6	1.994	91.9	0.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

201303O012

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3-1-13 Page: 1 of 1

Client: Libby Environmental, Inc
Address: (see above)
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jamie Deyman
Project Name: John Havens Estate
Location: City, State: Olympia, WA
Collector: Date of Collection: 2-28-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Nickel		Field Notes
1	HB5-1	1	907	Soil	Jar														
2	HB6-1	1	945	↓	↓														
3	HB9-1	1	1045	↓	↓														
4	HB10-1	1	1100	↓	↓														
5																			
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Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2-28-13 Page: 1 of 1

Client: Robinson Noble

Project Manager: Max Wills

Address: 3011 South Huson, Suite A

Project Name: John Havens Estate

City: Tacoma State: WA Zip: 98409

Location: 411 93rd Ave SE City, State: Olympia

Phone: 253-475-7711 Fax:

Collector: ACY Date of Collection: 2-28-13

Client Project # 2491-001 E

Email:

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	zinc, copper, nickel		Field Notes
1 HB 5-1	1	9:07	Soil	4 oz				X						X	X			
2 HB6-1	1	9:45						X						X	X			
3 HB9-1	1	10:45						X						X	X			
4 HB10-1	1	11:00	↓	↓				X						X	X			
5																		
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Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
EIM Please

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/l)	Diesel (µg/l)	Mineral Oil (µg/l)	Heavy Oil (µg/l)
Method Blank	3/4/13	101	nd	nd	nd	nd
MW-5	3/4/13	98	nd	nd	nd	nd
MW-4	3/4/13	106	nd	nd	nd	nd
Practical Quantitation Limit			200	500	500	500

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Cadmium µg/L	Chromium µg/L	Arsenic µg/L
Method Blank	3/2/13	nd	nd	nd	nd
MW-5	3/2/13	11	nd	nd	nd
MW-4	3/2/13	nd	nd	nd	nd
MW-4 Dup	3/2/13	nd	nd	nd	nd
Practical Quantitation Limit		5.0	0.5	10.0	3.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	103%	101%	99%	95%
MW-4 MS	3/2/13	102%	92%	89%	93%
MW-4 MSD	3/2/13	107%	94%	77%	97%
RPD	3/2/13	5%	2%	14%	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

Analyses of Mercury in Water by EPA Method 7470

Sample Number	Date Analyzed	Mercury µg/L
Method Blank	3/6/13	nd
MW-5	3/6/13	nd
MW-4	3/6/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7470

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/6/13	113%
L130225-10 MS	3/6/13	113%
L130225-10 MSD	3/6/13	113%
RPD	3/6/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper µg/L	Zinc µg/L
Method Blank	3/2/13	nd	nd
MW-5	3/2/13	5.1	7.9
MW-4	3/2/13	nd	5.9
MW-4 Dup	3/2/13	nd	6.0
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130301-9
Client Project # 2491-001E

QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	106%	100%
MW-4 MS	3/2/13	111%	106%
MW-4 MSD	3/2/13	119%	112%
RPD	3/2/13	7%	6%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/11/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Sample Matrix: Water
Date Sampled: 03/01/2013
Date Received: 03/05/2013
Spectra Project: 2013030074

Client ID	Spectra #	Analyte	Result	Units	Method
MW-5	1	Nickel	< 0.015	mg/L	EPA 200.7
MW-4	2	Nickel	< 0.015	mg/L	EPA 200.7

Date Anaylzed: 3-11-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

March 11, 2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030074
Applies to Spectra #'s 1 and 2

QUALITY CONTROL RESULTS

ICP Metals - EPA Method 200.7 - Water

Method Blank

Date Digested: 3/11/2013 Date Analyzed: 3/11/2013

Element	Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/11/2013 Date Analyzed: 3/11/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	1.0	1.011	101.1

LCS Recovery limits 85-115%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/11/2013 Date Analyzed: 3/11/2013
Sample Spiked: 2013030077-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.072	1.0	0.840	76.8	0.833	76.1	0.9

Recovery Limits 75-125%
RPD Limit 20

Spectra Laboratories

Steve Hibbs
Laboratory Manager

2013030074

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3/6/13 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (see above)
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jamie Deyman
Project Name: John Havens Estate
Location: City, State: Olympia, WA
Collector: Date of Collection: 3-1-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Nickel		Field Notes
1	MW-5		12:45	Water	poly											X			
2	MW-4		14:40	↓	poly											X			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
Joe	3/5/13 2:30pm	Marie Holt	3-5-13 2:30
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3-1-13 Page: 1 of 1

Client: Robinson Noble

Project Manager: Max Wills

Address: 3011 South Huson Street, Suite A

Project Name: John Havens

City: Tacoma State: WA Zip: 98409

Location: 411 93rd Ave SE City, State: Olympia

Phone: 253-475-7711 Fax:

Collector: ACY Date of Collection: 3-1-13

Client Project # 2491-001 E

Email:

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Zinc / copper / nickel		Field Notes
1 MW-5		12:45	water	1 amber 4 poly				X						X	X			
2 MW-4		14:40	↓	↓				X						X	X			
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	3-1-13 1536	[signature]	3-1 13 1536
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks: EIM please

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Light Oil (mg/kg)	Heavy Oil (mg/kg)
Method Blank	2/25/13	100	nd	nd	nd	nd
B12-3	2/25/13	101	nd	nd	nd	nd
B12-8	2/25/13	98	nd	nd	nd	nd
B13-3	2/25/13	100	nd	nd	nd	nd
B13-8	2/25/13	96	nd	nd	nd	nd
B14-3	2/25/13	100	nd	nd	nd	nd
B14-3 Dup	2/25/13	112	nd	nd	nd	nd
B14-8	2/25/13	92	nd	nd	nd	nd
MW-4-3	2/25/13	102	nd	nd	nd	nd
MW-4-9	2/25/13	100	nd	nd	nd	nd
B15-3	2/25/13	88	nd	nd	nd	nd
B15-10	2/25/13	99	nd	nd	nd	nd
B16-3	2/25/13	106	nd	nd	nd	nd
B16-10	2/25/13	89	nd	nd	nd	nd
B17-3	2/25/13	91	nd	nd	nd	nd
B17-9	2/25/13	91	nd	nd	nd	nd
B17-9 Dup	2/25/13	94	nd	nd	nd	nd
Practical Quantitation Limit			20	50	100	100

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Soil

Sample Description		Method Blank	B12-3	B12-3 Dup	B12-8	B13-3	B13-8
Date Sampled	Reporting	N/A	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.02	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.02	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd	nd	nd	nd
Total Xylenes	0.03	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Soil

Sample Description		Method Blank	B12-3	B12-3 Dup	B12-8	B13-3	B13-8
Date Sampled	Reporting	N/A	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits (mg/kg)	2/27/13 (mg/kg)	2/27/13 (mg/kg)	2/27/13 (mg/kg)	2/27/13 (mg/kg)	2/27/13 (mg/kg)	2/27/13 (mg/kg)
Bromoform	0.02	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalenes	0.03	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		102	106	105	104	103	100
1,2-Dichloroethane-d4		111	112	112	114	117	108
Toluene-d8		109	107	103	102	100	100
4-Bromofluorobenzene		101	96	100	100	97	99

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Soil

Sample Description		B14-3	B14-8	B15-3	B15-10	B16-3	B16-10
Date Sampled	Reporting	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.02	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.02	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd	nd	nd	nd
Total Xylenes	0.03	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Soil

Sample Description		B14-3	B14-8	B15-3	B15-10	B16-3	B16-10
Date Sampled	Reporting	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalenes	0.03	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		106	108	110	105	107	103
1,2-Dichloroethane-d4		116	122	123	118	118	109
Toluene-d8		106	102	104	97	97	96
4-Bromofluorobenzene		96	98	98	99	100	95

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.
* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Soil

Sample Description		B17-3	B17-9	B17-9 Dup
Date Sampled Date Analyzed	Reporting Limits (mg/kg)	2/25/13 2/27/13 (mg/kg)	2/25/13 2/27/13 (mg/kg)	2/25/13 2/27/13 (mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd
Chloromethane	0.06	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd
Bromomethane	0.09	nd	nd	nd
Chloroethane	0.06	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.02	nd	nd	nd
trans -1,2-Dichloroethene	0.02	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd
cis -1,2-Dichloroethene	0.02	nd	nd	nd
Chloroform	0.02	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd
Benzene	0.02	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd
cis-1,3-Dichloropropene	0.02	nd	nd	nd
Toluene	0.02	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd
Ethylbenzene	0.03	nd	nd	nd
Total Xylenes	0.03	nd	nd	nd
Styrene	0.02	nd	nd	nd

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Soil

Sample Description		B17-3	B17-9	B17-9 Dup
Date Sampled	Reporting	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits	2/27/13	2/27/13	2/27/13
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd
1,2,4-Trichlorolbenzene	0.05	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd
Naphthalenes	0.03	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd
Surrogate Recovery				
Dibromofluoromethane		108	102	106
1,2-Dichloroethane-d4		123	113	115
Toluene-d8		98	97	97
4-Bromofluorobenzene		99	100	98

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

QA/QC Data - EPA 8260C Analyses

Sample Identification: B12-8	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)	
1,1-Dichloroethene	0.50	0.439	88	0.50	0.4	89	1.8
Benzene	0.50	0.5	107	0.50	0.5	110	3.0
Toluene	0.50	0.5	101	0.50	0.5	103	2.4
Chlorobenzene	0.50	0.5	97	0.50	0.5	98	0.8
Trichloroethene (TCE)	0.50	0.5	102	0.50	0.5	105	2.9
Surrogate Recovery							
Dibromofluoromethane			101			106	
1,2-Dichloroethane-d4			105			125	
Toluene-d8			101			105	
4-Bromofluorobenzene			93			97	

Laboratory Control Sample			
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	0.50	0.4	88
Benzene	0.50	0.5	98
Toluene	0.50	0.5	94
Chlorobenzene	0.50	0.4	90
Trichloroethene (TCE)	0.50	0.5	98
Surrogate Recovery			
Dibromofluoromethane			97
1,2-Dichloroethane-d4			98
Toluene-d8			107
4-Bromofluorobenzene			98

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Kyle Williams

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	3/2/13	nd	nd	nd	nd
MW-4-3	3/2/13	nd	nd	7.3	8.3
B15-3	3/2/13	nd	nd	nd	8.8
B16-3	3/2/13	nd	nd	7.6	8.6
B17-3	3/2/13	nd	nd	nd	9.7
B17-3 Dup	3/2/13	nd	nd	nd	9.9
B17-9	3/17/13	nd	nd	14.1	nd
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

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Client Project # 2491-001E

QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	92%	101%	99%	88%
B17-3 MS	3/2/13	86%	96%	101%	86%
B17-3 MSD	3/2/13	96%	99%	89%	83%
RPD	3/2/13	11%	3%	13%	3%
LCS	3/17/13	109%	103%	92%	103%
L130226-30 MS	3/17/13	105%	90%	92%	86%
L130226-30 MSD	3/17/13	94%	93%	85%	92%
RPD	3/17/13	11%	3%	8%	7%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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Analyses of Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	2/27/13	nd
MW-4-3	2/27/13	nd
B15-3	2/27/13	nd
B16-3	2/27/13	nd
B17-3	2/27/13	nd
B17-3 Dup	2/27/13	nd
B17-9	3/19/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

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Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	2/27/13	112%
B17-3 MS	2/27/13	103%
B17-3 MSD	2/27/13	103%
RPD	2/27/13	0%
LCS	3/19/13	106%
B17-3 MS	3/19/13	106%
B17-3 MSD	3/19/13	106%
RPD	3/19/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

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Analyses of Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (mg/kg)	Zinc (mg/kg)
Method Blank	3/2/13	nd	nd
MW-4-3	3/2/13	12	nd
B15-3	3/2/13	13	nd
B16-3	3/2/13	14	5.3
B17-3	3/2/13	12	nd
B17-3 Dup	3/2/13	12	nd
B17-9	3/17/13	20	16
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

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QA/QC for Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	95%	89%
B17-3 MS	3/2/13	91%	92%
B17-3 MSD	3/2/13	92%	99%
RPD	3/2/13	1%	8%
LCS	3/17/13	116%	106%
L130226-30 MS	3/17/13	85%	95%
L130226-30 MSD	3/17/13	91%	85%
RPD	3/17/13	7%	11%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

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Hydrocarbon Identification by NWTPH-HCID for Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/l)	Diesel (µg/l)	Mineral Oil (µg/l)	Heavy Oil (µg/l)
Method Blank	2/25/13	100	nd	nd	nd	nd
B12-W	2/25/13	103	nd	nd	nd	nd
B13-W	2/25/13	93	nd	nd	nd	nd
B14-W	2/25/13	93	nd	nd	nd	nd
B14-W Dup	2/25/13	109	nd	nd	nd	nd
B15-W	2/25/13	98	nd	nd	nd	nd
B16-W	2/25/13	106	nd	nd	nd	nd
B16-W Dup	2/25/13	89	nd	nd	nd	nd
B17-W	2/25/13	101	nd	nd	nd	nd
Practical Quantitation Limit			200	500	500	500

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Water

Sample Description		Method Blank	B12-W	B12-W Dup	B13-W	B14-W	B15-W
Date Sampled	Reporting	N/A	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits (µg/l)	2/27/13 (µg/l)	2/27/13 (µg/l)	2/27/13 (µg/l)	2/27/13 (µg/l)	2/27/13 (µg/l)	2/27/13 (µg/l)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.2	nd	nd	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	2.0	nd	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Benzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	1.90	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd	nd	nd
Chlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	2.0	nd	nd	nd	nd	nd	nd
Styrene	1.0	nd	nd	nd	nd	nd	nd

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Robinson Noble
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Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Water

Sample Description		Method Blank	B12-W	B12-W Dup	B13-W	B14-W	B15-W
Date Sampled	Reporting	N/A	2/25/13	2/25/13	2/25/13	2/25/13	2/25/13
Date Analyzed	Limits	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13	2/27/13
	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
Bromoform	1.0	nd	nd	nd	nd	nd	nd
Isopropylbenzene	4.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
n-Propylbenzene	1.0	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Isopropyltoluene	1.0	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
n-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd	nd	nd
Naphthalenes	5.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		99	100	98	97	97	94
1,2-Dichloroethane-d4		95	107	107	103	110	108
Toluene-d8		103	103	102	103	103	102
4-Bromofluorobenzene		104	104	105	106	101	105

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.
* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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Libby Project # L130225-10
Client Project # 2491-001E

Volatile Organic Compounds by EPA Method 8260C in Water

Sample Description		B16-W	B17-W
Date Sampled Date Analyzed	Reporting Limits (µg/l)	2/25/13 2/27/13 (µg/l)	2/25/13 2/27/13 (µg/l)
Dichlorodifluoromethane	2.0	nd	nd
Chloromethane	2.0	nd	nd
Vinyl chloride	0.2	nd	nd
Bromomethane	2.0	nd	nd
Chloroethane	2.0	nd	nd
Trichlorofluoromethane	2.0	nd	nd
1,1-Dichloroethene	2.0	nd	nd
Methylene chloride	1.0	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd
1,1-Dichloroethane	1.0	nd	nd
2,2-Dichloropropane	2.0	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd
Chloroform	1.0	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd
Carbon tetrachloride	1.0	nd	nd
1,1-Dichloropropene	1.0	nd	nd
Benzene	1.0	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd
Trichloroethene (TCE)	1.0	nd	nd
1,2-Dichloropropane	1.0	nd	nd
Dibromomethane	1.0	nd	nd
Bromodichloromethane	1.0	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd
Toluene	1.0	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd
1,3-Dichloropropane	1.0	nd	nd
Dibromochloromethane	1.0	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd
Chlorobenzene	1.0	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	2.0	nd	nd
Styrene	1.0	nd	nd

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Volatile Organic Compounds by EPA Method 8260C in Water

Sample Description		B16-W	B17-W
Date Sampled Date Analyzed	Reporting Limits (µg/l)	2/25/13 2/27/13 (µg/l)	2/25/13 2/27/13 (µg/l)
Bromoform	1.0	nd	nd
Isopropylbenzene	4.0	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd
Bromobenzene	1.0	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd
n-Propylbenzene	1.0	nd	nd
2-Chlorotoluene	1.0	nd	nd
4-Chlorotoluene	1.0	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd
tert-Butylbenzene	1.0	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd
sec-Butylbenzene	1.0	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd
Isopropyltoluene	1.0	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd
n-Butylbenzene	1.0	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd
Naphthalenes	5.0	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		97	95
1,2-Dichloroethane-d4		111	106
Toluene-d8		104	102
4-Bromofluorobenzene		105	104

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.
* INSTRUMENT DETECTION LIMIT
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kyle Williams

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QA/QC Data - EPA 8260C Analyses

Sample Identification: B13-W	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)	(%)
1,1-Dichloroethene	10	8.0	80	10	7.8	78	2.4
Benzene	10	9.5	95	10	9.2	92	3.0
Toluene	10	9.6	96	10	9.3	93	3.3
Chlorobenzene	10	8.5	85	10	8.3	83	2.9
Trichloroethene (TCE)	10	9.1	91	10	8.8	88	3.3
Surrogate Recovery							
Dibromofluoromethane			99			96	
1,2-Dichloroethane-d4			111			111	
Toluene-d8			104			103	
4-Bromofluorobenzene			101			104	

Laboratory Control Sample			
	Spiked Conc. (µg/l)	Measured Conc. (µg/l)	Spike Recovery (%)
Benzene	10	9.4	94
Toluene	10	9.5	95
Chlorobenzene	10	8.6	86
Trichloroethene (TCE)	10	9.1	91
Surrogate Recovery			
Dibromofluoromethane			99
1,2-Dichloroethane-d4			105
Toluene-d8			104
4-Bromofluorobenzene			104

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Kyle Williams

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Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Cadmium µg/L	Chromium µg/L	Arsenic µg/L
Method Blank	3/2/13	nd	nd	nd	nd
B15-W	3/2/13	30	1.5	65	136
B16-W	3/2/13	20	0.8	79	59
B17-W	3/2/13	14	nd	60	17
Practical Quantitation Limit		5.0	0.5	10.0	3.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

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QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	3/2/13	103%	101%	99%	95%
L130301-9 MS	3/2/13	102%	92%	89%	93%
L130301-9 MSD	3/2/13	107%	94%	77%	97%
RPD	3/2/13	5%	2%	14%	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson & Jamie Deyman

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Analyses of Mercury in Water by EPA Method 7470

Sample Number	Date Analyzed	Mercury µg/L
Method Blank	3/6/13	nd
B15-W	3/6/13	nd
B16-W	3/6/13	nd
B16-W Dup	3/6/13	nd
B17-W	3/6/13	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Ramses Osorio

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Client Project # 2491-001E

QA/QC for Mercury by EPA Method 7470

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	3/6/13	113%
B16-W MS	3/6/13	113%
B16-W MSD	3/6/13	113%
RPD	3/6/13	0%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Ramses Osorio

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Analyses of Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper µg/L	Zinc µg/L
Method Blank	3/2/13	nd	nd
B15-W	3/2/13	1160	90
B16-W	3/2/13	297	81
B17-W	3/2/13	126	115
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

QA/QC for Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Copper (% Recovery)	Zinc (% Recovery)
LCS	3/2/13	106%	100%
L130301-9 MS	3/2/13	111%	106%
L130301-9 MSD	3/2/13	119%	112%
RPD	3/2/13	7%	6%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

JOHN HAVENS ESTATE PROJECT
Robinson Noble
Olympia, Washington
Libby Project # L130225-10
Client Project # 2491-001E

Analyses of Dissolved Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead µg/L	Chromium µg/L	Copper µg/L	Arsenic µg/L
Method Blank	3/17/13	nd	nd	nd	nd
LCS	3/17/13	115%	107%	106%	119%
B15-W	3/17/13	nd	nd	nd	nd
B16-W	3/17/13	nd	nd	-	nd
B17-W	3/17/13	-	nd	-	nd
Practical Quantitation Limit		5.0	10.0	5.0	3.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/11/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Sample Matrix: Water
Date Sampled: 02/25/2013
Date Received: 02/27/2013
Spectra Project: 2013020577

Client ID	Spectra #	Analyte	Result	Units	Method
B15-W	1	Ethylene Glycol	<10	mg/L	GC-FID
B15-W	1	Propylene Glycol	<10	mg/L	GC-FID
B16-W	2	Ethylene Glycol	<10	mg/L	GC-FID
B16-W	2	Propylene Glycol	<10	mg/L	GC-FID
B17-W	3	Ethylene Glycol	<10	mg/L	GC-FID
B17-W	3	Propylene Glycol	<10	mg/L	GC-FID

Analyzed on 03/08/13 by JJB.

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/mlh

2013020577

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2/26/13 Page: 1 of 1

Client: Libby Environmental INC

Project Manager: JAMIE DERMAN

Address: SEE ABOVE

Project Name: John Havens Estate

City: State: Zip:

Location: City, State:

Phone: Fax:

Collector: Date of Collection: 2/25/13

Client Project #

Email:

	Sample Number	Depth	Time	Sample Type	Container Type	pH	Turbidity	Oil & Grease	Zinc, Copper	Zinc, Copper, Lead	TSS	BOD 5	Nitrate/Nitrite	Total Phosphorus	COD	TPH	Glycols			Field Notes
1	B15-W			H2O	Amber															
2	B16-W																			
3	B17-W																			
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	2/26/13 11:45	[signature]	2/27/13 @ 0950
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Record pH here:

5 DAY

STD

Distribution: White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/07/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Sample Matrix: Water
Date Sampled: 02/25/2013
Date Received: 02/27/2013
Spectra Project: 2013020578

Client ID	Spectra #	Analyte	Result	Units	Method
B-15-W	1	Nickel	0.852	mg/L	SW846 6010B
B-16-W	2	Nickel	0.789	mg/L	SW846 6010B
B-17-W	3	Nickel	0.382	mg/L	SW846 6010B
MW-4-3	4	Total Nickel	20.8	mg/Kg	SW846 6010B
B15-3	5	Total Nickel	20.8	mg/Kg	SW846 6010B
B16-3	6	Total Nickel	22.4	mg/Kg	SW846 6010B
B17-3	7	Total Nickel	20	mg/Kg	SW846 6010B

Date Analyzed - 3-5-13 SCJ

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a7/mlh

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/5/2013

Libby Environmental, Inc
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013020578
Applies to Spectra #'s 1 thru 3

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Water/Liquid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	1.0	0.963	96.3

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030044-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.047	1.0	0.956	90.9	0.949	90.2	0.8

Recovery Limits 75-125%
RPD Limit 20

Spectra Laboratories

Steven G. Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/5/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013020578
Applies to Spectra #'s 4 thru 7

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.098	104.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/5/2013 Date Analyzed: 3/5/2013
Sample Spiked: 2013030045-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.156	2.0	2.008	92.6	1.994	91.9	0.8

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

2013020578

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Client: Libby Environmental INC
Address: SEE ABOVE
City: State: Zip:
Phone: Fax:
Client Project #

Date: 2/26/13 Page: 1 of 1
Project Manager: Jamie Derman
Project Name: John Havens Estate
Location: City, State:
Collector: Date of Collection: 2/25/13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	pH	Turbidity	Oil & Grease	Zinc, Copper	Zinc, Copper, Lead	TSS	BOD 5	Nitrate/Nitrite	Total Phosphorus	COD	TPH	Nickle			Field Notes
1	B-15-W			H2O	poly											X				
2	B-16-W																			
3	B-17-W																			
4	MW-4-3			SOIL	4oz JAR															
5	B15-3																			
6	B16-3																			
7	B17-3																			
8																				
9																				
10																				

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	2/26/13 11:45	[signature]	2/27/13 0950
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Record pH here:
5 DAY
STD

Distribution: White - Lab, Yellow - File, Pink - Originator

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

03/21/2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506
Attn: Sherry Chilcutt

Project: John Havens Estate
Date Received: 03/15/2013
Spectra Project: 2013030335

Client ID	Spectra #	Analyte	Result	Units	Method	Matrix	Date Sampled
B15-W	1	Dissolved Nickel	< 0.015	mg/L	EPA 200.7	Water	02/25/2013
B16-W	2	Dissolved Nickel	< 0.015	mg/L	EPA 200.7	Water	02/25/2013
B17-W	3	Dissolved Nickel	< 0.015	mg/L	EPA 200.7	Water	02/25/2013
B17-9	4	Total Nickel	22.2	mg/Kg	SW846 6010B	Soil	02/25/2013

SPECTRA LABORATORIES

Steve Hibbs, Laboratory Manager
a8/scj

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

March 21, 2013

Libby Environmental, Inc.
4139 Libby Rd NE
Olympia, WA 98506

Units:	mg/L
Spectra Project:	2013030335
Applies to Spectra #'s	1 thru 3

QUALITY CONTROL RESULTS

ICP Dissolved Metals - EPA Method 200.7 - Water

Dissolved Filter Blank

Date Digested: 3/21/2013 Date Analyzed: 3/21/2013

Element	Result
Nickel	< 0.015

Initial Calibration Verification (ICV)

Date Digested: 3/21/2013 Date Analyzed: 3/21/2013

Element	ICV Conc.	ICV Result	ICV %Rec
Nickel	1.0	1.025	102.5

ICV Recovery limits 95-105%

Spectra Laboratories

Steve Hibbs
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

3/21/2013

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2013030335
Applies to Spectra #'s 4

QUALITY CONTROL RESULTS

ICP Metals SW846 6010B - Soil/Solid

Method Blank

Date Digested: 3/21/2013 Date Analyzed: 3/21/2013

Element	Blank Result
Nickel	< 0.015

Blank Spike (LCS)

Date Digested: 3/21/2013 Date Analyzed: 3/21/2013

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	2.0	2.004	100.2

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/20/2013 Date Analyzed: 3/20/2013
Sample Spiked: 2013030386-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	0.462	2.0	2.206	87.2	2.185	86.2	1.2

Recovery Limits 75-125%
RPD Limit 20

SPECTRA LABORATORIES

Steven G. Hibbs
Laboratory Manager

20130303335

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 3-14-13 Page: 1 of 1

Client: Libby Environmental, Inc.
Address: (See above)
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: Jamie Deyman
Project Name: John Havens Estate
Location: City, State: Olympia, WA
Collector: Date of Collection: 2-25-13
Email:

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Dissolved Ni	Total Ni	Field Notes
1	B15-W	—	1425	H_2O	Poly											X			
2	B16-W	—	1545	H_2O	Poly											X			
3	B17-W	—	1700	H_2O	Poly											X			
4	B17-9	9	1645	Soil	Jar												X		
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	3-14-13	[signature]	3/15/13 @0935
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks:
Standard TAT
EDD
TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2/25/13 Page: 1 of 2

Client: ROBINSON NOBLE

Project Manager: MAX WILLS

Address: 3011 S. HUSON SUITE A1

Project Name: John Havens Estate

City: TACOMA State: WA Zip: 98409

Location: 411 93rd City, State: OLYMPIA WA

Phone: Fax:

Collector: ACY Date of Collection: 2/25/13

Client Project # 2491-001E

Email: MWILLS@ROBINSON-NOBLE.COM

3-14-13 dissolved metals added per Max via email. STD

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Zinc, Copper, Nickel	Glycols see Notes	Field Notes
1 B12-3	3	9:45	SOIL	4 oz/VOA			X		X									
2 B12-8	8	9:50	SOIL	4 oz/VOA			X		X									
3 B12-W	—	10:00	WTR	AMR/VOA			X		X									
4 B13-3	3	10:40	SOIL	4 oz/VOA			X		X									
5 B13-8	8	10:50	SOIL	4 oz/VOA			X		X									
6 B13-W	—	11:00	WTR	AMR			X		X									
7 B14-3	3	11:45	soil	4 oz/VOA			X		X									
8 B14-8	8	1200	soil	4 oz/VOA			X		X									
9 B14-W	—	1205	WTR	AMR			X		X									
10 MW-4-3	3	1255	SOIL	4 oz					X						X	X			
11 MW-4-9	9	1305	SOIL	4 oz					X						X	X			HOLD metals
12 B15-3	3	1400	soil	3 4oz/VOA			X		X						X	X			
13 B15-10	10	1410	soil	3 4oz/VOA			X		X						X	X			HOLD Metals
14 B15-W	—	1425	WTR	PCB's/VOA/AMR			X		X						X	X	X	X	Pb, Cr, As, Cu, Ni - Dissolved
15 B16-3	3	1515	SOIL	3 4oz/VOA			X		X						X	X			
16 B16-10	10	1525	SOIL	3 4oz/VOA			X		X						X	X			HOLD Metals
17 B16-W	—	1535	WTR	PCB's/VOA/AMR			X		X						X	X	X	X	Pb, Cr, As, Ni - Dissolved

Relinquished by:	Date / Time	Received by:	Date / Time
		Paul Bunk	2-25-13
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks: need EIM

-STD-

Turn around

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc. — Chain of Custody Record

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154
www.LibbyEnvironmental.com

Client: Robinson Noble
Address: 3011 S. Huson Suite A
City: Tacoma State: WA Zip: 98409
Phone: Fax:
Client Project # 2491-001E

Date: 2/25/13 Page: 1 of 2
Project Manager: Max Wills
Project Name: John Havens Estate
Location: 411 93rd City, State: Olympia WA
Collector: ACT Date of Collection: 2/25/13
Email: mwills@robinson-noble.com

#	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Zinc, Copper, Nickel	Glycols	[illegible]	Field Notes
1	B12-3	3	9:45	Soil	4oz/VOA			X		X										
2	B12-8	8	9:50	Soil	4oz/VOA			X		X										
3	B12-W	—	10:00	WTR	AMR/VOA			X		X										
4	B13-3	3	10:40	Soil	4oz/VOA			X		X										
5	B13-8	8	10:50	Soil	4oz/VOA			X		X										
6	B13-W	—	11:00	WTR	AMR			X		X										
7	B14-3	3	11:45	Soil	4oz/VOA			X		X										
8	B14-8	8	1200	Soil	4oz/VOA			X		X										
9	B14-W	—	1205	WTR	AMR			X		X										
10	MW-4-3	3	1255	Soil	4oz					X						X	X			
11	MW-4-9	9	1305	Soil	4oz					X						X	X			
12	B15-3	3	1406	[illegible]	[illegible]			X		X						X	X			
13	B15-10	10	1410	Soil	4oz/VOA			X		X						X	X			
14	B15-W	—	1425	WTR	[illegible]/VOA/AMR			X		X						X	X	X	(X)	Pb, Cr, As, Cu, Ni - Dissolved
15	B16-3	3	1515	Soil	3 4oz/VOA			X		X						X	X			
16	B16-10	10	1525	Soil	3 4oz/VOA			X		X						X	X			
17	B16-W	—	1545	WTR	AMR/VOA/AMR			X		X						X	X	X	(X)	Pb, Cr, As, Ni - Dissolved

3-14-13 dissolved metals added per Max via email, STD

Relinquished by:	Date / Time	Received by:	Date / Time
		Paul Burg (signature)	2-25-13

Sample Receipt:
Good Condition?
Cold?
Seals Intact?
Total Number of Containers

Remarks: -STD- Turnaround

TAT: 24HR 48HR 5-DAY

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2/25/13 Page: 2 of 2

Client: ROBINSON NOBLE
Project Manager: MAX WILLS
Address: 3011 S. HUSON SUITE A
Project Name: JOHN HAVENS ESTATE
City: TACOMA State: WA Zip: 98409
Location: 411 93rd City, State: OLYMPIA WA
Phone: (253) 475-7711 Fax:
Collector: ACY Date of Collection: 2/25/13
Client Project # 2491-001E
Email: MWILLS@ROBINSON-NOBLE.COM

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Zinc, Copper, Nickel, Cadmium	See notes	Field Notes
1	B17-3	3	1630	SOIL	3 4oz/VOA			X		X					X	X			
2	B17-9	9	1645	SOIL	3 4oz/VOA			X		X					X	X			~~Hold metals~~ Run metals
3	B17-W	—	1700	WTR	Poly/VOA/AMB			X		X					X	X	X	⊗	Cr, As, Ni - Dissolved
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

3-14-13 Dissolved metals added per Max via email. STD

3-14-13 run select metals per Max STD

Relinquished by:	Date / Time	Received by:	Date / Time
Aaron Young	2-25-13 17:30	Paul Burke	2-25-13 17:30
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks: need EIM - STD

Turn around

TAT: 24HR 48HR 5-DAY

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc. — Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 2/25/13 Page: 2 of 2

Client: Robinson Noble
Project Manager: Max Wills
Address: 3011 S. Huson Suite A
Project Name: John Hawks Estate
City: Tacoma State: WA Zip: 98409
Location: 411 92nd City, State: Olympia WA
Phone: (253) 475-7711 Fax:
Collector: AC Date of Collection: 2/25/13
Client Project # 2491-001E
Email: mwills@robinson-noble.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCB's 8082	MTCA 5 Metals	Zinc, Lead, Nickel, Cu		Field Notes
1	B17-3	3	1035	Soil	3 4oz/VOA			X		X						X	X		
2	B17-7	7	1045	Soil	3 4oz/VOA			X		X						(X)	(X)		
3	B17-W	—	1100	WTR	Poly/VOA/AMB			X		X						X	X	X	(X)		
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
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Relinquished by:	Date / Time	Received by:	Date / Time
[illegible]	2-25 17:30	Paul Burke	2-25-13 17:30

Sample Receipt:

Good Condition?	
Cold?	
Seals Intact?	
Total Number of Containers	

Remarks: [illegible]

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - File, Pink - Originator

APPENDIX D

Max Wills

From: Radcliff, Eugene (ECY) [erad461@ECY.WA.GOV]
Sent: Wednesday, June 26, 2013 4:50 PM
To: Max Wills
Cc: Alan Wertjes; Callender, Alexander (ECY); Gerald Tousley; Rose, Scott (ECY)
Subject: John's Auto Wrecking - SW1127: Site Visit

Max:

Thank you for meeting with us (Eugene Radcliff - VCP and Alex Callender (WQ)) at the Havens Auto Wrecking facility (Site) in Tumwater yesterday. My general impression was that the Site's appearance had dramatically improved in some areas (northeast corner of the Site), while observing little progress in other areas (pond and upper building area). Based on my Site visit yesterday, Ecology has some recommendations for you to consider when conducting further evaluation of the Site:

- Evaluate sediments and surface water samples in pond southern pond along property line. Sediment COCs: TPH-HCID*, metals, PAHs, PCBs, VOCs, semi-VOCs.
- Remove tires, wheels, and all other debris from water bodies. Removal of material should by least invasive, least destructive methods (e.g. by hand)
- Evaluate the pond banks to ascertain whether tires have been buried into the bank along north shoreline of pond.
- Review the electric pole transformer history; sample soils beneath the transformer for PCBs as warranted.
- Remove large "creosote" timber near southern property line (and any other treated lumber found) and sample soil for PAHs, pentachlorophenol, and metals.
- Segregate/remove debris pile from the northern portion of the Site and transport to appropriate off-Site disposal facilities, do not store debris piles on Site for extended periods of time. Ecology views the debris piles as a potential pollutant source, it may necessitate additional sample analyses as well as added cleanup costs if these piles remain on-Site. Items identified in the debris pile included fluorescent light ballasts, insulation, treated wood, a portion of a chimney, galvanized metals, and oil storage containers.
- BMPs should be used when storing debris piles on the Site. The county has primacy on solid waste storage issues and there may be permitting requirements for this type of storage activity. Please contact the Thurston County Health Department for additional guidance on solid waste issues
- Further investigation, based on historic maps and aerial imagery plus the appearance of the area soils being reworked south of the Hopkins Ditch, may be warranted.
- Small collections of metal, tires, and other debris remain scattered throughout the Site and should be removed.
- A Terrestrial Ecological Evaluation (TEE) should be conducted for the Site.
- We discussed the value of having a wetland delineation completed for the Site, this could be useful to help you complete a TEE.

The County has zoned the Site, consisting of five parcels, with two zoning classifications:

Zoned LIGHT INDUSTRIAL DISTRICT (LI)* (northern three parcels)
Subject to the provisions of this title, the following uses are permitted in the light industrial district:

3.Processing and Storage.

g.Junk, rags, paper, or metal salvage, storage, recycling or processing;

Zoned RURAL—ONE DWELLING UNIT PER TEN ACRES (R 1/10) (southern two parcels)

Primary uses.

Subject to the provisions of this title, the following uses are permitted in this district:

1.Single-family dwellings (limited to one primary residential structure per lot);

2.Agriculture;

3.Forest practices and forest management activities; and

4.Outdoor recreation.

Any additional investigation/feasibility study should take these zoning criteria into consideration as potential future uses.

Per our discussion at the Site, Ecology would not be receptive to providing a No Further Action Opinion fort a Site where re-contamination was possible. That is why the removal of any potential Site contamination, and its sources, is essential to moving forward in any future cleanup activities.

Ecology's Southwest Regional Office Water Quality Section may have some additional comments for you at a later date. I will forward to you if I receive any comments.

I would be happy to meet with you and your client to discuss future remedial actions at the Site if you would like.

If you have any questions or comments, please contact me.

Sincerely,

Eugene

Eugene Radcliff, L.G.
Toxic Cleanup Program-Voluntary Cleanup Program
Washington Department of Ecology
(360) 407-7404
erad461@ecy.wa.gov

* TPH-HCID should be collected at selected locations, if the analysis indicated TPH-D or TPH-O then the samples should be NWTPH-Dx using without the silica gel/acid cleanup preparation.